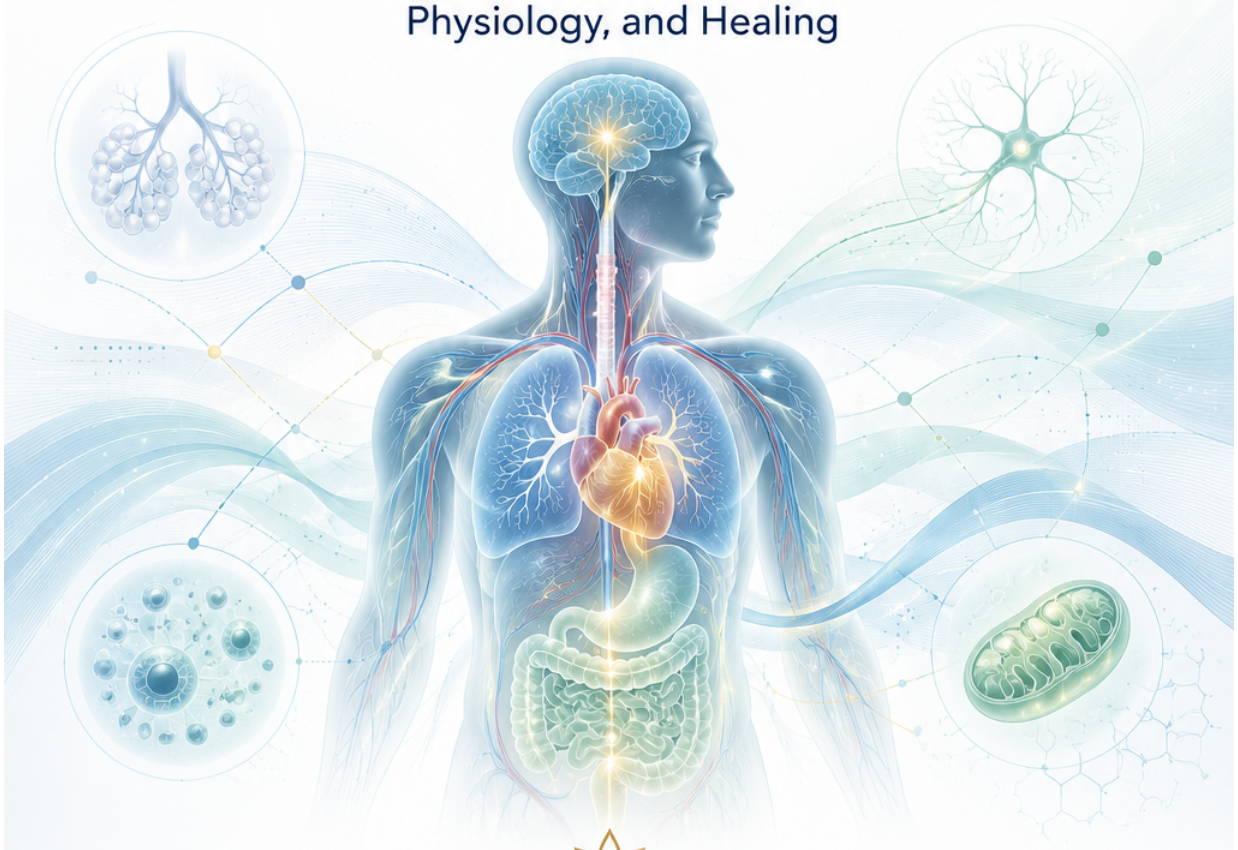
Internal Medicine Made Easy

A Life-Coherent Guide to Clinical Reasoning, Physiology, and Healing



SEE THE WHOLE | THINK DEEPLY | HEAL WISELY

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A Life-Coherent Guide to Clinical Reasoning, Physiology, and Healing

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Clinical reasoning from danger to repair

18 June 2026

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This educational edition is prepared as a life-coherent guide to clinical reasoning in Internal Medicine. It is not a prescribing guide, emergency protocol, or substitute for professional training, direct supervision, local protocols, specialist consultation, or current authoritative clinical guidance.

Medical knowledge changes. Readers should verify diagnostic pathways, drug information, treatment protocols, contraindications, and local standards using up-to-date authoritative sources before applying any clinical recommendation.

Dedication

To the patients who teach us that illness is never only biological.

To the families and caregivers who reveal what the chart cannot see.

To the nurses, therapists, pharmacists, social workers, clerks, and clinical teams who hold the daily fabric of care together.

To students and young clinicians learning to think, act, communicate, and remain humane under pressure.

And to all who believe medicine is not merely the treatment of disease, but the protection and restoration of life.

Acknowledgments

This book grows from years of clinical practice, teaching, reflection, and conversation with patients, families, students, colleagues, and communities. Internal Medicine is learned not only from textbooks and guidelines, but from the bedside: from breathlessness, confusion, fever, weakness, worry, recovery, relapse, and the difficult decisions that occur when life is fragile.

I am grateful to the patients and families whose trust has shaped my understanding of medicine as a living practice. I am also grateful to the clinical teams whose daily work reminds us that care is never the achievement of one person alone. The physician may write the note, but the patient is held by a field of shared attention.

This manuscript also reflects a broader effort to make clinical reasoning more coherent, humane, and teachable for students. Its central aim is simple: to help the learner move from fear and fragmentation toward disciplined attention, wise action, and genuine repair.

AI Use Disclosure

This manuscript was developed with generative AI assistance under the direction, review, editing, and conceptual authorship of Dr. Bichara Sahely. AI was used as an organization, editing, and language-support tool. The framework, clinical orientation, interpretive structure, chapter sequence, and final responsibility rest with the author.

AI-assisted material has been shaped through human clinical judgment and is educational in purpose. It is not a substitute for professional advice, local protocols, specialist guidance, supervision, or direct patient care.

Author's Note

The phrase "made easy" does not mean that Internal Medicine is simple. It means that complexity becomes more teachable when it is organized around the right questions. The living patient is the organizing center. Disease labels, tests, treatments, notes, referrals, handovers, and discharges matter because they either protect or fail to protect life-capacity.

This book therefore invites students to practice a particular clinical discipline: begin with danger, form the syndrome, map capacity failure, identify coupling conditions, act wisely, and follow repair.

Preface

Why Internal Medicine Needs to Be Made Life-Coherent

Internal Medicine is one of the great integrative disciplines of clinical practice.

It asks the clinician to understand symptoms, physiology, disease, medicines, investigations, evidence, uncertainty, patient values, family realities, health systems, and the lived consequences of illness — often all at once.

A patient rarely arrives with a single isolated problem.

They arrive breathless, weak, frightened, confused, swollen, tired, in pain, unable to walk, unable to eat, unable to sleep, unable to cope, or unable to understand what is happening to them.

They arrive with chronic disease, acute illness, medicines, family responsibilities, fears, costs, past experiences, and hopes.

They arrive as whole persons.

Yet medical learning often fragments them.

Students learn cardiology, nephrology, endocrinology, pulmonology, gastroenterology, neurology, infectious disease, geriatrics, rheumatology, hematology, oncology, psychiatry, pharmacology, and ethics as separate subjects. This is necessary, but it is not enough. In real clinical practice, these separations dissolve quickly.

A patient with pneumonia may also have delirium, AKI, hypoglycemia, heart failure, frailty, chronic pain, constipation, unsafe mobility, medication risk, and caregiver strain.

A patient with heart failure may also have CKD, diabetes, dizziness, falls, depression, social isolation, and uncertainty about whether further escalation is truly helpful.

A patient with chronic pain may also have opioid harm, sleep disruption, low mood, immobility, constipation, financial difficulty, and loss of agency.

A patient recovering from infection may be medically improved but still unsafe to discharge because cognition, mobility, medicines, bowels, pain, and support remain fragile.

This is why Internal Medicine must be made not only understandable, but life-coherent.

What This Book Means by “Life-Coherent”

Life-coherent medicine means clinical practice oriented toward the protection, restoration, relief, support, and accompaniment of living persons.

It asks:

What is happening to this patient’s capacity to live?

Not merely:

What disease label fits?

It asks:

What is dangerous?
What syndrome is present?
Which life-capacity is failing?
What context shapes vulnerability and recovery?
What action will help more than harm?
What should repair look like?

The core reasoning loop used throughout this book is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This loop is deliberately simple.

It is not a replacement for clinical knowledge, evidence, guidelines, or local protocols.

It is a way to organize them around the living patient.

Why "Made Easy" Does Not Mean Oversimplified

The title *Internal Medicine Made Easy* does not mean that medicine itself is easy.

It is not.

Patients are complex.
Physiology is complex.
Health systems are complex.
Clinical judgment is complex.
Human suffering is complex.

"Made Easy" means that the learner is given a clear way in.

Medicine becomes easier when it is organized around recurring questions:

Is the patient safe?
What pattern am I seeing?
What function is failing?
What context matters?
What intervention is proportionate?
What should happen next?
What must I reassess?

These questions allow students to move from memorization toward clinical reasoning.

They help junior clinicians avoid common errors: premature closure, diagnostic anchoring, treating numbers without context, missing medication harm, ignoring function, weak discharge planning, and vague safety-netting.

They also remind experienced clinicians of something easy to lose in pressured systems: the patient is not the disease, the result, the bed, the discharge, or the protocol.

The patient is the living center of care.

The Problem This Book Tries to Solve

Many learners struggle not because they lack intelligence, but because clinical medicine is often taught in fragments.

They may know lists of causes of breathlessness, but not how to prioritize danger.
They may know the definition of AKI, but not how to think about fluids, heart failure, NSAIDs, ACE inhibitors, urine output, potassium, and discharge follow-up together.
They may know the criteria for delirium, but still miss it when a quiet older patient is "not herself."
They may know the guideline, but not how frailty, CKD, poor intake, caregiver support, or patient goals change the plan.
They may know how to write a diagnosis, but not how to define a repair trajectory.

This book tries to bridge that gap.

It is written for the student standing at the bedside trying to understand what matters.

It is written for the junior doctor on call trying to decide who must be seen first.

It is written for the clinician preparing a case presentation, ward round, referral, discharge summary, or safety-net.

It is written for teachers who want to help learners reason from physiology to personhood.

It is written for all clinicians who sense that good medicine requires both scientific discipline and fidelity to life.

The Patient as a Living Whole

A central claim of this book is that disease must be understood through life-capacity.

The body is not a machine with independent parts.

The patient is a living whole.

Breathing affects cognition.
Kidney function affects medicine safety.
Pain affects mobility.
Constipation affects delirium.
Hypoglycemia affects falls.
Frailty affects treatment tolerance.
Family support affects discharge safety.
Poverty affects adherence.
Fear affects agency.
Communication affects outcomes.

Internal Medicine becomes clearer when we stop asking only:

Which organ system is involved?

and also ask:

Which capacity for living is threatened?

This approach does not weaken biomedical reasoning.

It strengthens it.

Physiology becomes more meaningful when it is connected to function, dignity, agency, and repair.

The Importance of Danger

The first duty of the clinician is to recognize danger.

Danger may be dramatic:

- shock
- hypoxia
- sepsis
- stroke
- myocardial infarction
- bleeding
- severe hypoglycemia
- airway compromise

But danger may also be quieter:

a frail patient becoming confused

a rising oxygen requirement

a potassium result not reviewed

a discharge before stairs are safe

an anticoagulated patient after a fall

an NSAID restarted after AKI

a caregiver who cannot cope

a patient with suicidal intent

a pending result with no owner

This book repeatedly returns to danger because danger gives clinical reasoning its moral urgency.

The question is always:

What could harm this patient if I miss it?

The Importance of Repair

Medicine is not only diagnosis.

Medicine is repair.

Repair may mean cure.
Repair may mean stabilization.
Repair may mean rehabilitation.
Repair may mean symptom relief.
Repair may mean safer medicines.
Repair may mean a supported discharge.
Repair may mean a truthful conversation.
Repair may mean palliative care.
Repair may mean dignity at the end of life.

A treatment is not complete simply because it was prescribed.

It must be followed by reassessment:

Did it help?
Did it harm?
What improved?
What remains fragile?
What should happen next?

The repair trajectory keeps care alive and responsive.

Why Medicines Receive So Much Attention

Medicines are among the most powerful tools in Internal Medicine.

They are also among the most common sources of harm.

A medicine can treat infection, relieve pain, prevent stroke, control glucose, reduce fluid overload, or stabilize disease.

But a medicine can also cause AKI, delirium, bleeding, constipation, dizziness, hypoglycemia, falls, respiratory depression, diarrhea, and confusion.

This book therefore treats prescribing, deprescribing, medicine reconciliation, high-risk medicine review, and discharge medicine clarity as central clinical skills.

The question is never only:

What medicine is indicated?

It is also:

Is this medicine still helping this patient, in this context, at this time, with acceptable harm and burden?

Why Function Matters

Patients do not live inside laboratory values.

They live through function.

They breathe, walk, eat, drink, sleep, toilet, think, speak, decide, work, pray, love, grieve, and return home.

A patient may have improving blood tests but still be unable to stand.
A patient may be afebrile but still delirious.
A patient may be off oxygen but unsafe on stairs.
A patient may have controlled glucose but recurrent hypoglycemia.
A patient may have treated infection but no caregiver support.

Function is not secondary.

Function is often the difference between safe recovery and preventable harm.

This is why the book repeatedly asks:

Can the patient actually live safely in the next setting of care?

Why Communication Is Clinical Care

Communication is not decoration around medicine.

It is medicine.

A diagnosis not explained may not be understood.
A medicine change not understood may not be followed.
A warning sign not named may not be recognized.
A pending result not assigned may be missed.
A handover without risk may fail.
A referral without a question may delay care.
A discharge without teach-back may become readmission.

This book therefore treats case presentation, handover, referral, escalation, safety-netting, discharge communication, and difficult conversations as core clinical competencies.

Good communication transfers meaning, risk, responsibility, and hope.

Why Humility Matters

Clinical medicine is uncertain.

Tests may mislead.
Symptoms may evolve.
Patients may present early.
Guidelines may not fit.
Treatments may harm.

Diagnoses may change.
Families may know what the chart does not.
Nurses may notice deterioration before the numbers are alarming.
The clinician may be wrong.

Humility is not weakness.

Humility is a safety practice.

The life-coherent clinician says:

“This is my working diagnosis.”
“This is what I am worried about.”
“This is what would change the plan.”
“We need to reassess.”
“I need help.”

Humility keeps the patient safer than false certainty.

Why Courage Matters

Medicine also requires courage.

The clinician must sometimes:

- escalate early
- delay unsafe discharge
- challenge a harmful plan
- stop a medicine that is causing harm
- admit uncertainty
- apologize after error
- speak honestly about prognosis
- advocate for comfort
- resist dehumanizing language
- listen when the system is rushing
- protect the patient when convenience pulls elsewhere

Courage in medicine is not theatrical.

It is quiet fidelity to the patient’s real need.

How This Book Is Organized

This book moves from foundations to practice.

It begins with the basic orientation of life-coherent clinical reasoning.

It then builds through physiology, organ systems, common syndromes, chronic disease, acute care, medicines, frailty, communication, discharge, safety-netting, reassessment, reflection, and integrated judgment.

The later chapters deliberately return to the same clinical situations from different angles. This repetition is intentional. Clinical wisdom develops by seeing the same patient reality through multiple lenses: diagnosis, physiology, function, medicines, discharge, communication, and reflection.

The appendices then provide practical tools: templates, checklists, scripts, safety-netting phrases, mini cases, and a glossary.

The aim is for the book to be both readable and usable.

A Note to Students

If you are a student, do not try to memorize everything at once.

Start with the core loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Use it on every case.

When you hear a symptom, ask what is dangerous.
When you see a diagnosis, ask what capacity is failing.
When you prescribe a treatment, ask what harm it may cause.
When you discharge a patient, ask whether repair can continue safely.
When you are uncertain, safety-net and reassess.
When something goes wrong, reflect and learn.

This is how clinical reasoning grows.

A Note to Clinicians and Teachers

If you are a clinician or teacher, this book is meant to support bedside teaching.

Ask learners:

What is dangerous here?
What syndrome are you seeing?
Which capacity is failing?
What context changes the plan?
What would you do first?
What harm could your treatment cause?
What would improvement look like?
What would you safety-net?

These questions help learners reason rather than merely recite.

They also help clinical teams remember the patient's whole situation under pressure.

A Note on Protocols and Local Practice

This book is educational.

It does not replace clinical supervision, professional judgment, emergency care, local guidelines, institutional protocols, or national standards.

Medicine must always be practiced according to local laws, clinical pathways, available resources, and appropriate professional regulation.

Where specific treatment details, thresholds, pathways, or medication decisions are needed, clinicians must refer to current local guidance and senior clinical support.

This book offers a reasoning framework.

It does not provide individualized medical instructions.

The Deeper Aim

The deeper aim of this book is formation.

Not only the formation of knowledge, but the formation of attention.

To become a good clinician is to learn how to see.

To see danger without panic.
To see physiology without reductionism.
To see the person without losing the diagnosis.
To see function without dismissing disease.
To see medicines as both help and harm.
To see families as sources of knowledge.
To see uncertainty honestly.
To see when treatment should escalate.
To see when treatment should stop.
To see when comfort is the highest form of care.
To see when the system is no longer serving the patient.
To see every clinical encounter as an opportunity for repair.

Internal Medicine becomes life-coherent when the clinician's knowledge remains ordered to the patient's living good.

That is the purpose of this book.

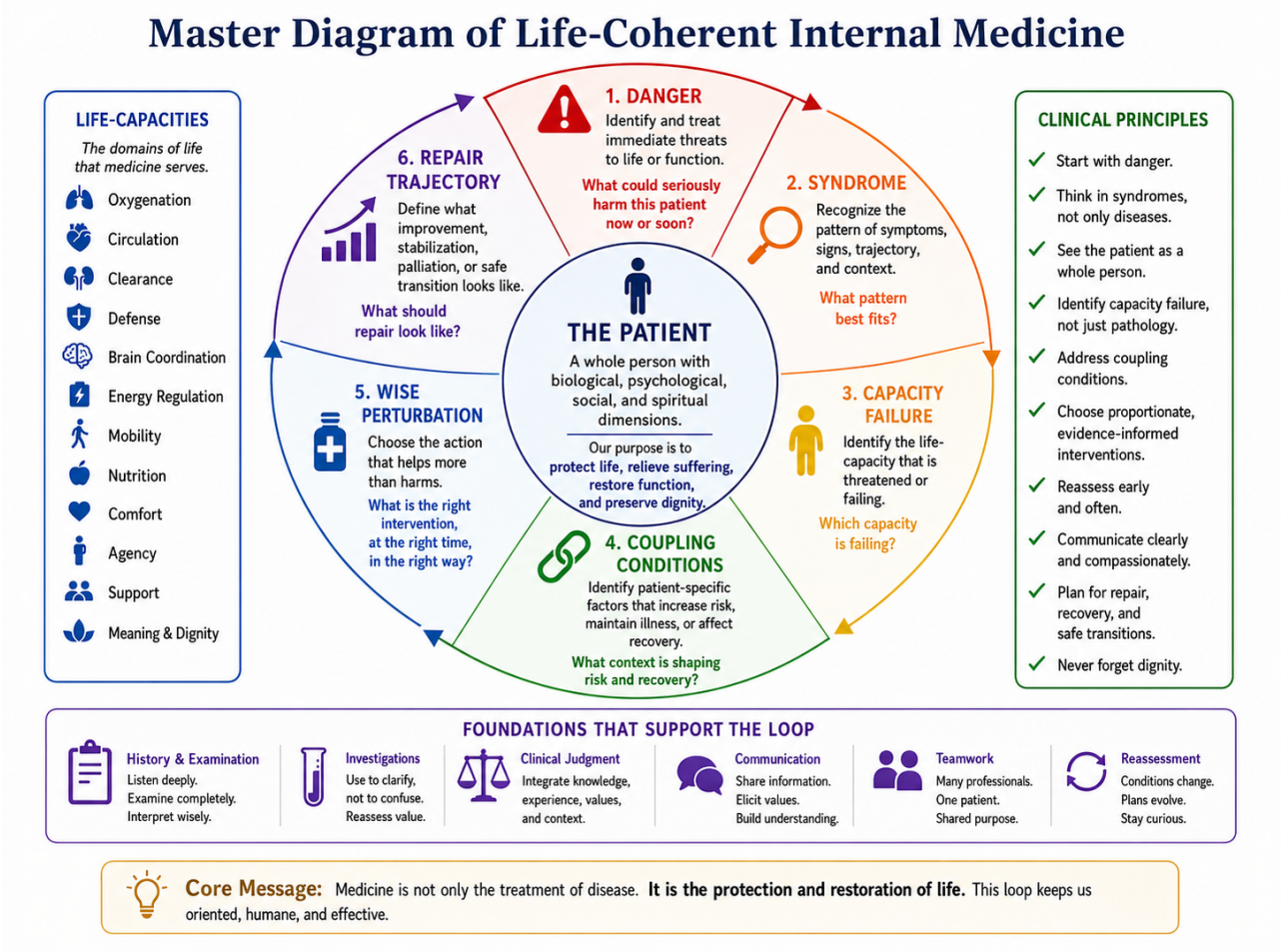

Figure 1. Master Diagram of Life-Coherent Internal Medicine

The life-coherent clinical framework places the living patient at the center of care and organizes Internal Medicine around danger recognition, syndrome formation, capacity failure, coupling conditions, wise perturbation, and repair trajectory.

How to Use This Book

This book is designed to be read, studied, taught, and used at the bedside.

It is not meant to be read only once from beginning to end and then placed aside. It is meant to become a clinical companion: a way of organizing knowledge, practicing reasoning, preparing for cases, guiding ward work, and reflecting after action.

The central method of the book is the life-coherent clinical reasoning loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This loop appears throughout the book because it is meant to become familiar.

At first, it may feel like a framework.
With practice, it becomes a habit of clinical seeing.

1. Start With the Core Loop

Before reading the detailed chapters, become familiar with the central questions:

Danger

What could seriously harm this patient now or soon?

Syndrome

What pattern of symptoms, signs, trajectory, and context is present?

Capacity Failure

Which life-capacity is threatened or failing?

Coupling Conditions

What patient-specific context changes the risk, treatment, or recovery?

Wise Perturbation

What action is likely to help more than harm?

Repair Trajectory

What should improvement, stabilization, palliation, or safe transition look like?

These six questions can be applied to almost every clinical situation.

2. Read the Book in Layers

This book can be used in several ways.

First Reading

Read for the overall philosophy and structure.

Do not try to memorize every checklist.

Focus on understanding the recurring pattern:

- danger first
- syndrome before final diagnosis
- physiology as capacity failure
- treatment as wise perturbation
- recovery as repair trajectory
- communication as clinical care

Second Reading

Read by clinical need.

If you are seeing breathlessness, review the respiratory and presenting complaint sections.
If you are preparing for ward rounds, review the ward round and prioritization chapters.
If you are discharging a patient, review discharge, medicines, safety-netting, and handover.
If you are managing frailty, review delirium, falls, function, medicines, and goals of care.

Third Reading

Use the book as a practice manual.

Apply the templates to real or simulated cases.
Use the mini cases for teaching.
Use the appendices before clinical placements, exams, ward rounds, and case presentations.

3. Use Part I as the Foundation

The early part of the book introduces the life-coherent orientation.

Use it to understand:

- why medicine must be centered on life-capacity
- why danger comes first
- why symptoms should be organized into syndromes
- why physiology matters
- why treatment must be proportionate
- why repair must be reassessed
- why patient dignity, agency, function, and context are not optional

Part I gives the mental map for the rest of the book.

Return to it whenever the later chapters feel detailed.

4. Use the System Chapters to Understand Physiology

The organ-system chapters should be read as more than disease summaries.

They show how each system protects life-capacity.

When reading a system chapter, ask:

- What does this system do for life?
- What happens when it fails?
- What symptoms reveal failure?
- What signs reveal danger?
- What tests help interpret function?
- What treatments restore capacity?
- What harms can treatment cause?
- What must be monitored?

This approach helps you avoid memorizing isolated facts.

It teaches you to think physiologically.

5. Use the Syndrome Chapters for Real Presentations

Patients usually present with symptoms, not diagnoses.

Use the syndrome chapters when approaching:

- chest pain
- breathlessness
- fever
- confusion
- falls
- abdominal pain
- dizziness
- weakness
- fatigue
- edema
- weight loss
- pain
- poor intake
- general decline

For every syndrome, ask:

What is dangerous?
What is most likely?
What is most reversible?
What must not be missed?
What is the safest next step?

This will help you move from symptom to safe clinical reasoning.

6. Use the Chronic Disease Chapters for Longitudinal Thinking

Chronic disease care is not only target control.

It is the long-term protection of life-capacity.

When reading chronic disease chapters, ask:

- What capacity is slowly being lost?
- What can be prevented?
- What can be stabilized?
- What treatment burden is being created?
- What does the patient understand?
- What does the patient value?
- What support is required?
- What follow-up closes the loop?

This is especially important in diabetes, hypertension, CKD, heart failure, COPD, chronic pain, frailty, and multimorbidity.

7. Use the Medicine Chapters for Safety

Medicines are powerful clinical tools.

They can restore life-capacity, but they can also cause harm.

When reading medicine-related sections, ask:

- What is the medicine for?
- Is it still needed?
- Is it helping?
- Is it harming?
- Does kidney or liver function affect safety?
- Does frailty increase risk?
- Does the patient understand it?
- Can the patient access it?
- What monitoring is needed?
- When should it stop?
- What should not be restarted?

Use the medicine chapters before admission, ward rounds, discharge, and follow-up.

8. Use the Frailty, Delirium, and Multimorbidity Chapters Often

Frailty, delirium, and multimorbidity appear throughout Internal Medicine.

They change the meaning of almost every diagnosis and treatment.

A frail patient may deteriorate with subtle signs.
A delirious patient may be mislabeled as having dementia.
A multimorbid patient may improve in one capacity while worsening in another.
A treatment that helps one condition may harm another.

When caring for such patients, repeatedly ask:

What was baseline?
What changed?
Which capacities are fragile?
What medicine harm is possible?
What support is real?
What does safe recovery require?

9. Use Part VII for Clinical Practice Integration

Part VII brings the whole book together.

Use it when preparing for:

- consultations

- prioritization
- ward rounds
- admissions
- discharges
- follow-up
- case synthesis
- case presentation
- case discussion
- on-call shifts
- handover
- referral
- escalation
- de-escalation
- safety-netting
- reassessment
- reflection
- integrated judgment

These chapters translate knowledge into practice.

They are especially useful for students and junior doctors entering real clinical environments.

10. Use the Appendices as Ward Tools

The appendices are designed for quick use.

They include:

- clinical reasoning template
- history-taking template
- examination template
- presenting complaint frameworks
- prioritization checklist
- ward round checklist
- admission checklist
- discharge checklist
- handover, referral, and escalation scripts
- safety-netting phrases
- mini case practice bank
- glossary of core concepts

Use them as practical prompts.

Before a ward round, review the ward round checklist.
Before admission, review the admission checklist.
Before discharge, review the discharge checklist.
Before calling a specialist, review the referral script.
Before sending a patient home, review the safety-netting phrases.

The appendices are meant to make the book usable in practice.

11. How Students Can Use This Book

If you are a student, use the book to practice clinical reasoning.

For every patient or case, write a short life-coherent summary:

Danger
What could harm the patient?

Syndrome
What pattern is present?

Capacity Failure
Which life-capacity is failing?

Coupling Conditions
What patient context matters?

Wise Perturbation
What action is needed?

Repair Trajectory
What should happen next?

This is more useful than memorizing long lists without structure.

When presenting cases, try to include:

- the main syndrome
- the key danger
- the relevant physiology
- the patient's baseline
- the working diagnosis
- the dangerous alternatives
- the plan
- the repair trajectory

This will make your presentations clearer and safer.

12. How Junior Doctors Can Use This Book

If you are a junior doctor, use this book to support safe practice under pressure.

Use it to help decide:

- who to see first
- what danger cannot wait
- what result needs action

what medicine may harm

when to escalate

what to hand over

whether discharge is safe

what to safety-net

what to reassess

During busy shifts, return to simple questions:

Who is unsafe now?
Who is getting worse?
What result could harm the patient?
What medicine could cause harm?
What discharge could be unsafe?
What must be handed over?

Good prioritization saves patients.

13. How Teachers Can Use This Book

Teachers can use this book as a bedside teaching framework.

Instead of asking only:

“What is the diagnosis?”

Ask learners:

“What is dangerous?”
“What syndrome are you seeing?”
“Which capacity is failing?”
“What context changes the plan?”
“What would you do first?”
“What harm could treatment cause?”
“What would improvement look like?”
“What would you safety-net?”

This helps learners develop judgment, not only recall.

The mini cases can be used for tutorials, small groups, bedside teaching, or exam preparation.

14. How to Use the Book for Case Presentations

Before presenting a case, prepare the following:

Patient

Age, relevant background, baseline function.

Presenting Syndrome

The pattern that brought the patient to care.

Danger

What must not be missed or delayed.

Key Findings

History, examination, results, and trends.

Capacity Failure
Which functions are impaired.

Coupling Conditions
Frailty, CKD, heart failure, diabetes, medicines, social support, goals.

Working Diagnosis
Best current explanation.

Dangerous Alternatives
What remains possible and important.

Plan
Treatment, monitoring, medicines, referrals, communication.

Repair Trajectory
What improvement should look like.

A case presentation should not be a data dump.

It should be a guided clinical argument.

15. How to Use the Book During Ward Rounds

During ward rounds, ask for each patient:

- Better, worse, unchanged, or different?
- What danger remains today?
- Does the diagnosis still fit?
- Did treatment help?
- Did treatment harm?
- What results have changed the plan?
- What medicines need review?
- What function remains unsafe?
- What does the patient understand?
- What must happen today?
- What blocks discharge?
- What must be handed over?

A ward round is not just review.

It is daily reassessment of repair.

16. How to Use the Book During Admissions

During admission, prioritize:

- immediate danger
- presenting syndrome
- baseline function
- baseline cognition

- medicines
- allergies
- high-risk medicines
- working diagnosis
- dangerous alternatives
- initial treatment
- monitoring
- escalation plan
- early discharge barriers

Admission should create the first coherent repair plan.

17. How to Use the Book During Discharge

Before discharge, ask:

- Is danger controlled?
- Is the diagnosis clear enough?
- Are medicines reconciled?
- Are stopped medicines explained?
- Are pending results owned?
- Is function safe or supported?
- Is cognition safe or supported?
- Is pain controlled?
- Are bowels and bladder addressed?
- Is follow-up arranged?
- Does the patient understand?
- Does the caregiver understand?
- Are warning signs specific?

Discharge is one of the highest-risk moments in care.

Use the discharge checklist every time.

18. How to Use the Book During On-Call Shifts

On call, do not try to solve everything at once.

Use the prioritization sequence:

- immediate danger
- deteriorating patients
- critical results
- time-critical treatments
- high-risk medicines

- unsafe transitions
- severe symptom burden
- routine tasks

If overwhelmed, write the list and ask for help.

On-call safety depends on prioritization, escalation, and handover.

19. How to Use the Book for Reflection

After a difficult case, ask:

- What happened?
- What did I think was happening?
- What was dangerous?
- What did I do?
- What helped?
- What harmed?
- What did I miss?
- What did the patient experience?
- What system factors mattered?
- What should I learn?
- What should change next time?

Reflection is not self-punishment.

It is how experience becomes wisdom.

20. How to Use the Book Without Becoming Mechanical

Frameworks are helpful, but patients are not templates.

Use the checklists to support attention, not replace it.

A checklist cannot listen for fear.
A template cannot notice dignity.
A pathway cannot fully know the patient's life.
A protocol cannot replace judgment when values, frailty, multimorbidity, and uncertainty intersect.

Use structure, but remain present.

Use evidence, but remain humble.

Use protocols, but remain oriented to the patient.

21. Repetition Is Intentional

Some themes repeat throughout the book:

- danger first
- treatment can harm
- function matters

medicines need review

discharge is clinical

family baseline matters

delirium is often missed

frailty changes risk

uncertainty needs safety-netting

reassessment prevents drift

communication is care

This repetition is deliberate.

Clinical wisdom develops through repeated recognition.

The same principle must be seen in many contexts before it becomes automatic.

22. The Most Important Habit

The most important habit this book teaches is to return to the patient.

Return after treatment.
Return after results.
Return after deterioration.
Return after handover.
Return before discharge.
Return after uncertainty.
Return after error.
Return after success.

Ask:

Does the plan still fit this living person?

That question is the heart of life-coherent medicine.

Quick Guide: Which Section Should I Use?

I am seeing a new patient

Use:

Complete History-Taking Template

Complete Examination Template

Admission Checklist

Common Presenting Complaint Frameworks

I am preparing a case presentation

Use:

Case Synthesis chapters

Case Presentation chapters

Life-Coherent Clinical Reasoning Template

I am on a ward round

Use:

- Ward Round Checklist
- Clinical Review and Reassessment
- Medicine Review sections

I am on call

Use:

- Clinical Prioritization Checklist
- Clinical Escalation
- Handover Scripts

I am discharging a patient

Use:

- Discharge Checklist
- Safety-Netting Phrases
- Medicine Reconciliation sections

I am worried about a patient

Use:

- Danger-first reasoning
- Escalation Script
- Reassessment chapter

I am uncertain

Use:

- Working diagnosis
- Dangerous alternatives
- Safety-netting
- Reassessment plan

I am reflecting after a difficult case

Use:

- Clinical Reflection After Action
- Mini Case Practice Bank
- Glossary of Core Concepts

Final Reminder

This book is best used not as a storehouse of facts, but as a way of seeing.

For every patient, return to the core loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Ask:

What is dangerous?
What is the pattern?
What capacity is failing?
What context matters?
What action helps more than harms?
What should repair look like?
What must be reassessed, communicated, safety-netted, and learned?

If these questions become part of your clinical habit, the book has done its work.

Clinical Disclaimer

Educational Use and Professional Responsibility

This book is intended for educational purposes.

It is designed to support learning, clinical reasoning, reflection, communication, and safe medical thinking. It is not intended to replace clinical training, professional supervision, local protocols, institutional policies, national guidelines, licensing requirements, or individualized medical judgment.

Medicine must always be practiced by appropriately trained and licensed clinicians within their scope of practice and according to the laws, standards, and clinical pathways of the relevant country, institution, and professional body.

Not a Substitute for Clinical Care

This book does not provide individualized medical advice.

The information contained here should not be used by patients, caregivers, students, or clinicians as a substitute for direct assessment by a qualified healthcare professional.

Patients with symptoms, concerns, deterioration, or medical emergencies should seek appropriate medical care through local healthcare services.

In urgent or life-threatening situations, emergency services should be contacted immediately according to local arrangements.

Use Local Guidelines and Protocols

Clinical practice changes over time.

Guidelines, drug formularies, diagnostic thresholds, treatment pathways, antimicrobial recommendations, resuscitation protocols, referral systems, and public health requirements may vary by country, region, institution, and patient population.

Where this book discusses clinical conditions, medicines, investigations, monitoring, escalation, discharge, or safety-netting, clinicians must apply current local guidance and senior clinical advice.

This book deliberately avoids detailed drug doses, rigid thresholds, and institution-specific protocols. Those decisions must be made according to current authoritative local sources and patient-specific clinical judgment.

Clinical Judgment Remains Essential

No textbook, checklist, template, pathway, or framework can replace clinical judgment.

Patients differ in age, physiology, frailty, comorbidities, pregnancy status, renal function, liver function, immune status, allergy history, medicine exposure, values, goals, social support, and access to care.

A treatment that helps one patient may harm another.

A discharge that is safe for one patient may be dangerous for another.

A result that is reassuring in one context may require urgent action in another.

The clinician must always ask:

Does this plan fit this patient, in this context, at this time?

Limits of Checklists and Templates

The checklists, scripts, templates, and frameworks in this book are learning tools.

They are designed to support attention and reasoning.

They are not mandatory protocols.
They are not exhaustive.
They are not substitutes for clinical assessment.
They are not guarantees of safety.
They do not cover every possible presentation, diagnosis, emergency, medicine interaction, complication, or local requirement.

Clinicians should adapt them thoughtfully according to patient need, clinical urgency, professional role, and local practice.

Medicines and Prescribing

Any discussion of medicines in this book is for educational reasoning only.

Prescribing must be performed by appropriately authorized clinicians using current local formularies, prescribing guidance, contraindication checks, allergy information, renal and hepatic dosing guidance, pregnancy and breastfeeding considerations, drug interaction tools, antimicrobial policies, monitoring requirements, and professional standards.

High-risk medicines require particular care, including but not limited to:

- anticoagulants
- antiplatelets
- insulin
- opioids
- sedatives
- antipsychotics
- diuretics
- ACE inhibitors and ARBs
- NSAIDs
- steroids
- antibiotics
- immunosuppressants
- medicines requiring renal or hepatic adjustment

Medication reconciliation, deprescribing, and discharge prescribing should be performed according to local policy and with appropriate pharmacy or senior clinical support when needed.

Diagnosis and Investigation

The diagnostic discussions in this book are intended to help learners reason safely.

They do not provide a complete differential diagnosis for every clinical presentation.

They do not define all indications, contraindications, sensitivities, specificities, diagnostic criteria, or pathway requirements for investigations.

Investigations should be selected according to the patient's presentation, urgency, risk, local availability, current guidance, and the question being asked.

A reassuring initial assessment does not always exclude evolving disease.

Ongoing symptoms, deterioration, new findings, or patient concern should prompt reassessment.

Emergencies

This book discusses danger recognition but is not an emergency protocol manual.

In emergencies, clinicians should follow local emergency pathways, call for senior help, and activate appropriate response systems.

Examples of urgent danger include, but are not limited to:

- airway compromise
- severe breathlessness
- rising oxygen requirement
- shock
- severe chest pain
- suspected stroke
- seizure
- severe hypoglycemia
- sepsis
- major bleeding
- reduced consciousness
- severe allergic reaction
- dangerous electrolyte abnormality
- suicidal intent
- major trauma
- rapidly worsening clinical condition

When in doubt, escalate early.

Patient Values, Consent, and Capacity

Clinical decisions must respect patient dignity, consent, capacity, confidentiality, cultural context, and legal rights.

Where capacity is impaired or uncertain, clinicians must follow applicable legal and ethical frameworks and involve appropriate decision-makers according to local law and institutional policy.

Goals-of-care conversations, treatment ceilings, resuscitation decisions, palliative care decisions, and end-of-life care require careful communication, senior support when appropriate, and documentation according to local standards.

Professional Scope

Students, trainees, nurses, allied health professionals, junior doctors, and other healthcare workers should use this book within their professional role and level of training.

Learners should seek supervision when:

- a patient is deteriorating
- diagnosis is uncertain and risk is high
- treatment may cause significant harm
- prescribing decisions are complex
- discharge safety is unclear
- capacity or consent is uncertain
- serious illness decisions are needed
- family conflict or ethical difficulty is present
- they feel out of depth

Asking for help is a clinical safety skill.

No Guarantee of Outcome

Medicine involves uncertainty.

Even careful assessment, evidence-based treatment, good communication, and appropriate follow-up cannot guarantee a particular outcome.

This book aims to improve clinical reasoning and patient-centered attention, but it cannot eliminate risk, error, complication, deterioration, or diagnostic uncertainty.

Clinicians remain responsible for their own professional decisions and for seeking appropriate support when needed.

Use of the Life-Coherent Framework

The life-coherent framework used in this book is a reasoning aid.

It is intended to help clinicians ask:

What is dangerous?
What syndrome is present?
Which life-capacity is failing?
What context shapes risk and recovery?
What action may help more than harm?
What repair trajectory should be expected?

This framework should be used alongside, not instead of:

- biomedical knowledge
- clinical examination
- diagnostic reasoning
- evidence-based medicine
- local protocols
- professional standards
- patient values
- multidisciplinary care
- senior clinical support

Final Disclaimer

This book is a guide to learning and reasoning in Internal Medicine.

It is not a substitute for direct patient assessment, emergency care, clinical supervision, professional licensing, institutional policy, or current medical guidelines.

All clinical decisions must be made by qualified professionals using current evidence, local protocols, patient-specific assessment, and appropriate professional judgment.

The central message of this book is simple:

Use knowledge, evidence, communication, humility, and judgment in service of the living patient.

Abbreviations List

This list includes common abbreviations used in Internal Medicine and throughout this book. Abbreviations can be useful, but they should be used carefully. In clinical communication, clarity is more important than speed.

When writing for patients, families, or non-specialist audiences, avoid unexplained abbreviations whenever possible.

A

ABG — Arterial blood gas
ACE inhibitor — Angiotensin-converting enzyme inhibitor
ACS — Acute coronary syndrome
ADL — Activities of daily living
AF — Atrial fibrillation
AKI — Acute kidney injury
ALT — Alanine aminotransferase
ARB — Angiotensin receptor blocker
AST — Aspartate aminotransferase

B

BMI — Body mass index
BP — Blood pressure
BPH — Benign prostatic hyperplasia

C

CABG — Coronary artery bypass grafting
CBC — Complete blood count
CKD — Chronic kidney disease
COPD — Chronic obstructive pulmonary disease
CPAP — Continuous positive airway pressure
CPR — Cardiopulmonary resuscitation
CRP — C-reactive protein
CT — Computed tomography
CVA — Cerebrovascular accident

D

DAPT — Dual antiplatelet therapy
DKA — Diabetic ketoacidosis
DNR — Do not resuscitate
DNACPR — Do not attempt cardiopulmonary resuscitation
DVT — Deep vein thrombosis

E

ECG — Electrocardiogram
eGFR — Estimated glomerular filtration rate
ENT — Ear, nose, and throat
ESR — Erythrocyte sedimentation rate

F

FBC — Full blood count
FEV1 — Forced expiratory volume in one second
FVC — Forced vital capacity

G

GCS — Glasgow Coma Scale
GI — Gastrointestinal
GTN — Glyceryl trinitrate

H

Hb — Hemoglobin
HbA1c — Glycated hemoglobin
HF — Heart failure
HHS — Hyperosmolar hyperglycemic state
HIV — Human immunodeficiency virus
HR — Heart rate

I

IBD — Inflammatory bowel disease
IBS — Irritable bowel syndrome
ICU — Intensive care unit
INR — International normalized ratio
IHD — Ischemic heart disease
IV — Intravenous

L

LFTs — Liver function tests
LMWH — Low molecular weight heparin
LOC — Loss of consciousness

M

MI — Myocardial infarction
MRI — Magnetic resonance imaging
MRSA — Methicillin-resistant *Staphylococcus aureus*

N

NAD — No abnormality detected
NEWS — National Early Warning Score, or local equivalent early warning score
NG tube — Nasogastric tube
NIV — Non-invasive ventilation
NSAID — Non-steroidal anti-inflammatory drug
NSTEMI — Non-ST-elevation myocardial infarction

O

O2 — Oxygen
OT — Occupational therapy

P

PE — Pulmonary embolism
PEG — Percutaneous endoscopic gastrostomy
PPI — Proton pump inhibitor
PRN — As needed
PT — Physiotherapy

R

RR — Respiratory rate

S

SIRS — Systemic inflammatory response syndrome
SOB — Shortness of breath
SpO2 — Peripheral oxygen saturation
STEMI — ST-elevation myocardial infarction

T

TIA — Transient ischemic attack
TFTs — Thyroid function tests

U

U&E — Urea and electrolytes
UTI — Urinary tract infection

V

VBG — Venous blood gas
VTE — Venous thromboembolism

W

WBC — White blood cell count

Abbreviations Commonly Used in Notes

These abbreviations may appear in clinical documentation. They should be used cautiously and only where they are understood locally.

Hx — History
Dx — Diagnosis
Rx — Treatment or prescription
Tx — Treatment or transfer, depending on context
Sx — Symptoms
PMH — Past medical history
DHx — Drug history

FHx — Family history
SHx — Social history
O/E — On examination
Obs — Observations or vital signs
N/V — Nausea and vomiting
BNO — Bowels not opened
PU — Passing urine
NPO / NBOM — Nothing by mouth
PO — By mouth
IM — Intramuscular
SC / SQ — Subcutaneous
SL — Sublingual
BD / BID — Twice daily
TDS / TID — Three times daily
QDS / QID — Four times daily
OD / QD — Once daily
ON — At night
STAT — Immediately
CXR — Chest X-ray
AXR — Abdominal X-ray

Abbreviations That Can Cause Confusion

Some abbreviations are risky because they may mean different things in different settings.

Use full words where possible.

MS

May mean multiple sclerosis, mitral stenosis, mental status, or morphine sulfate.

Prefer writing the full term.

SOB

May mean shortness of breath, but can be misunderstood outside clinical settings.

Prefer “breathlessness” or “shortness of breath.”

OD

May mean once daily or overdose.

Prefer “once daily” when prescribing or communicating.

U

May be mistaken for zero or another symbol.

Prefer “units.”

IU

May be misread.

Prefer “international units.”

QD

May be confused with other dosing schedules.

Prefer “once daily.”

HS

May mean bedtime or half-strength depending on context.

Prefer full wording.

PE

May mean pulmonary embolism or physical examination.

Clarify meaning from context.

PT

May mean physiotherapy, prothrombin time, or patient.

Use full wording when unclear.

Abbreviations in Patient Communication

When speaking or writing to patients and caregivers, use plain language.

Instead of:

“You had AKI.”

Say:

“Your kidney function became worse during the illness, and we need to recheck it.”

Instead of:

“You are at risk of VTE.”

Say:

“Because you have been less mobile, you are at risk of blood clots.”

Instead of:

“Your ECG was reassuring.”

Say:

“The tracing of your heart rhythm did not show the dangerous changes we were looking for today.”

Instead of:

“Your CXR showed pneumonia.”

Say:

“Your chest X-ray showed signs of infection in the lung.”

The patient should not have to decode clinical language to understand their own care.

Abbreviations in Handover

When handing over to another clinician, abbreviations may be acceptable if they are standard locally.

However, clarity matters most when risk is high.

Weak handover:

“AKI, K high, repeat U&E later.”

Safer handover:

“This patient has acute kidney injury with high potassium. Repeat kidney function and potassium are due this evening. Please review the result urgently and escalate if potassium remains high, urine output falls, or ECG changes occur.”

Abbreviations should never hide danger.

Abbreviations in Discharge Summaries

Discharge summaries often go to patients, families, primary care clinicians, pharmacists, and other services.

Use abbreviations carefully.

Always write clearly:

- diagnosis
- medicine changes
- medicines stopped
- medicines not to restart
- pending results
- follow-up
- safety-netting
- functional status
- cognitive status

If an abbreviation may confuse the patient or receiving clinician, write it out.

Final Reminder

Abbreviations are tools of efficiency.

They should never reduce safety, dignity, understanding, or accountability.

Use abbreviations when they clarify communication within a shared clinical context.

Avoid them when they obscure meaning, confuse patients, weaken handover, or make risk invisible.

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Part I. Foundations of Life-Coherent Internal Medicine

This part gives the book its grammar. It teaches students to begin with danger, organize symptoms into syndromes, interpret disease as capacity failure, see the coupling conditions that sustain illness, treat with proportionate wisdom, and follow repair.

Chapter 1. Why Internal Medicine Feels Difficult

Internal Medicine is one of the most intellectually rich areas of clinical practice. It is also one of the most difficult to learn.

Students often enter Internal Medicine expecting diseases to appear in clean textbook form. Pneumonia should present as fever, cough, sputum, crackles, and an obvious chest X-ray. Heart failure should present as breathlessness, edema, orthopnea, and raised jugular venous pressure. Myocardial infarction should present as crushing chest pain radiating to the left arm. Diabetes should announce itself with thirst, polyuria, and high glucose.

But real patients rarely arrive as textbook paragraphs.

They arrive with partial stories, multiple problems, uncertain timelines, chronic illnesses, medication effects, frailty, fear, social pressures, and abnormal results that may or may not matter. One patient presents with "weakness" but actually has sepsis. Another presents with "anxiety" but actually has pulmonary embolism. Another presents with "confusion" but is hypoxic, hypoglycemic, septic, or over-sedated. Another is "medically fit for discharge" but cannot walk safely, understand the medicine changes, or return to a home that can hold the remaining risk.

Internal Medicine feels difficult because real patients are living systems, not disease labels.

The student's task is not simply to memorize more diagnoses. The task is to learn how to think safely when the diagnosis is uncertain, the information is incomplete, and the patient's condition may change.

This book offers a practical way to do that.

The central framework is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This loop does not replace medical knowledge. It organizes medical knowledge around the living patient.

1. The First Difficulty: Patients Present With Symptoms, Not Diagnoses

Students often learn diseases in organized chapters:

- pneumonia
- heart failure
- diabetes
- chronic kidney disease
- stroke
- anemia

- asthma
- chronic obstructive pulmonary disease
- sepsis
- delirium

But patients usually present with symptoms:

- chest pain
- shortness of breath
- fatigue
- fever
- confusion
- dizziness
- swelling
- weakness
- weight loss
- abdominal pain
- vomiting
- falls

The problem is that one symptom can have many causes.

Chest pain may be acute coronary syndrome, pulmonary embolism, aortic dissection, pneumothorax, pneumonia, reflux, costochondritis, panic, or shingles.

Dyspnea may be pneumonia, asthma, COPD exacerbation, pulmonary embolism, heart failure, anemia, acidosis, sepsis, neuromuscular weakness, anxiety, or deconditioning.

Confusion may be delirium, dementia, hypoxia, hypoglycemia, stroke, medication toxicity, infection, urinary retention, constipation, pain, alcohol withdrawal, hepatic encephalopathy, or head injury.

Fatigue may be anemia, depression, hypothyroidism, malignancy, chronic infection, sleep disruption, chronic inflammation, adrenal insufficiency, heart failure, kidney disease, medication effect, or post-viral illness.

The student therefore cannot jump directly from symptom to diagnosis. The safer movement is:

Symptom → Syndrome → Danger → Capacity Failure → Differential Diagnosis → Wise Action

A symptom is what the patient reports.
A syndrome is the pattern the clinician constructs.
A diagnosis is one possible explanation for that pattern.
Capacity failure explains why the pattern matters to the patient's life.

2. The Second Difficulty: Danger Must Be Recognized Before Certainty

In real clinical practice, certainty often arrives late.

But danger cannot always wait.

A patient with chest pain may need urgent ECG and monitoring before the diagnosis is confirmed. A patient with sepsis may need early treatment before all cultures return. A patient with hypoglycemia needs immediate correction before a full neurological workup. A patient with acute stroke symptoms needs time-sensitive assessment before the full story is clear. A patient with hyperkalemia and ECG changes needs urgent treatment before a complete renal diagnosis is established.

This is why Internal Medicine must begin with the question:

Is the patient safe now?

This does not mean assuming the worst. It means refusing to miss the dangerous.

Danger-first thinking asks:

- Could this patient die soon if I delay?
- Could this patient deteriorate quickly?
- Could this patient lose brain, heart, kidney, limb, mobility, or independence?
- Could this patient be harmed by discharge?
- Could this treatment help but also cause serious harm?
- Could my reassurance be premature?

Danger-first medicine is calm. It is not panic. It is organized attention to what must not be missed.

3. The Third Difficulty: Disease Labels Do Not Tell the Whole Story

A disease label is necessary, but it is not enough.

Consider the diagnosis: **heart failure**.

One patient with heart failure is walking, eating, managing medicines, and living independently. Another is breathless at rest, hypoxic, edematous, confused, hyponatremic, unable to walk, and developing kidney injury.

Same label. Different life-capacity.

Or consider **pneumonia**.

One patient has mild fever and cough but remains hydrated, alert, mobile, and stable. Another has sepsis, delirium, hypoxia, poor intake, falls risk, and cannot return home safely.

Same label. Different danger. Different capacity failure. Different plan.

Internal Medicine becomes clearer when the clinician asks:

What can this patient no longer sustain?

The answer may include:

- oxygenation
- circulation
- clearance
- energy transformation
- defense against infection
- immune tolerance
- repair
- regulation
- cognition
- mobility
- comfort
- agency
- dignity
- participation

The diagnosis tells us what disease may be present.
Capacity failure tells us what the disease is doing to the person.

4. The Fourth Difficulty: Patients Have More Than One Problem

Textbooks often separate diseases. Patients combine them.

A patient may have:

- diabetes
- chronic kidney disease
- heart failure
- hypertension
- atrial fibrillation
- osteoarthritis
- depression
- frailty
- poor vision
- limited transport
- low income
- caregiver strain

Each condition affects the others.

A diuretic may improve pulmonary congestion but worsen kidney function. An ACE inhibitor may protect the heart and kidneys long term but may need review during acute kidney injury. Insulin may

control glucose but cause hypoglycemia if the patient is not eating. Anticoagulation may prevent stroke but increase bleeding risk after a fall. Sedation may calm agitation but worsen delirium, aspiration risk, and falls.

The student must therefore learn integrated judgment.

The question is not simply:

What does the guideline say for this disease?

The fuller question is:

How does the evidence apply to this patient, with this risk, this physiology, this context, this treatment burden, and this capacity for repair?

5. The Fifth Difficulty: Context Determines Whether Care Can Work

A treatment plan does not exist only on paper. It has to live in the patient's world.

A plan may fail because:

- the patient cannot afford the medicine
- the patient cannot read the instructions
- the patient has no transport to follow-up
- the patient is cognitively unable to manage complex dosing
- the patient lives alone and is falling
- the caregiver is overwhelmed
- the patient's work schedule prevents regular meals
- the home has stairs the patient cannot climb
- the patient does not understand why treatment matters
- the health system has delayed review, testing, or referral

These are not "social extras." They are coupling conditions.

A coupling condition is anything that links the patient's illness to the environment in a way that shapes deterioration or repair.

Examples include medicines, comorbidities, frailty, nutrition, sleep, pain, family support, health literacy, finances, transport, housing, culture, work, caregiving, and system delays.

A correct treatment plan that the patient cannot live becomes an unsafe plan.

6. The Sixth Difficulty: Treatment Can Harm

Students often think treatment means helping.

But every intervention is also a perturbation.

A perturbation is an action introduced into a living system. It changes physiology, behavior, risk, relationships, and future decisions.

Examples:

- oxygen
- fluids
- diuretics
- insulin
- anticoagulation
- antibiotics
- steroids
- sedatives
- opioids
- procedures
- admission
- discharge
- referral
- deprescribing
- reassurance
- safety-netting
- comfort care

Every perturbation asks for judgment.

Fluids may restore circulation in hypovolemia, but worsen pulmonary edema in heart failure.

Diuretics may relieve congestion, but worsen renal function or electrolytes.

Insulin may correct hyperglycemia, but cause hypoglycemia.

Anticoagulation may prevent stroke, but worsen bleeding.

Sedatives may reduce immediate agitation, but worsen delirium and falls.

Antibiotics may treat infection, but cause allergy, diarrhea, drug interaction, or resistance.

Discharge may restore independence, but may also transfer risk too early.

Wise treatment asks:

What helps most, with least harm, for this patient, at this time?

7. The Seventh Difficulty: Improvement Is Not Only Better Numbers

Students often look for improvement in test results.

But patients may have improving numbers and worsening life-capacity.

A pneumonia patient may have improving inflammatory markers but remain delirious, weak, and unsafe to walk.

A heart failure patient may have less edema but worsening kidney function and dizziness.

A diabetic patient may have improved glucose but recurrent hypoglycemia and fear of eating.

An older patient may be “medically stable” but unable to toilet, understand medicines, or return home safely.

Healing must be judged as a repair trajectory.

Repair may include:

- danger controlled
- vital signs stabilizing
- oxygen requirement falling
- urine output improving
- fever settling
- pain controlled
- breathlessness easing
- confusion clearing
- sleep improving
- walking returning
- eating and drinking improving
- medicines simplified
- patient understanding strengthened
- caregiver support secured
- dignity protected
- participation restored

The central question is:

How will we know that the patient is genuinely safer, stronger, clearer, more comfortable, better supported, or more able to live?

8. The Life-Coherent Clinical Loop

The framework used throughout this book is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Each step asks a practical clinical question.

Danger

What must not be missed?

This protects the patient from immediate or serious harm.

Syndrome

What pattern is present?

This organizes symptoms, signs, time course, severity, and context.

Capacity Failure

What can the patient no longer sustain?

This connects disease to the patient's life-functions.

Coupling Conditions

What keeps the problem going?

This identifies the factors that shape deterioration or recovery.

Wise Perturbation

What helps most with least harm?

This guides treatment, monitoring, escalation, and de-escalation.

Repair Trajectory

How will healing be recognized?

This tracks whether the patient is actually recovering, not merely being processed.

9. A Bedside Example

A 79-year-old woman presents with shortness of breath, ankle swelling, poor sleep, and reduced ability to walk to the bathroom. She has hypertension, diabetes, chronic kidney disease, and takes several medicines.

A student may begin by asking:

“Is this heart failure?”

That is a reasonable diagnostic question.

But the life-coherent loop expands the reasoning.

Danger

Is she hypoxic?
Is she in pulmonary edema?
Is there acute coronary syndrome?
Is there arrhythmia?
Is potassium dangerously high?
Is kidney function worsening?
Is she safe to remain on the ward or does she need escalation?

Syndrome

This is dyspnea with edema, orthopnea, reduced exercise tolerance, and reduced urine output.

The pattern suggests congestion, but dangerous alternatives must still be considered.

Capacity Failure

She may have failure of:

- circulation
- oxygenation
- clearance
- mobility
- energy
- comfort

Coupling Conditions

Important conditions include:

- chronic kidney disease
- diabetes
- medicines
- salt and fluid intake

- frailty
- ability to monitor weight
- ability to obtain medicines
- family support
- follow-up access

Wise Perturbation

Treatment may include careful management of congestion, medicine review, oxygen if needed, monitoring of renal function and potassium, and senior input if unstable.

But the plan must be proportionate and monitored because diuresis may improve breathing while worsening renal function.

Repair Trajectory

Repair would be shown by:

- less breathlessness
- lower oxygen requirement if oxygen was needed
- reduced edema
- improved urine output
- stable or improving renal function
- safer potassium
- improved walking
- clearer medicine plan
- safe follow-up

This is more than naming heart failure. It is understanding what is happening to the living patient.

10. Common Student Pitfalls

Pitfall 1: Jumping to Diagnosis Too Early

Diagnosis matters, but premature diagnosis can close the mind.

Safer question:

What dangerous possibilities remain?

Pitfall 2: Listing Differentials Without Prioritizing

A long differential is not the same as safe reasoning.

Prioritize diagnoses that are:

- likely
- dangerous
- treatable
- context-specific

Pitfall 3: Treating Numbers Instead of Patients

A potassium, creatinine, glucose, troponin, or white cell count matters because of what it means for the patient.

Ask:

What capacity does this result threaten?

Pitfall 4: Ignoring Function

A patient's ability to walk, eat, drink, think, sleep, toilet, and understand the plan is clinical data.

Function is not an afterthought.

Pitfall 5: Ignoring Medicines

Medicines may be treatment, cause, complication, or barrier.

Always ask:

What should start, stop, hold, restart, reduce, taper, or monitor?

Pitfall 6: Failing to Reassess

Treatment without reassessment is unfinished care.

After every major intervention, ask:

Did the patient respond as expected?

Pitfall 7: Unsafe Discharge

Discharge is not the end of care. It is the transfer of risk to the next setting.

Ask:

Can this patient safely live the plan outside hospital?

11. Clinical Practice Box

When seeing any patient, begin with six questions:

1. **What must not be missed?**
2. **What pattern is present?**
3. **What can the patient no longer sustain?**
4. **What keeps the problem going?**
5. **What helps most with least harm?**
6. **How will healing be recognized?**

These questions are simple enough for the bedside and strong enough to hold complexity.

12. Mini-Case for Practice

A 68-year-old man presents with fatigue, dizziness, and shortness of breath on exertion. He looks pale. He takes aspirin and an anti-inflammatory for chronic knee pain. He has noticed darker stools but did not think it was important.

Apply the loop.

Danger

Possible severe anemia, gastrointestinal bleeding, cardiac ischemia, syncope risk, shock if unstable.

Syndrome

Fatigue and exertional dyspnea with pallor and possible melena.

Capacity Failure

Possible oxygen delivery failure due to anemia, circulation vulnerability, energy failure, mobility limitation.

Coupling Conditions

Aspirin, anti-inflammatory use, chronic pain, delayed presentation, possible limited understanding of dark stools, comorbid cardiovascular risk.

Wise Perturbation

Assess vital signs, hemodynamic stability, hemoglobin, bleeding risk, stool history, medication review, senior input if unstable or severe anemia, local pathway for GI bleeding where indicated.

Repair Trajectory

Stable vitals, bleeding controlled or excluded, hemoglobin stabilized, dizziness improves, exertional tolerance improves, harmful medicines reviewed, follow-up arranged.

13. Student Takeaway

Internal Medicine feels difficult because patients are complex, uncertain, changing, and whole.

They are not diagnosis labels.

They are living persons whose capacities may be threatened by disease, treatment, context, and system failure.

The life-coherent clinical loop gives students a way to stay oriented:

Start with danger.
Organize the syndrome.
Map the failing capacity.
Identify coupling conditions.
Treat wisely.
Track repair.

This is clinical reasoning from danger to repair.

Chapter 2. The Life-Coherent Clinical Loop

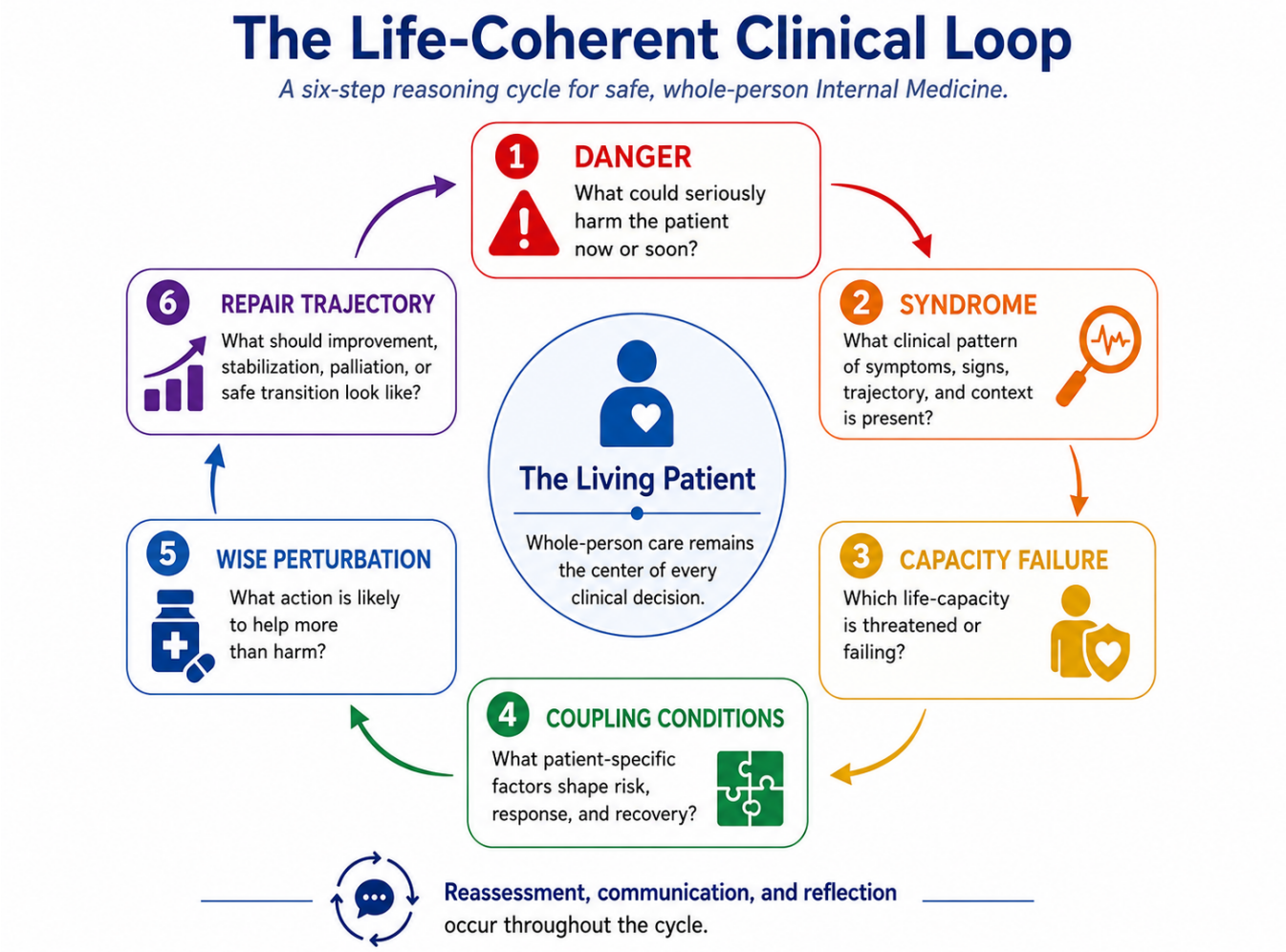

Figure 2. The Life-Coherent Clinical Loop

The six-step reasoning cycle moves from immediate danger to repair while keeping reassessment, communication, and reflection active throughout clinical care.

Clinical reasoning can feel scattered when the patient's presentation is complex.

A student may hear a long story, see multiple abnormal results, notice several comorbidities, and feel unsure where to begin. Should the focus be the diagnosis, the vital signs, the blood tests, the medication list, the patient's social situation, or the discharge plan?

The answer is: all of these may matter, but not all at once and not in random order.

The life-coherent clinical loop provides an ordered way to think.

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This loop is the central reasoning structure of this book.

It helps the clinician move from uncertainty to safe action.

It asks six practical questions:

1. **Danger:** What must not be missed?
2. **Syndrome:** What pattern is present?
3. **Capacity Failure:** What can the patient no longer sustain?
4. **Coupling Conditions:** What keeps the problem going?
5. **Wise Perturbation:** What helps most with least harm?
6. **Repair Trajectory:** How will healing be recognized?

The loop is not a rigid checklist. It is a disciplined rhythm of clinical attention.

It can be used in the emergency department, clinic, ward round, on-call shift, discharge planning, case presentation, referral, handover, and follow-up review.

1. Why a Clinical Loop Is Needed

Internal Medicine requires the clinician to hold many forms of information at the same time:

- the patient's story
- the presenting symptom
- vital signs
- examination findings
- laboratory results
- imaging
- previous diagnoses
- medicines
- allergies
- frailty
- cognition
- function
- family concerns
- home situation
- patient values
- clinical guidelines
- local pathways
- uncertainty
- time pressure

Without a structure, students often respond in one of three ways.

They jump too quickly to a diagnosis

They hear “chest pain” and immediately think “myocardial infarction” or “reflux,” without first considering danger, time course, vital signs, and pattern.

They list everything they know

They produce a long differential diagnosis, but the list is not prioritized by danger, probability, treatability, or context.

They collect data without synthesis

They gather history, examination findings, and test results, but cannot explain what is happening to the patient or what should happen next.

The clinical loop prevents scattered thinking by giving each part of the reasoning process a place.

2. The Whole Loop at a Glance

The life-coherent clinical loop begins with safety and ends with repair.

Danger

Before asking, “What is the final diagnosis?” ask:

What must not be missed now?

Syndrome

Before creating a diagnosis list, ask:

What pattern is present?

Capacity Failure

Before treating a disease label, ask:

What can this patient no longer sustain?

Coupling Conditions

Before assuming treatment will work, ask:

What keeps the problem going or shapes recovery?

Wise Perturbation

Before intervening, ask:

What action helps most with least harm?

Repair Trajectory

Before saying the patient is improving, ask:

How will we know that repair is actually occurring?

This is the basic movement of life-coherent clinical reasoning.

3. Step One: Danger

The first step is danger.

Danger means what could kill, disable, destabilize, seriously harm, or make the patient unsafe if missed.

Danger may be immediate, such as airway obstruction, respiratory failure, shock, hypoglycemia, stroke, sepsis, major bleeding, or hyperkalemia.

Danger may also be less dramatic but still serious, such as suicidal risk, safeguarding concerns, medication toxicity, unsafe discharge, or inability to access urgent follow-up.

Danger-first thinking does not mean assuming the worst. It means checking for what would be unsafe to ignore.

The danger question is:

Is this patient safe now?

Practical danger prompts include:

- Is the airway open and protected?
- Is breathing adequate?
- Is circulation stable?
- Is consciousness altered?
- Is glucose dangerously low or high?
- Is there sepsis?
- Is there major bleeding?
- Is there chest pain with high-risk features?
- Is there a new neurological deficit?
- Is potassium dangerously high?

- Is the patient at risk of suicide or serious self-harm?
- Is there abuse, neglect, coercion, or safeguarding danger?
- Would discharge transfer too much risk?

Danger-first thinking gives clinical reasoning a safety floor.

4. Step Two: Syndrome

After immediate danger is considered, the clinician forms a syndrome.

A syndrome is not a final diagnosis. It is a useful clinical pattern.

It brings together:

- main symptom
- time course
- severity
- associated symptoms
- vital signs
- examination findings
- risk factors
- comorbidities
- medicines
- context

For example, “shortness of breath” is only a symptom.

But the following are syndromes:

- acute dyspnea with hypoxia and fever
- sudden dyspnea with pleuritic chest pain
- progressive dyspnea with edema and orthopnea
- dyspnea with wheeze and prolonged expiration
- dyspnea with severe anemia
- dyspnea with normal oxygenation and panic symptoms

Each syndrome points toward different dangers, different diagnoses, different investigations, and different actions.

The syndrome question is:

What pattern is present?

A good syndrome statement might sound like:

“This is acute dyspnea with hypoxia, fever, and tachypnea in an older patient with frailty.”

Or:

“This is central chest pressure with autonomic symptoms in a patient with diabetes.”

Or:

“This is acute fluctuating confusion in a patient with baseline dementia after a new sedative.”

A syndrome turns scattered facts into clinical direction.

5. Step Three: Capacity Failure

Once the syndrome is recognized, the clinician asks what life-capacity is threatened.

Disease matters because it affects the patient’s ability to sustain life.

Capacity failure may involve:

- oxygenation
- ventilation
- circulation
- clearance
- fluid and electrolyte balance
- energy transformation
- defense against infection
- immune tolerance
- repair
- regulation
- cognition
- mobility
- comfort
- agency
- dignity
- participation

This step prevents the clinician from reducing the patient to a disease label.

For example:

- Pneumonia may threaten oxygenation, defense, cognition, mobility, and hydration.
- Heart failure may threaten circulation, oxygenation, clearance, mobility, and sleep.
- AKI may threaten clearance, potassium balance, medicine safety, circulation, and oxygenation if overloaded.
- Delirium may threaten cognition, mobility, safety, agency, and dignity.
- Depression may threaten energy, agency, participation, and comfort.
- End-stage illness may threaten comfort, dignity, family understanding, and meaningful participation.

The capacity question is:

What can this patient no longer sustain?

This is often where clinical reasoning becomes humane.

The clinician is no longer asking only:

“What disease is this?”

The clinician is asking:

“What is this illness doing to the person’s ability to live?”

6. Step Four: Coupling Conditions

Patients are not isolated bodies. They are structurally coupled to their environments.

In clinical terms, this means that illness and recovery are shaped by the patient’s surrounding conditions.

Coupling conditions include:

- comorbidities
- medicines
- frailty
- nutrition
- hydration
- sleep
- pain
- mood
- cognition
- health literacy
- family support
- caregiver strain
- finances
- transport
- housing
- work conditions
- culture
- access to care
- system delays

These conditions may cause illness, worsen illness, prevent recovery, or make treatment unsafe.

For example:

A patient with diabetes may remain hyperglycemic not because they are “non-compliant,” but because insulin timing does not fit their meals, they fear hypoglycemia, they cannot afford monitoring, or they do shift work.

A patient with heart failure may worsen not only because of disease progression, but because of kidney disease, NSAID use, salt intake, poor medicine access, or no scale at home.

A patient with delirium may remain confused because of infection, sedatives, pain, urinary retention, constipation, dehydration, sleep disruption, and an unfamiliar ward.

A patient may be ready medically but not ready for discharge because mobility, cognition, caregiver support, or home safety cannot hold the remaining risk.

The coupling question is:

What keeps the problem going or shapes recovery?

Context is not extra. Context is part of the clinical situation.

7. Step Five: Wise Perturbation

Every treatment is a perturbation.

A perturbation is an action introduced into a living system. It changes the patient’s physiology, experience, risk, and trajectory.

Perturbations include:

- oxygen
- fluids
- diuretics
- antibiotics
- insulin
- anticoagulation
- analgesia
- steroids
- sedatives
- procedures
- admission
- discharge
- referral
- deprescribing
- explanation
- reassurance
- safety-netting
- comfort care

The question is not simply:

What can I do?

The better question is:

What action will restore capacity with the least harm?

A wise perturbation is:

Indicated: there is a clear reason.
Proportionate: the burden fits the likely benefit.
Feasible: the patient can live the plan.
Monitorable: response and harm can be checked.
Adjustable: the plan can change if the patient changes.
Context-aware: the plan fits the patient's life and values.

Examples:

Fluids may be wise in hypovolemia but harmful in pulmonary edema.

Diuresis may be wise in congestion but harmful if it causes severe AKI, hypotension, or electrolyte disturbance.

Insulin may be necessary in severe hyperglycemia but dangerous if the patient is not eating or cannot monitor glucose.

Anticoagulation may reduce stroke risk but may be dangerous with active bleeding or severe falls risk.

Sedation may be necessary for immediate safety but may worsen delirium, aspiration, and falls.

Discharge may be good if it restores independence and reduces hospital harms, but unsafe if the patient cannot walk, understand medicines, or access help.

The wise perturbation question is:

What helps most, with least harm, for this patient, at this time?

8. Step Six: Repair Trajectory

The loop does not end with treatment.

It ends with repair.

Repair means that the patient is becoming safer, more stable, more functional, clearer, more comfortable, better supported, or more able to participate in life.

Repair may include:

- immediate danger controlled
- vital signs stabilizing
- oxygen requirement falling
- fever settling
- pain easing
- breathlessness improving
- urine output improving
- potassium safer
- glucose safer
- confusion clearing
- strength returning
- walking improving
- oral intake improving
- medicines simplified
- patient understanding improving
- caregiver prepared
- follow-up arranged
- pending results owned
- safety-net understood
- dignity protected

The repair question is:

How will healing be recognized?

This question prevents the common error of assuming that treatment equals improvement.

A patient is not improving just because something was prescribed.

A patient is improving when the expected repair markers are actually appearing.

9. The Loop Is Recursive

The clinical loop is not a straight line.

It is recursive.

Patients change. New results arrive. Treatments help or harm. A diagnosis becomes more likely or less likely. A patient who was stable becomes unstable. A patient ready for discharge becomes unsafe. A treatment that was wise yesterday becomes harmful today.

Therefore, the clinician repeatedly returns to the loop.

After treatment, ask again:

- Is there new danger?
- Does the syndrome still fit?
- Is another capacity now failing?
- Have coupling conditions changed?
- Is the intervention helping or harming?
- Is repair actually occurring?

Good Internal Medicine is disciplined reassessment.

10. Applying the Loop: Chest Pain

A 58-year-old man with diabetes presents with central chest pressure, sweating, and nausea.

Danger

Acute coronary syndrome is a major danger. Other serious causes may include pulmonary embolism, aortic dissection, pneumothorax, arrhythmia, severe anemia, or myocarditis depending on features.

Syndrome

High-risk chest pain syndrome: central pressure-type pain with autonomic symptoms in a patient with diabetes.

Capacity Failure

Coronary circulation may be threatened. Comfort and agency are also affected because the patient is frightened and needs urgent understanding.

Coupling Conditions

Diabetes, hypertension, smoking, kidney disease, delayed presentation, medicine use, family history, access to emergency care.

Wise Perturbation

Urgent ECG, vital signs, local chest pain or ACS pathway, monitoring, appropriate blood tests, analgesia if needed, escalation depending on findings.

Repair Trajectory

Pain improves. Vitals remain stable. ECG and troponin pathway are interpreted. Dangerous causes are addressed. Patient understands the plan.

11. Applying the Loop: Confusion

An 84-year-old woman with known dementia is suddenly more confused overnight.

Danger

Hypoxia, hypoglycemia, sepsis, stroke, seizure, head injury, medication toxicity, pain, urinary retention, constipation, dehydration, hypercapnia, withdrawal, falls.

Syndrome

Acute fluctuating confusion in a patient with baseline cognitive impairment: delirium syndrome until proven otherwise.

Capacity Failure

Cognition, regulation, mobility, safety, agency, dignity.

Coupling Conditions

Dementia, frailty, infection, new sedative, sleep disruption, unfamiliar environment, pain, retention, constipation, dehydration, sensory impairment.

Wise Perturbation

Check oxygen, glucose, vital signs, medicines, pain, retention, constipation, hydration, infection, baseline from family. Use non-drug delirium care. Avoid sedatives unless immediate safety requires them. Escalate if unstable or focal neurological signs are present.

Repair Trajectory

Attention improves. Orientation returns toward baseline. Trigger is treated. Falls risk is reduced. Sleep improves. Family recognizes recovery.

12. Applying the Loop: AKI

A 70-year-old with chronic kidney disease has rising creatinine, reduced urine output, and potassium of 6.3.

Danger

Hyperkalemia with arrhythmia risk, worsening AKI, acidosis, fluid overload, drug toxicity, obstruction, sepsis, hypotension, dehydration.

Syndrome

AKI on CKD with oliguria and hyperkalemia.

Capacity Failure

Clearance, electrolyte regulation, medicine safety, circulation, oxygenation if overloaded.

Coupling Conditions

Baseline CKD, medicines, volume status, heart failure, infection, obstruction, poor intake, NSAIDs, ACE inhibitors or ARBs, potassium supplements, diuretics.

Wise Perturbation

Urgent clinical review, ECG, local hyperkalemia protocol if appropriate, medication review, volume assessment, urine output monitoring, obstruction assessment, senior or renal input if severe or persistent.

Repair Trajectory

Potassium safer. ECG stable. Urine output improves. Creatinine stabilizes. Fluid status controlled. Medicine plan safer. Repeat blood tests owned.

13. Applying the Loop: Discharge Decision

An 87-year-old woman treated for pneumonia is afebrile and no longer needs oxygen, but she remains confused, weak, and unable to walk safely.

Danger

Falls, persistent delirium, aspiration, dehydration, medication error, failed discharge, caregiver strain, readmission.

Syndrome

Frailty decompensation after pneumonia with persistent delirium and functional decline.

Capacity Failure

Cognition, mobility, nutrition, hydration, agency, dignity, participation, discharge safety.

Coupling Conditions

Frailty, baseline cognition, ward environment, medicines, sleep, poor intake, deconditioning, home hazards, caregiver readiness, follow-up access.

Wise Perturbation

Do not discharge simply because fever settled. Assess delirium, mobility, oral intake, medicines, home support, and caregiver readiness. Involve the multidisciplinary team where available. Create a supported discharge plan or delay discharge if risk cannot be held safely.

Repair Trajectory

Clearer cognition, safer walking or transfers, adequate intake, caregiver prepared, medicines understood, follow-up arranged, safety-net clear.

14. One-Minute Clinical Reasoning Template

The loop can be compressed into a one-minute clinical statement:

This patient has [syndrome]
with danger of [danger]
likely due to [working diagnosis or differential]
causing failure of [capacity]
sustained by [coupling conditions].

The wise next step is [action],
and repair will be shown by [markers].

Example:

This patient has acute dyspnea with edema and orthopnea, with danger of respiratory failure, acute coronary syndrome, arrhythmia, AKI, and hyperkalemia, likely due to decompensated heart failure causing failure of circulation, oxygenation, and clearance, sustained by CKD, medicine burden, salt intake, and frailty. The wise next step is careful assessment and treatment of congestion with monitoring of oxygenation, renal function, potassium, urine output, and symptoms. Repair will be shown by easier breathing, lower oxygen need, reduced edema, stable renal function, safer potassium, and improved mobility.

This template helps students present cases with synthesis rather than scattered facts.

15. How to Use the Loop in Different Settings

In the Emergency Department

Use the loop to avoid missing danger before diagnosis is certain.

Focus on:

- danger
- syndrome
- immediate capacity failure
- urgent perturbation
- early repair markers

On the Ward

Use the loop to reassess trajectory each day.

Focus on:

- what changed
- whether diagnosis still fits
- whether treatment is helping or harming
- function
- discharge readiness
- handover needs

In Clinic

Use the loop to organize chronic complexity.

Focus on:

- capacity over time
- treatment burden
- coupling conditions
- patient values
- feasible repair goals

On Call

Use the loop to triage competing tasks.

Focus on:

- danger
- time-sensitivity
- reversible harm
- reassessment
- escalation
- handover

During Discharge Planning

Use the loop to test whether risk can be safely transferred.

Focus on:

- stability
- medicines
- function
- cognition
- support
- pending results
- safety-netting

16. Common Student Pitfalls

Pitfall 1: Using the Loop as a Rigid Checklist

The loop is a guide for attention, not a form to complete mechanically.

Use it to think, not to perform bureaucracy.

Pitfall 2: Skipping Danger

Students may feel reassured by a familiar diagnosis.

But danger may still be present.

A patient with “known COPD” may have pneumonia, PE, pneumothorax, heart failure, or acidosis.

A patient with “known dementia” may have delirium.

A patient with “anxiety” may have hypoxia, arrhythmia, or pulmonary embolism.

Pitfall 3: Naming a Syndrome Without Severity

“Dyspnea” is not enough.

Is it mild or severe? Acute or chronic? Hypoxic or not? With fever, wheeze, edema, chest pain, anemia, or panic?

Severity changes urgency.

Pitfall 4: Forgetting Capacity

The diagnosis is not the whole story.

Always ask what the patient can no longer sustain.

Pitfall 5: Treating Without Monitoring

A plan is incomplete unless the clinician knows how response and harm will be checked.

Pitfall 6: Calling Numbers "Repair"

Improving numbers are useful, but repair must also include symptoms, function, understanding, support, and dignity.

17. Clinical Practice Box

For any patient, write six short lines:

Danger: _____
Syndrome: _____
Capacity failure: _____
Coupling conditions: _____
Wise perturbation: _____
Repair trajectory: _____

If you can complete these lines clearly, your clinical reasoning is becoming organized.

If you cannot, you have found where your uncertainty lies.

18. Mini-Case for Practice

A 74-year-old man presents with fever, poor oral intake, weakness, and new confusion. His blood pressure is low, respiratory rate is high, and his daughter says, "He was not like this yesterday."

Apply the loop.

Danger

Sepsis, shock, delirium, hypoxia, hypoglycemia, dehydration, AKI, medication toxicity, stroke.

Syndrome

Fever with acute confusion, poor intake, weakness, and physiological instability.

Capacity Failure

Defense, circulation, cognition, regulation, clearance, energy, mobility.

Coupling Conditions

Age, frailty, baseline function, medicines, hydration, infection source, kidney function, family support, home safety.

Wise Perturbation

Urgent ABCDE assessment, oxygen if needed, glucose check, infection assessment, cultures where appropriate, antibiotics and fluids according to local sepsis guidance, senior review, delirium prevention, monitoring of urine output and renal function.

Repair Trajectory

Blood pressure stabilizes, respiratory rate improves, fever settles, urine output improves, mental state returns toward baseline, oral intake improves, mobility and safety improve.

19. Student Takeaway

The life-coherent clinical loop gives students a practical way to think through real patients.

It begins with safety and ends with repair.

It does not replace diagnosis, evidence, guidelines, or clinical skill. It organizes them around the living patient.

Use the loop whenever you feel lost:

What must not be missed?
What pattern is present?
What can the patient no longer sustain?
What keeps the problem going?
What helps most with least harm?
How will healing be recognized?

Clinical reasoning becomes easier when it follows the patient from danger to repair.

Chapter 3. Danger First

The first task of clinical reasoning is not to name the diagnosis.

The first task is to keep the patient safe while the diagnosis is being clarified.

This is why Internal Medicine begins with danger.

Danger-first medicine asks:

What must not be missed?

This question protects the patient from immediate or serious harm. It prevents premature reassurance, delayed escalation, unsafe discharge, and overconfidence when the clinical picture is still incomplete.

Danger-first thinking does not mean assuming every patient is critically ill. It means calmly checking for the conditions that would cause serious harm if overlooked.

The clinician must learn to ask, early and repeatedly:

Is this patient safe now?

1. What Danger Means

In clinical medicine, danger means any condition or situation that could:

- kill the patient
- disable the patient
- destabilize physiology
- cause rapid deterioration
- cause serious suffering
- cause irreversible harm
- create unsafe discharge
- require urgent escalation
- make delay unsafe

Danger may be obvious, such as shock, severe hypoxia, major bleeding, or coma.

Danger may also be subtle, such as a mildly confused older patient with sepsis, a diabetic patient with silent myocardial infarction, a patient with early cauda equina symptoms, a potassium result that has not been acted upon, or a frail patient being discharged without mobility or caregiver support.

Danger may be physiological, psychological, social, or system-based.

Examples include:

- airway obstruction

- respiratory failure
- shock
- sepsis
- acute coronary syndrome
- stroke
- major bleeding
- severe hypoglycemia
- hyperkalemia
- anaphylaxis
- meningitis
- acute abdomen
- spinal cord compression
- suicidal intent
- abuse or neglect
- unsafe discharge
- critical result not handed over

The danger-first clinician does not ask only, “What disease is likely?”

They ask:

What would be unsafe to miss?

2. Danger-First Is Not Panic

Students sometimes misunderstand danger-first thinking.

They may think it means assuming catastrophe in every patient.

It does not.

Danger-first thinking is not panic.
It is not fear-based medicine.
It is not over-testing everyone.
It is not treating every mild symptom as an emergency.

Danger-first medicine is ordered safety.

It means that before the clinician settles into routine reasoning, reassurance, discharge, or slow outpatient workup, they check whether the patient has a time-critical risk.

The tone should be calm:

- What is the patient’s airway status?
- How is the breathing?
- Is circulation stable?
- Is consciousness altered?

- Is glucose low?
- Is there sepsis?
- Is there bleeding?
- Is there chest pain danger?
- Is there stroke danger?
- Is potassium dangerous?
- Is there self-harm risk?
- Is discharge unsafe?

A calm clinician can recognize danger without becoming chaotic.

3. Why Danger Comes Before Diagnosis

Diagnosis is essential, but diagnosis often takes time.

Danger may not wait.

A patient with low oxygen saturation needs oxygenation assessed and supported while the cause is being investigated.

A patient with hypoglycemia needs immediate correction before a full neurological diagnosis is pursued.

A patient with shock needs urgent assessment and escalation before every test result is available.

A patient with possible stroke needs time-sensitive evaluation.

A patient with chest pain and ECG changes needs urgent action before the final troponin trend is complete.

A patient with hyperkalemia and ECG changes needs emergency management before the full cause of AKI is known.

A patient at risk of suicide needs safety assessment before routine discharge.

A patient with delirium needs reversible causes considered before being dismissed as “dementia.”

Danger-first thinking keeps the patient safe while diagnostic reasoning continues.

4. The Immediate Safety Screen

A practical danger-first screen begins with:

Airway
Breathing

Circulation
Disability
Exposure
Glucose

This is not only for resuscitation rooms. It is a useful mental structure whenever the patient may be unstable.

Airway

Ask:

Is the airway open and protected?

Danger signs include:

- choking
- stridor
- facial, tongue, or throat swelling
- reduced consciousness
- vomiting with aspiration risk
- severe allergic reaction
- facial or neck trauma
- inability to speak

Airway danger requires immediate help.

Breathing

Ask:

Is oxygenation or ventilation failing?

Danger signs include:

- severe breathlessness
- low oxygen saturation
- rising oxygen requirement
- very high or very low respiratory rate
- respiratory exhaustion
- cyanosis
- inability to speak full sentences
- silent chest
- confusion from hypoxia or hypercapnia

Breathing danger can deteriorate rapidly.

Circulation

Ask:

Is blood flow failing?

Danger signs include:

- hypotension
- shock
- cold clammy skin
- severe tachycardia
- severe bradycardia
- syncope with abnormal vital signs
- major bleeding
- chest pain with instability
- poor urine output
- altered mental state with poor perfusion

Circulation failure threatens every organ.

Disability

Ask:

Is brain regulation failing?

Danger signs include:

- reduced consciousness
- seizure
- new confusion
- focal neurological deficit
- severe headache with neurological signs
- hypoglycemia
- intoxication or overdose
- acute agitation with medical danger

New brain change is never “just confusion” until danger has been considered.

Exposure

Ask:

What is visible when the whole patient is assessed?

Look for:

- fever
- rash

- trauma
- bleeding
- severe pain
- dehydration
- swelling
- skin infection
- pressure injury
- jaundice
- signs of neglect or abuse

Exposure means seeing the patient, not only the chart.

Glucose

Glucose is a vital sign in the right context.

Check glucose early in:

- confusion
- collapse
- seizure
- sweating
- weakness
- reduced consciousness
- diabetes
- insulin or sulfonylurea use
- severe illness
- poor intake
- frailty

Hypoglycemia is reversible danger. Do not miss it.

5. Time-Critical Medical Dangers

After the immediate safety screen, the clinician should consider common time-critical medical dangers.

These include:

- acute coronary syndrome
- stroke or transient ischemic attack
- sepsis
- pulmonary embolism
- aortic dissection
- pneumothorax
- severe asthma or COPD exacerbation
- anaphylaxis

- meningitis
- diabetic ketoacidosis or hyperosmolar hyperglycemic state
- severe hypoglycemia
- hyperkalemia
- major bleeding
- acute abdomen
- bowel obstruction or perforation
- spinal cord compression
- cauda equina syndrome
- acute kidney injury with complications
- severe electrolyte disturbance
- overdose or withdrawal
- suicidal intent

The student does not need to diagnose all of these instantly.

But they must learn to ask whether any are plausible enough to require urgent assessment, treatment, monitoring, or senior help.

6. Danger in Common Presentations

Danger-first thinking becomes practical when linked to presenting complaints.

Chest Pain

Do not miss:

- acute coronary syndrome
- pulmonary embolism
- aortic dissection
- pneumothorax
- pericarditis or myocarditis
- pneumonia or sepsis
- severe anemia
- esophageal rupture

High-risk features include central pressure, radiation, sweating, nausea, exertional symptoms, syncope, hypotension, abnormal ECG, severe breathlessness, or major cardiovascular risk factors.

Dyspnea

Do not miss:

- respiratory failure
- severe asthma or COPD exacerbation
- pneumonia with hypoxia

- pulmonary embolism
- heart failure or pulmonary edema
- pneumothorax
- anaphylaxis
- sepsis
- acidosis
- severe anemia

Rising oxygen requirement is always important.

Fever

Do not miss:

- sepsis
- meningitis
- pneumonia
- pyelonephritis
- cholangitis
- endocarditis
- infected device or line
- neutropenic sepsis
- severe tropical or travel-related infection where relevant
- severe inflammatory or drug reaction

Fever with hypotension, confusion, tachypnea, poor perfusion, or immunosuppression is high-risk.

Confusion

Do not miss:

- hypoxia
- hypoglycemia
- sepsis
- stroke
- seizure
- head injury
- medication toxicity
- alcohol or sedative withdrawal
- urinary retention
- constipation
- pain
- dehydration
- hypercapnia

Known dementia does not explain acute change by itself.

Headache

Do not miss:

- subarachnoid hemorrhage
- meningitis
- temporal arteritis in older patients
- intracranial mass or raised pressure
- cerebral venous thrombosis
- stroke
- severe hypertension with end-organ symptoms

Sudden severe headache, neurological signs, fever, neck stiffness, altered consciousness, papilledema, pregnancy/postpartum state, cancer, immunosuppression, or age over 50 with new headache should increase concern.

Abdominal Pain

Do not miss:

- perforation
- obstruction
- appendicitis
- pancreatitis
- ruptured abdominal aortic aneurysm
- mesenteric ischemia
- ectopic pregnancy where relevant
- sepsis
- cholangitis
- severe gastrointestinal bleeding

Pain with shock, guarding, persistent vomiting, fever, syncope, GI bleeding, pregnancy risk, or severe metabolic disturbance is dangerous.

Syncope

Do not miss:

- arrhythmia
- myocardial infarction
- pulmonary embolism
- aortic stenosis
- major bleeding
- seizure
- stroke mimic where relevant
- orthostatic hypotension from dehydration or medication
- injury from fall

Syncope during exertion, with chest pain, palpitations, abnormal ECG, family history of sudden death, or persistent hypotension is high-risk.

Weakness

Do not miss:

- stroke
- spinal cord compression
- Guillain-Barré syndrome
- hyperkalemia or hypokalemia
- hypoglycemia
- sepsis
- severe anemia
- myasthenic crisis
- rhabdomyolysis
- medication toxicity

Sudden focal weakness is neurological danger until proven otherwise.

7. Mental Health and Safeguarding Danger

Danger is not only physiological.

A patient may be unsafe because of:

- suicidal thoughts with plan or intent
- severe self-neglect
- psychosis with risk
- domestic violence
- elder abuse
- child safeguarding concerns
- coercion
- exploitation
- inability to care for self
- unsafe home environment
- lack of capacity with serious risk

The clinician should ask direct, respectful questions when risk is possible.

Examples:

“Have you had thoughts of harming yourself?”

“Do you feel safe at home?”

“Is anyone hurting, threatening, or controlling you?”

“Are you able to get food, medicines, and help when you need them?”

These questions are part of medical safety.

8. Unsafe Discharge Is Danger

One of the most commonly missed dangers is unsafe discharge.

A patient may no longer need oxygen, IV antibiotics, or acute monitoring, but still be unsafe to leave hospital or clinic without support.

Discharge danger includes:

- unresolved abnormal vital signs
- persistent delirium
- unsafe mobility
- poor oral intake
- medication confusion
- no caregiver support
- pending results without ownership
- no follow-up
- inability to understand warning signs
- unsafe home environment
- high risk of falls
- high risk of self-harm
- worsening social vulnerability
- diagnostic uncertainty without safety-net

Discharge is not merely paperwork.

Discharge transfers risk to the next setting.

The key question is:

Can this patient safely live the plan outside hospital?

If the answer is no, discharge is not safe until the risk is reduced, supported, transferred, or clearly owned.

9. The Danger-First Communication Habit

Danger must be communicated clearly.

Students often speak vaguely when worried.

Weak phrases include:

- “Can you review when you have time?”
- “The patient looks a bit off.”
- “The bloods are abnormal.”
- “The nurse is concerned.”
- “I’m not sure.”

Better phrases include:

- **“I am worried because the patient is hypotensive and confused.”**
- **“This patient has rising oxygen requirement and may be deteriorating.”**
- **“The potassium is 6.5 in AKI, and I need urgent senior advice.”**
- **“This patient has chest pain with ECG changes.”**
- **“This discharge feels unsafe because the patient remains delirious and cannot walk.”**
- **“The family says this is not baseline.”**

Clear concern saves time.

A useful escalation structure is:

1. Who is the patient?
2. What is the immediate concern?
3. What are the vital signs or key findings?
4. What have you done?
5. What help do you need?
6. How urgent is the review?

10. Danger and Capacity Failure

Danger becomes more meaningful when connected to capacity failure.

Examples:

- Hypoxia means oxygenation is failing.
- Shock means circulation is failing.
- AKI with hyperkalemia means clearance and electrical stability are failing.
- Delirium means regulation and cognition are failing.
- Severe anemia means oxygen delivery and energy are failing.
- Sepsis means defense, tolerance, circulation, and regulation may be failing.
- Unsafe discharge means the patient’s home situation cannot hold the remaining capacity failure.

Danger-first thinking is therefore not separate from the life-coherent framework. It is the first step in protecting life-capacity.

11. Worked Case 1: “Just Anxiety”

A 31-year-old woman presents with chest tightness, breathlessness, and fear. She says she has panic attacks.

A student may be tempted to accept anxiety as the explanation.

Danger-first reasoning asks:

- Are vital signs normal?
- Is oxygen saturation normal?
- Is there pleuritic pain?
- Any syncope?
- Any leg swelling?
- Any pregnancy or postpartum risk?
- Any recent surgery, immobility, or long travel?
- Any wheeze?
- Any pneumothorax risk?
- Any ECG abnormality?
- Any substance use or stimulant exposure?

The final diagnosis may still be panic. But danger must be considered before reassurance.

Student takeaway: Anxiety can coexist with medical danger. Do not let emotional appearance end clinical reasoning.

12. Worked Case 2: "Just Dementia"

An 86-year-old man with dementia is "more confused than usual." He is drowsy, eating poorly, and nearly fell overnight.

Danger-first reasoning asks:

- Is this acute delirium?
- Is oxygen low?
- Is glucose low?
- Is there infection?
- Is he dehydrated?
- Is there urinary retention?
- Is there constipation?
- Is he in pain?
- Has a sedative, opioid, or anticholinergic been started?
- Did he fall or hit his head?
- Is there a stroke sign?

Known dementia does not explain acute deterioration.

Student takeaway: Acute change needs acute explanation.

13. Worked Case 3: “Just a Lab Result”

A nurse calls about potassium of 6.4 in a patient with AKI.

A student may think, “I will repeat it later.”

Danger-first reasoning asks:

- Is the result credible?
- Is there AKI or CKD?
- Are there ECG changes?
- Is the patient weak, bradycardic, or unwell?
- What medicines raise potassium?
- Has treatment been started according to local protocol?
- When will potassium be repeated?
- Who owns the repeat result?

Hyperkalemia is electrical danger, not just a lab abnormality.

Student takeaway: Critical results need action, ownership, and handover.

14. Worked Case 4: “Medically Fit”

An 89-year-old woman treated for pneumonia no longer has fever and is off oxygen. The team says she is medically fit.

But she remains confused, weak, and cannot walk to the bathroom.

Danger-first reasoning asks:

- Is delirium still present?
- Is she at risk of falling?
- Is she eating and drinking?
- Can she manage medicines?
- Does she have caregiver support?
- Is the home safe?
- Are pending results owned?
- Does she or the caregiver understand the plan?
- What would happen if she deteriorates tonight?

Discharge may be dangerous even when infection markers improve.

Student takeaway: “Medically fit” must include function, cognition, support, and safety.

15. Common Student Pitfalls

Pitfall 1: Reassuring Before Checking Danger

Reassurance is not wrong. Premature reassurance is dangerous.

Pitfall 2: Calling a Patient Stable Without Looking

A patient is not stable because the chart says so. Stability must be checked against current physiology, function, and trajectory.

Pitfall 3: Ignoring Respiratory Rate

Respiratory rate is often one of the earliest signs of deterioration.

Do not ignore it.

Pitfall 4: Forgetting Glucose

Glucose should be checked early in confusion, collapse, seizure, sweating, weakness, or reduced consciousness.

Pitfall 5: Missing Medicine Danger

Medicines can cause falls, AKI, bleeding, hypoglycemia, delirium, hypotension, and electrolyte disturbance.

Pitfall 6: Not Listening to Nurses or Family

Nurses and family often notice deterioration before it is obvious in the chart.

When someone says, **“This is not normal,”** listen.

Pitfall 7: No Reassessment

Treating danger is only the beginning. The patient must be reassessed to confirm response.

16. Danger-First Bedside Checklist

Use this checklist when reviewing an unwell patient:

Immediate Safety

Airway: safe or threatened?
Breathing: oxygenation, ventilation, respiratory effort?
Circulation: blood pressure, pulse, perfusion, bleeding?
Disability: consciousness, seizure, focal signs, glucose?
Exposure: fever, rash, pain, trauma, dehydration?

Time-Critical Risks

Sepsis?
ACS?
Stroke?
PE?
Anaphylaxis?
Hyperkalemia?
Major bleeding?
Acute abdomen?
Severe asthma/COPD?
DKA/HHS?
Overdose/withdrawal?

Whole-Person Safety

Suicide risk?
Safeguarding?
Falls risk?
Delirium?
Unsafe discharge?
Critical result ownership?
Need for senior help?

17. Mini-Case for Practice

A 72-year-old man is reviewed on the ward because he is “not himself.” He was admitted with cellulitis. He is now breathing faster, more confused, and has passed very little urine today.

Apply danger-first thinking.

Danger

Possible sepsis, shock, AKI, hypoxia, delirium, dehydration, medication toxicity, urinary retention.

Syndrome

Infection with acute confusion, tachypnea, and oliguria.

Capacity Failure

Defense, circulation, cognition, clearance, regulation, possibly oxygenation.

Coupling Conditions

Age, infection burden, fluid balance, kidney function, medicines, baseline cognition, nutrition, monitoring gaps.

Wise Perturbation

Urgent assessment with vital signs, oxygen saturation, glucose, fluid status, urine output, infection review, renal function/electrolytes, medication review, senior escalation, and treatment according to local sepsis and AKI pathways.

Repair Trajectory

Respiratory rate improves, blood pressure and perfusion stabilize, urine output improves, mental state clears, infection controlled, renal function and electrolytes monitored.

18. Student Takeaway

Danger-first medicine is the safety foundation of Internal Medicine.

Before naming the diagnosis, ask:

Is this patient safe now?

Before reassuring, ask:

What would be unsafe to miss?

Before discharging, ask:

Can this patient safely live the plan outside hospital?

Before leaving after treatment, ask:

Did the patient respond as expected?

Danger-first thinking is not fear.
It is disciplined care for what matters most when time, uncertainty, and risk are present.

Chapter 4. From Symptoms to Syndromes

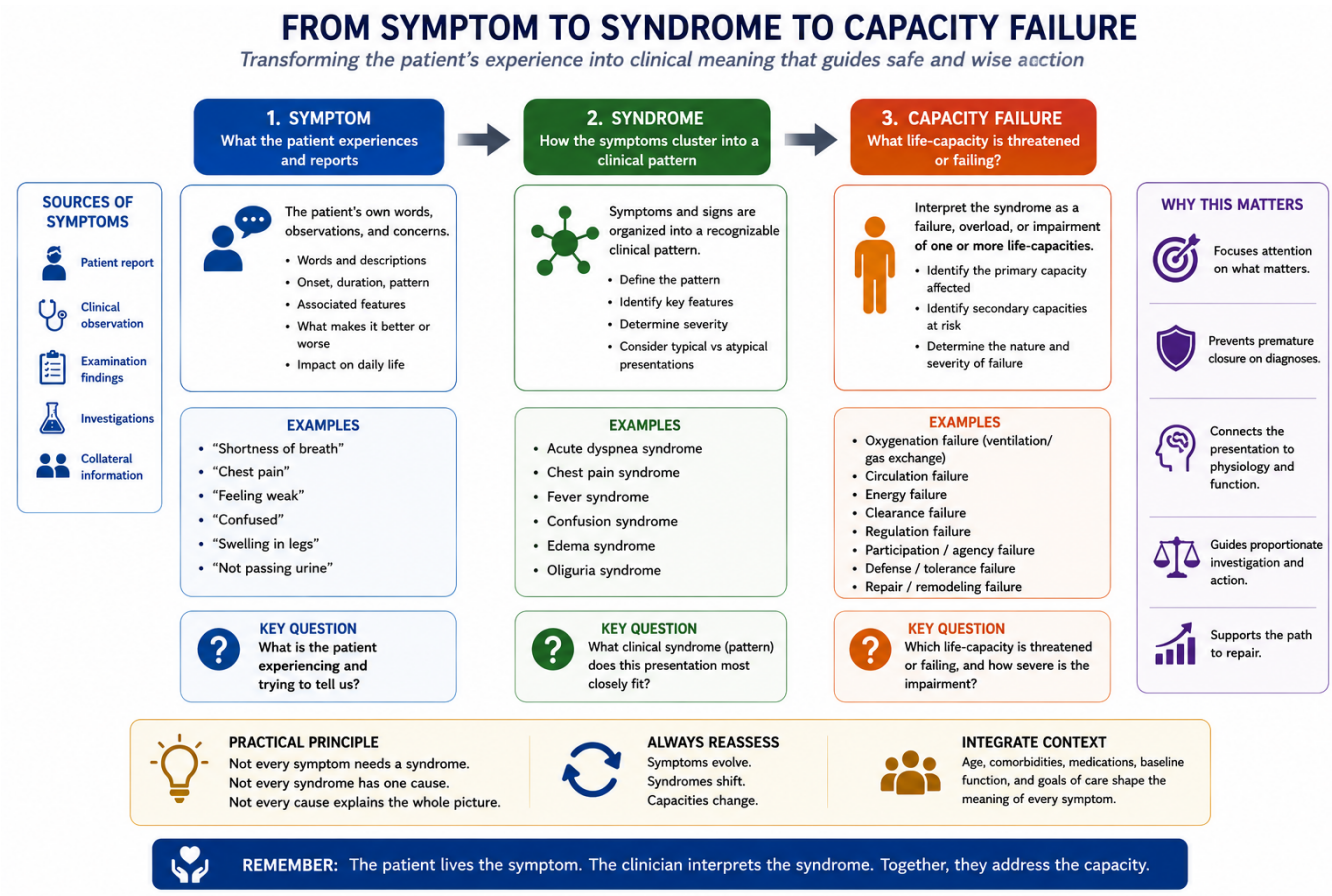

Figure 3. From Symptom to Syndrome to Capacity Failure

Patient-reported symptoms become clinically useful when they are organized into syndromes and interpreted in terms of threatened or failing life-capacities.

Patients usually enter clinical care through symptoms.

They say:

"I have chest pain."
"I feel short of breath."
"I am tired."
"I feel dizzy."
"My legs are swollen."
"I feel confused."
"I have abdominal pain."

Symptoms matter because they are the patient's lived experience of illness. They are the doorway into the clinical encounter.

But symptoms alone are rarely enough.

A symptom is not yet a diagnosis. It is not yet a safe plan. It is not yet a measure of danger. It is not yet a full explanation of what the patient can no longer sustain.

The clinician must transform symptoms into syndromes.

A **syndrome** is a clinically meaningful pattern formed from the symptom, time course, severity, associated features, vital signs, examination findings, risk factors, and context.

The basic movement is:

Symptom → Syndrome → Danger → Capacity Failure → Differential Diagnosis → Wise Action → Repair

This chapter teaches students how to make that movement.

1. Why Symptoms Are Not Enough

A symptom can have many possible meanings.

Chest pain may be myocardial infarction, pulmonary embolism, aortic dissection, pneumothorax, pneumonia, reflux, costochondritis, panic, shingles, or musculoskeletal strain.

Dyspnea may be asthma, COPD exacerbation, pneumonia, heart failure, pulmonary embolism, anemia, acidosis, neuromuscular weakness, sepsis, anxiety, or deconditioning.

Fatigue may be anemia, depression, hypothyroidism, malignancy, chronic infection, heart failure, kidney disease, liver disease, medication effect, sleep disorder, chronic inflammation, or post-viral illness.

Confusion may be delirium, dementia, hypoxia, hypoglycemia, infection, stroke, seizure, medication toxicity, urinary retention, constipation, dehydration, withdrawal, or head injury.

The symptom is real. But the symptom is broad.

If the student stops at the symptom, they remain lost.

The clinician must ask:

What pattern is this symptom part of?

2. What Is a Syndrome?

A syndrome is a pattern that organizes uncertainty.

It is built from:

- the main symptom
- time course
- severity
- associated symptoms
- vital signs
- examination findings
- risk factors
- past medical history
- medicines
- patient context
- trajectory over time

A syndrome is not necessarily the final diagnosis. It is the working clinical shape of the problem.

For example:

"Chest pain" is a symptom.

"Central pressure-like chest pain radiating to the left arm with sweating and nausea in a 62-year-old man with diabetes" is a syndrome.

"Shortness of breath" is a symptom.

"Acute dyspnea with hypoxia, fever, cough, tachypnea, and pleuritic chest pain" is a syndrome.

"Confusion" is a symptom.

"Acute fluctuating confusion in an older patient after a new sedative, with poor oral intake and urinary retention" is a syndrome.

The syndrome gives the clinician direction.

3. Why Syndromes Matter

Syndromes help the clinician decide:

- what is dangerous
- what diagnoses are likely
- what diagnoses must not be missed
- what investigations are useful
- what treatment may be needed now
- what capacity is failing
- what context matters
- whether escalation is needed
- what repair should look like

A syndrome is therefore a bridge between the patient's words and the clinician's reasoning.

The patient gives a symptom.

The clinician forms a syndrome.

The syndrome guides danger recognition, differential diagnosis, assessment, treatment, and reassessment.

4. The Syndrome-Building Questions

When a patient presents with a symptom, ask the following questions.

What exactly is the symptom?

Clarify the patient's words.

For pain:

- Where is it?
- What does it feel like?
- How severe is it?
- Does it radiate?
- What brings it on?
- What relieves it?

For breathlessness:

- At rest or exertion?
- Sudden or gradual?
- With wheeze, cough, fever, chest pain, edema, orthopnea?
- Is oxygen saturation low?
- Is respiratory effort increased?

For fatigue:

- Sleepiness, weakness, low motivation, exertional intolerance, or generalized exhaustion?
- Acute or chronic?
- With weight loss, fever, pain, low mood, dyspnea, bleeding, poor sleep?

For confusion:

- Acute or chronic?
- Fluctuating or progressive?
- Baseline cognition?
- Any fever, hypoxia, hypoglycemia, new medicines, fall, pain, retention, constipation?

What is the time course?

Time course is one of the most important syndrome-forming tools.

Ask:

- When did it begin?
- Sudden or gradual?
- Constant or intermittent?
- Improving, worsening, or fluctuating?
- First episode or recurrent?
- Acute, subacute, chronic, or progressive?

Sudden severe chest pain is different from months of intermittent burning chest discomfort.

Acute confusion is different from gradual memory decline.

Sudden dyspnea is different from progressive exertional breathlessness over months.

Rapid progression often increases danger.

How severe is it?

Severity helps determine urgency.

Ask:

- Is the patient distressed?
- Are vital signs abnormal?
- Can the patient speak, walk, eat, drink, or sleep?
- Is pain severe?
- Is there syncope, hypotension, hypoxia, reduced consciousness, or inability to function?

A mild symptom with normal physiology may be safely evaluated more slowly.

The same symptom with abnormal vital signs may be dangerous.

What features are associated?

Associated symptoms shape the syndrome.

Chest pain with sweating and nausea is different from chest pain with cough and fever.

Dyspnea with wheeze is different from dyspnea with edema and orthopnea.

Fever with confusion is different from fever with mild sore throat.

Headache with neck stiffness is different from headache after screen use.

Abdominal pain with guarding is different from abdominal pain relieved by antacid.

What do the vital signs show?

Vital signs are syndrome-forming data.

They include:

- respiratory rate
- oxygen saturation
- oxygen requirement
- heart rate
- blood pressure
- temperature
- level of consciousness
- glucose when relevant

A symptom with abnormal vital signs becomes a higher-risk syndrome.

Do not ignore the respiratory rate.

Do not forget glucose in confusion, collapse, seizure, sweating, or weakness.

What does the examination add?

The examination helps locate the pattern.

Examples:

- crackles, wheeze, reduced breath sounds
- raised jugular venous pressure
- edema
- focal neurological signs
- abdominal guarding
- rash
- pallor
- dehydration
- lymphadenopathy
- joint swelling
- pressure injury
- signs of trauma

The examination does not stand alone. It joins the symptom, time course, vital signs, and context.

What is the context?

The same symptom means different things in different patients.

Chest pain in a young healthy person is not the same as chest pain in an older diabetic patient with CKD.

Fever in an immunosuppressed patient is not the same as fever in a healthy adult.

Confusion in someone with dementia may still be delirium.

A fall in a frail patient may represent collapse of reserve, medication harm, infection, dehydration, or unsafe home conditions.

Context changes danger and probability.

5. Syndrome Statements

A syndrome statement is a concise summary of the clinical pattern.

It should include:

- age or relevant patient context
- main symptom
- time course
- severity
- key associated features
- major risk factors
- danger features if present

Examples:

“This is acute central chest pressure with autonomic symptoms in a 62-year-old man with diabetes.”

“This is acute dyspnea with hypoxia, fever, tachypnea, and cough in an older patient.”

“This is progressive dyspnea with edema, orthopnea, and reduced urine output in a patient with CKD and hypertension.”

“This is acute fluctuating confusion in a frail older patient with baseline dementia after a new sedative.”

“This is chronic fatigue with weight loss, anemia symptoms, and poor appetite.”

A good syndrome statement makes the differential diagnosis more focused and the danger screen more precise.

6. From Syndrome to Danger

Once the syndrome is formed, ask:

What dangerous diagnoses belong to this pattern?

Examples:

High-Risk Chest Pain Syndrome

Dangerous diagnoses:

- acute coronary syndrome
- aortic dissection
- pulmonary embolism
- pneumothorax
- pericarditis or myocarditis
- severe pneumonia
- esophageal rupture

Acute Dyspnea With Hypoxia

Dangerous diagnoses:

- pneumonia
- pulmonary embolism
- heart failure
- severe asthma or COPD exacerbation
- pneumothorax
- sepsis
- anaphylaxis
- acidosis

Fever With Confusion and Hypotension

Dangerous diagnoses:

- sepsis
- meningitis
- pneumonia
- pyelonephritis
- cholangitis
- severe dehydration
- AKI
- hypoglycemia or metabolic disturbance

Acute Confusion in Frailty

Dangerous diagnoses or causes:

- hypoxia
- hypoglycemia
- sepsis
- stroke
- medication toxicity
- head injury
- urinary retention
- constipation
- dehydration
- withdrawal

The syndrome tells the clinician what danger to look for.

7. From Syndrome to Differential Diagnosis

A differential diagnosis should not be a random list.

It should be organized.

A useful structure is:

Likely
Dangerous
Treatable
Context-specific

Likely

What diagnoses best fit the pattern?

Dangerous

What diagnoses would cause serious harm if missed?

Treatable

What diagnoses can be acted on now or soon?

Context-specific

What diagnoses become more or less likely because of this patient's background, exposures, medicines, geography, immune status, frailty, pregnancy status, travel, occupation, or social context?

For example:

A patient with dyspnea, edema, orthopnea, CKD, and hypertension may have likely heart failure or fluid overload.

Dangerous alternatives include ACS, pulmonary embolism, arrhythmia, severe renal failure, hyperkalemia, and sepsis.

Treatable contributors may include uncontrolled blood pressure, fluid overload, anemia, infection, medication non-adherence, NSAID use, or arrhythmia.

Context-specific factors may include access to medicines, salt intake, renal disease, frailty, and home monitoring.

This style of differential diagnosis is safer than an unprioritized list.

8. From Syndrome to Capacity Failure

After naming the syndrome, ask:

What can the patient no longer sustain?

Examples:

Chest Pain Syndrome

Possible threatened capacities:

- circulation
- vascular integrity
- oxygenation
- comfort
- agency

Dyspnea Syndrome

Possible threatened capacities:

- oxygenation
- ventilation
- circulation
- energy
- comfort

Edema Syndrome

Possible threatened capacities:

- circulation
- clearance
- mobility
- skin integrity
- comfort

Confusion Syndrome

Possible threatened capacities:

- cognition
- regulation
- safety
- agency
- dignity

Fatigue Syndrome

Possible threatened capacities:

- energy transformation
- oxygen delivery
- endocrine regulation
- mood and agency
- participation

Capacity failure explains why the syndrome matters.

It connects clinical pattern to the patient's ability to live.

9. Common Syndrome Patterns in Internal Medicine

Students should become familiar with recurring syndrome patterns.

Chest Pain Syndromes

- central pressure with autonomic symptoms
- pleuritic chest pain with dyspnea
- tearing pain to back
- chest pain with fever and cough
- reproducible chest wall pain
- burning post-meal pain
- chest tightness with panic symptoms

Dyspnea Syndromes

- dyspnea with hypoxia and fever
- dyspnea with wheeze
- dyspnea with edema and orthopnea
- sudden dyspnea with pleuritic chest pain
- dyspnea with severe anemia
- dyspnea with acidosis
- dyspnea with normal oxygenation and anxiety

Fever Syndromes

- fever with respiratory symptoms
- fever with urinary symptoms
- fever with abdominal pain or jaundice
- fever with rash
- fever with headache and neck stiffness
- fever with confusion
- fever in immunosuppression
- prolonged fever with weight loss

Confusion Syndromes

- acute fluctuating confusion
- confusion with fever
- confusion with hypoxia
- confusion with hypoglycemia
- confusion after medication change
- confusion after fall or head injury
- confusion with focal neurological signs
- progressive memory decline

Edema Syndromes

- bilateral leg edema with dyspnea
- edema with proteinuria
- edema with liver disease
- unilateral leg swelling
- edema after new medication
- edema with immobility
- generalized swelling with low albumin

Fatigue Syndromes

- fatigue with anemia symptoms
- fatigue with weight loss
- fatigue with low mood
- fatigue with poor sleep
- fatigue with dyspnea

- fatigue after viral illness
- fatigue with endocrine features
- fatigue with chronic pain

These patterns do not replace full assessment, but they give students starting maps.

10. Worked Example 1: Chest Pain

A 58-year-old man with diabetes presents with central chest pressure for two hours. The pain radiates to his left arm and is associated with sweating and nausea.

Symptom

Chest pain.

Syndrome

Acute central pressure-type chest pain with autonomic symptoms in a patient with diabetes.

Danger

Acute coronary syndrome is the primary concern. Other serious causes may include aortic dissection, pulmonary embolism, pneumothorax, or arrhythmia depending on features.

Capacity Failure

Circulation, especially coronary perfusion, is threatened. Comfort and agency are also affected.

Differential Diagnosis

Likely: acute coronary syndrome.
Dangerous: ACS, dissection, PE, pneumothorax.
Treatable: ACS pathway, arrhythmia, severe hypertension if present.
Context-specific: diabetes, CKD, smoking, delayed presentation.

Wise Action

Urgent ECG, vital signs, monitoring, local chest pain or ACS pathway, blood tests including troponin strategy according to local protocol, analgesia if needed, senior input if unstable or high-risk.

Repair

Pain improves, ECG/troponin pathway interpreted, vitals stable, risk plan clear, patient understands next steps.

11. Worked Example 2: Dyspnea

A 76-year-old woman presents with worsening breathlessness, ankle swelling, orthopnea, and reduced urine output. She has hypertension and chronic kidney disease.

Symptom

Shortness of breath.

Syndrome

Progressive dyspnea with edema, orthopnea, and oliguria in a patient with CKD.

Danger

Pulmonary edema, respiratory failure, ACS, arrhythmia, hyperkalemia, worsening renal failure, sepsis, PE.

Capacity Failure

Circulation, oxygenation, clearance, mobility, energy.

Differential Diagnosis

Likely: heart failure or fluid overload.
Dangerous: ACS, arrhythmia, severe renal failure, hyperkalemia, PE.
Treatable: congestion, uncontrolled hypertension, medication-related fluid retention, anemia.
Context-specific: CKD, medicines, salt intake, home support.

Wise Action

Assess oxygenation, vital signs, volume status, ECG, renal function, potassium, urine output, medication list. Treat congestion carefully and monitor response and harm.

Repair

Less breathlessness, lower oxygen need, less edema, urine output improves, potassium safer, renal function stable, walking improves.

12. Worked Example 3: Confusion

An 84-year-old man with known mild dementia becomes more confused overnight. He is drowsy, intermittently agitated, and trying to climb out of bed.

Symptom

Confusion.

Syndrome

Acute fluctuating confusion in a patient with baseline cognitive impairment.

Danger

Delirium from hypoxia, hypoglycemia, infection, medication toxicity, stroke, head injury, urinary retention, constipation, pain, dehydration, withdrawal.

Capacity Failure

Cognition, regulation, safety, mobility, agency, dignity.

Differential Diagnosis

Likely: delirium from medical or medication trigger.
Dangerous: sepsis, hypoxia, hypoglycemia, stroke, head injury.
Treatable: infection, low glucose, hypoxia, medication harm, pain, retention, constipation, dehydration.
Context-specific: dementia, frailty, ward environment, sensory impairment.

Wise Action

Check vital signs, oxygen saturation, glucose, medicines, pain, retention, constipation, hydration, infection, baseline from family. Use non-drug delirium care. Avoid sedatives unless needed for immediate safety.

Repair

Attention improves, agitation settles without over-sedation, sleep improves, trigger treated, mobility safer, family recognizes improvement.

13. Worked Example 4: Fatigue

A 68-year-old man presents with fatigue, dizziness, exertional breathlessness, and dark stools. He takes aspirin and anti-inflammatory medication.

Symptom

Fatigue.

Syndrome

Fatigue with exertional dyspnea, dizziness, pallor, and possible gastrointestinal bleeding.

Danger

Severe anemia, active GI bleeding, syncope, shock, cardiac ischemia.

Capacity Failure

Oxygen delivery, circulation reserve, energy, mobility.

Differential Diagnosis

Likely: anemia from GI bleeding.
Dangerous: active bleed, severe anemia, ACS triggered by anemia.
Treatable: medication-related bleeding, ulcer disease, anticoagulant/antiplatelet effects if present.
Context-specific: aspirin, NSAID use, chronic pain, age, delayed presentation.

Wise Action

Assess vital signs, orthostatic symptoms, hemoglobin, stool history, medication list, bleeding severity, need for urgent referral or admission depending on stability and local pathways.

Repair

Bleeding controlled or excluded, hemoglobin stable, dizziness improves, exertional tolerance improves, harmful medicines reviewed, follow-up arranged.

14. Syndrome Formation and Investigations

Investigations should be guided by the syndrome.

Students sometimes order tests reflexively.

A better question is:

What evidence do I need to clarify danger, diagnosis, capacity failure, or treatment safety?

Examples:

In chest pain, ECG and troponin pathway may clarify coronary danger.

In dyspnea, oxygen saturation, chest imaging, ECG, blood tests, and sometimes blood gas may clarify oxygenation, circulation, infection, anemia, or metabolic causes.

In confusion, glucose, oxygenation, infection screen, medicine review, renal/liver function, and collateral history may be more useful than jumping immediately to advanced imaging unless neurological danger is present.

In AKI, potassium, urine output, volume assessment, medicines, obstruction assessment, and baseline creatinine are central.

Investigations are not random data collection. They answer clinical questions.

15. Syndrome Formation and Treatment

Treatment should also be guided by the syndrome and danger.

Examples:

A patient with dyspnea, hypoxia, fever, and sepsis features may need urgent infection treatment and oxygen support.

A patient with dyspnea, edema, orthopnea, and fluid overload may need careful decongestion and renal/electrolyte monitoring.

A patient with confusion from hypoglycemia needs immediate glucose correction.

A patient with chest pain and ACS features needs local chest pain pathway and monitoring.

A patient with early abdominal pain and reassuring assessment may need safety-netting rather than immediate admission, but only if danger has been considered and follow-up is safe.

Treatment follows the pattern, not the symptom alone.

16. Common Student Pitfalls

Pitfall 1: Treating the Symptom as the Diagnosis

“Chest pain” is not a diagnosis.
“Dyspnea” is not a diagnosis.
“Confusion” is not a diagnosis.
“Fatigue” is not a diagnosis.

They are starting points.

Pitfall 2: Ignoring Time Course

Acute, subacute, chronic, recurrent, and progressive symptoms have different meanings.

Time course is part of the syndrome.

Pitfall 3: Ignoring Vital Signs

A symptom with abnormal vital signs is a different syndrome from the same symptom with normal vital signs.

Pitfall 4: Making Random Differential Lists

Differentials should be organized into likely, dangerous, treatable, and context-specific possibilities.

Pitfall 5: Missing Context

The same symptom in a frail older patient, an immunosuppressed patient, a pregnant patient, a diabetic patient, or a patient with CKD may carry different danger.

Pitfall 6: Forgetting Capacity Failure

The syndrome matters because life-capacity is threatened.

Always ask what the patient can no longer sustain.

17. Clinical Practice Box

When a patient presents with a symptom, complete this pattern:

The symptom is: _____

The time course is: _____

The severity is: _____

Associated features are: _____

Vital sign pattern is: _____

Relevant context is: _____

Therefore, the syndrome is: _____

The dangers to exclude are: _____

The capacities threatened are: _____

This exercise turns a symptom into clinical reasoning.

18. Mini-Case for Practice

A 45-year-old woman presents with headache. She says it began suddenly and is the worst headache of her life. She vomited twice and feels stiff in the neck.

Apply syndrome reasoning.

Symptom

Headache.

Syndrome

Sudden severe headache with vomiting and neck stiffness.

Danger

Subarachnoid hemorrhage, meningitis, intracranial bleeding, raised intracranial pressure.

Capacity Failure

Regulation, cognition, comfort, neurological integrity, possibly circulation depending on cause.

Differential Diagnosis

Likely depends on full assessment, but dangerous diagnoses must be prioritized: subarachnoid hemorrhage and meningitis.

Treatable: meningitis, severe hypertension if present, pain, vomiting, raised pressure depending on diagnosis.

Context-specific: anticoagulation, pregnancy/postpartum state, immunosuppression, trauma, previous aneurysm, infection exposure.

Wise Action

Urgent assessment, vital signs, neurological examination, senior or emergency pathway, appropriate imaging and/or infection assessment according to local protocols. Avoid simple reassurance or discharge without addressing danger.

Repair

Pain controlled safely, neurological status monitored, dangerous causes investigated, diagnosis clarified, treatment started if indicated, patient not left unsupported during uncertainty.

19. Student Takeaway

Symptoms are the doorway into clinical care.

Syndromes are the first organized clinical pattern.

The student must learn to move from:

What the patient feels
to
What pattern is present
to
What danger must not be missed
to
What capacity is threatened
to
What action and repair are needed

Internal Medicine becomes easier when symptoms are not treated as isolated complaints but as signals within a larger pattern of danger, physiology, context, and repair.

Chapter 5. From Disease Labels to Capacity Failure

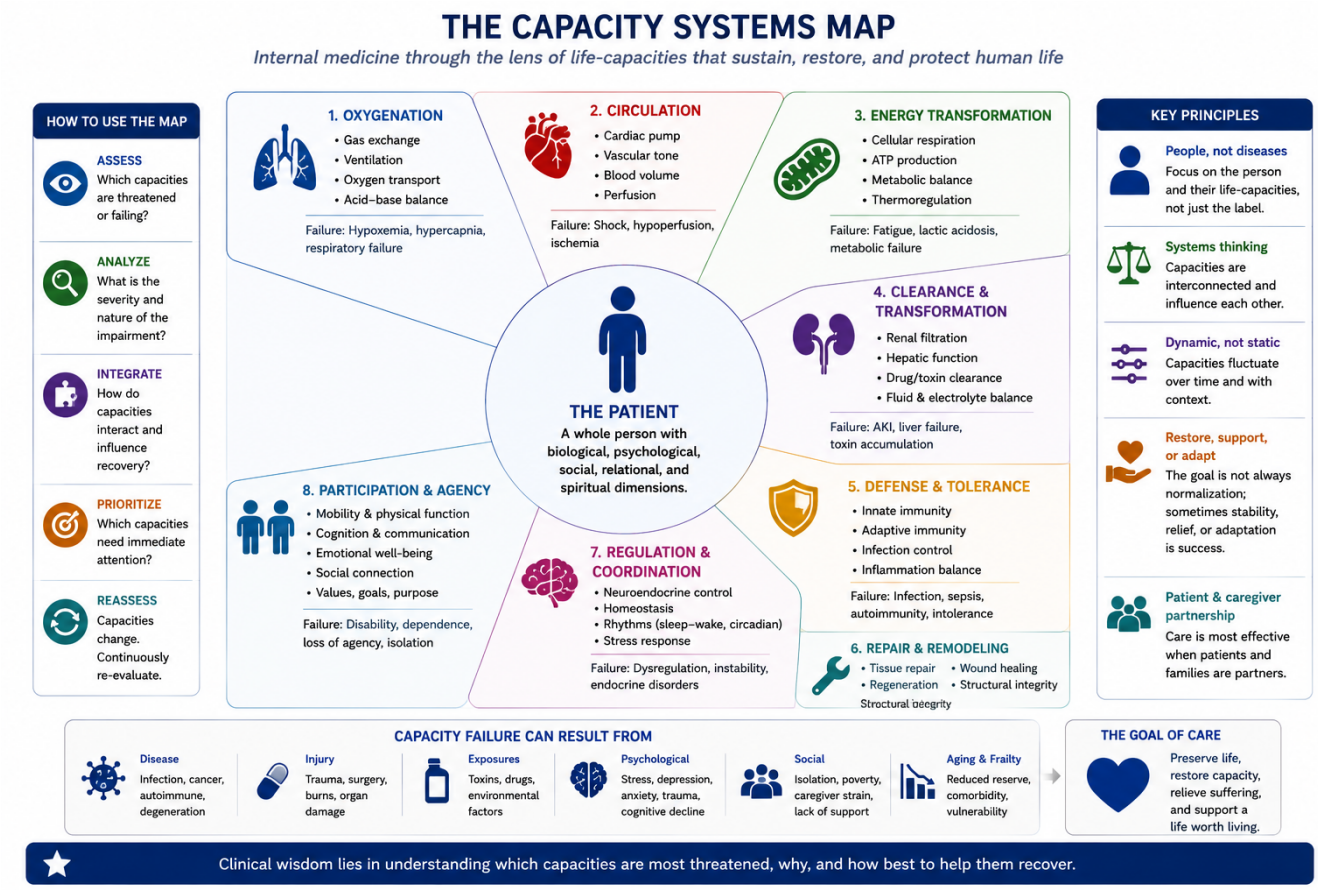

Figure 4. Capacity Systems Map

The major capacity systems of Internal Medicine are interdependent domains of life-function. Clinical reasoning becomes more coherent when disease is interpreted through the capacities it threatens, impairs, or destabilizes.

Disease labels are necessary.

They allow clinicians to communicate, investigate, treat, research, code, teach, and follow evidence. Without diagnostic labels, medicine would become vague and unsafe.

But disease labels are not enough.

A label tells us what disease process may be present. It does not automatically tell us how sick the patient is, what capacity is failing, what treatment burden is reasonable, what context may prevent recovery, or whether the patient is safe to go home.

Internal Medicine becomes clearer when every disease label is followed by a deeper question:

What can this patient no longer sustain?

This is the movement from disease label to capacity failure.

It is one of the central habits of life-coherent clinical reasoning.

1. Why Disease Labels Are Useful but Incomplete

A diagnosis gives the clinician a name for a pattern.

Examples:

- pneumonia
- heart failure
- chronic kidney disease
- diabetes mellitus
- anemia
- COPD
- stroke
- delirium
- sepsis
- cirrhosis
- depression
- malignancy

These labels matter. They guide differential diagnosis, investigations, treatment pathways, prognosis, communication, and follow-up.

But a label does not describe the whole patient.

Consider two patients with pneumonia.

One has fever, cough, mild crackles, normal oxygen saturation, normal blood pressure, good oral intake, and can walk independently.

The other has fever, hypoxia, tachypnea, confusion, hypotension, poor intake, acute kidney injury, and cannot stand without help.

Both may have pneumonia.

But they are not clinically the same.

The first patient may have preserved oxygenation, circulation, cognition, mobility, and hydration.

The second patient has multiple capacity failures.

The label is the same. The clinical reality is different.

2. The Capacity Question

After identifying a possible diagnosis, ask:

What is this disease doing to the patient's ability to live?

More specifically:

- Can the patient breathe?
- Can the patient circulate blood effectively?
- Can the patient clear waste, fluid, acid, potassium, and medicines?
- Can the patient transform energy into activity?
- Can the patient defend against threat without overwhelming inflammation?
- Can the patient regulate consciousness, glucose, temperature, pressure, and electrolytes?
- Can the patient think, understand, and participate?
- Can the patient move safely?
- Can the patient eat, drink, sleep, and toilet?
- Can the patient manage medicines?
- Can the patient remain comfortable?
- Can the patient retain dignity?
- Can the patient return to meaningful life roles?

This is capacity failure mapping.

It moves the clinician from the disease as an abstraction to the patient as a living person.

3. What Is Capacity Failure?

A **capacity failure** is a loss, narrowing, overload, or distortion of a life-function the patient needs in order to remain safe, functional, comfortable, dignified, and able to participate in life.

Capacity failure may be acute, chronic, reversible, partially reversible, progressive, or terminal.

Examples:

- respiratory failure is oxygenation or ventilation capacity failure
- shock is circulation capacity failure
- AKI is clearance capacity failure
- hypoglycemia is energy regulation failure
- sepsis is defense and circulation failure
- delirium is regulation and cognition failure
- frailty is reserve failure across multiple capacities
- falls may reflect mobility, cognition, circulation, vision, medicine, or environmental failure
- uncontrolled pain is comfort failure
- unsafe discharge is failure of support capacity outside hospital
- end-of-life distress may involve comfort, dignity, meaning, and family understanding

Capacity failure does not replace diagnosis. It deepens diagnosis.

4. The Main Capacity Domains

The life-coherent approach organizes clinical medicine around capacities that sustain life.

Oxygenation

Can the patient exchange gases and deliver oxygen to tissues?

Threats include pneumonia, COPD exacerbation, asthma, pulmonary edema, pulmonary embolism, pneumothorax, anemia, hypoventilation, and sepsis.

Clinical signs include dyspnea, hypoxia, tachypnea, cyanosis, confusion, and respiratory exhaustion.

Circulation

Can the patient maintain blood flow and perfusion?

Threats include shock, heart failure, arrhythmia, myocardial infarction, bleeding, dehydration, pulmonary embolism, sepsis, and severe anemia.

Clinical signs include hypotension, tachycardia, bradycardia, syncope, cold peripheries, chest pain, poor urine output, and altered mental state.

Clearance and Transformation

Can the patient clear waste, fluid, acid, potassium, toxins, and medicines?

Threats include AKI, CKD, liver failure, urinary obstruction, dehydration, sepsis, drug toxicity, and fluid overload.

Clinical signs include oliguria, edema, rising creatinine, hyperkalemia, acidosis, encephalopathy, jaundice, and drug accumulation.

Energy Transformation

Can the patient convert fuel and oxygen into usable biological work?

Threats include hypoglycemia, hyperglycemia, anemia, heart failure, chronic inflammation, endocrine disorders, malnutrition, mitochondrial dysfunction, infection, and severe depression.

Clinical signs include fatigue, weakness, poor exercise tolerance, weight loss, poor intake, dizziness, and collapse.

Defense and Tolerance

Can the patient respond to threat without underreacting or overreacting?

Threats include infection, sepsis, immunosuppression, autoimmune disease, allergic disease, chronic inflammation, and inflammatory storm.

Clinical signs include fever, hypothermia, tachycardia, hypotension, rash, pain, swelling, raised inflammatory markers, organ dysfunction, or recurrent infections.

Repair and Remodeling

Can the patient heal, recover, and adapt after injury?

Threats include poor nutrition, diabetes, vascular disease, steroids, immunosuppression, pressure injury, chronic inflammation, frailty, and poor mobility.

Clinical signs include delayed wound healing, recurrent ulcers, pressure sores, persistent weakness, and poor recovery after illness.

Regulation and Coordination

Can the body coordinate its internal systems?

Threats include delirium, endocrine crisis, autonomic dysfunction, severe electrolyte disturbance, sepsis, hypoxia, sleep disruption, and medication toxicity.

Clinical signs include confusion, altered consciousness, unstable blood pressure, temperature disturbance, glucose instability, seizures, and sleep-wake reversal.

Mobility

Can the patient move safely?

Threats include frailty, stroke, arthritis, neuropathy, pain, deconditioning, dizziness, orthostatic hypotension, sedatives, poor vision, and unsafe environment.

Clinical signs include falls, inability to transfer, unsteady gait, reduced walking distance, and fear of movement.

Cognition

Can the patient attend, understand, remember, and make sense of the situation?

Threats include delirium, dementia, depression, stroke, hypoxia, hypoglycemia, infection, medicines, sleep deprivation, and sensory impairment.

Clinical signs include confusion, poor attention, disorientation, memory problems, inability to follow the plan, and fluctuating awareness.

Agency

Can the patient participate in decisions and self-care?

Threats include cognitive impairment, poor health literacy, coercion, severe depression, poverty, language barriers, treatment complexity, and lack of support.

Clinical signs include inability to manage medicines, missed appointments, confusion about diagnosis, fear of treatment, and passive or overwhelmed decision-making.

Comfort

Can suffering be relieved?

Threats include pain, breathlessness, nausea, anxiety, insomnia, itch, constipation, wounds, and end-of-life distress.

Clinical signs include distress, grimacing, agitation, sleeplessness, withdrawal, and poor participation.

Dignity

Is the patient treated as a person rather than a problem?

Threats include neglect, rushed communication, loss of privacy, uncontrolled symptoms, dismissive language, coercion, stigma, and futile or burdensome treatment.

Clinical signs include fear, shame, distress, loss of trust, refusal of care, and family concern.

Participation

Can the patient live in relationship, role, and meaning?

Threats include disability, chronic illness, depression, pain, social isolation, caregiver strain, poverty, stigma, and lack of rehabilitation.

Clinical signs include inability to work, study, worship, care for family, socialize, or sustain meaningful routines.

5. Disease Labels Through the Capacity Lens

A disease label becomes clinically richer when translated into capacity failure.

Pneumonia

Disease label: pneumonia.

Potential capacity failures:

- defense against infection
- oxygenation
- circulation if septic
- cognition if delirious
- clearance if AKI develops
- mobility if deconditioned
- nutrition and hydration
- comfort from cough, fever, breathlessness, or pain

Repair is not only fever settling. It is safer breathing, clearer thinking, better intake, improved mobility, and safe follow-up.

Heart Failure

Disease label: heart failure.

Potential capacity failures:

- circulation
- oxygenation
- clearance
- sleep due to orthopnea
- mobility due to breathlessness
- energy
- medicine safety
- participation

Repair is not only a lower weight or reduced edema. It is easier breathing, stable renal function, safer potassium, improved walking, and a medicine plan the patient can live.

Diabetes Mellitus

Disease label: diabetes.

Potential capacity failures:

- glucose regulation
- energy transformation
- vascular integrity
- kidney clearance
- nerve function
- vision

- wound repair
- agency if the treatment plan is complex
- participation if hypoglycemia fear or complications limit life

Repair is not only a better glucose value. It is safer glucose patterns, fewer hypoglycemic episodes, feasible eating and medicine routines, foot safety, understanding, and long-term complication prevention.

Chronic Kidney Disease

Disease label: CKD.

Potential capacity failures:

- clearance
- fluid balance
- potassium regulation
- acid-base balance
- blood pressure regulation
- anemia and energy
- bone-mineral balance
- medicine safety
- cardiovascular reserve

Repair may mean slowing decline, preventing AKI, avoiding hyperkalemia, adjusting medicines, protecting volume status, and planning future care.

Delirium

Disease label: delirium.

Potential capacity failures:

- cognition
- regulation
- mobility
- safety
- agency
- dignity
- nutrition and hydration
- sleep

Repair is not sedation. Repair is clearer attention, safer behavior, trigger treatment, sleep-wake rhythm restoration, family recognition of baseline, and reduced falls risk.

Frailty

Disease label: frailty.

Potential capacity failures:

- reserve across many systems
- mobility
- cognition
- nutrition
- strength
- balance
- medication tolerance
- recovery after stress
- discharge safety
- participation

Repair may mean returning toward baseline, simplifying treatment, improving support, preventing falls, restoring mobility, and aligning care with goals.

6. Capacity Failure and Severity

Capacity failure helps distinguish severity.

A diagnosis becomes more serious when more capacities are failing.

For example:

A patient with COPD exacerbation may have mild wheeze but preserved oxygenation, normal mental state, and stable function.

Another patient with COPD exacerbation may have hypoxia, hypercapnia, confusion, exhaustion, inability to speak, and rising oxygen requirement.

Both have COPD exacerbation.

But the second patient has severe oxygenation, ventilation, regulation, and energy failure.

Capacity failure therefore helps the clinician ask:

- How sick is the patient?
- What must be supported now?
- What requires monitoring?
- What needs escalation?
- What recovery markers matter?
- Is discharge safe?

Severity is not only the name of the disease. It is the degree to which life-capacity is threatened.

7. Capacity Failure and Treatment

Treatment should be linked to the capacity being restored.

If the capacity failure is oxygenation, treatment may include oxygen support, bronchodilation, antibiotics, diuresis, anticoagulation, ventilation support, or drainage depending on the cause.

If the capacity failure is circulation, treatment may include fluids, blood, vasopressor support, rhythm control, treatment of infection, treatment of bleeding, or management of myocardial ischemia depending on the pattern.

If the capacity failure is clearance, treatment may include volume correction, relief of obstruction, medication review, electrolyte management, renal support, or avoidance of nephrotoxins.

If the capacity failure is cognition, treatment may include oxygen, glucose correction, infection treatment, medicine review, pain control, hydration, sleep restoration, sensory aids, and family involvement.

If the capacity failure is comfort, treatment may include analgesia, breathlessness management, nausea control, positioning, explanation, reassurance, and palliative care.

The clinician should ask:

What capacity am I trying to restore with this intervention?

This question prevents unfocused treatment.

8. Capacity Failure and Investigation

Investigations should also be linked to capacity.

Ask:

What capacity am I testing, and how will the result change care?

Examples:

In dyspnea, oxygen saturation and respiratory rate assess oxygenation; chest imaging may assess lung pathology; ECG may assess circulation; hemoglobin may assess oxygen delivery; renal function may affect treatment safety.

In AKI, creatinine, potassium, bicarbonate, urine output, fluid status, medication list, and obstruction assessment clarify clearance failure and danger.

In confusion, glucose, oxygenation, infection screen, renal/liver function, medication review, and collateral history assess regulation and cognition.

In edema, renal function, urine protein, liver tests, albumin, cardiac assessment, and medication review may clarify circulation, clearance, and oncotic balance.

Testing is not data accumulation. It is capacity clarification.

9. Capacity Failure and Discharge

Discharge should never be based only on disease improvement.

Ask:

Which capacities remain fragile, and can the next setting hold that risk?

Examples:

A patient recovering from pneumonia may no longer need oxygen, but if delirium and weakness persist, discharge may be unsafe.

A patient after AKI may have improving creatinine, but if medicines are unclear and potassium follow-up is not arranged, discharge may be unsafe.

A patient after heart failure treatment may feel better, but if they cannot understand diuretic adjustment, monitor symptoms, obtain medicines, or attend follow-up, discharge may be unsafe.

Safe discharge requires attention to:

- medical stability
- medicine safety
- function
- cognition
- home support
- caregiver readiness
- pending results
- follow-up
- safety-netting
- patient understanding

Discharge is safe only when remaining capacity failure is supported, monitored, or resolved enough for the next setting.

10. Capacity Failure and Patient Communication

Patients often understand their illness better when it is explained in capacity language.

Instead of saying only:

“You have heart failure.”

The clinician might say:

“Your heart is not moving fluid forward as well as it should, so fluid has built up in your lungs and legs. That is why you feel breathless and cannot walk as far. Our treatment is trying to remove the extra fluid while keeping your kidneys and blood salts safe.”

Instead of saying only:

“You have delirium.”

The clinician might say to family:

“Your mother’s brain is not processing normally today. This often happens in older patients when infection, dehydration, pain, medicines, or poor sleep overwhelm the brain. We are looking for the triggers and trying to help her return toward her usual self.”

Instead of saying only:

“Your kidneys are worse.”

The clinician might say:

“Your kidneys are not clearing waste and potassium as safely as usual. Potassium can affect the heart rhythm, so we need to monitor and treat it carefully.”

Capacity language makes illness concrete.

It helps patients and families understand what is failing, why treatment matters, and what repair should look like.

11. Worked Case 1: Pneumonia

A 79-year-old man is admitted with fever, cough, hypoxia, confusion, and poor oral intake.

Disease Label

Pneumonia.

Capacity Failure

Oxygenation is failing because he is hypoxic.

Defense and tolerance are stressed because infection has triggered systemic illness.

Cognition and regulation are failing because he is confused.

Energy and nutrition are failing because he is not eating.

Clearance may become threatened if dehydration or sepsis causes AKI.

Mobility is threatened because weakness and confusion increase falls risk.

Coupling Conditions

Age, frailty, baseline cognition, medicines, hydration, family support, aspiration risk, mobility, and home situation.

Wise Perturbation

Treat infection according to local guidance, support oxygenation, assess hydration, monitor renal function, prevent delirium harm, mobilize safely, involve family.

Repair Trajectory

Fever settles, oxygen requirement falls, confusion clears, oral intake improves, walking returns, renal function remains safe, family understands plan.

12. Worked Case 2: Diabetes With Hypoglycemia

A 72-year-old woman with type 2 diabetes is found confused and sweating. Her glucose is low. She has not been eating well but continued her usual insulin.

Disease Label

Diabetes mellitus.

Capacity Failure

Energy regulation is acutely failing because glucose is too low for safe brain function.

Cognition is impaired.

Mobility and safety are threatened because hypoglycemia can cause falls, seizures, or coma.

Agency is threatened if the medicine plan is too complex or not adjusted to eating.

Coupling Conditions

Insulin, poor oral intake, renal function, illness, frailty, health literacy, food access, caregiver support, fear of hyperglycemia.

Wise Perturbation

Treat hypoglycemia immediately according to local protocol. Review insulin plan, meals, kidney function, monitoring ability, and education. Prevent recurrence.

Repair Trajectory

Glucose stabilizes, alertness returns, eating plan clarified, insulin adjusted safely, patient and caregiver understand prevention.

13. Worked Case 3: Heart Failure With CKD

A 76-year-old woman with CKD presents with dyspnea, edema, orthopnea, and rising creatinine.

Disease Labels

Heart failure and chronic kidney disease.

Capacity Failure

Circulation is failing because congestion is present.

Oxygenation is threatened by pulmonary congestion.

Clearance is fragile because kidney function is impaired.

Energy and mobility are reduced because breathlessness limits activity.

Medicine safety is threatened because renal function affects drug handling.

Coupling Conditions

CKD, diuretics, ACE inhibitor or ARB, NSAIDs if present, salt intake, fluid intake, adherence, blood pressure, frailty, home support.

Wise Perturbation

Assess volume carefully. Treat congestion proportionately. Monitor renal function, potassium, urine output, blood pressure, and symptoms. Review medicines. Escalate if oxygenation, potassium, renal function, or blood pressure is unsafe.

Repair Trajectory

Less breathlessness, reduced edema, stable blood pressure, safer potassium, renal function stabilizes, walking improves, medicine plan clear.

14. Worked Case 4: Depression and Chronic Pain

A 55-year-old woman with chronic back pain reports fatigue, poor sleep, low mood, and loss of interest. She has stopped attending church and no longer visits friends.

Disease Labels

Chronic pain and depression may both be relevant.

Capacity Failure

Comfort is failing due to pain.

Sleep is disrupted.

Energy is reduced.

Agency is narrowed by hopelessness.

Participation is reduced because relationships, worship, and social life have declined.

Dignity may be threatened if the patient feels dismissed or stigmatized.

Coupling Conditions

Pain cycle, sleep, mood, medicines, work stress, family support, finances, previous trauma, physical deconditioning, fear of movement, access to therapy.

Wise Perturbation

Assess danger, including suicidal thoughts. Explore pain, mood, function, sleep, medicines, and goals. Avoid reducing the patient to “psychological” or “drug-seeking.” Build a multimodal plan focused on function, comfort, agency, and support.

Repair Trajectory

Pain becomes more manageable, sleep improves, activity increases, mood lifts, patient reconnects with meaningful roles, safety plan is clear if needed.

15. Common Student Pitfalls

Pitfall 1: Thinking the Diagnosis Is the End

Diagnosis is a beginning. It tells the clinician what may be wrong. Capacity mapping asks what the illness is doing.

Pitfall 2: Ignoring Function

Walking, eating, drinking, toileting, sleeping, thinking, and understanding are clinical outcomes.

Pitfall 3: Treating One Organ While Harming Another

Heart failure treatment may affect kidneys. Diabetes treatment may cause hypoglycemia. Sedation may worsen delirium. Anticoagulation may increase bleeding risk.

Capacity mapping helps integrate trade-offs.

Pitfall 4: Calling a Patient Better Because One Marker Improved

A fever may settle while delirium worsens.

Creatinine may improve while the patient remains weak and unsupported.

Glucose may improve while hypoglycemia fear increases.

Repair must be broader than one number.

Pitfall 5: Forgetting Agency and Dignity

Patients are not passive bodies. They need understanding, choice, respect, and participation.

Agency and dignity are not optional extras. They are part of care.

16. Clinical Practice Box

For every diagnosis, complete these lines:

Disease label: _____

Main capacity threatened: _____

Other capacities affected: _____

Evidence of capacity failure: _____

What could worsen it: _____

What treatment aims to restore: _____

How harm will be monitored: _____

What repair would look like: _____

This turns a diagnosis into patient-centered clinical reasoning.

17. Mini-Case for Practice

A 68-year-old man with COPD presents with worsening breathlessness, wheeze, productive cough, and drowsiness. His oxygen saturation is low, and his respiratory rate is high.

Apply capacity failure mapping.

Disease Label

Possible COPD exacerbation, with possible infection or respiratory failure.

Capacity Failure

Oxygenation is failing.

Ventilation may be failing if carbon dioxide is rising.

Defense may be active if infection triggered the exacerbation.

Energy is threatened because work of breathing is high.

Cognition and regulation are threatened because drowsiness may reflect hypoxia, hypercapnia, infection, or exhaustion.

Comfort is affected by breathlessness and fear.

Coupling Conditions

Smoking history, baseline lung function, inhaler use, infection exposure, medicines, frailty, home oxygen if present, previous admissions, ability to use inhalers, support at home.

Wise Perturbation

Assess severity urgently, including vital signs, oxygenation, mental state, chest findings, and need for local COPD/respiratory pathway. Use oxygen carefully according to local guidance, bronchodilator treatment, infection assessment, and escalation if drowsy, exhausted, or worsening.

Repair Trajectory

Breathlessness improves, respiratory rate falls, oxygenation safer, mental state clears, wheeze reduces, patient can speak and move more comfortably, inhaler plan understood, follow-up and safety-net arranged.

18. Student Takeaway

Disease labels are essential, but they are incomplete.

The life-coherent clinician asks:

What can this patient no longer sustain?

Capacity failure mapping helps the student see:

- why the disease matters
- how severe the illness is
- what treatment is trying to restore
- what harm must be monitored
- whether the patient is truly improving
- whether discharge is safe
- whether dignity, agency, comfort, and participation are protected

Internal Medicine becomes more humane and more precise when diagnosis is joined to life-capacity.

Chapter 6. Structural Coupling: Why Illness Persists

Some illnesses improve quickly once the correct treatment is started.

A patient with hypoglycemia may wake after glucose. A patient with dehydration may improve after fluids. A patient with bacterial pneumonia may begin to recover after appropriate antibiotics and supportive care. A patient with acute urinary retention may feel immediate relief after drainage.

But many illnesses do not resolve simply because a diagnosis is named or a treatment is prescribed.

The patient remains breathless despite medicines.
The glucose remains uncontrolled despite insulin.
The blood pressure remains high despite tablets.
The delirium persists after antibiotics.
The pain continues despite analgesia.
The patient is readmitted soon after discharge.
The fatigue remains disabling despite normal basic tests.
The wound does not heal despite dressings.

When illness persists, the clinician must ask:

What is keeping this problem going?

This is the clinical meaning of **structural coupling**.

In this book, structural coupling means that the patient's illness is shaped by ongoing interactions between the body, medicines, habits, relationships, home, work, culture, resources, healthcare systems, and the wider environment.

A patient is never an isolated disease process. A patient is a living person coupled to conditions that may either worsen disease or support repair.

1. What Structural Coupling Means Clinically

In biology, living systems survive through continuous interaction with their surroundings. They take in air, water, food, signals, relationships, threats, and support. They respond, adapt, resist, reorganize, or deteriorate.

In clinical medicine, this means that illness is not located only inside the body.

Illness is shaped by:

- physiology
- comorbidities
- medicines
- nutrition
- hydration

- sleep
- pain
- mood
- cognition
- mobility
- family support
- caregiving
- finances
- housing
- transport
- work demands
- culture
- health literacy
- healthcare access
- local protocols
- system delays
- previous experiences of care

These conditions do not merely surround illness. They interact with illness.

They may trigger disease, worsen disease, block recovery, complicate treatment, or support repair.

The life-coherent question is:

What is this patient coupled to that is sustaining illness or enabling healing?

2. Coupling Conditions Are Not “Extras”

Students sometimes divide clinical information into two categories:

Medical information and **social information**.

This division is often misleading.

For example:

A patient’s inability to afford insulin is not merely social. It directly affects glucose regulation, energy, infection risk, vascular injury, kidney disease, and hospital admission.

A patient’s poor housing is not merely social. It may worsen asthma, infection exposure, sleep, mental health, mobility, and falls risk.

A patient’s lack of transport is not merely social. It may prevent dialysis, wound care, chemotherapy, physiotherapy, antenatal care, follow-up, or urgent review.

A caregiver’s exhaustion is not merely social. It may determine whether a frail patient can eat, take medicines, avoid falls, attend appointments, and remain at home.

A patient's health literacy is not merely social. It determines whether the treatment plan can actually be understood and followed.

Coupling conditions are clinical because they determine whether care can work.

3. Why Illness Persists

Illness may persist for many reasons.

The diagnosis may be wrong.

The diagnosis may be incomplete.

The treatment may be insufficient.

The treatment may be harmful.

The patient may not be able to follow the plan.

The body may lack reserve.

The environment may keep triggering the problem.

The healthcare system may delay needed care.

The patient may be overwhelmed by treatment burden.

A disease may be irreversible, progressive, or terminal.

Structural coupling helps the clinician look beyond the simple question:

"What disease is this?"

It asks:

"What interactions are keeping this patient from repair?"

4. Common Coupling Conditions

Medicines

Medicines may help, harm, interact, confuse, accumulate, or become impossible to manage.

Examples:

- sedatives worsening falls or delirium
- NSAIDs worsening kidney function or bleeding risk
- diuretics worsening dehydration or electrolyte imbalance
- insulin causing hypoglycemia when meals are missed
- opioids causing constipation, sedation, or falls
- steroids worsening glucose, infection risk, bone health, or mood
- anticoagulants increasing bleeding risk
- anticholinergics worsening urinary retention or confusion

Medicine review is coupling review.

Always ask:

- What is each medicine for?
- Is it still needed?
- Is it helping?
- Could it be harming?
- Is the dose safe for age, renal function, liver function, weight, and frailty?
- Can the patient manage it?
- Should it start, stop, hold, restart, reduce, taper, or monitor?

Comorbidities

Diseases interact.

Heart failure changes kidney treatment.
Kidney disease changes diabetes treatment.
COPD changes breathlessness assessment.
Dementia changes discharge safety.
Frailty changes treatment tolerance.
Depression changes participation and adherence.
Pain changes sleep, movement, mood, and blood pressure.

A single-disease plan may become unsafe in multimorbidity.

Frailty and Reserve

Frailty means reduced physiological reserve.

A small infection can cause delirium.
A short admission can cause deconditioning.
A new medicine can cause falls.
A missed meal can cause hypoglycemia.
A mild dehydration can cause AKI.

In frailty, the stressor may look small, but the response may be large.

Ask:

- What was baseline?
- What stressor overwhelmed reserve?
- Which capacities declined?
- What support is needed for recovery?
- Is full recovery realistic?

Nutrition and Hydration

Repair requires substrate.

Poor intake may worsen:

- AKI
- delirium
- falls
- wound healing
- infection recovery
- frailty
- hypoglycemia
- pressure injury
- medication tolerance

Ask:

- Is the patient eating?
- Is the patient drinking?
- Can the patient swallow?
- Is nausea, pain, depression, poverty, or poor dentition limiting intake?
- Is there weight loss?
- Is there food insecurity?
- Does the treatment plan match meal patterns?

Sleep

Sleep is not optional recovery time. It is part of regulation and repair.

Poor sleep worsens:

- delirium
- pain
- blood pressure
- glucose regulation
- mood
- immune function
- fatigue
- attention
- falls risk

Hospital environments often disrupt sleep through noise, light, observations, pain, anxiety, and unfamiliar surroundings.

Ask:

- Is the patient sleeping?
- What wakes them?
- Is pain controlled?
- Are unnecessary overnight disruptions occurring?
- Is sleep medication helping or harming?

Pain

Pain couples to illness through stress, immobility, poor sleep, fear, delirium, hypertension, tachycardia, and reduced participation.

Uncontrolled pain can prevent breathing deeply after pneumonia, walking after illness, eating, sleeping, or engaging with care.

But pain treatment can also harm.

Opioids may cause sedation, constipation, nausea, respiratory depression, delirium, and dependence.

Wise pain care asks:

- What is causing pain?
- Is there dangerous pain?
- What function is pain preventing?
- What treatment helps with least harm?
- What side effects must be prevented?
- What would improved comfort and function look like?

Mood and Meaning

Depression, anxiety, demoralization, grief, trauma, loneliness, and hopelessness can sustain illness.

They may affect:

- appetite
- sleep
- adherence
- activity
- pain
- substance use
- self-care
- attendance
- recovery motivation
- suicidal risk

This does not mean illness is “all psychological.” It means mood and meaning are coupled to physiology, behavior, and recovery.

Ask:

- What has this illness taken from the patient?
- What does the patient fear?
- What matters most now?
- Is there suicidal thinking?
- What support restores agency?

Cognition and Health Literacy

A plan that the patient cannot understand is not a safe plan.

Cognitive impairment, delirium, low literacy, language barriers, sensory impairment, and complex instructions can make treatment impossible.

Ask:

- Can the patient explain the diagnosis?
- Can they describe the medicine changes?
- Can they identify warning signs?
- Can they use inhalers, insulin, oxygen, or monitoring devices?
- Is a caregiver needed?
- Was teach-back used?

Family and Caregiver Support

Families often hold the repair trajectory.

They may provide food, medicines, transport, wound care, observation, emotional support, mobility assistance, and safety monitoring.

But caregivers can also be overwhelmed, absent, ill, fearful, or unsupported.

Ask:

- Who helps the patient?
- What exactly do they do?
- Are they able and willing?
- Do they understand the plan?
- Are they exhausted?
- Is more support needed?

Home and Physical Environment

The home can support or threaten recovery.

Important questions include:

- Are there stairs?
- Is there running water?
- Is food available?
- Is there electricity for equipment?
- Is the bathroom accessible?
- Is the floor safe?
- Is there mold, smoke, overcrowding, or heat exposure?
- Is the patient isolated?
- Can emergency help be reached?

Home safety is clinical data.

Finances, Transport, and Access

A plan may fail because the patient cannot pay for medicines, reach appointments, access testing, or communicate with the care team.

Ask:

- Can the patient obtain medicines?
- Can they afford monitoring?
- Can they attend follow-up?
- Is transport reliable?
- Is there a phone?
- Are there system delays?
- Is a simpler plan needed?

Healthcare System Conditions

Illness may persist because of system factors:

- delayed appointments
- unavailable medicines
- fragmented records
- poor handover
- missed results
- unclear responsibility
- short consultations
- overcrowding
- lack of rehabilitation
- limited community support
- communication barriers between services

The clinician may not be able to fix the whole system, but must recognize when system conditions are shaping risk.

5. Structural Coupling in Common Conditions

Diabetes

Uncontrolled diabetes may persist because of:

- food insecurity
- irregular meals
- fear of hypoglycemia
- insulin cost
- poor injection technique
- lack of monitoring
- shift work
- renal impairment
- steroid use
- depression
- low health literacy
- infection
- treatment complexity

The question is not simply:

“Why is the patient non-compliant?”

The better question is:

“What is the patient’s glucose regulation coupled to?”

Hypertension

Poor blood pressure control may persist because of:

- salt intake
- obesity
- stress
- sleep apnea
- kidney disease
- alcohol
- NSAIDs
- steroids
- pain
- missed medicines
- cost
- side effects
- poor understanding
- white-coat effect

- undertreatment
- resistant hypertension

The question is:

“What is sustaining pressure overload?”

Heart Failure

Recurrent heart failure may persist because of:

- kidney disease
- arrhythmia
- ischemia
- uncontrolled hypertension
- salt intake
- NSAIDs
- missed diuretics
- poor medicine access
- inability to monitor weight
- frailty
- infection
- anemia
- poor follow-up

The question is:

“What keeps circulation and clearance failing?”

Delirium

Delirium persists when triggers are missed:

- infection
- hypoxia
- hypoglycemia
- pain
- urinary retention
- constipation
- dehydration
- sedatives
- anticholinergics
- withdrawal
- sleep disruption
- sensory deprivation
- unfamiliar environment
- immobility

The question is:

“What keeps brain regulation unstable?”

Chronic Pain

Chronic pain persists through interaction of:

- tissue injury
- nerve sensitization
- fear of movement
- poor sleep
- depression
- stress
- trauma
- unemployment
- social isolation
- opioid tolerance
- physical deconditioning
- unresolved diagnosis
- stigma

The question is:

“What keeps the pain system amplified and life narrowed?”

Recurrent Admissions

Recurrent admissions may reflect:

- disease severity
- poor follow-up
- medication confusion
- frailty
- unsafe home environment
- caregiver strain
- social isolation
- poor transport
- missed warning signs
- unresolved diagnosis
- premature discharge
- system fragmentation

The question is:

“What risk is repeatedly escaping the care plan?”

6. Structural Coupling and Wise Treatment

A treatment plan must fit the coupling conditions.

For example:

A complex insulin plan may be physiologically correct but unsafe for a patient with poor vision, irregular meals, and no glucose monitor.

A diuretic plan may be correct but fail if the patient cannot access follow-up blood tests.

A low-salt diet may be unrealistic if the patient relies on low-cost processed food.

A discharge plan may fail if the patient cannot climb stairs.

A palliative plan may fail if the family does not understand that the goal has shifted from cure to comfort.

A rehabilitation plan may fail if transport is unavailable.

A medicine plan may fail if tablets are unaffordable or instructions are unclear.

Wise perturbation requires coupling awareness.

The clinician should ask:

Can this patient actually live this plan?

7. Structural Coupling and Blame

When illness persists, clinicians may become frustrated.

They may say:

- “The patient is non-compliant.”
- “They keep coming back.”
- “They do not listen.”
- “They refuse to help themselves.”
- “The family is difficult.”
- “Nothing works.”

Sometimes patients do make choices that worsen illness. But blame usually stops inquiry too early.

A life-coherent clinician asks a better question:

What is making the healthy action difficult, unsafe, unaffordable, confusing, frightening, or impossible?

This does not remove responsibility from the patient. It makes responsibility realistic.

Patients can participate more fully when barriers are understood and reduced.

8. Structural Coupling and Clinical Humility

Structural coupling teaches humility.

The clinician may prescribe, but the patient must live the plan.

The clinician may explain, but the patient must understand.

The clinician may discharge, but the home must hold the risk.

The clinician may refer, but the system must complete the loop.

The clinician may treat the disease, but the person must recover within a real life.

Humility does not mean helplessness.

It means recognizing that good care requires attention to conditions of repair, not only mechanisms of disease.

9. Bedside Coupling Assessment

When illness persists, ask:

Disease and Physiology

- Is the diagnosis correct?
- Is there more than one diagnosis?
- Has the severity changed?
- Is a complication developing?
- Is treatment reaching the target?

Medicines

- What medicines help?
- What medicines harm?
- What medicines interact?

- What medicines are unaffordable?
- What medicines are confusing?
- What medicines need monitoring?

Patient Capacity

- Can the patient walk?
- Can the patient eat and drink?
- Can the patient sleep?
- Can the patient think clearly?
- Can the patient understand the plan?
- Can the patient manage medicines?
- Can the patient recognize warning signs?

Support

- Who helps?
- Is the caregiver ready?
- Is home safe?
- Is transport available?
- Is follow-up realistic?
- Are pending results owned?

Meaning and Values

- What matters most to the patient?
- What does the patient fear?
- What burden is acceptable?
- What outcome would feel like repair?

10. Worked Case 1: “Uncontrolled Diabetes”

A 59-year-old man has persistently high glucose despite being prescribed insulin.

A narrow approach says:

“Increase insulin.”

A coupling approach asks:

- Can he afford insulin?
- Does he have a fridge?
- Does he understand dosing?
- Can he see the syringe or pen markings?
- Does he eat regular meals?

- Does he fear hypoglycemia?
- Does he have kidney disease?
- Is he taking steroids?
- Is there infection?
- Is he depressed?
- Does his work schedule prevent regular injections?
- Can he monitor glucose?

The issue may not be insulin deficiency alone. It may be treatment-life mismatch.

Repair may include safer glucose, fewer hypoglycemic episodes, a simpler regimen, meal alignment, education, monitoring access, and restored agency.

11. Worked Case 2: "Persistent Delirium"

An older patient was admitted with pneumonia. Antibiotics were started, and fever has settled. But the patient remains confused and agitated at night.

A narrow approach says:

"The infection is treated; give sedation."

A coupling approach asks:

- Is oxygenation normal?
- Is glucose stable?
- Is pain controlled?
- Is there urinary retention?
- Is there constipation?
- Is the patient dehydrated?
- Are sedatives or anticholinergics being given?
- Is sleep disrupted?
- Are glasses or hearing aids missing?
- Is the room unfamiliar and frightening?
- Has family helped establish baseline?
- Is mobility being supported?

The infection may have triggered delirium, but multiple coupling conditions may be sustaining it.

Repair means attention improves, sleep normalizes, triggers are removed, mobility becomes safer, and the patient returns toward baseline without unnecessary sedation.

12. Worked Case 3: "Recurrent Heart Failure Admission"

A patient is admitted for the third time in six months with fluid overload.

A narrow approach says:

“Give diuretics again.”

A coupling approach asks:

- Why does congestion recur?
- Is the diagnosis correct?
- Is there ischemia or arrhythmia?
- Is kidney function limiting treatment?
- Is blood pressure controlled?
- Is the patient taking medicines?
- Can the patient afford medicines?
- Does the patient understand fluid and salt advice?
- Are NSAIDs being used?
- Is follow-up too delayed?
- Can the patient monitor weight?
- Is there depression or cognitive impairment?
- Is the home situation stable?

Repair means not only fluid removal, but a clearer plan that reduces recurrence risk.

13. Worked Case 4: “Unsafe Discharge”

A frail patient recovering from infection is medically improving but cannot walk safely and lives alone.

A narrow approach says:

“The infection is better, discharge.”

A coupling approach asks:

- Can the patient transfer?
- Can the patient toilet?
- Can the patient obtain food?
- Can the patient take medicines correctly?
- Is cognition back to baseline?
- Is there a caregiver?
- Are there stairs?
- Is follow-up arranged?
- Are pending results owned?
- Does the patient know warning signs?
- What happens if the patient falls tonight?

Repair means the patient can live the plan outside hospital, or enough support is arranged to hold the remaining risk.

14. Coupling Conditions and Repair Trajectory

Repair requires changing the conditions that sustain illness.

Examples:

- Treat infection and restore hydration.
- Stop a harmful medicine.
- Simplify a regimen.
- Arrange transport.
- Involve family.
- Provide a written plan.
- Use teach-back.
- Improve pain control without oversedation.
- Arrange physiotherapy.
- Ensure follow-up blood tests.
- Clarify pending result ownership.
- Provide palliative support.
- Address food insecurity where possible.
- Escalate system barriers.

The repair question becomes:

What coupling condition must change for this patient to recover?

15. Common Student Pitfalls

Pitfall 1: Calling Context “Non-Medical”

Context shapes physiology, risk, and recovery. It is medical.

Pitfall 2: Blaming the Patient Too Early

Non-adherence often has reasons. Explore before judging.

Pitfall 3: Adding Treatment Without Understanding Persistence

If the problem persists, ask why before simply intensifying treatment.

Pitfall 4: Ignoring Medicines

Medicine harm is one of the most common coupling conditions.

Pitfall 5: Forgetting the Home

A patient may improve in hospital but fail at home if the plan does not fit the environment.

Pitfall 6: Missing Caregiver Strain

A care plan may depend on a caregiver who is already overwhelmed.

Pitfall 7: Treating a Recurrent Admission as a New Isolated Event

Recurrent admissions are signals. Ask what risk keeps recurring.

16. Clinical Practice Box

When illness persists, complete this coupling map:

What is the diagnosis or syndrome?

What capacity is failing?

What treatment has been tried?

What response occurred?

What medicines may be helping or harming?

What comorbidities shape recovery?

What functional limits are present?

What cognitive or emotional factors matter?

What family or caregiver factors matter?

What financial, transport, home, or access barriers matter?

What system delays or handover gaps matter?

What coupling condition must change for repair to occur?

17. Mini-Case for Practice

A 64-year-old woman has uncontrolled hypertension despite three medicines. She also has chronic knee pain, poor sleep, obesity, and occasional dizziness. She takes ibuprofen most days. She says she sometimes skips tablets because they make her feel weak, and she cannot always attend clinic because transport is unreliable.

Apply structural coupling.

Syndrome

Persistent hypertension with symptoms, medicine difficulty, chronic pain, NSAID use, poor sleep, and access barriers.

Capacity Failure

Circulation regulation is under strain. Mobility and comfort are affected by knee pain. Agency is affected because the plan is difficult to sustain. Sleep and energy may also be impaired.

Coupling Conditions

NSAID use, pain, obesity, sleep disruption, side effects, possible orthostatic symptoms, transport difficulty, adherence difficulty, health literacy, cost/access, possible kidney disease, dietary salt, stress.

Wise Perturbation

Do not simply add a fourth medicine without reviewing the coupling conditions. Assess blood pressure technique, home readings if available, kidney function, medication side effects, orthostatic symptoms, NSAID harm, pain management alternatives, sleep, diet, and feasibility. Simplify treatment if possible and arrange realistic follow-up.

Repair Trajectory

Blood pressure improves safely, dizziness reduces, pain plan becomes safer, NSAID use decreases if possible, patient understands medicines, follow-up becomes feasible, and circulation risk is reduced without increasing harm.

18. Student Takeaway

Illness persists when the conditions that sustain it remain unchanged.

Structural coupling helps the clinician ask:

What is this patient connected to that is worsening disease, blocking treatment, increasing harm, or preventing repair?

These conditions may include medicines, comorbidities, frailty, nutrition, sleep, pain, mood, cognition, family support, finances, transport, housing, work, and healthcare system delays.

The life-coherent clinician does not stop at diagnosis.

They ask:

What keeps the problem going, and what conditions must change for healing to become possible?

Chapter 7. Wise Perturbation: Treatment Without Harm

Treatment is one of the great responsibilities of medicine.

Patients come to clinicians because something is wrong and help is needed. The clinician must decide whether to give oxygen, fluids, antibiotics, insulin, diuretics, anticoagulation, analgesia, steroids, sedatives, procedures, referral, admission, discharge, reassurance, palliative support, or no immediate intervention.

Students often ask:

"What treatment should I give?"

That is an important question.

But a safer question comes first:

"What action will restore capacity with the least harm?"

In life-coherent Internal Medicine, every treatment is understood as a **perturbation**.

A perturbation is an action introduced into a living system. It changes physiology, risk, comfort, function, relationships, decisions, and future possibilities.

A treatment is not wise simply because it is active.
A treatment is wise when it fits the patient, the danger, the syndrome, the capacity failure, the coupling conditions, and the repair trajectory.

This chapter teaches the clinical habit of wise perturbation.

1. Treatment Is Not Merely "Doing Something"

In clinical practice, doing something can help.

But doing something can also harm.

Fluids can restore circulation in dehydration, but worsen pulmonary edema in heart failure.

Diuretics can relieve congestion, but worsen kidney function, potassium, blood pressure, or dizziness.

Insulin can correct hyperglycemia, but cause hypoglycemia.

Anticoagulation can prevent stroke or treat thrombosis, but cause bleeding.

Antibiotics can treat infection, but cause allergy, diarrhea, drug interactions, or resistance.

Sedatives can reduce immediate agitation, but worsen delirium, falls, aspiration, and respiratory depression.

Opioids can relieve pain, but cause sedation, constipation, nausea, dependence, and respiratory suppression.

Steroids can reduce inflammation, but worsen glucose, infection risk, mood, blood pressure, bone loss, and muscle weakness.

Admission can protect a patient, but also expose them to delirium, deconditioning, sleep disruption, infection, and loss of independence.

Discharge can restore home life, but can also transfer risk too early.

Therefore, the clinician must learn to ask not only:

“What can I do?”

but:

“What should I do, for this patient, at this time, with this risk, and how will I know whether it helped or harmed?”

2. What Makes a Perturbation Wise?

A wise perturbation has several qualities.

It is indicated

There is a clear reason for doing it.

The clinician can say:

“I am doing this because…”

It has a target capacity

The treatment aims to restore or protect a specific capacity.

For example:

- oxygenation
- circulation
- clearance
- glucose regulation
- defense against infection

- cognition
- mobility
- comfort
- dignity

It is proportionate

The intensity and burden of treatment fit the seriousness of the problem and the likelihood of benefit.

A dangerous, reversible condition may require strong urgent action.

A mild, self-limited condition may require explanation, observation, and safety-netting.

A terminal condition may require comfort-focused care rather than burdensome escalation.

It is feasible

The patient can live the plan.

A plan that requires medicines the patient cannot obtain, monitoring they cannot access, instructions they cannot understand, or follow-up they cannot attend is not truly safe.

It is monitorable

The clinician knows how response and harm will be checked.

Treatment without monitoring is unfinished care.

It is adjustable

The plan can change if the patient changes.

A wise plan includes reassessment.

It is context-aware

The plan fits the patient's comorbidities, frailty, values, family support, finances, home setting, and health system realities.

It protects dignity

The treatment respects the patient as a person, not simply as a disease process.

3. The Wise Perturbation Questions

Before recommending treatment, ask:

1. **What is the danger?**
2. **What syndrome is present?**
3. **What capacity am I trying to restore?**
4. **What intervention is most likely to help?**
5. **What harm could this intervention cause?**
6. **Is the intervention proportionate?**
7. **Can the patient live the plan?**
8. **How will I monitor response?**
9. **How will I monitor harm?**
10. **When should I reassess?**
11. **Who owns follow-up?**
12. **What would repair look like?**

These questions convert treatment from reflex action into clinical judgment.

4. Treatment Must Match Capacity Failure

Treatment becomes clearer when linked to the capacity being restored.

Oxygenation Failure

Possible perturbations may include:

- oxygen support
- bronchodilators
- antibiotics
- diuretics
- anticoagulation
- drainage of pneumothorax or effusion
- ventilatory support
- positioning
- treatment of anemia or acidosis depending on cause

Wise care asks:

Why is oxygenation failing, and what intervention best restores it without causing additional harm?

Circulation Failure

Possible perturbations may include:

- fluids
- blood products

- vasopressor support in appropriate settings
- treatment of infection
- control of bleeding
- rhythm management
- treatment of myocardial ischemia
- relief of obstruction
- careful diuresis if congestion is the issue

Wise care asks:

Is circulation failing because of volume loss, pump failure, obstruction, vasodilation, rhythm, or bleeding?

The same fluid bolus that helps one patient may harm another.

Clearance Failure

Possible perturbations may include:

- stopping nephrotoxic medicines
- treating dehydration
- relieving obstruction
- managing fluid overload
- treating hyperkalemia
- adjusting drug doses
- renal referral
- renal replacement therapy in selected cases

Wise care asks:

What is the kidney unable to clear, what danger follows, and what must be monitored?

Defense and Tolerance Failure

Possible perturbations may include:

- antimicrobials
- source control
- fluids if septic and hypoperfused
- oxygen support
- immunosuppression adjustment
- anti-inflammatory treatment
- isolation or infection control
- vaccination or prevention planning

Wise care asks:

Is the body underreacting, overreacting, or both?

Regulation and Cognition Failure

Possible perturbations may include:

- oxygen correction
- glucose correction
- infection treatment
- medication review
- pain control
- hydration
- treatment of retention or constipation
- sleep restoration
- sensory aids
- family presence
- avoidance of unnecessary sedatives

Wise care asks:

What is destabilizing brain-body regulation, and what can be reversed?

Comfort Failure

Possible perturbations may include:

- analgesia
- antiemetics
- breathlessness relief
- positioning
- bowel care
- wound care
- explanation
- emotional support
- palliative care

Wise care asks:

What suffering can be relieved without creating disproportionate burden or harm?

5. Proportionality

Proportionality means that the burden of treatment should fit the likely benefit.

A treatment may be technically possible but not proportionate.

Examples:

An invasive procedure may be reasonable for a previously independent patient with a reversible condition, but burdensome and non-beneficial for a dying patient whose main need is comfort.

A strong antibiotic may be needed for sepsis, but unnecessary for a viral illness.

Strict glucose control may be appropriate in some settings, but harmful in a frail patient with recurrent hypoglycemia.

Aggressive blood pressure lowering may be appropriate in some emergencies, but harmful if it causes falls, syncope, kidney injury, or cerebral hypoperfusion.

Daily blood tests may be necessary in unstable AKI, but burdensome and unnecessary when no result would change management.

Proportionality asks:

Does the burden of this intervention fit the likely benefit for this patient now?

6. Feasibility

A treatment plan must be livable.

Students may create beautiful plans that collapse outside the hospital.

Examples:

A patient is prescribed insulin but has irregular meals, poor vision, no glucose monitor, and no caregiver support.

A patient is discharged on five new medicines but cannot read the labels.

A patient is told to attend follow-up but has no transport.

A patient is told to restrict salt but depends on low-cost processed food.

A patient is told to weigh daily but has no scale.

A patient is told to return if worse but does not understand what “worse” means.

Feasibility asks:

Can this patient actually do this?

If not, the plan must be simplified, supported, explained differently, or changed.

7. Monitoring

Every significant perturbation needs a monitoring plan.

Monitoring asks:

How will we know if the treatment helped?
How will we know if it harmed?

Examples:

After Fluids

Monitor:

- blood pressure
- pulse
- perfusion
- urine output
- respiratory status
- lung crackles
- oxygen requirement
- edema
- renal function where relevant

Fluids help if perfusion improves without causing overload.

After Diuresis

Monitor:

- breathlessness
- edema
- urine output
- weight if available
- blood pressure
- renal function
- potassium
- dizziness
- mobility

Diuresis helps if congestion improves without unsafe renal or electrolyte harm.

After Insulin

Monitor:

- glucose
- symptoms of hypoglycemia
- eating pattern
- renal function
- potassium in relevant contexts
- patient understanding

Insulin helps if glucose becomes safer without recurrent hypoglycemia.

After Antibiotics

Monitor:

- fever
- heart rate
- respiratory rate
- blood pressure
- mental state
- symptoms
- source control
- renal function if relevant
- adverse effects

Antibiotics help if infection trajectory improves and harms are avoided.

After Analgesia

Monitor:

- pain score or comfort
- function
- sedation
- respiratory rate
- constipation
- nausea
- delirium
- falls risk

Analgesia helps if suffering improves without dangerous sedation or immobility.

8. Reversibility and De-Escalation

Wise perturbation includes knowing when to stop, reduce, hold, restart, taper, or change treatment.

Treatment should not continue forever simply because it was once appropriate.

Examples:

Antibiotics may need review when cultures, diagnosis, and trajectory become clearer.

Fluids should stop when perfusion improves or overload appears.

Diuretics may need adjustment when congestion improves or kidney function worsens.

Sedatives should be minimized or stopped when immediate danger has passed.

Steroids may need tapering depending on dose, duration, and indication.

Oxygen should be adjusted to the patient's target range and clinical status.

Anticoagulation should be reviewed when bleeding risk changes.

A medicine held during AKI may need restarting when kidney function and volume status recover.

De-escalation is not neglect. It is part of wise care.

Ask:

What was started, why was it started, is it still needed, and what harm could continuing cause?

9. Treatment Under Uncertainty

Clinicians often treat before certainty is complete.

This is not a failure. It is part of medicine.

Examples:

Sepsis may require early treatment before the organism is known.

ACS pathways begin before the full troponin trend is complete.

Hypoglycemia is treated before all causes are known.

Hyperkalemia may be treated urgently before the full AKI workup is complete.

Acute severe asthma is treated before all test results return.

Possible stroke requires urgent pathway assessment before every detail is known.

The key is to treat uncertainty honestly.

A wise clinician says:

“This is the danger we are treating now. This is what remains uncertain. This is how we will reassess.”

Uncertainty should be monitored, not hidden.

10. When Not Acting Is Also a Perturbation

Not every patient needs immediate active treatment.

Observation, watchful waiting, explanation, safety-netting, and follow-up can be wise.

But doing nothing is not neutral if danger exists.

The question is:

Is watchful waiting safe, monitored, and explained?

Examples:

A patient with early abdominal pain and reassuring examination may not need admission immediately, but must receive specific safety-netting.

A patient with mildly abnormal blood results may need repeat testing rather than urgent treatment, if danger is low and follow-up is reliable.

A patient near the end of life may benefit from not escalating burdensome treatment and instead focusing on comfort, dignity, and family understanding.

A patient with viral symptoms may need reassurance and safety-netting rather than antibiotics.

Non-intervention is wise only when danger has been considered and follow-up is safe.

11. Wise Perturbation and Patient Values

Treatment is not wise if it ignores what matters to the patient.

Ask:

- What outcome matters most to you?
- What are you most afraid of?
- What burden would be too much?
- What trade-off feels acceptable?
- What do you understand about the illness?
- Who should be involved in decisions?

- What would a good day look like?
- What would you not want?

This matters especially in:

- frailty
- multimorbidity
- chronic illness
- progressive disease
- palliative care
- high-risk procedures
- burdensome treatments
- uncertain benefit
- end-of-life decisions

A technically correct plan may be life-incoherent if it violates the patient's goals, values, or dignity.

12. Wise Perturbation and Communication

The treatment plan should be explainable.

A useful explanation includes:

1. What we think is happening.
2. What danger we are trying to prevent.
3. What capacity we are trying to restore.
4. What treatment we recommend.
5. What benefit we expect.
6. What harm we will watch for.
7. What uncertainty remains.
8. What will happen next.
9. What the patient should report.
10. When reassessment will occur.

Example:

"You are breathless because fluid appears to have built up in your lungs and legs. We are going to use a water tablet to remove extra fluid. This should help your breathing, but it can affect kidney function and potassium, so we will monitor your blood tests, urine, blood pressure, and symptoms."

This kind of explanation protects agency.

13. Worked Case 1: Fluids in AKI

A 74-year-old patient has AKI after several days of vomiting and poor intake. Blood pressure is low, mucous membranes are dry, and urine output is reduced. There are no signs of fluid overload.

Capacity Failure

Clearance is impaired. Circulation is underfilled. Energy and function are affected by dehydration and illness.

Possible Wise Perturbation

Careful fluid replacement may restore circulation and kidney perfusion.

Expected Benefit

Blood pressure improves. Urine output increases. Dizziness improves. Creatinine stabilizes or improves.

Possible Harm

Fluid overload, especially if heart failure or CKD is present. Electrolyte changes. Delayed recognition if obstruction or sepsis is also present.

Monitoring

Vital signs, fluid balance, urine output, respiratory status, renal function, electrolytes, symptoms.

Repair

Patient becomes less dizzy, urine output improves, renal function stabilizes, oral intake returns, and medicines are reviewed.

14. Worked Case 2: Diuretics in Heart Failure

A 78-year-old woman has worsening dyspnea, edema, orthopnea, and crackles. She has CKD and takes several medicines.

Capacity Failure

Circulation and oxygenation are impaired by congestion. Clearance is fragile because of CKD. Mobility and sleep are affected.

Possible Wise Perturbation

Diuresis may reduce congestion and improve breathing.

Expected Benefit

Less breathlessness, reduced edema, improved sleep, improved walking, lower oxygen requirement if hypoxic.

Possible Harm

Worsening renal function, hypokalemia or hyperkalemia depending on context, hypotension, dizziness, falls, dehydration.

Monitoring

Symptoms, oxygenation, respiratory rate, edema, weight if available, urine output, blood pressure, renal function, potassium, dizziness, mobility.

Repair

Breathing easier, edema reduced, renal function stable enough, electrolytes safe, patient understands diuretic plan and follow-up.

15. Worked Case 3: Insulin in Poor Intake

A frail older patient with diabetes is eating poorly during an acute illness but remains on the usual insulin dose. Overnight, the patient becomes sweaty and confused.

Capacity Failure

Energy regulation is failing from hypoglycemia. Cognition and safety are threatened.

Wise Perturbation

Treat hypoglycemia immediately according to local protocol. Review insulin dosing in relation to oral intake, renal function, illness, and monitoring.

Expected Benefit

Glucose becomes safe, cognition improves, recurrence prevented.

Possible Harm

Overcorrection, recurrent hypoglycemia if insulin is not adjusted, hyperglycemia if insulin is stopped without plan.

Monitoring

Glucose pattern, meals, renal function, mental state, medication chart, patient or caregiver understanding.

Repair

Alertness returns, glucose stabilizes, insulin plan becomes safer, recurrence risk reduced.

16. Worked Case 4: Sedation in Delirium

An 86-year-old patient with delirium is agitated and trying to climb out of bed.

Capacity Failure

Cognition, regulation, mobility, safety, agency, and dignity are threatened.

Possible Unwise Perturbation

Giving sedation reflexively without searching for causes.

Wise Perturbation

First assess danger and triggers: hypoxia, hypoglycemia, infection, pain, retention, constipation, dehydration, medication toxicity, withdrawal, fear, sleep disruption, sensory impairment.

Use non-drug delirium care, family support, reassurance, orientation, and environmental measures.

Sedation may be considered only if there is immediate risk of harm and non-drug measures are insufficient, using the safest local approach and close monitoring.

Expected Benefit

Patient becomes safer and less distressed.

Possible Harm

Over-sedation, aspiration, falls, worsened delirium, respiratory depression, loss of dignity.

Monitoring

Mental state, sedation level, respiratory status, falls risk, hydration, trigger correction, family feedback.

Repair

Calmer without being over-sedated, more oriented, triggers treated, sleep improves, mobility safer.

17. Worked Case 5: Comfort-Focused Care

A patient with advanced metastatic disease is deteriorating despite treatment. The patient is breathless, frightened, and exhausted. Further disease-directed treatment is unlikely to restore meaningful capacity.

Capacity Failure

Comfort, dignity, energy, participation, and family understanding are central. Oxygenation and circulation may also be declining as part of dying.

Wise Perturbation

Shift the focus toward comfort, dignity, symptom relief, honest communication, family support, and avoidance of burdensome interventions that do not meet the patient's goals.

Expected Benefit

Less suffering, clearer goals, family understanding, peaceful care, dignity protected.

Possible Harm

Undertreating symptoms, abandoning communication, family misunderstanding, continuing burdensome treatment by default.

Monitoring

Pain, breathlessness, agitation, nausea, secretions, anxiety, family distress, spiritual or cultural needs.

Repair

Repair may not mean cure. It may mean comfort, peace, dignity, reconciliation, and reduced suffering.

18. Common Student Pitfalls

Pitfall 1: Equating Action With Help

Doing something is not always helping. Action must be linked to capacity restoration and harm monitoring.

Pitfall 2: Treating the Number Alone

Treat potassium, glucose, creatinine, oxygen saturation, blood pressure, and troponin as signals of patient risk, not isolated numbers.

Pitfall 3: Forgetting Treatment Harm

Every intervention has possible harm. Anticipating harm is part of treatment.

Pitfall 4: Ignoring Feasibility

A plan that cannot be lived will fail.

Pitfall 5: Not Reassessing

A treatment is incomplete until response is checked.

Pitfall 6: Continuing Treatment by Habit

Review whether yesterday's treatment is still needed today.

Pitfall 7: Delaying Needed Action Because Certainty Is Incomplete

When danger is high and treatment is time-critical, act while continuing to reason.

Pitfall 8: Ignoring Patient Values

A treatment can be medically reasonable but wrong for the patient's goals, burdens, or dignity.

19. Clinical Practice Box

Before any significant intervention, complete this wise perturbation check:

What is the indication?

What capacity am I trying to restore?

What benefit do I expect?

What harm could occur?

Is the intervention proportionate?

Can the patient live the plan?

How will response be monitored?

How will harm be monitored?

When should reassessment occur?

Who owns follow-up?

What would repair look like?

20. Mini-Case for Practice

A 69-year-old man with fever and cough is diagnosed with pneumonia. He is mildly hypoxic, confused, and has reduced oral intake. He also has CKD and takes an ACE inhibitor, diuretic, and metformin.

Apply wise perturbation.

Danger

Hypoxia, sepsis, delirium, AKI, medicine harm, dehydration, unsafe discharge.

Syndrome

Pneumonia with hypoxia, acute confusion, poor intake, and renal vulnerability.

Capacity Failure

Defense, oxygenation, cognition, clearance, hydration, energy.

Coupling Conditions

CKD, medicines, poor intake, frailty if present, baseline cognition, home support, ability to drink and manage medicines.

Wise Perturbation

Treat pneumonia according to local guidance, support oxygenation, assess hydration carefully, monitor renal function and electrolytes, review medicines that may become unsafe during acute illness, prevent delirium harm, involve family if needed, reassess response.

Possible Harm

Fluid overload if overhydrated, AKI if underhydrated or nephrotoxic medicines continue, delirium worsening from sedatives or ward environment, antibiotic adverse effects, hypoglycemia or lactic acidosis risk depending on medicines and renal function.

Repair Trajectory

Oxygen requirement falls, fever settles, confusion clears, oral intake improves, renal function remains safe, medicines are reviewed appropriately, patient and caregiver understand plan, discharge becomes safe.

21. Student Takeaway

Treatment is a perturbation introduced into a living patient.

A wise perturbation asks:

What capacity am I trying to restore?
What benefit do I expect?
What harm could I cause?
Is this proportionate?
Can the patient live this plan?
How will I monitor response?
What would repair look like?

Good treatment is not merely active.
It is indicated, proportionate, feasible, monitored, adjustable, humane, and oriented toward repair.

Chapter 8. Repair Trajectory: How to Know the Patient Is Healing

Treatment is not the end of clinical reasoning.

After danger has been recognized, the syndrome formed, capacity failure mapped, coupling conditions identified, and treatment started, the clinician must ask one more question:

How will we know the patient is healing?

This is the question of **repair trajectory**.

A repair trajectory is the expected path from danger or dysfunction toward restored safety, stability, function, comfort, understanding, dignity, and participation.

It is not enough to say:

“Treatment has been started.”

The clinician must know what improvement should look like, when it should appear, what harm might occur, and what should trigger reassessment or escalation.

Healing is not only better numbers.

Healing is the patient becoming safer, clearer, stronger, more comfortable, better supported, and more able to live.

1. Why Repair Trajectory Matters

Students often learn to focus on diagnosis and treatment.

They ask:

“What is the diagnosis?”
“What should we prescribe?”
“What tests should we order?”

These questions matter, but they are incomplete.

A patient can receive the correct diagnosis and still fail to recover.

A patient can receive the correct treatment and still deteriorate.

A patient’s laboratory values may improve while their function worsens.

A patient may look medically stable but remain unsafe for discharge.

Repair trajectory helps the clinician avoid the assumption that treatment equals healing.

It asks:

What response do we expect, and is it actually happening?

2. What Repair Means

Repair means the restoration, protection, or stabilization of life-capacity.

Repair may include cure, but it is broader than cure.

In acute illness, repair may mean returning to baseline.

In chronic illness, repair may mean better control, fewer exacerbations, less suffering, and improved participation.

In frailty, repair may mean returning close enough to baseline to live safely with support.

In progressive disease, repair may mean slowing decline, reducing burden, and preserving dignity.

At the end of life, repair may not mean survival. It may mean comfort, peace, family understanding, symptom relief, and a death aligned with the patient's values.

Repair is therefore always interpreted in relation to the patient's condition, goals, and realistic possibilities.

3. The Main Repair Domains

A patient's repair trajectory may be tracked across several domains.

Danger Controlled

Immediate threats are addressed.

Examples:

- airway is safe
- oxygenation supported
- shock improving
- bleeding controlled
- glucose corrected
- potassium treated
- seizure stopped

- chest pain pathway activated
- suicide risk contained
- unsafe discharge avoided

Physiology Stabilizing

The body’s measurable functions are improving.

Examples:

- respiratory rate falling
- oxygen requirement decreasing
- blood pressure stabilizing
- pulse improving
- fever settling
- urine output improving
- potassium safer
- glucose safer
- renal function stabilizing
- inflammatory markers improving where relevant

Symptoms Improving

The patient feels better.

Examples:

- pain reduced
- breathlessness easing
- nausea settling
- dizziness improving
- cough less distressing
- fever symptoms settling
- anxiety reducing
- itch relieved
- sleep improving

Function Returning

The patient can do more.

Examples:

- eating
- drinking
- walking
- transferring
- toileting

- sleeping
- sitting out of bed
- using inhaler or insulin
- managing self-care
- participating in rehabilitation

Cognition and Understanding Improving

The patient becomes clearer and more able to participate.

Examples:

- attention improves
- orientation returns toward baseline
- delirium settles
- patient understands diagnosis
- patient understands medicines
- patient knows warning signs
- caregiver understands the plan
- uncertainty is explained

Support Secured

The patient's next setting can hold the remaining risk.

Examples:

- family informed
- caregiver prepared
- medicines available
- follow-up arranged
- pending results owned
- transport considered
- home risks addressed
- community services arranged where available
- safety-net explained

Dignity and Participation Restored

The patient is not merely physiologically improved but more able to live.

Examples:

- comfort protected
- privacy respected
- goals clarified
- fears heard
- meaningful routines supported

- patient participates in decisions
- family relationships supported
- burdensome treatment reduced when appropriate

These domains remind the clinician that recovery is whole-person recovery.

4. Repair Is Diagnosis-Specific and Patient-Specific

Repair markers depend on the syndrome and capacity failure.

Pneumonia

Repair may include:

- fever settling
- respiratory rate improving
- oxygen requirement falling
- cough and breathlessness easing
- appetite returning
- confusion clearing
- mobility improving
- hydration adequate
- antibiotics tolerated
- discharge safety established

Heart Failure

Repair may include:

- less breathlessness
- reduced orthopnea
- reduced edema
- improved exercise tolerance
- stable blood pressure
- urine output appropriate
- renal function and potassium safe
- medicine plan understood
- follow-up arranged

AKI

Repair may include:

- urine output improving
- potassium safer

- acidosis improving if present
- creatinine stabilizing or improving
- fluid status controlled
- obstruction relieved if present
- nephrotoxic medicines reviewed
- drug doses adjusted
- repeat blood tests owned

Delirium

Repair may include:

- attention improving
- sleep-wake rhythm improving
- agitation reducing without over-sedation
- underlying triggers treated
- hydration and nutrition improving
- mobility safer
- family recognizes return toward baseline
- dignity protected

Diabetes With Hypoglycemia

Repair may include:

- glucose corrected
- consciousness restored
- cause identified
- insulin or medicine plan adjusted
- eating pattern considered
- recurrence prevented
- patient or caregiver understands prevention

Chronic Pain

Repair may include:

- pain more manageable
- sleep better
- movement increasing
- mood improving
- medicine harm reduced
- patient regaining agency
- participation in meaningful roles increasing

Palliative Care

Repair may include:

- pain controlled
- breathlessness relieved
- agitation reduced
- nausea controlled
- patient’s wishes understood
- family supported
- unnecessary burdens reduced
- dignity protected

Repair must always be defined for this patient, not for an abstract disease.

5. Repair Trajectory Requires Time Awareness

Repair happens over time.

The clinician must ask:

What should improve immediately?
What should improve over hours?
What should improve over days?
What may take weeks or months?
What may not fully recover?

Examples:

Hypoglycemia should improve quickly after correction.

Shock should show early signs of response after appropriate resuscitation and treatment, though the underlying cause may take longer.

Pneumonia may take days to improve, and fatigue may persist longer than fever.

Delirium may fluctuate and may take days or weeks to fully resolve.

Frailty decompensation may require prolonged rehabilitation.

Depression and chronic pain may improve gradually through sustained support.

End-of-life comfort may require frequent reassessment over hours.

Time awareness prevents both premature alarm and dangerous complacency.

6. Expected Response and Failure to Respond

A treatment plan should include the expected response.

For example:

After oxygen, breathlessness and saturation should improve.

After fluids for hypovolemia, perfusion, blood pressure, and urine output should improve without overload.

After diuretics for congestion, breathlessness and edema should improve while renal function and electrolytes remain safe.

After treating hypoglycemia, consciousness should improve.

After antibiotics for bacterial infection, fever, systemic features, and trajectory should begin to improve over time.

After stopping a sedative contributing to delirium, alertness may improve, though other triggers may remain.

Failure to respond should trigger reassessment.

Ask:

- Was the diagnosis correct?
- Was the syndrome incomplete?
- Is there a complication?
- Is another capacity failing?
- Is treatment reaching the target?
- Is treatment causing harm?
- Is source control needed?
- Is adherence or feasibility a problem?
- Is escalation needed?
- Are coupling conditions blocking repair?

Treatment failure is not simply “more of the same.” It is a signal to re-enter the loop.

7. Repair and Harm Must Be Tracked Together

A patient may improve in one capacity while worsening in another.

Examples:

Diuresis improves breathing but worsens kidney function.

Insulin lowers glucose but causes hypoglycemia.

Opioids reduce pain but cause sedation, constipation, or delirium.

Antibiotics treat infection but cause diarrhea or allergy.

Anticoagulation treats thrombosis but causes bleeding.

Sedation reduces agitation but worsens aspiration risk and cognition.

Discharge restores home comfort but increases falls risk if support is inadequate.

Therefore, repair trajectory must include harm surveillance.

Ask:

What is improving?
What is worsening?
What new risk has treatment created?
Is the balance still wise?

8. Repair and Reassessment

Reassessment is the bridge between treatment and repair.

A clinician should not prescribe and disappear.

Reassessment may involve:

- repeating vital signs
- reviewing symptoms
- checking mental state
- measuring urine output
- reviewing glucose
- repeating potassium
- reassessing pain
- checking respiratory effort
- reviewing blood results
- assessing mobility
- asking nursing staff
- speaking with family
- confirming understanding
- checking whether follow-up occurred

Every important intervention should have a reassessment plan.

Examples:

“Repeat potassium at 22:00 and escalate if still above threshold or ECG changes.”

“Review respiratory status in 30 minutes after bronchodilator treatment.”

“Check glucose after hypoglycemia treatment and adjust insulin plan.”

“Review pain and sedation after opioid dose.”

“Reassess walking and cognition before discharge.”

Reassessment is not optional. It is how the clinician discovers whether repair is happening.

9. Repair and Discharge

Discharge decisions should be based on repair trajectory, not only disease treatment.

Ask:

- Is immediate danger controlled?
- Are vital signs stable enough?
- Is the diagnosis or working plan clear enough?
- Are symptoms manageable?
- Is the patient eating and drinking?
- Can the patient walk or transfer safely?
- Is cognition at baseline or supported?
- Are medicines reconciled and explained?
- Are pending results owned?
- Is follow-up arranged?
- Does the patient know warning signs?
- Is the caregiver prepared?
- Can the home hold the remaining risk?

A patient may be improving but not discharge-ready.

A patient may be discharge-ready even if not fully cured, if the remaining risk is understood, supported, monitored, and acceptable.

Discharge is safe when the repair trajectory can continue outside hospital.

10. Repair in Chronic Disease

In chronic disease, repair often means improved trajectory rather than cure.

For example:

Diabetes

Repair may mean:

- fewer hypoglycemic episodes
- safer glucose patterns
- improved understanding
- reduced treatment burden
- foot care established
- kidney and cardiovascular risk addressed
- patient able to live the plan

Hypertension

Repair may mean:

- safer blood pressure
- fewer side effects
- adherence improved
- salt, sleep, pain, stress, and medicine contributors addressed
- follow-up realistic
- end-organ risk reduced

COPD

Repair may mean:

- fewer exacerbations
- better inhaler technique
- improved exercise tolerance
- smoking cessation support where relevant
- vaccination and prevention addressed
- rescue plan understood
- breathlessness managed

Heart Failure

Repair may mean:

- fewer admissions
- stable volume status
- medicine plan optimized and tolerated
- renal function monitored
- patient knows when to seek help
- support for daily self-management

Chronic repair is often the restoration of stable participation within limits.

11. Repair in Frailty

In frailty, repair must be realistic and reserve-aware.

A frail patient may not return fully to previous baseline after acute illness.

Repair may mean:

- delirium improves
- eating resumes
- walking returns enough for safe transfer
- medicines simplified
- falls risk reduced
- caregiver support arranged
- goals clarified
- burdensome treatment avoided
- dignity protected

The question is not only:

“Has the disease improved?”

It is:

“Has the person recovered enough capacity, support, and safety for the next phase of care?”

Frailty repair often requires the whole team.

12. Repair at the End of Life

At the end of life, repair does not mean reversing death.

Repair may mean:

- pain relieved
- breathlessness eased
- agitation reduced
- nausea controlled
- family understands what is happening
- patient’s wishes respected
- privacy protected
- unnecessary interventions stopped
- spiritual or cultural needs supported
- the patient is not abandoned

This is a crucial point for students.

When cure is no longer possible, medicine still has work to do.

The goal shifts from restoration of physiology to restoration of comfort, dignity, relationship, meaning, and peace.

This too is repair.

13. Worked Case 1: Pneumonia With Delirium

An 84-year-old woman is admitted with pneumonia, hypoxia, fever, and confusion. Antibiotics and oxygen are started.

Expected Repair

In the first hours, oxygenation should be supported, respiratory distress should reduce, and sepsis danger should be monitored.

Over days, fever should settle, oxygen requirement should decrease, oral intake should improve, and confusion should begin to clear.

Function should be reassessed because deconditioning and delirium increase falls risk.

Failure to Repair

If she remains confused, ask:

- Is oxygenation adequate?
- Is glucose safe?
- Is infection improving?
- Is there another infection source?
- Is pain controlled?
- Is there urinary retention?
- Is there constipation?
- Is she dehydrated?
- Are medicines worsening delirium?
- Is sleep disrupted?
- Does family confirm baseline?

Repair Trajectory

Repair means more than fever settling. It means safer breathing, clearer cognition, improved intake, safer mobility, family understanding, and discharge readiness.

14. Worked Case 2: Heart Failure Treatment

A 76-year-old man with heart failure is treated with diuretics for congestion.

Expected Repair

Breathlessness should improve. Edema should reduce. Orthopnea should improve. Weight may fall if measured. Walking may become easier.

Harm to Monitor

Renal function may worsen. Potassium may become unsafe. Blood pressure may fall. Dizziness or falls may occur. Over-diuresis may cause dehydration.

Repair Trajectory

The patient is repairing if congestion improves while kidney function, potassium, blood pressure, and function remain safe enough.

If breathing improves but the patient becomes dizzy, hypotensive, and develops AKI, the treatment may need adjustment.

Repair is balance, not single-marker success.

15. Worked Case 3: AKI With Hyperkalemia

A patient with CKD develops AKI and potassium of 6.4.

Expected Repair

Potassium should become safer after treatment. ECG should remain safe or improve. Urine output should be assessed. Renal function should stabilize. Cause should be addressed.

Failure to Repair

If potassium remains high, ask:

- Was treatment completed?
- Is ongoing potassium intake or medicine effect present?
- Is renal function worsening?
- Is obstruction present?
- Is acidosis contributing?

- Is dialysis-level support needed?
- Has senior or renal help been called?

Repair Trajectory

Repair means potassium safe, ECG safe, repeat bloods checked, urine output monitored, medicine plan corrected, and responsibility handed over clearly.

16. Worked Case 4: Discharge After Infection

An 87-year-old woman treated for urinary infection is afebrile, but remains weak, confused, and unable to toilet independently.

Disease Improvement

Fever settled. Infection markers may be improving.

Repair Not Complete

Cognition, mobility, toileting, hydration, and discharge safety remain impaired.

Repair Trajectory

Before discharge, ask:

- Is delirium improving?
- Can she transfer safely?
- Is she eating and drinking?
- Can she manage medicines?
- Is family ready?
- Is home safe?
- Is follow-up arranged?
- Are warning signs understood?

This patient may need more time, rehabilitation, caregiver preparation, or supported discharge.

17. Worked Case 5: Palliative Repair

A patient with advanced heart failure is breathless at rest despite maximal tolerated treatment. Further escalation is unlikely to restore meaningful function. The patient says, “I just do not want to suffer.”

Repair Goal

Comfort, dignity, reduced breathlessness, family understanding, and a care plan aligned with the patient's wishes.

Wise Perturbation

Clarify goals. Review burdensome treatments. Manage breathlessness and anxiety. Involve palliative care where available. Support family. Avoid unwanted escalation.

Repair Trajectory

Breathlessness eases. Fear reduces. Family understands. Patient's wishes are documented. Unnecessary burdens reduce. Dignity is protected.

18. Common Student Pitfalls

Pitfall 1: Thinking Treatment Equals Improvement

Starting antibiotics, fluids, oxygen, insulin, or diuretics does not prove repair.

Response must be checked.

Pitfall 2: Tracking Only Laboratory Results

Laboratory improvement is useful, but patients also need symptom, function, cognition, support, and dignity repair.

Pitfall 3: Missing Treatment Harm

A treatment can improve one measure and harm another capacity.

Pitfall 4: Discharging Too Early

A patient may be medically improved but functionally unsafe.

Pitfall 5: Failing to Define Reassessment

Every important intervention needs a time and method for reassessment.

Pitfall 6: Expecting Cure When Stabilization Is the Real Goal

In chronic, frail, or palliative illness, repair may mean stability, comfort, dignity, and support rather than full reversal.

Pitfall 7: Ignoring Patient Goals

Repair must be meaningful to the patient, not only to the chart.

19. Clinical Practice Box

For any patient after treatment, complete this repair trajectory:

What danger should now be controlled?

What physiological marker should improve?

What symptom should improve?

What function should improve?

What harm should be monitored?

What would make us reassess the diagnosis?

What would trigger escalation?

What must be true before discharge?

What does the patient need to understand?

What support must be secured?

20. Mini-Case for Practice

A 73-year-old man is admitted with fever, cough, hypoxia, and poor oral intake. He is diagnosed with pneumonia and started on antibiotics and oxygen. After 48 hours, his fever has improved and oxygen requirement is lower, but he remains weak, dizzy on standing, and has not walked since admission.

Apply repair trajectory thinking.

Danger Controlled

Infection and oxygenation appear to be improving, but falls risk and deconditioning are now important dangers.

Physiology

Fever settling and oxygen requirement falling are positive signs. Orthostatic symptoms, hydration, renal function, and medicine effects should be assessed.

Symptoms

Cough and breathlessness may be improving, but dizziness and weakness remain.

Function

He has not walked, so mobility capacity is not repaired.

Coupling Conditions

Poor intake, bed rest, age, medicines, dehydration, frailty, sleep disruption, and lack of mobilization may be slowing repair.

Wise Perturbation

Assess hydration, blood pressure lying and standing if appropriate, medicine effects, renal function, nutrition, and mobility. Encourage safe mobilization with nursing or physiotherapy support where available. Do not discharge until mobility and dizziness are safe enough or support is arranged.

Repair Trajectory

Repair would be shown by safer standing, improved walking, adequate intake, stable oxygenation, stable physiology, and a discharge plan that can hold remaining risk.

21. Student Takeaway

The clinical loop ends not with treatment, but with repair.

Always ask:

How will we know this patient is healing?

Repair may be shown by:

- danger controlled
- physiology stabilizing
- symptoms improving
- function returning
- cognition clearing
- understanding improving
- support secured
- dignity protected
- participation restored

Healing is not only better numbers.

Healing is the restoration, protection, or peaceful support of life-capacity.

Part II. Core Clinical Presentations Made Easy

This part applies the framework to the presentations students meet at the bedside. Each presentation is approached through danger, syndrome, capacity failure, context, wise action, and repair.

Chapter 9. The Sick Patient Made Easy

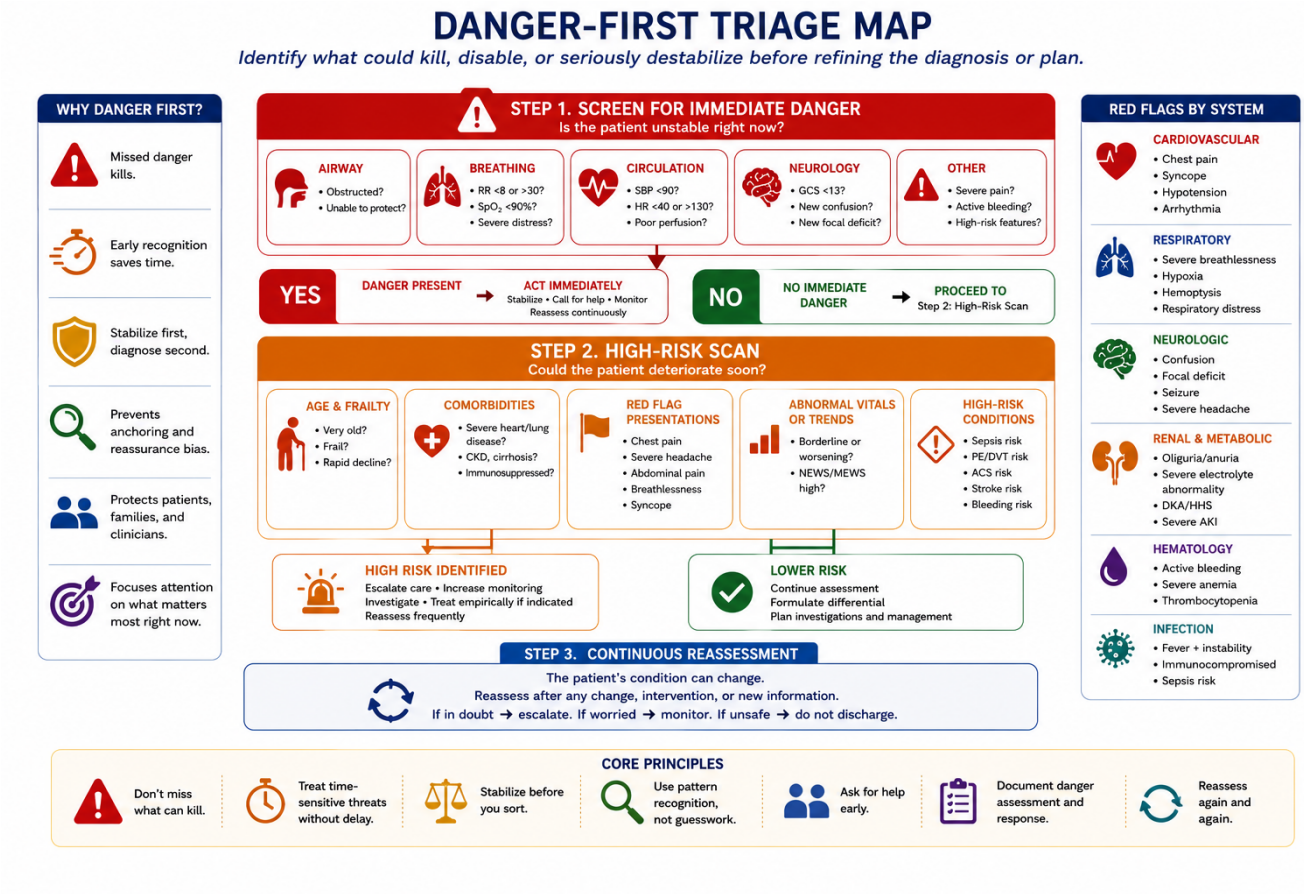

Figure 5. Danger-First Triage Map

Danger-first triage prioritizes threats that could seriously harm the patient now or soon before diagnostic refinement, routine review, reassurance, or discharge planning.

Every student eventually meets a patient who is simply described as:

"sick."

The nurse says, "Doctor, this patient does not look right."
The family says, "He was not like this yesterday."
The vital signs are abnormal.
The patient looks pale, sweaty, breathless, confused, weak, or frightened.
The diagnosis may not yet be clear.

This is one of the most important moments in Internal Medicine.

The clinician must not begin with a long academic discussion. The clinician must first decide:

Is this patient safe now?

The sick patient requires organized urgency.

The goal is not panic.
The goal is not premature diagnosis.
The goal is to recognize danger, support failing capacity, call for help when needed, and reassess.

The life-coherent loop is especially useful here:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

When the patient is sick, the loop becomes practical and immediate.

1. What Does "Sick" Mean?

A "sick patient" is a patient whose physiology, consciousness, function, or appearance suggests possible danger.

The patient may be sick because of:

- respiratory failure
- shock
- sepsis
- acute coronary syndrome
- stroke
- hypoglycemia
- hyperkalemia
- major bleeding
- anaphylaxis
- acute kidney injury
- severe dehydration
- diabetic emergency
- overdose
- medication toxicity
- delirium
- severe pain
- end-of-life deterioration

Sometimes the diagnosis is obvious.

Often it is not.

The sick patient may present with vague symptoms:

- "weakness"
- "dizziness"
- "fatigue"
- "not eating"
- "confusion"

- “collapse”
- “just not right”

The clinician should take these seriously, especially when there are abnormal vital signs, acute change, frailty, or family concern.

2. The First Rule: Look at the Patient

Before scrolling through results, look at the patient.

Ask:

- Are they awake?
- Are they speaking?
- Are they breathing comfortably?
- Are they pale, sweaty, cyanosed, or mottled?
- Are they agitated, drowsy, or confused?
- Are they in severe pain?
- Are they using accessory muscles?
- Are they able to sit up?
- Are they able to maintain posture?
- Do they look frightened?
- Does the nurse look worried?
- Does the family say this is not baseline?

The first diagnostic test is often the clinician’s organized attention.

A patient who “looks sick” deserves immediate assessment.

3. Danger First: The Immediate Screen

In the sick patient, begin with immediate danger.

Use:

Airway → Breathing → Circulation → Disability → Exposure → Glucose

This structure helps students avoid missing reversible danger.

Airway

Ask:

Is the airway open and protected?

Danger signs:

- choking
- stridor
- gurgling
- facial or tongue swelling
- reduced consciousness
- vomiting with aspiration risk
- inability to speak
- severe allergic reaction

If the airway is threatened, call for urgent help.

Breathing

Ask:

Is oxygenation or ventilation failing?

Danger signs:

- severe breathlessness
- low oxygen saturation
- rising oxygen requirement
- very high or very low respiratory rate
- respiratory exhaustion
- cyanosis
- inability to speak full sentences
- silent chest
- confusion or drowsiness with respiratory illness

Support oxygenation according to local guidance and escalate early.

Circulation

Ask:

Is blood flow failing?

Danger signs:

- hypotension
- shock
- cold clammy skin
- severe tachycardia
- severe bradycardia
- weak pulse
- chest pain with instability

- major bleeding
- poor urine output
- collapse
- altered mental state with poor perfusion

Circulation failure is never a wait-and-see problem.

Disability

Ask:

Is brain function acutely impaired?

Danger signs:

- reduced consciousness
- seizure
- acute confusion
- focal neurological deficit
- severe headache with neurological signs
- hypoglycemia
- overdose
- agitation with medical danger

Check glucose early.

Exposure

Ask:

What whole-body signs are visible?

Look for:

- fever
- rash
- trauma
- bleeding
- severe pain
- dehydration
- jaundice
- swelling
- skin infection
- pressure injury
- signs of neglect or abuse

Expose enough to assess safely while protecting dignity.

Glucose

In any sick, confused, collapsed, sweaty, weak, or drowsy patient, check glucose.

Hypoglycemia is rapidly reversible and dangerous if missed.

4. Vital Signs Are Not Decoration

In the sick patient, vital signs are central.

Always consider:

- respiratory rate
- oxygen saturation
- oxygen requirement
- pulse
- blood pressure
- temperature
- conscious level
- urine output
- glucose where relevant

A single abnormal vital sign may matter.

A pattern of abnormal vital signs matters even more.

Examples:

Tachypnea plus fever plus confusion suggests possible sepsis or respiratory failure.

Hypotension plus tachycardia plus oliguria suggests circulation failure.

Low oxygen saturation plus drowsiness suggests oxygenation or ventilation danger.

Bradycardia plus hyperkalemia context is electrical danger.

Fever plus low blood pressure is not “just infection.” It may be sepsis with circulation failure.

Students should learn to say:

“The vital signs show physiological danger.”

5. Syndrome Formation in the Sick Patient

Once immediate danger is being addressed, form the syndrome.

Useful sick-patient syndromes include:

- fever with instability
- dyspnea with hypoxia
- chest pain with autonomic symptoms
- acute confusion with abnormal vital signs
- collapse with hypotension
- weakness with hyperkalemia risk
- vomiting with dehydration and AKI
- abdominal pain with shock
- bleeding with tachycardia or hypotension
- severe pain with systemic features
- reduced consciousness with hypoglycemia or overdose risk

The syndrome should include severity.

Weak statement:

“This patient has fever.”

Stronger statement:

“This patient has fever with tachypnea, hypotension, confusion, and poor urine output.”

The second statement reveals danger.

6. Capacity Failure in the Sick Patient

The sick patient is sick because one or more life-capacities are failing.

Common capacity failures include:

Oxygenation Failure

Signs:

- breathlessness
- hypoxia
- tachypnea
- cyanosis
- confusion
- exhaustion

Possible causes:

- pneumonia
- asthma
- COPD exacerbation
- pulmonary edema
- pulmonary embolism
- pneumothorax
- aspiration
- hypoventilation
- severe anemia

Circulation Failure

Signs:

- hypotension
- shock
- tachycardia or bradycardia
- cold peripheries
- syncope
- poor urine output
- confusion
- chest pain

Possible causes:

- sepsis
- bleeding
- dehydration
- myocardial infarction
- arrhythmia
- pulmonary embolism
- anaphylaxis
- heart failure
- obstruction

Clearance Failure

Signs:

- oliguria
- rising creatinine
- hyperkalemia
- acidosis
- fluid overload
- drug toxicity
- confusion

Possible causes:

- dehydration
- sepsis
- obstruction
- medicines
- heart failure
- CKD decompensation
- intrinsic kidney disease

Regulation and Cognition Failure

Signs:

- confusion
- drowsiness
- agitation
- seizure
- fluctuating attention
- abnormal glucose
- temperature instability

Possible causes:

- hypoxia
- hypoglycemia
- sepsis
- stroke
- medication toxicity
- renal or liver failure
- pain
- retention
- constipation
- withdrawal

Energy Failure

Signs:

- profound weakness
- collapse
- inability to sit or walk
- hypoglycemia
- severe anemia
- sepsis
- malnutrition
- endocrine crisis

Capacity mapping helps the clinician support what is failing while the diagnosis is clarified.

7. Coupling Conditions That Make Patients Sicker

Some patients deteriorate faster or recover more slowly because of coupling conditions.

Important coupling conditions include:

- frailty
- dementia
- chronic kidney disease
- heart failure
- diabetes
- immunosuppression
- steroid use
- anticoagulation
- polypharmacy
- poor oral intake
- dehydration
- recent surgery
- infection exposure
- alcohol or sedative dependence
- poor mobility
- living alone
- delayed presentation
- inability to access medicines
- limited caregiver support
- system delays

A mild stressor may cause severe decline in a patient with low reserve.

For example:

A simple urinary infection may cause delirium, falls, AKI, and unsafe discharge in a frail older adult.

A missed meal may cause severe hypoglycemia in a patient on insulin with CKD.

A small bleed may destabilize a patient on anticoagulation.

A sedative may cause respiratory failure in a patient with COPD or delirium in a frail patient.

The sick patient must be understood in context.

8. Wise Perturbation in the Sick Patient

When the patient is sick, treatment may need to begin before diagnostic certainty is complete.

But treatment must still be wise.

Ask:

- What danger needs immediate support?
- What capacity is failing?
- What intervention can restore capacity now?
- What harm could the intervention cause?
- Who needs to be called?
- How soon must we reassess?
- What monitoring is needed?

Examples:

Oxygen

May help hypoxia, but should be titrated according to clinical context and local guidance, especially in patients at risk of carbon dioxide retention.

Fluids

May help hypovolemia or sepsis-related hypoperfusion, but may harm patients with heart failure, pulmonary edema, or kidney failure if not reassessed.

Antibiotics

May be urgent in suspected sepsis, but should be linked to likely source, local guidance, cultures where appropriate, and reassessment.

Insulin or Glucose

May be lifesaving in glucose emergencies, but requires monitoring to prevent overcorrection or recurrence.

Hyperkalemia Treatment

May be urgent, but requires ECG assessment, repeat potassium, glucose monitoring if insulin is used, medicine review, and clear ownership.

Analgesia

May reduce suffering and physiological stress, but must be balanced against sedation, respiratory depression, delirium, constipation, and falls.

Escalation

Calling for help is a wise perturbation when risk exceeds current capacity.

Students should learn that escalation is not failure. It is patient protection.

9. Reassessment: The Sick Patient Must Not Be Abandoned

After intervention, reassess.

Ask:

- Is the patient breathing easier?
- Has oxygen saturation improved?
- Has respiratory rate changed?
- Has blood pressure improved?
- Is perfusion better?
- Is mental state improving?
- Has pain improved?
- Is urine output improving?
- Has glucose corrected?
- Has potassium been repeated?
- Are new harms appearing?
- Does the diagnosis still fit?
- Is senior help needed now?

The sick patient should not be treated once and left.

The clinician should set a clear reassessment time.

Examples:

“I will review again in 15 minutes after oxygen and bronchodilator treatment.”

“Repeat potassium is due at 22:00, and the night doctor must be handed over.”

“Check glucose again after hypoglycemia treatment and adjust insulin plan.”

“Reassess blood pressure, lungs, and urine output after fluids.”

Reassessment is where safety is maintained.

10. When to Escalate

Students sometimes delay calling for help because they feel they should manage alone.

This is unsafe.

Call senior help early when:

- airway is threatened
- oxygenation is worsening
- oxygen requirement is rising
- respiratory exhaustion is present
- blood pressure is low or falling
- shock is suspected
- consciousness is reduced
- seizures occur
- chest pain is high-risk
- stroke symptoms are present
- sepsis with instability is possible
- potassium is dangerously high
- glucose emergency is severe or recurrent
- major bleeding is suspected
- severe pain has unclear cause
- the diagnosis is unclear and the patient looks sick
- treatment is not working
- you feel out of depth

A useful escalation phrase is:

“I am worried because…”

Then state:

- what changed
- current vital signs
- key danger
- what has been done
- what help is needed
- how urgent it is

Clear escalation saves time.

11. Common Sick Patient Patterns

Fever With Instability

Think:

- sepsis
- pneumonia

- pyelonephritis
- cholangitis
- meningitis
- infected device or line
- severe cellulitis
- intra-abdominal infection
- tropical or travel-related infection where relevant

Capacity failures:

- defense
- circulation
- oxygenation
- cognition
- clearance

Repair markers:

fever settling, blood pressure stable, respiratory rate improving, urine output improving, mental state clearing.

Dyspnea With Hypoxia

Think:

- pneumonia
- pulmonary edema
- asthma/COPD
- pulmonary embolism
- pneumothorax
- aspiration
- sepsis
- anemia
- acidosis

Capacity failures:

- oxygenation
- ventilation
- circulation
- energy
- comfort

Repair markers:

less breathlessness, lower oxygen requirement, improved respiratory rate, clearer mental state.

Collapse or Syncope With Abnormal Vitals

Think:

- arrhythmia
- bleeding
- dehydration
- sepsis
- pulmonary embolism
- myocardial infarction
- hypoglycemia
- stroke mimic
- medication effect

Capacity failures:

- circulation
- cognition
- energy
- mobility and safety

Repair markers:

stable vitals, cause identified, injury assessed, recurrence risk addressed.

Acute Confusion

Think:

- delirium
- hypoxia
- hypoglycemia
- infection
- stroke
- medication toxicity
- head injury
- urinary retention
- constipation
- dehydration
- withdrawal

Capacity failures:

- cognition
- regulation
- mobility
- agency
- dignity

Repair markers:

attention improves, trigger treated, safety restored, baseline clarified.

12. Worked Case 1: Fever, Confusion, Low Blood Pressure

An 82-year-old man presents with fever, confusion, poor oral intake, and low blood pressure.

Danger

Sepsis, shock, delirium, dehydration, AKI, hypoglycemia, hypoxia.

Syndrome

Fever with acute confusion, poor intake, and hemodynamic instability.

Capacity Failure

Defense, circulation, cognition, regulation, clearance, energy.

Coupling Conditions

Age, frailty, baseline cognition, medicines, hydration, infection source, kidney function, caregiver support.

Wise Perturbation

Assess ABCDE, check oxygenation and glucose, obtain vital signs, assess infection source, renal function, urine output, and medicines. Treat according to local sepsis guidance, including timely antibiotics and fluids where appropriate, with senior review if unstable.

Repair Trajectory

Blood pressure stabilizes, respiratory rate improves, fever settles, urine output improves, confusion clears, oral intake returns, support plan is clear.

13. Worked Case 2: Breathless and Drowsy

A 69-year-old woman with COPD is more breathless than usual. She is drowsy, wheezy, and unable to speak full sentences.

Danger

Respiratory failure, hypercapnia, severe COPD exacerbation, pneumonia, pneumothorax, sepsis.

Syndrome

Acute severe dyspnea with wheeze and reduced consciousness in a patient with COPD.

Capacity Failure

Oxygenation, ventilation, regulation, energy, comfort.

Coupling Conditions

Baseline COPD severity, inhaler use, infection trigger, smoking, home oxygen, previous admissions, sedatives, frailty.

Wise Perturbation

Urgent assessment, oxygen support according to local COPD guidance, bronchodilator therapy, infection assessment, blood gas where available/appropriate, senior or respiratory escalation if drowsy, exhausted, or deteriorating.

Repair Trajectory

Respiratory rate improves, oxygenation safer, drowsiness resolves, wheeze reduces, patient speaks more comfortably, escalation avoided or arranged appropriately.

14. Worked Case 3: Weakness and Critical Potassium

A 74-year-old man with CKD is weak and nauseated. Blood tests show potassium 6.7.

Danger

Hyperkalemia causing arrhythmia or cardiac arrest. AKI or worsening CKD. Medication-related potassium rise.

Syndrome

Weakness and nausea with severe hyperkalemia in renal vulnerability.

Capacity Failure

Clearance and electrical stability are failing. Energy and circulation may be threatened.

Coupling Conditions

CKD, ACE inhibitor or ARB, potassium supplements, spironolactone, NSAIDs, dehydration, acidosis, diet, missed follow-up.

Wise Perturbation

Urgent clinical review, ECG, treatment according to local hyperkalemia protocol, review medicines, assess renal function and urine output, repeat potassium, glucose monitoring if insulin is used, senior or renal input if severe or persistent.

Repair Trajectory

Potassium becomes safer, ECG stable, weakness improves, repeat result checked, medicine plan corrected, ongoing monitoring owned.

15. Worked Case 4: “Not Right” After Surgery

A 77-year-old woman is recovering after surgery. The nurse says she is “not right.” She is mildly confused, tachycardic, and has reduced urine output.

Danger

Sepsis, bleeding, dehydration, pulmonary embolism, hypoxia, AKI, pain, medication effect, delirium.

Syndrome

Postoperative acute change with confusion, tachycardia, and oliguria.

Capacity Failure

Circulation, clearance, cognition, regulation, possibly oxygenation.

Coupling Conditions

Recent surgery, pain, opioids, immobility, fluid balance, bleeding risk, infection risk, baseline frailty, catheter status.

Wise Perturbation

Urgent review, vital signs, oxygenation, glucose, pain assessment, fluid status, wound or infection assessment, bleeding assessment, urine output/catheter check, medication review, senior surgical/medical input depending on concern.

Repair Trajectory

Mental state improves, pulse settles, urine output improves, pain controlled without oversedation, cause identified and treated.

16. Common Student Pitfalls

Pitfall 1: Looking at the Computer Before the Patient

Results matter, but the patient's current state comes first.

Pitfall 2: Calling the Patient Stable Without Checking Vital Signs

Stability must be verified.

Pitfall 3: Ignoring Respiratory Rate

Tachypnea is often an early sign of danger.

Pitfall 4: Forgetting Glucose

Always consider glucose in confusion, collapse, seizure, sweating, weakness, or reduced consciousness.

Pitfall 5: Treating Without Reassessment

An intervention is incomplete until response is checked.

Pitfall 6: Delaying Senior Help

Escalation is part of safe care.

Pitfall 7: Failing to Hand Over Risk

If a critical result, repeat test, or reassessment is pending, it must be handed over clearly.

Pitfall 8: Assuming the Diagnosis Is Already Known

A patient with known heart failure can also have sepsis, PE, ACS, arrhythmia, or AKI.

A patient with known dementia can have delirium.

A patient with known anxiety can have hypoxia, PE, or arrhythmia.

17. Clinical Practice Box

When called to see a sick patient, use this structure:

1. Look at the patient.
Do they look critically unwell?

2. Check immediate danger.
Airway, breathing, circulation, disability, exposure, glucose.

3. Review vital signs.
Respiratory rate, oxygen saturation, oxygen requirement, pulse, blood pressure, temperature, consciousness, urine output.

4. Name the syndrome.
What pattern is present?

5. Map capacity failure.
What is failing: oxygenation, circulation, clearance, cognition, energy, comfort?

6. Start wise support.
What helps most with least harm?

7. Call for help if needed.
Use "I am worried because…"

8. Reassess.
Did the patient respond?

9. Hand over.
What risk remains, who owns it, and what must happen next?

18. Mini-Case for Practice

A nurse calls you at 2 a.m. about a 78-year-old woman admitted with a urinary tract infection. She is now more confused, breathing faster, and has passed very little urine. Her blood pressure is lower than earlier.

Apply the sick patient approach.

Danger

Sepsis, shock, AKI, delirium, hypoxia, hypoglycemia, dehydration, medication toxicity.

Syndrome

Infection with acute confusion, tachypnea, oliguria, and falling blood pressure.

Capacity Failure

Defense, circulation, clearance, cognition, regulation, energy, possibly oxygenation.

Coupling Conditions

Age, frailty, baseline cognition, poor intake, medicines, renal function, infection severity, fluid balance, ward monitoring, caregiver information.

Wise Perturbation

Urgent bedside review. Check airway, breathing, circulation, consciousness, glucose, oxygenation, full vital signs, fluid status, urine output, medications, renal function, and infection status. Treat according to local sepsis and AKI guidance, support circulation carefully, escalate early to senior help, and set reassessment time.

Repair Trajectory

Blood pressure stabilizes, respiratory rate improves, urine output increases, mental state clears, infection trajectory improves, renal function and electrolytes monitored, and risk is clearly handed over.

19. Student Takeaway

The sick patient must be approached with organized urgency.

Do not begin with scattered facts.

Begin with:

Is the patient safe now?

Then move through the loop:

Danger: What must not be missed?
Syndrome: What pattern is present?
Capacity Failure: What is failing?
Coupling Conditions: What makes this patient vulnerable?
Wise Perturbation: What helps most with least harm?
Repair Trajectory: How will we know the patient is safer?

The sick patient becomes easier when the clinician stays calm, structured, and ready to escalate.

Chapter 10. Chest Pain Made Easy

Chest pain is one of the most important presentations in Internal Medicine.

It is common.
It is frightening.
It may be harmless.
It may be immediately life-threatening.

The student's task is not to decide too quickly that chest pain is cardiac, muscular, reflux, anxiety, or "nothing serious."

The first task is to ask:

What dangerous causes of chest pain must not be missed?

Chest pain becomes easier when it is approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This chapter teaches a practical approach to chest pain that begins with danger, forms a syndrome, maps the threatened capacity, and moves toward safe action and repair.

1. The First Question: Is This Chest Pain Dangerous?

Chest pain must be treated as potentially dangerous until serious causes have been considered.

Dangerous causes include:

- acute coronary syndrome
- myocardial infarction
- aortic dissection
- pulmonary embolism
- pneumothorax
- tension pneumothorax
- pericarditis or myocarditis
- severe pneumonia
- sepsis
- esophageal rupture
- major gastrointestinal bleeding causing cardiac strain
- severe anemia
- arrhythmia with ischemia or instability

Many patients with chest pain will not have these conditions. But the danger-first clinician does not reassure before checking.

The key question is:

Could this chest pain represent a threat to circulation, oxygenation, vascular integrity, or life?

2. Immediate Danger Features

Assess urgently if chest pain is associated with:

- collapse or syncope
- severe breathlessness
- sweating
- nausea or vomiting
- hypotension
- severe hypertension with concerning symptoms
- tachycardia or bradycardia
- low oxygen saturation
- new confusion
- new neurological symptoms
- tearing pain to the back
- pleuritic pain with dyspnea
- unequal pulses or limb ischemia
- signs of shock
- abnormal ECG
- known high cardiovascular risk
- recent surgery, immobility, pregnancy/postpartum state, or thrombosis risk
- fever and systemic illness
- severe persistent pain

The more danger features are present, the less appropriate it is to reassure, delay, or discharge without a clear safety plan.

3. Chest Pain Is a Symptom, Not a Diagnosis

“Chest pain” alone is too broad.

The clinician must form a syndrome.

Ask:

- Where is the pain?
- What does it feel like?
- When did it start?
- Was onset sudden or gradual?
- How severe is it?

- Is it constant or intermittent?
- Does it radiate?
- Is it related to exertion?
- Is it related to breathing?
- Is it related to posture?
- Is it related to meals?
- Is it reproducible with movement or palpation?
- Are there associated symptoms?
- What are the vital signs?
- What is the patient's risk context?

The goal is not to memorize one perfect question list. The goal is to shape the pattern.

4. Common Chest Pain Syndrome Patterns

Central Pressure With Autonomic Symptoms

Pattern:

- central pressure, heaviness, tightness, or squeezing
- may radiate to arm, jaw, neck, back, or epigastrium
- may occur with sweating, nausea, breathlessness, fear, or collapse
- may be exertional or occur at rest
- may be atypical in diabetes, older age, women, or CKD

Major concern:

Acute coronary syndrome

Threatened capacity:

Circulation, especially coronary perfusion.

Pleuritic Chest Pain With Dyspnea

Pattern:

- sharp pain worse with breathing or coughing
- associated breathlessness
- may have tachycardia, hypoxia, hemoptysis, leg swelling, or thrombosis risk

Major concerns:

- pulmonary embolism
- pneumothorax
- pneumonia

- pleurisy
- pericarditis

Threatened capacity:

Oxygenation and sometimes **circulation**.

Tearing Chest Pain Radiating to the Back

Pattern:

- sudden severe tearing or ripping pain
- may radiate to back
- may have neurological symptoms, syncope, pulse difference, severe hypertension, or shock

Major concern:

Aortic dissection

Threatened capacity:

Vascular integrity and **circulation**.

Chest Pain With Fever and Cough

Pattern:

- chest pain with fever, cough, sputum, pleuritic pain, or breathlessness
- may have tachypnea, hypoxia, crackles, or systemic features

Major concerns:

- pneumonia
- pleurisy
- sepsis
- pulmonary embolism if risk factors or disproportionate symptoms

Threatened capacity:

Defense, **oxygenation**, and sometimes **circulation**.

Chest Pain Worse Lying Flat and Better Sitting Forward

Pattern:

- sharp or central chest pain
- worse lying flat
- better sitting forward

- may follow viral illness
- may be associated with pericardial rub or ECG changes

Major concern:

Pericarditis

Threatened capacity:

Usually **comfort**, but may threaten **circulation** if tamponade develops.

Reproducible Chest Wall Pain

Pattern:

- localized pain
- worse with movement, palpation, coughing, or posture
- often normal vital signs
- no high-risk associated features

Possible causes:

- costochondritis
- muscle strain
- rib injury
- chest wall inflammation

Threatened capacity:

Usually **comfort** and function.

Important caution:

Reproducible pain does not absolutely exclude serious disease. Interpret in context.

Burning Retrosternal Pain After Meals

Pattern:

- burning discomfort
- related to meals, lying down, reflux, sour taste
- may improve with antacid
- usually no abnormal vital signs

Possible causes:

- reflux
- esophagitis

- gastritis
- peptic disease

Important caution:

Cardiac pain may be epigastric or burning, especially in high-risk patients.

Chest Tightness With Fear or Panic

Pattern:

- chest tightness, palpitations, tingling, trembling, fear
- may occur with hyperventilation
- vital signs and examination may be reassuring

Possible cause:

- panic or anxiety syndrome

Important caution:

Anxiety may coexist with medical danger. Do not diagnose anxiety before considering ACS, PE, arrhythmia, asthma, pneumothorax, and other dangers where relevant.

5. Capacity Failure in Chest Pain

Chest pain matters because one or more life-capacities may be threatened.

Circulation

Threatened by:

- acute coronary syndrome
- myocardial infarction
- arrhythmia
- shock
- severe anemia
- aortic dissection
- tamponade
- massive pulmonary embolism

Clinical signals:

- hypotension
- syncope
- sweating

- chest pressure
- abnormal ECG
- weak pulse
- poor perfusion
- new heart failure signs

Oxygenation

Threatened by:

- pulmonary embolism
- pneumothorax
- pneumonia
- pulmonary edema
- severe anemia
- respiratory failure

Clinical signals:

- dyspnea
- hypoxia
- tachypnea
- pleuritic pain
- cyanosis
- confusion

Vascular Integrity

Threatened by:

- aortic dissection
- rupturing aneurysm
- major vascular event

Clinical signals:

- sudden tearing pain
- neurological symptoms
- pulse deficit
- syncope
- shock
- severe hypertension or hypotension

Defense and Tolerance

Threatened by:

- pneumonia

- sepsis
- pericarditis
- myocarditis
- inflammatory conditions

Clinical signals:

- fever
- tachycardia
- systemic illness
- raised inflammatory features
- pleuritic or positional pain

Comfort, Agency, and Dignity

Even non-life-threatening chest pain can cause fear, suffering, and loss of agency.

Patients often fear death during chest pain.

Clear explanation, safety-netting, and respectful communication are part of care.

6. Risk Context

The meaning of chest pain changes with context.

Higher-risk contexts include:

- older age
- diabetes
- chronic kidney disease
- hypertension
- smoking
- known coronary disease
- previous stroke or peripheral vascular disease
- family history of premature cardiovascular disease
- dyslipidemia
- obesity
- inflammatory disease
- pregnancy or postpartum state for thrombotic risk where relevant
- recent surgery or immobility
- active cancer
- previous venous thromboembolism
- anticoagulant use
- stimulant or cocaine use
- connective tissue disease or known aortic disease
- immunosuppression or infection risk

A “mild” symptom in a high-risk patient may require more caution than the same symptom in a low-risk context.

7. Bedside Assessment of Chest Pain

A practical assessment should include:

Appearance

Does the patient look well or unwell?

Look for:

- distress
- sweating
- pallor
- breathlessness
- agitation
- drowsiness
- cyanosis
- shock
- severe pain

Vital Signs

Check:

- respiratory rate
- oxygen saturation
- oxygen requirement
- heart rate
- blood pressure
- temperature
- level of consciousness
- glucose if unwell, diabetic, confused, sweaty, or collapsed

Pain Features

Ask about:

- site
- character
- radiation
- onset
- duration

- severity
- exertional nature
- pleuritic nature
- positional nature
- relation to meals
- reproducibility
- relieving and worsening factors

Associated Symptoms

Ask about:

- breathlessness
- sweating
- nausea or vomiting
- palpitations
- syncope
- cough
- fever
- hemoptysis
- leg swelling
- neurological symptoms
- abdominal or back pain
- dysphagia or vomiting after severe retching

Examination

Examine for:

- perfusion and shock
- heart sounds
- murmurs
- signs of heart failure
- lung crackles
- wheeze
- reduced breath sounds
- chest wall tenderness
- pulse symmetry where relevant
- leg swelling or calf tenderness
- fever or infection signs
- abdominal tenderness if epigastric pain
- neurological signs if dissection or stroke concern

8. Initial Investigations

Investigations depend on the syndrome and local pathways.

Common investigations may include:

- ECG
- repeat ECG if symptoms persist or evolve
- cardiac biomarkers according to local chest pain pathway
- full blood count where anemia or infection is possible
- renal function and electrolytes
- glucose where relevant
- chest X-ray where respiratory, heart failure, pneumonia, pneumothorax, or other thoracic causes are possible
- oxygen saturation monitoring
- blood gas where severe respiratory distress, hypoxia, shock, acidosis, or ventilation concern exists
- D-dimer or imaging only when clinically appropriate and according to local PE/dissection pathways
- pregnancy testing where clinically relevant
- inflammatory markers or cultures where infection is suspected

Testing should answer clinical questions:

- Is there myocardial ischemia?
- Is oxygenation threatened?
- Is infection present?
- Is anemia contributing?
- Is renal function safe for treatment?
- Is pulmonary embolism plausible?
- Is dissection plausible?
- Is pneumothorax present?
- Is the patient safe for discharge?

Do not order tests randomly. Let the syndrome guide the investigation.

9. Dangerous Diagnoses Not to Miss

Acute Coronary Syndrome

Consider when chest pain is:

- central, pressure-like, heavy, tight, or squeezing
- exertional or occurring at rest
- associated with sweating, nausea, breathlessness, collapse, or palpitations
- radiating to arm, jaw, neck, back, or epigastrium
- occurring in a patient with cardiovascular risk factors

Remember:

Diabetes, older age, CKD, and frailty may produce atypical symptoms.

Capacity threatened:

Coronary circulation

Wise action:

Urgent ECG, monitoring, local ACS pathway, senior/cardiology input depending on risk and findings.

Aortic Dissection

Consider when chest pain is:

- sudden and severe
- tearing or ripping
- radiating to the back
- associated with syncope, neurological symptoms, pulse difference, severe hypertension, shock, or known aortic disease

Capacity threatened:

Vascular integrity and **circulation**

Wise action:

Urgent senior/emergency assessment and imaging pathway according to local protocols. Avoid premature reassurance.

Pulmonary Embolism

Consider when chest pain is:

- pleuritic
- associated with dyspnea, tachycardia, hypoxia, hemoptysis, syncope, or leg swelling
- occurring after surgery, immobility, cancer, pregnancy/postpartum state, previous VTE, or other thrombosis risk

Capacity threatened:

Oxygenation and sometimes **circulation**

Wise action:

Risk assessment and investigation according to local PE pathway. Escalate if unstable.

Pneumothorax

Consider when chest pain is:

- sudden
- pleuritic
- associated with breathlessness
- with reduced breath sounds or hyperresonance
- occurring in tall thin young patients, lung disease, trauma, or procedures

Capacity threatened:

Oxygenation

Tension pneumothorax threatens **circulation** as well.

Wise action:

Urgent assessment and management according to local emergency protocols if tension physiology suspected.

Pericarditis and Myocarditis

Consider when chest pain is:

- sharp or central
- positional
- pleuritic
- following viral illness
- associated with fever, palpitations, breathlessness, or ECG changes

Capacity threatened:

Usually **comfort**, but myocarditis or tamponade can threaten **circulation**.

Wise action:

ECG, clinical assessment, biomarkers and imaging where appropriate, senior input depending on severity.

Pneumonia and Sepsis

Consider when chest pain is:

- pleuritic
- associated with cough, fever, sputum, dyspnea, hypoxia, tachypnea, or confusion

Capacity threatened:

Defense, **oxygenation**, and sometimes **circulation**

Wise action:

Assess severity, oxygenation, sepsis features, and treat according to local infection guidance.

Esophageal Rupture

Consider when chest pain follows:

- severe vomiting or retching
- severe chest or epigastric pain
- systemic toxicity
- subcutaneous emphysema
- shock

Capacity threatened:

Vascular/infective integrity, **circulation**, and **defense**

Wise action:

Urgent senior/emergency assessment.

10. Wise Perturbation in Chest Pain

Treatment depends on syndrome and diagnosis.

Avoid giving a single universal chest pain treatment.

Instead, ask:

- What dangerous cause is most likely or must be excluded?
- Is the patient unstable?
- What capacity is threatened?
- What local pathway applies?
- What treatment could help?
- What treatment could harm?
- What monitoring is needed?
- Is senior help needed?

Examples:

Suspected ACS

Use local ACS/chest pain pathway.

Ensure ECG, monitoring, risk assessment, appropriate biomarkers, analgesia if needed, and escalation depending on findings.

Suspected PE

Use local PE pathway.

Assess stability, oxygenation, bleeding risk, and need for urgent imaging or escalation.

Suspected Pneumothorax

Assess oxygenation and hemodynamic stability.

Escalate urgently if tension pneumothorax is suspected.

Suspected Pneumonia

Assess oxygenation, sepsis features, source severity, and local antibiotic guidance.

Suspected Musculoskeletal Pain

If danger has been considered and the patient is stable, focus on pain relief, explanation, function, and safety-netting.

Suspected Reflux

If danger has been considered and the pattern is consistent, treat appropriately and safety-net.

Suspected Anxiety

Only after medical danger has been considered. Provide reassurance, explanation, and support without dismissing symptoms.

11. Repair Trajectory in Chest Pain

Repair depends on the cause.

General repair markers include:

- pain improving
- vital signs stable
- oxygenation safe
- ECG pathway completed or appropriately escalated
- cardiac biomarkers interpreted where relevant

- dangerous diagnoses excluded or treated
- patient understands working diagnosis
- medicines explained if prescribed
- follow-up arranged
- safety-net clear

Repair After Suspected ACS

- pain controlled
- ECG reviewed
- troponin pathway interpreted
- rhythm stable
- appropriate admission, discharge, or referral decision made
- risk factors and medicines addressed
- patient understands when to seek urgent help

Repair After Pneumonia-Related Chest Pain

- fever settling
- breathlessness improving
- oxygen requirement reducing
- pain controlled
- oral intake improving
- infection plan clear

Repair After Musculoskeletal Chest Pain

- dangerous causes considered
- pain manageable
- movement improving
- patient reassured with explanation
- warning signs understood

Repair After Anxiety-Associated Chest Tightness

- medical danger considered
- breathing and physiology safe
- symptoms explained without dismissal
- patient supported
- recurrence plan clear
- mental health support considered if needed

12. Safety-Netting in Chest Pain

Chest pain safety-netting must be specific.

Weak advice:

“Come back if worse.”

Stronger advice:

“Seek urgent medical help if chest pain returns or worsens, if it occurs with breathlessness, sweating, fainting, palpitations, weakness, nausea, pain spreading to the arm, jaw or back, coughing blood, new neurological symptoms, or if you feel seriously unwell.”

Also explain:

- what diagnosis is suspected
- what has been checked
- what uncertainty remains
- what follow-up is needed
- what medicines were started or changed
- who will review results
- when to return urgently

Use teach-back:

“Can you tell me what symptoms would make you seek urgent help?”

13. Worked Case 1: High-Risk Chest Pain

A 62-year-old man with diabetes presents with two hours of central chest pressure radiating to the left arm. He is sweating and nauseated.

Danger

Acute coronary syndrome must be considered first. Other serious causes include dissection, PE, pneumothorax, and arrhythmia depending on features.

Syndrome

High-risk central chest pain with autonomic symptoms in a patient with diabetes.

Capacity Failure

Coronary circulation is threatened. Comfort and agency are also affected.

Coupling Conditions

Diabetes, possible hypertension, CKD, smoking, delayed presentation, medication history, access to emergency care.

Wise Perturbation

Urgent ECG, vital signs, monitoring, local ACS pathway, blood tests including cardiac biomarkers according to local pathway, analgesia if needed, senior/cardiology input depending on findings.

Repair Trajectory

Pain improves, vital signs stable, ECG and troponin pathway interpreted, appropriate risk plan made, patient understands urgency and next steps.

14. Worked Case 2: Pleuritic Pain and Dyspnea

A 44-year-old woman presents with sudden pleuritic chest pain and shortness of breath after recent surgery. She is tachycardic and mildly hypoxic.

Danger

Pulmonary embolism is a major concern. Pneumothorax, pneumonia, and ACS may also be considered depending on context.

Syndrome

Sudden pleuritic chest pain with dyspnea, tachycardia, hypoxia, and recent surgery.

Capacity Failure

Oxygenation is threatened. Circulation may be threatened if PE is large.

Coupling Conditions

Recent surgery, immobility, thrombosis risk, bleeding risk, medication history, comorbidities.

Wise Perturbation

Urgent assessment, oxygenation support if needed, PE risk pathway according to local guidance, imaging or testing as appropriate, senior input if unstable, consider anticoagulation according to local pathway and bleeding risk.

Repair Trajectory

Oxygenation stabilizes, pain and breathlessness improve, diagnosis clarified, treatment started if confirmed or strongly suspected, bleeding risk monitored, follow-up plan clear.

15. Worked Case 3: Chest Pain With Fever and Cough

A 70-year-old man presents with pleuritic chest pain, fever, cough, tachypnea, and low oxygen saturation.

Danger

Pneumonia with hypoxia, sepsis, pulmonary embolism if disproportionate symptoms or risk factors, pneumothorax less likely but considered if sudden.

Syndrome

Fever and cough with pleuritic chest pain, tachypnea, and hypoxia.

Capacity Failure

Defense, oxygenation, comfort, and possibly circulation.

Coupling Conditions

Age, frailty, COPD, smoking, aspiration risk, immune status, home support, baseline mobility.

Wise Perturbation

Assess severity, oxygenation, sepsis features, chest examination, chest imaging where appropriate, infection treatment according to local guidance, fluids only if indicated and reassessed, monitor respiratory status.

Repair Trajectory

Fever settles, respiratory rate improves, oxygen requirement falls, pain improves, oral intake returns, mobility and cognition remain safe.

16. Worked Case 4: Reproducible Chest Wall Pain

A 28-year-old man has localized sharp chest pain after lifting heavy boxes. The pain is worse with movement and palpation. Vital signs are normal. He has no breathlessness, syncope, fever, or cardiovascular risk factors.

Danger

Serious causes appear less likely, but danger must still be considered. No current features of ACS, PE, pneumothorax, pneumonia, or dissection are present.

Syndrome

Localized musculoskeletal chest wall pain.

Capacity Failure

Comfort and movement are affected.

Coupling Conditions

Recent strain, work demands, anxiety about chest pain, need for safe return to activity.

Wise Perturbation

Explanation, appropriate pain relief if safe, advice on movement and activity, safety-netting for new or worsening symptoms.

Repair Trajectory

Pain improves, movement returns, patient understands warning signs, no new danger features develop.

17. Worked Case 5: Chest Tightness and Panic

A 35-year-old patient presents with chest tightness, tingling fingers, palpitations, and fear of dying. Symptoms occurred during emotional stress. Vital signs, oxygen saturation, examination, and ECG are reassuring.

Danger

Before diagnosing panic, consider ACS, arrhythmia, PE, asthma, pneumothorax, stimulant use, and other dangers based on context.

Syndrome

Chest tightness with panic symptoms and reassuring physiological assessment.

Capacity Failure

Comfort, regulation, and agency are affected.

Coupling Conditions

Stress, anxiety, sleep, caffeine or stimulant use, previous panic, trauma, health fears, social support.

Wise Perturbation

Explain findings respectfully. Avoid dismissive language. Provide reassurance grounded in assessment. Discuss breathing, recurrence plan, follow-up, and mental health support where needed. Safety-net for danger features.

Repair Trajectory

Fear reduces, patient understands why immediate danger seems unlikely, knows warning signs, and has a plan for recurrence.

18. Common Student Pitfalls

Pitfall 1: Calling Chest Pain “Anxiety” Too Early

Anxiety may be present, but danger must be considered first.

Pitfall 2: Assuming Young Patients Cannot Have Serious Disease

Risk is lower, but not zero. Context matters.

Pitfall 3: Missing Atypical ACS

Older adults, diabetic patients, patients with CKD, and some women may have atypical symptoms.

Pitfall 4: Ignoring Vital Signs

Chest pain with abnormal vital signs is higher risk.

Pitfall 5: Forgetting Pulmonary Causes

Pleuritic chest pain with dyspnea may be PE, pneumothorax, pneumonia, or pleurisy.

Pitfall 6: Forgetting Dissection

Sudden tearing pain, back radiation, neurological symptoms, pulse differences, or shock should raise concern.

Pitfall 7: Reassuring After One Normal Test Without Considering the Whole Pathway

Chest pain assessment often requires time, repeat assessment, and pathway-based interpretation.

Pitfall 8: Weak Safety-Netting

“Come back if worse” is not enough.

19. Clinical Practice Box

When assessing chest pain, complete this structure:

Danger: What serious causes must not be missed?

Syndrome: What pattern is present?

Risk context: What makes this patient higher or lower risk?

Capacity failure: What is threatened: circulation, oxygenation, vascular integrity, defense, comfort?

Initial assessment: What vital signs, examination, ECG, or tests are needed?

Wise perturbation: What pathway or treatment is needed now?

Repair trajectory: What would show the patient is safer?

Safety-net: What warning signs require urgent help?

20. Mini-Case for Practice

A 57-year-old woman with hypertension and CKD presents with burning central chest discomfort and nausea. She thought it was indigestion. The discomfort began while walking uphill and improved with rest, but returned later while sitting.

Apply the chest pain approach.

Danger

Acute coronary syndrome must be considered despite the burning quality. Other dangers include PE, dissection, arrhythmia, and severe anemia depending on assessment.

Syndrome

Exertional central chest discomfort with nausea in a patient with cardiovascular risk factors, recurring at rest.

Capacity Failure

Coronary circulation may be threatened. Comfort and agency are affected.

Coupling Conditions

Hypertension, CKD, possible diabetes or dyslipidemia if present, medicine use, delayed presentation because symptoms seemed like indigestion, access to care.

Wise Perturbation

Urgent vital signs, ECG, local chest pain/ACS pathway, cardiac biomarkers according to local guidance, monitoring, senior input depending on findings. Avoid dismissing as reflux until cardiac danger is addressed.

Repair Trajectory

Symptoms controlled, ECG and biomarker pathway interpreted, risk clarified, appropriate admission or discharge decision made, patient understands warning signs and follow-up.

21. Student Takeaway

Chest pain becomes easier when approached in order.

Do not start with reassurance.

Start with danger.

Then ask:

What pattern is present?
What capacity is threatened?
What context changes risk?
What pathway or treatment is needed?
How will we know the patient is safe?

Chest pain may threaten circulation, oxygenation, vascular integrity, comfort, agency, and life itself.

The safe clinician remains calm, structured, and danger-aware.

Chapter 11. Dyspnea Made Easy

Dyspnea means the patient feels unable to breathe comfortably.

It may be mild and chronic.
It may be sudden and life-threatening.
It may come from the lungs, heart, blood, kidneys, metabolism, nerves, muscles, medicines, anxiety, or the whole body under stress.

Because dyspnea can deteriorate quickly, the first question is not:

“What is the diagnosis?”

The first question is:

“Is oxygenation or ventilation failing now?”

Dyspnea becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This chapter teaches a practical way to recognize dangerous dyspnea, form useful syndrome patterns, map capacity failure, and track repair.

1. The First Question: Is This Dyspnea Dangerous?

Dyspnea may signal immediate danger.

Dangerous causes include:

- respiratory failure
- severe asthma exacerbation
- severe COPD exacerbation
- pneumonia with hypoxia
- pulmonary embolism
- pneumothorax
- pulmonary edema
- acute heart failure
- acute coronary syndrome
- arrhythmia
- sepsis
- anaphylaxis
- severe anemia
- metabolic acidosis
- neuromuscular weakness
- airway obstruction

- aspiration
- overdose or sedative effect

The danger-first question is:

Can this patient maintain oxygenation, ventilation, circulation, and work of breathing?

If the answer is uncertain, assess urgently and escalate early.

2. Immediate Danger Features in Dyspnea

Urgent assessment is needed if dyspnea is associated with:

- low oxygen saturation
- rising oxygen requirement
- severe tachypnea
- very slow or shallow breathing
- inability to speak full sentences
- cyanosis
- exhaustion
- drowsiness or confusion
- silent chest
- severe wheeze
- chest pain
- syncope
- hypotension
- shock
- hemoptysis
- unilateral leg swelling
- fever with instability
- stridor
- facial or tongue swelling
- severe anxiety with abnormal physiology
- known severe lung disease
- pregnancy or postpartum thrombosis risk where relevant
- recent surgery or immobility
- active cancer or previous venous thromboembolism

A patient who is too breathless to speak, too drowsy to cooperate, or requiring increasing oxygen is not safe for slow outpatient reasoning.

3. Dyspnea Is a Symptom, Not a Diagnosis

“Shortness of breath” alone is too broad.

The clinician must form a dyspnea syndrome.

Ask:

- Did it begin suddenly or gradually?
- Is it acute, recurrent, progressive, or chronic?
- Is it present at rest or only on exertion?
- Is there cough?
- Is there fever?
- Is there wheeze?
- Is there chest pain?
- Is the pain pleuritic?
- Is there orthopnea or paroxysmal nocturnal dyspnea?
- Is there leg swelling?
- Is there hemoptysis?
- Is there palpitations or syncope?
- Is there anemia, bleeding, or black stools?
- Is there anxiety or panic?
- What are the vital signs?
- What is the oxygen saturation?
- Is the patient using accessory muscles?
- What is the risk context?

The goal is to convert the symptom into a pattern.

4. Common Dyspnea Syndrome Patterns

Dyspnea With Fever and Cough

Pattern:

- breathlessness
- fever
- cough
- sputum
- pleuritic chest pain
- tachypnea
- crackles
- hypoxia in more severe cases

Possible causes:

- pneumonia
- bronchitis
- viral respiratory infection
- aspiration

- sepsis
- COPD/asthma exacerbation triggered by infection

Threatened capacities:

Defense, **oxygenation**, **comfort**, and sometimes **circulation**.

Dyspnea With Wheeze

Pattern:

- breathlessness
- wheeze
- chest tightness
- cough
- prolonged expiration
- possible reduced peak flow where used
- possible silent chest in severe disease

Possible causes:

- asthma exacerbation
- COPD exacerbation
- anaphylaxis
- heart failure with wheeze
- airway obstruction
- inhaled irritant exposure

Threatened capacities:

Ventilation, **oxygenation**, **energy**, and **comfort**.

Dyspnea With Edema and Orthopnea

Pattern:

- progressive breathlessness
- leg swelling
- orthopnea
- paroxysmal nocturnal dyspnea
- crackles
- raised jugular venous pressure where present
- reduced exercise tolerance
- possible reduced urine output

Possible causes:

- heart failure

- renal failure with fluid overload
- valvular disease
- arrhythmia
- uncontrolled hypertension
- medication-related fluid retention

Threatened capacities:

Circulation, **oxygenation**, **clearance**, **mobility**, and **sleep**.

Sudden Dyspnea With Pleuritic Chest Pain

Pattern:

- sudden breathlessness
- sharp pain worse on breathing
- tachycardia
- possible hypoxia
- possible hemoptysis
- possible syncope
- thrombosis risk factors

Possible causes:

- pulmonary embolism
- pneumothorax
- pneumonia
- pleurisy
- pericarditis

Threatened capacities:

Oxygenation and sometimes **circulation**.

Dyspnea With Chest Pressure or Sweating

Pattern:

- breathlessness
- chest pressure or tightness
- sweating
- nausea
- exertional symptoms
- cardiovascular risk factors

Possible causes:

- acute coronary syndrome

- acute heart failure
- arrhythmia
- pulmonary embolism
- severe anemia

Threatened capacities:

Circulation and **oxygenation**.

Dyspnea With Severe Anemia

Pattern:

- exertional breathlessness
- fatigue
- dizziness
- palpitations
- pallor
- possible chest pain
- possible bleeding history

Possible causes:

- iron deficiency anemia
- gastrointestinal bleeding
- heavy menstrual bleeding where relevant
- hemolysis
- chronic kidney disease
- malignancy or chronic disease

Threatened capacities:

Oxygen delivery, **energy**, **circulation reserve**, and **mobility**.

Dyspnea With Acidosis

Pattern:

- deep or rapid breathing
- systemic illness
- abdominal pain, vomiting, dehydration, or diabetes in some cases
- renal failure or sepsis context
- altered mental state in severe cases

Possible causes:

- diabetic ketoacidosis
- sepsis

- renal failure
- lactic acidosis
- toxins
- severe shock

Threatened capacities:

Regulation, **clearance**, **circulation**, **energy**, and **ventilation compensation**.

Dyspnea With Anxiety Symptoms

Pattern:

- breathlessness or chest tightness
- fear
- tingling fingers
- palpitations
- trembling
- sense of impending doom
- often normal oxygen saturation and examination

Possible causes:

- panic syndrome
- anxiety
- hyperventilation

Important caution:

Anxiety may coexist with asthma, PE, ACS, arrhythmia, pneumothorax, or other medical danger. Do not diagnose anxiety before checking physiology and context.

Threatened capacities:

Comfort, **regulation**, and **agency**.

5. Capacity Failure in Dyspnea

Dyspnea matters because it may signal failure of one or more capacities.

Oxygenation

The lungs cannot adequately load oxygen into blood, or oxygen delivery to tissues is threatened.

Signals include:

- low oxygen saturation
- rising oxygen requirement
- cyanosis
- tachypnea
- confusion
- severe distress

Common causes include pneumonia, pulmonary edema, PE, pneumothorax, severe asthma/COPD, aspiration, and anemia.

Ventilation

The patient cannot adequately move air in and out or clear carbon dioxide.

Signals include:

- drowsiness
- headache
- confusion
- shallow breathing
- severe COPD/asthma
- neuromuscular weakness
- sedative or opioid effect
- respiratory exhaustion

Ventilation failure may be missed if oxygen saturation alone is followed without attention to mental state and work of breathing.

Circulation

Dyspnea may arise because the heart or circulation cannot deliver oxygen effectively.

Signals include:

- edema
- orthopnea
- hypotension
- tachycardia
- arrhythmia
- chest pain
- poor perfusion
- poor urine output

Common causes include heart failure, ACS, arrhythmia, PE, shock, and severe anemia.

Clearance

Fluid overload, acidosis, or toxin accumulation may cause dyspnea.

Signals include:

- reduced urine output
- edema
- rising creatinine
- hyperkalemia
- acidosis
- pulmonary congestion

Kidney failure can cause dyspnea through fluid overload and acid-base disturbance.

Energy and Work of Breathing

Breathing requires energy.

A patient may become exhausted from the work of breathing.

Signals include:

- inability to speak
- accessory muscle use
- fatigue
- drowsiness
- decreasing respiratory effort after severe distress
- silent chest

A quiet, exhausted patient may be more dangerous than a noisy, anxious one.

Comfort and Agency

Dyspnea is frightening.

Even when oxygenation is safe, breathlessness can narrow agency, sleep, mobility, and quality of life.

The clinician should treat breathlessness as suffering, not only as a number.

6. Bedside Assessment of Dyspnea

Look First

Does the patient look breathless?

Notice:

- posture

- ability to speak
- accessory muscle use
- cyanosis
- sweating
- agitation
- drowsiness
- exhaustion
- audible wheeze or stridor
- respiratory effort
- ability to lie flat
- fear

A patient sitting forward, unable to speak, with rising oxygen needs requires urgent attention.

Vital Signs

Check:

- respiratory rate
- oxygen saturation
- oxygen requirement
- pulse
- blood pressure
- temperature
- level of consciousness
- glucose where relevant

Respiratory rate is central. Do not ignore it.

Focused History

Ask:

- sudden or gradual onset?
- at rest or exertion?
- cough, sputum, fever?
- wheeze?
- chest pain?
- pleuritic pain?
- orthopnea?
- leg swelling?
- hemoptysis?
- palpitations?
- syncope?
- recent surgery or immobility?
- pregnancy/postpartum where relevant?
- cancer or previous clot?
- asthma/COPD history?

- heart failure history?
- kidney disease?
- anemia or bleeding symptoms?
- smoking or occupational exposures?
- medicines, including sedatives, opioids, beta-blockers, NSAIDs, diuretics, anticoagulants?

Examination

Assess:

- general appearance
- respiratory effort
- chest expansion
- wheeze
- crackles
- reduced breath sounds
- dullness to percussion where relevant
- heart sounds
- rhythm
- signs of heart failure
- jugular venous pressure where appropriate
- peripheral edema
- calf swelling or tenderness
- pallor
- fever or sepsis signs
- neurological weakness if neuromuscular cause suspected

7. Initial Investigations

Investigations depend on the syndrome, severity, and local pathways.

Common investigations may include:

- oxygen saturation monitoring
- ECG
- chest X-ray
- full blood count
- renal function and electrolytes
- glucose
- inflammatory markers where infection suspected
- cardiac biomarkers where ACS is possible
- natriuretic peptides where used for heart failure assessment
- blood gas where severe hypoxia, hypercapnia, acidosis, shock, or ventilation failure is suspected
- D-dimer or imaging according to local PE pathway where clinically appropriate
- sputum or cultures where infection severity warrants
- lung ultrasound or echocardiography where available and appropriate

Testing should answer practical questions:

- Is oxygenation failing?
- Is ventilation failing?
- Is there infection?
- Is there heart failure?
- Is there ischemia or arrhythmia?
- Is there anemia?
- Is there renal failure or acidosis?
- Is PE or pneumothorax plausible?
- Is the patient safe for the current setting?

8. Dangerous Diagnoses Not to Miss

Respiratory Failure

Danger signs:

- severe hypoxia
- rising oxygen requirement
- drowsiness
- exhaustion
- inability to speak
- very high or falling respiratory rate
- cyanosis
- severe wheeze or silent chest

Capacity failure:

Oxygenation and/or ventilation

Wise action:

Urgent assessment, oxygen support according to local guidance, treatment of cause, senior escalation, and close reassessment.

Severe Asthma

Danger signs:

- severe breathlessness
- inability to speak
- exhaustion
- silent chest
- hypoxia
- confusion

- poor response to initial treatment

Capacity failure:

Ventilation, **oxygenation**, **energy**

Wise action:

Follow local acute asthma pathway, bronchodilator treatment, oxygen where appropriate, steroids according to guidance, urgent escalation if severe or not responding.

COPD Exacerbation With Ventilation Risk

Danger signs:

- worsening breathlessness
- wheeze
- drowsiness
- confusion
- history of CO_2 retention
- severe hypoxia
- acidosis/hypercapnia where assessed

Capacity failure:

Ventilation, **oxygenation**, **regulation**

Wise action:

Controlled oxygen according to local guidance, bronchodilators, infection assessment, blood gas where appropriate, senior/respiratory escalation if drowsy, acidotic, or worsening.

Pneumonia With Hypoxia or Sepsis

Danger signs:

- fever
- tachypnea
- hypoxia
- confusion
- hypotension
- poor perfusion
- poor oral intake
- frailty
- immunosuppression

Capacity failure:

Defense, **oxygenation**, **circulation**, **cognition**

Wise action:

Assess severity, oxygen support if needed, local antibiotic guidance, sepsis pathway where appropriate, hydration assessment, monitoring.

Pulmonary Embolism

Danger signs:

- sudden dyspnea
- pleuritic chest pain
- tachycardia
- hypoxia
- syncope
- hemoptysis
- leg swelling
- recent surgery or immobility
- cancer
- previous VTE
- pregnancy/postpartum risk where relevant

Capacity failure:

Oxygenation, sometimes **circulation**

Wise action:

Assess stability, use local PE pathway, consider imaging/testing and anticoagulation according to risk and bleeding context, escalate if unstable.

Pulmonary Edema / Acute Heart Failure

Danger signs:

- severe breathlessness
- orthopnea
- crackles
- hypoxia
- edema
- high or low blood pressure
- chest pain
- arrhythmia
- reduced urine output

Capacity failure:

Circulation, **oxygenation**, **clearance**

Wise action:

Assess cause, oxygenation, ECG, renal function, potassium, fluid status, and treat congestion according to local guidance with close monitoring.

Pneumothorax

Danger signs:

- sudden dyspnea
- pleuritic chest pain
- reduced breath sounds
- hypoxia
- hypotension or tracheal deviation in tension physiology

Capacity failure:

Oxygenation, and in tension pneumothorax **circulation**

Wise action:

Urgent assessment and emergency management according to local protocols if tension pneumothorax suspected.

Anaphylaxis

Danger signs:

- airway swelling
- stridor
- wheeze
- hypotension
- rash or urticaria
- gastrointestinal symptoms
- exposure to allergen
- rapid progression

Capacity failure:

Airway, **breathing**, **circulation**

Wise action:

Immediate emergency treatment according to local anaphylaxis protocol and call for help.

Severe Anemia

Danger signs:

- exertional dyspnea
- chest pain
- syncope
- tachycardia
- hypotension
- pallor
- active bleeding
- black stools
- heart failure symptoms

Capacity failure:

Oxygen delivery, **circulation reserve**, **energy**

Wise action:

Assess severity, bleeding source, hemodynamic stability, hemoglobin, and need for urgent treatment or referral according to local practice.

Metabolic Acidosis

Danger signs:

- rapid deep breathing
- dehydration
- shock
- diabetes
- renal failure
- sepsis
- altered mental state
- abdominal pain or vomiting

Capacity failure:

Regulation, **clearance**, **circulation**, **energy**

Wise action:

Identify cause, check glucose/ketones where relevant, renal function/electrolytes, blood gas where appropriate, treat underlying emergency according to local pathway.

9. Wise Perturbation in Dyspnea

Treatment depends on the dyspnea syndrome.

Avoid treating all dyspnea the same.

Ask:

- Is oxygen needed?
- Is ventilation failing?
- Is circulation failing?
- Is infection likely?
- Is bronchospasm present?
- Is fluid overload present?
- Is PE possible?
- Is anemia present?
- Is acidosis driving breathing?
- Could medicines be causing harm?
- Who needs to be called?
- How soon should reassessment occur?

Oxygen

Oxygen is used to correct hypoxia, not as a universal comfort measure for all breathlessness.

Monitor response and follow local target saturation guidance, especially in patients at risk of carbon dioxide retention.

Bronchodilators

Useful when bronchospasm is present, such as asthma or COPD exacerbation.

Monitor wheeze, respiratory rate, oxygenation, heart rate, tremor, and clinical response.

Diuresis

Useful when congestion or pulmonary edema is present.

Monitor breathlessness, oxygenation, urine output, renal function, electrolytes, blood pressure, and dizziness.

Antibiotics

Useful when bacterial infection is suspected or severe infection is possible.

Monitor fever, respiratory status, hemodynamics, renal function, side effects, and clinical trajectory.

Anticoagulation

May be needed when PE is confirmed or strongly suspected according to local pathways.

Always consider bleeding risk, renal function, and diagnostic certainty.

Fluids

May help sepsis or hypovolemia, but may worsen pulmonary edema.

Assess volume status and reassess after administration.

Ventilatory Support

May be needed if oxygenation or ventilation failure is severe or worsening.

Requires senior escalation and local protocols.

Breathlessness Relief

In chronic or palliative dyspnea, comfort measures, positioning, fan/airflow, breathing strategies, anxiety support, and carefully chosen medicines may be appropriate.

10. Repair Trajectory in Dyspnea

Repair is shown by more than a better oxygen saturation.

Repair markers include:

- less breathlessness
- lower respiratory rate
- reduced work of breathing
- ability to speak more comfortably
- lower oxygen requirement
- improved mental state
- improved chest findings where relevant
- fever settling if infection
- edema reducing if congestion
- urine output improving if fluid balance was involved
- walking distance improving
- sleep improving
- anxiety reducing
- patient understands inhalers, medicines, warning signs, and follow-up

If oxygen saturation improves but the patient remains exhausted, drowsy, or unable to speak, repair is incomplete.

If breathlessness improves but renal function worsens dangerously after treatment, repair is complicated by harm.

If pneumonia improves but the patient cannot walk, eat, or safely return home, repair is incomplete.

11. Safety-Netting in Dyspnea

Safety-netting must be specific.

Weak advice:

“Come back if breathing gets worse.”

Stronger advice:

“Seek urgent help if you become more breathless, cannot speak full sentences, develop chest pain, faint, cough blood, become confused or very drowsy, develop blue lips, need more inhaler than usual without relief, have high fever or shaking chills, or your oxygen levels fall if you monitor them.”

Also explain:

- what the working diagnosis is
- what uncertainty remains
- what treatment should do
- how quickly improvement is expected
- what medicines to take and how
- when follow-up is needed
- what pending results must be checked
- who to contact if worsening occurs

Use teach-back when possible.

12. Worked Case 1: Dyspnea With Fever

A 72-year-old man presents with fever, cough, pleuritic chest pain, tachypnea, and oxygen saturation of 89% on room air.

Danger

Pneumonia with hypoxia, sepsis, respiratory failure, PE if disproportionate or risk factors.

Syndrome

Acute dyspnea with fever, cough, pleuritic pain, tachypnea, and hypoxia.

Capacity Failure

Defense, oxygenation, comfort, possibly circulation.

Coupling Conditions

Age, frailty, COPD if present, aspiration risk, immune status, baseline mobility, home support.

Wise Perturbation

Assess severity, oxygen support according to local guidance, chest assessment/imaging where appropriate, infection treatment according to local protocol, sepsis assessment if unstable, hydration and renal function review, reassessment.

Repair Trajectory

Fever settles, respiratory rate improves, oxygen requirement decreases, breathlessness eases, oral intake improves, mobility returns, discharge safety clear.

13. Worked Case 2: Dyspnea With Edema

A 78-year-old woman with CKD presents with progressive breathlessness, orthopnea, leg swelling, crackles, and reduced urine output.

Danger

Pulmonary edema, respiratory failure, ACS, arrhythmia, hyperkalemia, worsening renal failure.

Syndrome

Progressive dyspnea with congestion and renal vulnerability.

Capacity Failure

Circulation, oxygenation, clearance, mobility, sleep.

Coupling Conditions

CKD, hypertension, heart failure, medicines, salt intake, NSAID use if present, frailty, adherence, home monitoring.

Wise Perturbation

Assess oxygenation, ECG, renal function, potassium, volume status, urine output, medicines. Treat congestion carefully according to clinical status and local guidance. Monitor renal function, electrolytes, blood pressure, urine output, and symptoms.

Repair Trajectory

Less breathlessness, reduced edema, lower oxygen requirement, safer potassium, stable renal function, improved sleep and mobility.

14. Worked Case 3: Sudden Dyspnea After Surgery

A 50-year-old patient develops sudden dyspnea and pleuritic chest pain one week after surgery. They are tachycardic and mildly hypoxic.

Danger

Pulmonary embolism is a major concern. Pneumothorax, pneumonia, ACS, and bleeding/anemia may also be considered depending on assessment.

Syndrome

Sudden pleuritic dyspnea with hypoxia and recent surgery.

Capacity Failure

Oxygenation is threatened. Circulation may be threatened if PE is large.

Coupling Conditions

Recent surgery, immobility, thrombosis risk, bleeding risk, anticoagulation status, comorbidities.

Wise Perturbation

Assess stability, oxygenation, ECG, chest findings, PE risk using local pathway, imaging/testing as appropriate, anticoagulation decisions according to local guidance and bleeding risk, senior escalation if unstable.

Repair Trajectory

Oxygenation stable, diagnosis clarified, treatment started if indicated, pain and breathlessness improve, bleeding risk monitored, follow-up arranged.

15. Worked Case 4: COPD and Drowsiness

A 69-year-old man with COPD is increasingly breathless and drowsy. He has wheeze and cannot speak full sentences.

Danger

Respiratory failure, possible hypercapnia, severe COPD exacerbation, pneumonia, pneumothorax, sepsis.

Syndrome

Severe dyspnea with wheeze and reduced consciousness in COPD.

Capacity Failure

Ventilation, oxygenation, regulation, energy, comfort.

Coupling Conditions

Baseline lung disease, previous CO_2 retention, infection trigger, inhaler technique, home oxygen, sedatives, frailty.

Wise Perturbation

Urgent assessment, oxygen according to local COPD guidance, bronchodilators, infection assessment, blood gas where appropriate, senior/respiratory escalation, close monitoring.

Repair Trajectory

Drowsiness improves, respiratory rate stabilizes, oxygenation safer, wheeze reduces, patient can speak, escalation plan clear.

16. Worked Case 5: Dyspnea and Panic

A 32-year-old patient presents with breathlessness, tingling fingers, chest tightness, and fear. Oxygen saturation, respiratory examination, ECG, and vital signs are reassuring. No PE, asthma, or cardiac risk features are present.

Danger

Medical danger should be considered before settling on anxiety. Assess for asthma, PE, ACS, arrhythmia, pneumothorax, anaphylaxis, and stimulant use where relevant.

Syndrome

Dyspnea with panic symptoms and reassuring physiology.

Capacity Failure

Comfort, regulation, agency.

Coupling Conditions

Stress, sleep, caffeine or stimulant use, trauma history, prior panic, health anxiety, social support.

Wise Perturbation

Explain findings respectfully. Avoid dismissing symptoms. Provide calm reassurance, breathing support, follow-up, mental health support if needed, and specific safety-netting.

Repair Trajectory

Fear reduces, breathing settles, patient understands why immediate danger seems unlikely, recurrence plan is clear.

17. Common Student Pitfalls

Pitfall 1: Treating Dyspnea as Anxiety Too Early

Anxiety can coexist with dangerous disease. Check physiology first.

Pitfall 2: Ignoring Respiratory Rate

Respiratory rate is one of the most important signs in dyspnea.

Pitfall 3: Following Oxygen Saturation Alone

Work of breathing, mental state, respiratory rate, and oxygen requirement matter.

Pitfall 4: Forgetting Ventilation Failure

A drowsy COPD patient may be retaining CO_2 even if oxygen saturation seems acceptable.

Pitfall 5: Giving Fluids Without Considering Pulmonary Edema

Fluids may worsen dyspnea in heart failure or renal failure.

Pitfall 6: Giving Diuretics Without Monitoring Kidneys and Electrolytes

Diuresis requires reassessment.

Pitfall 7: Missing PE or Pneumothorax in Sudden Dyspnea

Sudden onset changes the syndrome.

Pitfall 8: Discharging When Walking or Oxygenation Has Not Been Tested

A patient may look comfortable at rest but fail with minimal exertion.

18. Clinical Practice Box

When assessing dyspnea, complete this structure:

Danger: Is oxygenation, ventilation, or circulation failing?

Syndrome: What pattern is present?

Onset and severity: Sudden, gradual, mild, severe, progressive?

Associated features: Fever, cough, wheeze, edema, chest pain, hemoptysis, syncope?

Vital signs: Respiratory rate, oxygen saturation, oxygen requirement, pulse, BP, temperature, consciousness?

Capacity failure: Oxygenation, ventilation, circulation, clearance, energy, comfort?

Coupling conditions: COPD, asthma, heart failure, CKD, anemia, medicines, thrombosis risk, frailty, anxiety?

Wise perturbation: What helps most with least harm?

Repair trajectory: What should improve, and by when?

Safety-net: What warning signs require urgent help?

19. Mini-Case for Practice

A 66-year-old man presents with worsening breathlessness over three days. He has cough, wheeze, and increased sputum. He has COPD. Today he is drowsy and his family says he is “not himself.”

Apply the dyspnea approach.

Danger

Respiratory failure, hypercapnia, pneumonia, severe COPD exacerbation, sepsis, hypoxia, medication effect.

Syndrome

Acute worsening dyspnea with wheeze, sputum change, and reduced consciousness in COPD.

Capacity Failure

Ventilation, oxygenation, regulation, energy, comfort.

Coupling Conditions

COPD severity, possible infection, inhaler technique, smoking, previous admissions, home oxygen, sedatives or opioids, frailty, family support.

Wise Perturbation

Urgent assessment of airway, breathing, circulation, consciousness, oxygenation, respiratory effort, chest signs, temperature, ECG if indicated, and blood gas where appropriate. Oxygen according to local

COPD guidance, bronchodilator treatment, infection assessment and treatment according to local protocol, senior/respiratory escalation because of drowsiness.

Repair Trajectory

Mental state improves, respiratory rate stabilizes, oxygenation safer, wheeze and sputum improve, patient can speak and mobilize more comfortably, escalation plan clear, discharge plan includes inhaler review and safety-netting.

20. Student Takeaway

Dyspnea becomes easier when the clinician asks first:

Is oxygenation, ventilation, or circulation failing?

Then form the syndrome:

- dyspnea with fever
- dyspnea with wheeze
- dyspnea with edema
- sudden pleuritic dyspnea
- dyspnea with chest pressure
- dyspnea with anemia
- dyspnea with acidosis
- dyspnea with panic symptoms

Map the capacity failure.
Treat the cause wisely.
Monitor response and harm.
Track repair through breathing, physiology, function, comfort, and safety.

Dyspnea is not just a symptom. It is a possible signal that the patient’s capacity to sustain life is narrowing.

Chapter 12. Fever Made Easy

Fever is one of the most common presentations in Internal Medicine.

It may be simple and self-limited.
It may be the first sign of sepsis.
It may reflect infection, inflammation, malignancy, drug reaction, thrombosis, autoimmune disease, heat illness, or tissue injury.

Students often think of fever as a temperature problem.

But fever is not only a number.

Fever is a signal that the body's **defense, tolerance, regulation, and circulation** may be under stress.

The first question is not:

"What antibiotic should I give?"

The first question is:

"Is this fever dangerous?"

Fever becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Fever Dangerous?

Most fevers are not immediately life-threatening.

But some are.

Dangerous fever may indicate:

- sepsis
- meningitis
- pneumonia with hypoxia
- pyelonephritis
- cholangitis
- endocarditis
- infected device or line
- neutropenic sepsis
- severe cellulitis or necrotizing infection
- intra-abdominal infection
- severe tropical or travel-related infection where relevant

- severe inflammatory disease
- drug reaction
- heat stroke
- infection in immunosuppression
- fever with delirium or shock

The danger-first question is:

Is this patient febrile but stable, or febrile and failing?

Fever with stable physiology can often be assessed in an orderly way.

Fever with hypotension, confusion, tachypnea, hypoxia, poor perfusion, oliguria, severe pain, rash, neck stiffness, or immunosuppression requires urgent assessment.

2. Immediate Danger Features in Fever

Assess urgently if fever is associated with:

- low blood pressure
- tachypnea
- low oxygen saturation
- rising oxygen requirement
- confusion or reduced consciousness
- severe headache
- neck stiffness
- rash, especially non-blanching or widespread severe rash
- severe abdominal pain
- jaundice
- persistent vomiting
- poor urine output
- cold clammy skin
- rigors with instability
- severe weakness or collapse
- immunosuppression
- neutropenia
- indwelling line or device
- recent surgery
- pregnancy or postpartum state where relevant
- frailty
- very young or very old age
- recent travel or exposure risk
- fever after chemotherapy
- fever with severe localized pain out of proportion

The more instability or host vulnerability present, the more dangerous the fever.

3. Fever Is a Syndrome, Not Just a Temperature

A temperature reading is only one piece of the pattern.

The clinician must form a fever syndrome.

Ask:

- How high is the fever?
- When did it start?
- Is it acute, recurrent, persistent, or prolonged?
- Are there rigors or sweats?
- Is there cough, sputum, or breathlessness?
- Is there urinary frequency, dysuria, or flank pain?
- Is there abdominal pain, diarrhea, vomiting, or jaundice?
- Is there headache, neck stiffness, photophobia, or confusion?
- Is there rash?
- Is there joint swelling or muscle pain?
- Is there weight loss or night sweats?
- Is there recent travel?
- Is there animal, insect, food, water, occupational, or sexual exposure?
- Is the patient immunosuppressed?
- Are there new medicines?
- Are there devices, catheters, wounds, or prostheses?
- What are the vital signs?
- What is the patient's baseline and reserve?

The goal is to move from:

"The patient has fever"

to:

"The patient has fever with a specific pattern, severity, host risk, and likely source."

4. Common Fever Syndrome Patterns

Fever With Cough and Dyspnea

Pattern:

- fever
- cough
- sputum

- pleuritic chest pain
- breathlessness
- tachypnea
- hypoxia in more severe cases
- crackles or bronchial breathing where present

Possible causes:

- pneumonia
- viral respiratory infection
- aspiration
- COPD or asthma exacerbation triggered by infection
- pulmonary embolism with fever mimic where relevant

Threatened capacities:

Defense, **oxygenation**, **comfort**, and sometimes **circulation**.

Fever With Urinary Symptoms

Pattern:

- fever
- dysuria
- frequency
- urgency
- suprapubic pain
- flank pain
- nausea or vomiting
- confusion in older patients
- hypotension if severe

Possible causes:

- lower urinary tract infection
- pyelonephritis
- obstructed infected kidney
- prostatitis in men
- catheter-associated infection

Threatened capacities:

Defense, **clearance**, **circulation**, and **cognition** in frailty.

Fever With Abdominal Pain or Jaundice

Pattern:

- fever
- abdominal pain
- vomiting
- diarrhea or constipation
- jaundice
- right upper quadrant pain
- guarding
- hypotension or confusion in severe disease

Possible causes:

- appendicitis
- diverticulitis
- cholecystitis
- cholangitis
- pancreatitis
- intra-abdominal abscess
- bowel perforation
- infectious gastroenteritis
- hepatitis

Threatened capacities:

Defense, **circulation**, **clearance/transformation**, **comfort**, and **nutrition/hydration**.

Fever With Headache, Neck Stiffness, or Confusion

Pattern:

- fever
- headache
- neck stiffness
- photophobia
- vomiting
- altered mental state
- rash where present
- seizure where severe

Possible causes:

- meningitis
- encephalitis
- sepsis
- intracranial infection
- severe systemic infection with delirium

Threatened capacities:

Regulation, **cognition**, **defense**, **circulation**, and **dignity/safety**.

Fever With Rash

Pattern:

- fever
- rash
- mucosal involvement
- joint pain
- recent medicine exposure
- travel or insect exposure
- systemic illness
- hypotension or confusion in severe cases

Possible causes:

- viral exanthem
- drug reaction
- meningococcal disease
- cellulitis
- rickettsial or arboviral illness where relevant
- autoimmune disease
- severe cutaneous adverse reaction

Threatened capacities:

Defense, **tolerance**, **skin integrity**, **circulation**, and **comfort**.

Prolonged Fever With Weight Loss

Pattern:

- fever lasting weeks
- night sweats
- weight loss
- fatigue
- lymphadenopathy
- chronic cough
- abdominal symptoms
- anemia
- travel, exposure, immune, or malignancy risk

Possible causes:

- tuberculosis
- endocarditis
- HIV-related illness
- occult abscess
- malignancy

- autoimmune disease
- chronic inflammatory disease
- drug fever

Threatened capacities:

Defense, **energy**, **repair**, **participation**, and sometimes **circulation** or **clearance**.

Fever in Immunosuppression

Pattern:

- fever may be the only sign
- symptoms may be muted
- infection may progress rapidly
- neutropenia, chemotherapy, steroids, transplant medicines, biologics, advanced HIV, or other immune compromise may be present

Possible causes:

- bacterial sepsis
- opportunistic infection
- line infection
- fungal infection
- viral reactivation
- pneumonia
- urinary infection
- abdominal infection

Threatened capacities:

Defense, **tolerance**, **circulation**, and **oxygenation**.

This is high-risk until proven otherwise.

5. Capacity Failure in Fever

Fever matters because it may signal stress or failure across several capacities.

Defense

The body may be responding to infection or tissue injury.

Signals include:

- fever

- rigors
- localizing symptoms
- raised inflammatory features
- pus, cough, urinary symptoms, wounds, or source signs

Tolerance

The immune response may be excessive or poorly regulated.

Signals include:

- hypotension
- organ dysfunction
- severe inflammation
- rash
- worsening despite treatment
- autoimmune or inflammatory features

Circulation

Fever with systemic illness may threaten perfusion.

Signals include:

- low blood pressure
- tachycardia
- cold peripheries
- poor urine output
- confusion
- lactate elevation where measured

Oxygenation

Fever with respiratory involvement may impair gas exchange.

Signals include:

- dyspnea
- tachypnea
- low oxygen saturation
- crackles
- pneumonia
- respiratory distress

Clearance

Severe infection or dehydration may impair kidney function.

Signals include:

- oliguria
- rising creatinine
- hyperkalemia
- acidosis
- drug accumulation

Regulation and Cognition

Fever can destabilize brain function, especially in frailty.

Signals include:

- delirium
- agitation
- drowsiness
- seizure
- poor attention
- sleep-wake disruption

Energy

Fever increases metabolic demand.

Signals include:

- profound weakness
- fatigue
- poor intake
- weight loss
- inability to mobilize
- deconditioning

6. Bedside Assessment of Fever

Look First

Does the patient look toxic, shocked, breathless, confused, dehydrated, or in severe pain?

Look for:

- distress
- rigors
- sweating

- drowsiness
- agitation
- mottled skin
- rash
- jaundice
- respiratory effort
- dehydration
- wounds
- devices
- severe localized pain

Vital Signs

Check:

- temperature
- respiratory rate
- oxygen saturation
- oxygen requirement
- heart rate
- blood pressure
- consciousness
- urine output
- glucose where relevant

Fever with tachypnea, hypotension, confusion, hypoxia, or oliguria is more concerning than fever alone.

Focused History

Ask about:

- onset and duration
- rigors or night sweats
- respiratory symptoms
- urinary symptoms
- abdominal symptoms
- headache, neck stiffness, photophobia
- rash
- joint or muscle pain
- wounds, lines, catheters, prostheses
- recent procedures or hospitalization
- recent antibiotics
- immunosuppression
- new medicines
- travel and exposure history
- sick contacts
- animal, insect, water, or food exposure
- sexual history where relevant

- weight loss
- previous similar episodes

Examination

Examine for likely sources:

- chest
- heart murmurs where endocarditis possible
- abdomen
- flanks
- skin and soft tissue
- wounds
- intravenous lines or devices
- joints
- neurological signs
- neck stiffness
- lymph nodes
- oral cavity
- perineal area where clinically indicated and with dignity preserved

The examination should be guided by the syndrome, but fever without source requires careful whole-body review.

7. Initial Investigations

Investigations depend on severity, source, and local pathways.

Common investigations may include:

- full blood count
- renal function and electrolytes
- liver tests
- glucose
- inflammatory markers where used
- urinalysis and urine culture where urinary source possible
- blood cultures where sepsis, severe infection, or endocarditis is possible
- chest X-ray where respiratory source possible
- sputum testing where appropriate
- blood gas where shock, hypoxia, acidosis, or severe illness is suspected
- lactate where available and clinically indicated
- cultures from wounds, lines, or other sources where appropriate
- imaging for abdominal, biliary, renal, soft tissue, or deep infection where indicated
- malaria, dengue, HIV, TB, or other tests depending on geography, exposure, and clinical context
- autoimmune, inflammatory, or malignancy workup where fever is prolonged or unexplained

Testing should answer:

- Is the patient unstable?
- Is there organ dysfunction?
- Where is the source?
- Is urgent treatment needed?
- Is source control needed?
- Is the patient immunocompromised?
- Is the fever infectious, inflammatory, malignant, drug-related, or environmental?
- Can this patient be safely managed in the current setting?

8. Dangerous Diagnoses Not to Miss

Sepsis

Consider sepsis when fever is associated with:

- hypotension
- tachypnea
- confusion
- poor perfusion
- oliguria
- hypoxia
- severe weakness
- elevated lactate where measured
- organ dysfunction
- high-risk host factors

Capacity failure:

Defense, **tolerance**, **circulation**, **clearance**, **cognition**

Wise action:

Urgent assessment and treatment according to local sepsis guidance. Escalate early if unstable.

Meningitis or Encephalitis

Consider when fever is associated with:

- severe headache
- neck stiffness
- photophobia
- confusion
- seizure
- rash

- vomiting
- reduced consciousness

Capacity failure:

Regulation, **cognition**, **defense**, **circulation**

Wise action:

Urgent senior/emergency assessment and local pathway treatment. Do not delay if clinically high-risk.

Pneumonia With Hypoxia

Consider when fever is associated with:

- cough
- sputum
- pleuritic pain
- breathlessness
- tachypnea
- hypoxia
- crackles
- confusion in older patients

Capacity failure:

Oxygenation, **defense**, **circulation** in severe disease.

Wise action:

Assess severity, oxygen support, infection treatment according to local guidance, and reassess.

Pyelonephritis or Urosepsis

Consider when fever is associated with:

- urinary symptoms
- flank pain
- vomiting
- hypotension
- confusion
- AKI
- catheter
- obstruction risk

Capacity failure:

Defense, **clearance**, **circulation**, **cognition**

Wise action:

Assess severity, urine testing/culture where appropriate, renal function, obstruction risk, antibiotics according to local guidance, and escalation if unstable.

Cholangitis

Consider when fever is associated with:

- jaundice
- right upper quadrant pain
- confusion or hypotension in severe cases

Capacity failure:

Defense, **clearance/transformation**, **circulation**, **cognition**

Wise action:

Urgent assessment, antibiotics according to local guidance, imaging, and source control planning with appropriate specialist input.

Endocarditis

Consider in prolonged or unexplained fever with:

- murmur
- embolic phenomena
- prosthetic valve
- intravenous drug use
- indwelling lines
- known valve disease
- persistent bacteremia
- weight loss or night sweats

Capacity failure:

Defense, **circulation**, **vascular integrity**, **energy**

Wise action:

Blood cultures before antibiotics where safe and appropriate, echocardiography pathway, and specialist input.

Neutropenic Sepsis

Consider in fever after chemotherapy or known neutropenia.

Symptoms may be minimal.

Capacity failure:

Defense failure

Wise action:

This is high-risk and requires urgent treatment according to local neutropenic sepsis protocol.

Severe Skin and Soft Tissue Infection

Consider when fever is associated with:

- rapidly spreading redness
- severe pain
- swelling
- blisters
- necrosis
- systemic toxicity
- pain out of proportion
- diabetes or immunosuppression

Capacity failure:

Defense, **skin integrity**, **circulation**, **comfort**

Wise action:

Urgent assessment, antibiotics according to local guidance, surgical input if necrotizing infection is possible.

Drug Fever or Severe Drug Reaction

Consider when fever occurs with:

- new medicine
- rash
- eosinophilia where present
- liver or kidney abnormalities
- mucosal involvement
- systemic symptoms

Capacity failure:

Tolerance, **skin integrity**, **clearance/transformation**, **comfort**

Wise action:

Review medicines carefully. Stop suspected harmful medicines when appropriate. Escalate if severe skin reaction or organ involvement is suspected.

Heat Stroke

Consider when high temperature is associated with:

- heat exposure
- altered mental state
- collapse
- dehydration
- organ dysfunction

Capacity failure:

Thermoregulation, **circulation**, **cognition**, **clearance**

Wise action:

Emergency cooling and supportive care according to local emergency protocols.

9. Wise Perturbation in Fever

Treatment depends on the syndrome, severity, likely source, and host risk.

Ask:

- Is the patient unstable?
- Is sepsis possible?
- Is oxygenation threatened?
- Is circulation threatened?
- Is there a source?
- Is source control needed?
- Is the patient immunosuppressed?
- Are cultures needed before antibiotics, if this can be done safely?
- What local antimicrobial guidance applies?
- What harm could treatment cause?
- What monitoring is needed?
- When should the patient be reassessed?

Antibiotics

Antibiotics may be urgent and lifesaving in serious bacterial infection and sepsis.

They should be chosen according to:

- likely source
- severity
- local guidance
- allergies
- renal function
- pregnancy status where relevant
- immune status
- previous resistant organisms
- recent antibiotic exposure

Monitor for:

- clinical response
- allergy
- diarrhea
- renal effects
- drug interactions
- culture results
- need to narrow, stop, or change treatment

Fluids

Fluids may help septic hypoperfusion or dehydration.

But fluids can harm in heart failure, kidney failure, or pulmonary edema.

Monitor:

- blood pressure
- perfusion
- lungs
- oxygenation
- urine output
- renal function
- edema
- response after each intervention

Antipyretics

Antipyretics may improve comfort.

But they do not treat the cause.

Use them as comfort support, not as a substitute for danger assessment.

Source Control

Some infections cannot be repaired by antibiotics alone.

Examples:

- abscess
- obstructed infected kidney
- cholangitis
- infected prosthesis
- infected line
- necrotizing infection
- empyema

Ask:

Is there a source that must be drained, removed, decompressed, or surgically managed?

Holding or Adjusting Medicines

During fever and acute illness, some medicines may become unsafe.

Consider review of:

- diuretics
- ACE inhibitors / ARBs
- NSAIDs
- metformin in relevant acute illness contexts
- anticoagulants if bleeding or procedures are possible
- immunosuppressants
- sedatives
- insulin if intake is poor

Medicine review is part of fever care.

10. Repair Trajectory in Fever

Repair is more than the temperature falling.

Repair markers include:

- patient looks less toxic
- fever settles
- rigors stop
- respiratory rate improves
- blood pressure stabilizes
- oxygen requirement decreases
- heart rate improves
- mental state clears
- urine output improves

- pain improves
- oral intake returns
- source is controlled
- renal function and electrolytes are safe
- inflammatory trajectory improves where relevant
- culture results reviewed
- antibiotics adjusted appropriately
- mobility returns
- discharge safety established

A fever may fall because of antipyretics while the patient remains septic.

Do not confuse temperature reduction with full repair.

11. Fever Without a Source

Sometimes no source is obvious.

This requires careful thinking, not random testing alone.

Ask:

- Is the patient stable or unstable?
- Is the fever acute or prolonged?
- Is the host immunosuppressed?
- Are there localizing symptoms?
- Are there hidden devices, wounds, lines, catheters, or prostheses?
- Are there travel or exposure clues?
- Are there new medicines?
- Are there inflammatory symptoms?
- Is there weight loss or night sweats?
- Are there thrombosis symptoms?
- Are repeated examinations revealing new signs?

Fever without a source should be reassessed over time.

A source may declare itself later.

12. Prolonged Fever

Prolonged fever requires broader thinking.

Major categories include:

Infection

- tuberculosis
- endocarditis
- occult abscess
- HIV-related infection
- chronic osteomyelitis
- travel-related infection
- parasitic infection where relevant

Inflammation

- autoimmune disease
- vasculitis
- connective tissue disease
- inflammatory bowel disease
- adult-onset inflammatory syndromes

Malignancy

- lymphoma
- leukemia
- solid tumors
- metastatic disease

Drug and Other Causes

- drug fever
- thrombosis
- endocrine causes
- factitious fever
- environmental heat illness

Prolonged fever should be approached with a careful history, repeated examination, targeted testing, and avoidance of premature closure.

13. Worked Case 1: Fever and Cough

A 73-year-old man presents with fever, productive cough, pleuritic chest pain, tachypnea, and oxygen saturation of 90% on room air.

Danger

Pneumonia with hypoxia, sepsis, respiratory failure, PE if features suggest.

Syndrome

Acute fever with respiratory symptoms, pleuritic pain, tachypnea, and hypoxia.

Capacity Failure

Defense and oxygenation are threatened. Circulation may be threatened if sepsis develops. Comfort is affected by pain and breathlessness.

Coupling Conditions

Age, smoking, COPD if present, aspiration risk, frailty, immune status, home support, baseline mobility.

Wise Perturbation

Assess severity, oxygenation, respiratory effort, chest findings, renal function, and sepsis features. Treat according to local pneumonia guidance. Support oxygenation. Monitor response and harm.

Repair Trajectory

Fever settles, respiratory rate improves, oxygen requirement falls, cough and pain improve, oral intake returns, mobility improves, discharge plan safe.

14. Worked Case 2: Fever and Confusion

An 86-year-old woman with mild dementia presents with fever, confusion, poor intake, and low blood pressure.

Danger

Sepsis, shock, delirium, hypoxia, hypoglycemia, AKI, medication toxicity.

Syndrome

Fever with acute confusion, poor intake, and hemodynamic instability.

Capacity Failure

Defense, circulation, cognition, regulation, clearance, energy, mobility.

Coupling Conditions

Frailty, dementia, poor oral intake, medicines, dehydration, infection source, home support, baseline function.

Wise Perturbation

ABCDE assessment, glucose, oxygenation, vital signs, infection source assessment, renal function, urine output, medicine review, treatment according to local sepsis/infection guidance, senior escalation if unstable.

Repair Trajectory

Blood pressure stabilizes, urine output improves, fever settles, confusion clears toward baseline, oral intake improves, mobility and discharge safety improve.

15. Worked Case 3: Fever After Chemotherapy

A 54-year-old patient receiving chemotherapy presents with fever and feels weak. There is no obvious source.

Danger

Neutropenic sepsis or severe infection in immunosuppression.

Syndrome

Fever in an immunocompromised patient after chemotherapy.

Capacity Failure

Defense capacity is impaired. Circulation and organ function may deteriorate rapidly.

Coupling Conditions

Chemotherapy, neutropenia risk, central line, recent antibiotics, mucositis, renal function, social support, time since treatment.

Wise Perturbation

Urgent assessment and treatment according to local neutropenic sepsis protocol. Do not wait for obvious source. Escalate early.

Repair Trajectory

Hemodynamics stable, fever trajectory improves, cultures reviewed, neutrophil count and renal function monitored, source identified if possible, antibiotic plan reviewed, patient safety maintained.

16. Worked Case 4: Fever With Jaundice

A 67-year-old patient presents with fever, right upper quadrant pain, jaundice, and confusion.

Danger

Cholangitis with sepsis.

Syndrome

Fever with jaundice, abdominal pain, and altered mental state.

Capacity Failure

Defense, biliary clearance/transformation, circulation, cognition.

Coupling Conditions

Gallstones, prior biliary disease, age, comorbidities, dehydration, anticoagulation or procedural risk.

Wise Perturbation

Urgent assessment, sepsis management according to local protocol, blood tests including liver profile and renal function, imaging, antibiotics according to local guidance, early specialist involvement for source control.

Repair Trajectory

Blood pressure and mental state improve, fever settles, pain improves, bilirubin/cholestatic pattern improves over time, source control achieved if needed.

17. Worked Case 5: Fever and Rash After New Medicine

A 42-year-old patient develops fever, widespread rash, facial swelling, and abnormal liver tests two weeks after starting a new medication.

Danger

Severe drug reaction with systemic involvement.

Syndrome

Fever with rash and organ involvement after new medicine exposure.

Capacity Failure

Tolerance is dysregulated. Skin integrity, liver transformation, comfort, and possibly circulation may be threatened.

Coupling Conditions

New medicine, allergy history, immune status, liver/kidney function, severity of rash, mucosal involvement, medication necessity.

Wise Perturbation

Urgent medicine review, stop suspected offending drug where appropriate, assess severity and organ involvement, senior/dermatology input depending on severity, supportive care, avoid re-exposure.

Repair Trajectory

Fever settles, rash improves, liver tests stabilize, no mucosal or systemic worsening, patient understands medicine allergy/avoidance.

18. Common Student Pitfalls

Pitfall 1: Treating Fever as Just a Temperature

Fever is a syndrome marker, not only a number.

Pitfall 2: Missing Sepsis

Fever with hypotension, tachypnea, confusion, hypoxia, poor perfusion, or oliguria is dangerous.

Pitfall 3: Forgetting Host Risk

Immunosuppressed, frail, elderly, pregnant/postpartum, post-operative, and chemotherapy patients may deteriorate quickly.

Pitfall 4: Giving Antibiotics Without Reassessment

Starting antibiotics is not the end. Response, cultures, source, and adverse effects must be reviewed.

Pitfall 5: Forgetting Source Control

Abscess, obstruction, cholangitis, infected devices, and necrotizing infection may not resolve with antibiotics alone.

Pitfall 6: Missing Drug Fever or Drug Reaction

New medicines matter.

Pitfall 7: Confusing Temperature Reduction With Repair

Antipyretics can reduce temperature while serious illness continues.

Pitfall 8: Ignoring Delirium

Fever plus confusion in an older person is high-risk.

19. Clinical Practice Box

When assessing fever, complete this structure:

Danger: Is there sepsis, meningitis, hypoxia, shock, immunosuppression, or unsafe deterioration?

Syndrome: Fever with what pattern? Respiratory, urinary, abdominal, neurological, rash, prolonged, immunosuppressed?

Vital signs: Temperature, respiratory rate, oxygen saturation, pulse, blood pressure, consciousness, urine output?

Likely source:

Dangerous causes to exclude:

Capacity failure: Defense, tolerance, oxygenation, circulation, clearance, cognition, energy?

Coupling conditions: Frailty, immune status, medicines, devices, travel, exposure, home support?

Wise perturbation: Antibiotics, fluids, oxygen, source control, medicine review, senior help?

Repair trajectory: What should improve and by when?

Safety-net or handover: What risk must not be lost?

20. Mini-Case for Practice

A 79-year-old woman presents with fever, weakness, poor oral intake, and new confusion. She has diabetes and chronic kidney disease. Her respiratory rate is elevated, blood pressure is lower than usual, and she has passed little urine.

Apply the fever approach.

Danger

Sepsis, shock, delirium, AKI, hypoxia, hypoglycemia, dehydration, medication toxicity.

Syndrome

Fever with acute confusion, poor intake, tachypnea, low blood pressure, and oliguria in a patient with diabetes and CKD.

Capacity Failure

Defense, circulation, cognition, regulation, clearance, energy, mobility.

Coupling Conditions

Age, diabetes, CKD, medicines, poor intake, dehydration, baseline cognition, frailty, infection source, home support.

Wise Perturbation

Urgent assessment with ABCDE, vital signs, oxygen saturation, glucose, infection source search, renal function, electrolytes, urine output, medicine review, and treatment according to local sepsis/infection guidance. Escalate early if unstable.

Repair Trajectory

Blood pressure stabilizes, respiratory rate improves, urine output returns, fever settles, glucose remains safe, confusion clears, renal function and electrolytes stabilize, oral intake improves, discharge risk is reassessed.

21. Student Takeaway

Fever becomes easier when the clinician does not treat it as a number.

Ask:

Is this fever dangerous?
What pattern is present?
What source is likely?
What capacity is failing?
What host factors make this patient vulnerable?
What treatment helps most with least harm?
What would repair look like?

Fever is a signal that defense, tolerance, regulation, oxygenation, circulation, or clearance may be under stress.

The safe clinician treats the patient, not the thermometer.

Chapter 13. Fatigue Made Easy

Fatigue is one of the most common and most difficult symptoms in Internal Medicine.

It can mean many things.

One patient means sleepiness.
Another means muscle weakness.
Another means low motivation.
Another means exertional breathlessness.
Another means dizziness from anemia.
Another means post-infectious exhaustion.
Another means depression, grief, burnout, chronic pain, or poor sleep.
Another means malignancy, endocrine disease, heart failure, kidney disease, liver disease, infection, medication harm, or systemic inflammation.

Fatigue becomes difficult when the clinician treats it as vague.

Fatigue becomes easier when the clinician turns it into a syndrome.

The life-coherent approach asks:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

The key question is:

What capacity is failing when this patient says, "I am tired"?

1. The First Question: Is This Fatigue Dangerous?

Most fatigue is not immediately life-threatening.

But fatigue can be the presenting symptom of serious disease.

Dangerous causes and contexts include:

- severe anemia
- gastrointestinal bleeding
- acute coronary syndrome, especially atypical presentation
- heart failure
- respiratory failure
- sepsis or chronic infection
- malignancy
- adrenal crisis or severe endocrine disorder
- severe hypothyroidism
- severe hyperglycemia or hypoglycemia

- acute kidney injury or advanced kidney disease
- liver failure
- severe electrolyte disturbance
- medication toxicity
- major depression with suicidal risk
- profound weight loss
- neurological weakness mistaken for fatigue
- frailty decompensation
- pregnancy-related or postpartum danger where relevant

The danger-first question is:

Is this fatigue actually a signal of failing oxygen delivery, circulation, clearance, regulation, defense, mood, cognition, or safety?

2. Immediate Red Flags in Fatigue

Urgent or careful assessment is needed when fatigue is associated with:

- chest pain
- breathlessness at rest or minimal exertion
- syncope or near-syncope
- palpitations with instability
- black stools or visible bleeding
- severe pallor
- unexplained weight loss
- persistent fever or night sweats
- new neurological weakness
- confusion or drowsiness
- severe dehydration
- hypotension
- low oxygen saturation
- severe pain
- new jaundice
- very low mood, hopelessness, or suicidal thoughts
- rapidly progressive decline
- inability to walk, eat, drink, or perform basic self-care
- abnormal vital signs
- frailty with sudden functional collapse

Fatigue with normal function and stable physiology can often be evaluated gradually.

Fatigue with danger features requires more urgent reasoning.

3. Fatigue Is Not One Symptom

When a patient says, **“I am tired,”** clarify what they mean.

Fatigue may mean:

Sleepiness

The patient wants to fall asleep.

Possible causes:

- poor sleep
- sleep apnea
- sedatives
- depression
- shift work
- chronic pain
- alcohol use
- sleep deprivation
- hypothyroidism

Weakness

The patient cannot generate strength.

Possible causes:

- neurological disease
- myopathy
- electrolyte disturbance
- steroid myopathy
- inflammatory muscle disease
- deconditioning
- malnutrition
- severe systemic illness

Low Energy

The patient feels depleted.

Possible causes:

- anemia
- infection
- chronic inflammation
- malignancy

- endocrine disease
- renal disease
- liver disease
- depression
- post-viral illness
- chronic pain
- poor nutrition

Exertional Intolerance

The patient becomes exhausted or breathless with activity.

Possible causes:

- heart failure
- lung disease
- anemia
- ischemic heart disease
- deconditioning
- obesity
- neuromuscular disease
- chronic fatigue syndromes
- post-infectious conditions

Low Motivation or Demoralization

The patient cannot initiate activity.

Possible causes:

- depression
- grief
- trauma
- chronic illness burden
- social isolation
- burnout
- loss of meaning
- medication effects

Clarifying the patient's meaning is the first step in turning fatigue into a syndrome.

4. Common Fatigue Syndrome Patterns

Fatigue With Weight Loss

Pattern:

- fatigue
- unintentional weight loss
- poor appetite
- night sweats or fever
- change in bowel habit
- chronic cough
- lymph node swelling
- pain
- anemia symptoms

Possible causes:

- malignancy
- tuberculosis or chronic infection
- inflammatory disease
- hyperthyroidism
- depression
- malabsorption
- chronic organ failure

Threatened capacities:

Energy, **defense**, **repair**, **participation**, and sometimes **circulation**.

Fatigue With Pallor or Breathlessness

Pattern:

- fatigue
- exertional dyspnea
- dizziness
- palpitations
- pallor
- chest discomfort
- black stools or bleeding history

Possible causes:

- anemia
- gastrointestinal bleeding
- heavy menstrual bleeding where relevant
- hemolysis
- chronic kidney disease
- malignancy
- nutritional deficiency
- chronic inflammation

Threatened capacities:

Oxygen delivery, **circulation reserve**, **energy**, and **mobility**.

Fatigue With Fever or Night Sweats

Pattern:

- fatigue
- fever
- night sweats
- weight loss
- cough, urinary symptoms, abdominal symptoms, rash, or joint pain
- exposure risk

Possible causes:

- chronic infection
- endocarditis
- tuberculosis
- HIV-related illness
- autoimmune disease
- malignancy
- inflammatory disease

Threatened capacities:

Defense, **tolerance**, **energy**, and **repair**.

Fatigue With Low Mood

Pattern:

- fatigue
- loss of interest
- low mood
- poor sleep or oversleeping
- appetite change
- guilt or hopelessness
- poor concentration
- reduced participation
- possible suicidal thoughts

Possible causes:

- depression
- grief
- demoralization

- chronic illness burden
- medication effect
- endocrine or systemic disease coexisting with mood disorder

Threatened capacities:

Agency, **energy**, **participation**, **comfort**, and **dignity**.

Fatigue With Poor Sleep

Pattern:

- tiredness on waking
- daytime sleepiness
- snoring or witnessed apneas
- restless legs
- pain at night
- nocturia
- anxiety
- shift work
- sedative use
- insomnia

Possible causes:

- sleep apnea
- insomnia
- chronic pain
- nocturia from diabetes, heart failure, diuretics, prostate disease
- depression or anxiety
- medication effects
- alcohol use
- poor sleep hygiene

Threatened capacities:

Regulation, **energy**, **cognition**, and **participation**.

Fatigue With Endocrine Features

Pattern may include:

- cold intolerance
- weight gain
- constipation
- dry skin
- hair loss
- menstrual change

- heat intolerance
- tremor
- weight loss
- thirst and polyuria
- salt craving or postural dizziness

Possible causes:

- hypothyroidism
- hyperthyroidism
- diabetes
- adrenal insufficiency
- pituitary disease
- hypercalcemia
- other endocrine disorders

Threatened capacities:

Regulation, **energy transformation**, **circulation**, and **cognition**.

Fatigue With Chronic Pain

Pattern:

- fatigue
- widespread pain or focal chronic pain
- poor sleep
- low mood
- reduced mobility
- fear of movement
- medication burden
- opioid or sedative exposure

Possible causes:

- inflammatory disease
- osteoarthritis
- fibromyalgia-like syndromes
- neuropathic pain
- depression
- medication effects
- deconditioning

Threatened capacities:

Comfort, **sleep**, **mobility**, **agency**, and **participation**.

Fatigue After Infection

Pattern:

- fatigue following viral or systemic illness
- exertional intolerance
- brain fog
- sleep disturbance
- autonomic symptoms in some patients
- gradual or fluctuating recovery

Possible causes:

- post-viral fatigue
- post-infectious syndrome
- unrecognized anemia, thyroid disease, depression, organ dysfunction, or ongoing inflammation
- deconditioning
- sleep disruption

Threatened capacities:

Energy transformation, **regulation**, **cognition**, **mobility**, and **participation**.

5. Capacity Failure in Fatigue

Fatigue matters because it signals that the patient cannot sustain some form of life-capacity.

Energy Transformation

The body may not be converting fuel, oxygen, rest, and metabolic resources into usable work.

Signals include:

- profound tiredness
- exertional intolerance
- post-exertional worsening
- reduced stamina
- inability to perform usual activities
- slow recovery after illness

Oxygen Delivery

Fatigue may result from impaired delivery of oxygen to tissues.

Signals include:

- anemia
- breathlessness on exertion

- palpitations
- dizziness
- chest discomfort
- pallor
- heart failure or lung disease

Circulation

Fatigue may reflect poor perfusion or cardiac limitation.

Signals include:

- exertional symptoms
- edema
- orthopnea
- syncope
- palpitations
- low blood pressure
- poor urine output
- chest pain

Clearance

Fatigue may reflect accumulation of waste, fluid, toxins, or medicines.

Signals include:

- kidney disease
- liver disease
- electrolyte disturbance
- medication toxicity
- sleepiness
- confusion
- poor appetite

Defense and Tolerance

Fatigue may reflect infection, inflammation, immune activation, or autoimmune disease.

Signals include:

- fever
- night sweats
- weight loss
- joint pain
- rash
- lymphadenopathy
- raised inflammatory features

- recurrent infections

Regulation

Fatigue may reflect endocrine, autonomic, sleep, or neurological dysregulation.

Signals include:

- thyroid symptoms
- glucose symptoms
- postural dizziness
- temperature intolerance
- sleep-wake disturbance
- cognitive slowing

Agency and Participation

Fatigue may narrow the patient's ability to live.

Signals include:

- inability to work
- inability to study
- withdrawal from family or worship
- reduced self-care
- hopelessness
- fear of activity
- loss of confidence

A life-coherent clinician asks:

What form of living has fatigue taken from this patient?

6. Bedside Assessment of Fatigue

Clarify the Meaning

Ask:

- When you say tired, do you mean sleepy, weak, breathless, low motivation, or exhausted after activity?
- Is the problem constant or episodic?
- What can you no longer do?
- What was your baseline?
- What changed first?

Time Course

Ask:

- Did it begin suddenly or gradually?
- Is it days, weeks, months, or years?
- Is it improving, worsening, or fluctuating?
- Did it follow infection, surgery, stress, medication change, or major life event?
- Is it worse after exertion?
- Is it worse at a certain time of day?

Functional Impact

Ask:

- Can you walk as far as before?
- Can you climb stairs?
- Can you work or study?
- Can you cook, bathe, shop, or care for others?
- Are you sleeping during the day?
- Are you avoiding activity?
- Are you falling?
- Are you eating and drinking?

Function shows severity.

Associated Symptoms

Ask about:

- fever
- night sweats
- weight loss
- appetite
- breathlessness
- chest pain
- palpitations
- dizziness
- bleeding or black stools
- bowel changes
- urinary symptoms
- thirst or polyuria
- pain
- joint swelling
- rash
- cough
- headache
- sleep quality

- snoring or witnessed apnea
- mood
- anxiety
- cognition or brain fog
- medication changes

Medicines and Substances

Review:

- sedatives
- opioids
- antihistamines
- anticholinergics
- beta-blockers
- antihypertensives
- diuretics
- antidepressants
- antipsychotics
- anticonvulsants
- steroids
- chemotherapy or immunosuppressants
- alcohol
- recreational substances
- over-the-counter medicines
- supplements

Medicines can cause fatigue directly or through hypotension, electrolyte disturbance, sleep disruption, glucose change, anemia, or organ injury.

Mood and Safety

Ask respectfully:

- How has your mood been?
- Have you lost interest in things?
- Do you feel hopeless?
- Have you had thoughts that life is not worth living?
- Have you thought about harming yourself?

Fatigue with depression may be dangerous if suicidal risk is present.

7. Physical Examination

Examination should be guided by the syndrome.

Look for:

- pallor
- jaundice
- weight loss
- cachexia
- dehydration
- edema
- lymphadenopathy
- fever
- tachycardia or bradycardia
- hypotension or postural drop
- hypoxia
- murmurs
- heart failure signs
- lung crackles or wheeze
- abdominal masses or organ enlargement
- thyroid enlargement
- skin hyperpigmentation or dryness
- rash
- joint swelling
- muscle tenderness or weakness
- neurological signs
- gait instability
- signs of chronic liver disease
- signs of renal disease
- pressure injuries or poor nutrition in frailty

The examination should test whether fatigue is linked to oxygen delivery, circulation, clearance, defense, regulation, mobility, or systemic disease.

8. Initial Investigations

Investigations should be guided by history, examination, severity, and local practice.

Common initial tests may include:

- full blood count
- renal function and electrolytes
- liver tests
- glucose or HbA1c where appropriate
- thyroid function
- inflammatory markers where indicated
- iron studies, B12, or folate where anemia or deficiency is suspected
- urinalysis
- pregnancy testing where relevant
- ECG if cardiac symptoms, palpitations, syncope, or risk factors

- chest imaging if respiratory symptoms, weight loss, or concerning signs
- infection testing guided by symptoms and exposure
- sleep assessment where sleep apnea or insomnia is suspected
- further endocrine, autoimmune, malignancy, or neurological workup when suggested by the syndrome

The key is not to test everything immediately.

The key is to ask:

What dangerous, treatable, or capacity-threatening causes does this patient's fatigue pattern suggest?

9. Dangerous Diagnoses Not to Miss

Severe Anemia or Bleeding

Clues:

- pallor
- exertional dyspnea
- dizziness
- palpitations
- chest discomfort
- black stools
- visible bleeding
- anticoagulant or NSAID use
- heavy menstrual bleeding where relevant

Capacity failure:

Oxygen delivery, **circulation reserve**, **energy**

Cardiac Disease

Clues:

- exertional fatigue
- chest pain
- breathlessness
- edema
- orthopnea
- palpitations
- syncope
- known cardiovascular disease
- diabetes or CKD

Capacity failure:

Circulation, **oxygenation**, **energy**

Respiratory Disease

Clues:

- breathlessness
- cough
- wheeze
- low oxygen saturation
- smoking history
- recurrent infections
- occupational exposure

Capacity failure:

Oxygenation, **ventilation**, **energy**

Infection or Sepsis

Clues:

- fever
- rigors
- night sweats
- confusion
- tachypnea
- hypotension
- urinary, respiratory, abdominal, skin, or device symptoms

Capacity failure:

Defense, **circulation**, **cognition**, **clearance**

Malignancy

Clues:

- unexplained weight loss
- night sweats
- persistent fatigue
- anemia
- new pain
- lymphadenopathy
- change in bowel habit
- chronic cough

- appetite loss

Capacity failure:

Energy, **repair**, **participation**, **defense**

Endocrine Disease

Clues:

- weight change
- temperature intolerance
- constipation or diarrhea
- tremor
- thirst or polyuria
- postural dizziness
- skin changes
- menstrual changes
- glucose symptoms

Capacity failure:

Regulation, **energy transformation**, **circulation**

Kidney or Liver Disease

Clues:

- edema
- poor appetite
- nausea
- itch
- confusion
- reduced urine
- jaundice
- abnormal bleeding
- known CKD or liver disease

Capacity failure:

Clearance, **transformation**, **regulation**, **energy**

Depression With Suicidal Risk

Clues:

- low mood
- loss of interest

- hopelessness
- guilt
- poor sleep
- appetite change
- withdrawal
- thoughts of death or self-harm

Capacity failure:

Agency, **participation**, **comfort**, **safety**

Neurological Weakness Mistaken for Fatigue

Clues:

- true loss of strength
- focal weakness
- difficulty rising from chair
- difficulty climbing stairs
- swallowing or speech symptoms
- double vision
- numbness
- falls
- progressive weakness

Capacity failure:

Mobility, **neuromuscular function**, **safety**

10. Wise Perturbation in Fatigue

Treatment depends on the syndrome.

Avoid reflexive reassurance.

Avoid reflexive vitamins, stimulants, or broad testing without reasoning.

Ask:

- Is there danger?
- What type of fatigue is this?
- What capacity is failing?
- What treatable causes are likely?
- What medicines may be contributing?
- What context keeps fatigue going?
- What investigation is needed now?

- What can safely wait?
- What support or explanation does the patient need?
- What would repair look like?

If Anemia Is Suspected

Assess severity, bleeding risk, symptoms, hemodynamic stability, likely cause, and need for urgent pathway or referral according to local practice.

If Depression Is Suspected

Assess safety, suicidal thoughts, function, supports, comorbid illness, substance use, and treatment preferences. Do not dismiss physical symptoms without appropriate assessment.

If Sleep Disorder Is Suspected

Assess sleep quality, snoring, apnea, insomnia, pain, nocturia, medicines, alcohol, shift work, and mood.

If Medication Harm Is Suspected

Review all medicines and consider dose, timing, interactions, renal/liver function, sedation, hypotension, electrolyte changes, and recent changes.

If Post-Infectious Fatigue Is Suspected

Exclude danger and treatable causes based on pattern. Support pacing, sleep, nutrition, function, and gradual return where appropriate. Avoid implying the illness is imaginary.

If Frailty Decompensation Is Present

Assess baseline, recent stressor, mobility, cognition, nutrition, hydration, medicines, caregiver support, and discharge safety.

11. Repair Trajectory in Fatigue

Repair in fatigue is often gradual.

Markers may include:

- dangerous causes excluded or treated
- anemia corrected or stabilized
- sleep improving
- mood improving
- pain better controlled

- medicine burden reduced
- nutrition improving
- hydration restored
- walking distance increasing
- postural symptoms reducing
- patient able to work or study more safely
- patient understands pacing and warning signs
- follow-up arranged
- participation restored

Repair is not simply:

“The blood tests are normal.”

If the patient still cannot function, the problem remains clinically real.

12. Safety-Netting in Fatigue

Fatigue safety-netting should include warning signs.

Advise urgent review if fatigue is associated with:

- chest pain
- severe breathlessness
- fainting
- black stools or bleeding
- new confusion
- new weakness
- fever or night sweats
- rapid weight loss
- inability to eat or drink
- severe dizziness
- suicidal thoughts
- worsening functional decline
- new jaundice
- severe pain

Also explain:

- what has been checked
- what remains uncertain
- what follow-up is needed
- when results will be reviewed
- what changes should prompt earlier reassessment

Fatigue can evolve. Safety-netting protects uncertainty.

13. Worked Case 1: Fatigue and Dark Stools

A 68-year-old man presents with fatigue, dizziness, exertional breathlessness, and dark stools. He takes aspirin and ibuprofen.

Danger

Severe anemia, gastrointestinal bleeding, syncope, shock, cardiac ischemia.

Syndrome

Fatigue with exertional dyspnea, dizziness, pallor, and possible melena in the context of aspirin and NSAID use.

Capacity Failure

Oxygen delivery, circulation reserve, energy, mobility.

Coupling Conditions

Aspirin, NSAID use, chronic pain, age, delayed presentation, possible cardiovascular disease, access to urgent care.

Wise Perturbation

Assess vital signs, hemodynamic stability, hemoglobin, stool history, medication risks, and need for urgent GI or emergency pathway according to local practice. Review harmful medicines and monitor response.

Repair Trajectory

Bleeding controlled or excluded, hemoglobin stable, dizziness improves, exertional tolerance improves, medicine harm reduced, follow-up clear.

14. Worked Case 2: Fatigue and Depression

A 42-year-old teacher reports fatigue, poor sleep, low mood, loss of interest, and difficulty concentrating. She has stopped seeing friends and feels she is failing her family.

Danger

Depression with possible suicidal risk. Also consider anemia, thyroid disease, sleep disorder, chronic infection, medication effects, and other medical contributors.

Syndrome

Fatigue with low mood, insomnia, loss of interest, poor concentration, and reduced participation.

Capacity Failure

Agency, energy, sleep regulation, participation, comfort, dignity.

Coupling Conditions

Work stress, family demands, sleep, social support, grief or trauma, chronic illness, medicines, stigma, access to care.

Wise Perturbation

Assess suicidal thoughts and safety. Explore mood, sleep, function, supports, and medical contributors. Offer a care plan that may include psychological, social, medical, and follow-up support according to local resources and patient preference.

Repair Trajectory

Safety secured, sleep improves, mood begins to lift, daily function returns, patient reconnects with supports, follow-up continues.

15. Worked Case 3: Fatigue and Weight Loss

A 61-year-old woman reports three months of fatigue, weight loss, reduced appetite, and night sweats.

Danger

Malignancy, chronic infection, inflammatory disease, endocrine disease.

Syndrome

Chronic fatigue with constitutional symptoms.

Capacity Failure

Energy, defense/tolerance, repair, participation.

Coupling Conditions

Age, exposure history, family history, smoking, travel, immune status, access to care, nutrition, psychosocial stress.

Wise Perturbation

Do not dismiss. Perform careful history, examination, baseline investigations, and targeted workup based on findings. Arrange follow-up and escalation if red flags are present.

Repair Trajectory

Diagnosis clarified, weight loss addressed, dangerous causes treated or excluded, nutrition and function supported, patient not lost to follow-up.

16. Worked Case 4: Fatigue After Viral Illness

A 35-year-old patient reports persistent fatigue, brain fog, and reduced exercise tolerance six weeks after a viral illness. Basic examination is reassuring, but the patient cannot return to usual activity.

Danger

Consider anemia, thyroid disease, cardiac or respiratory complications, depression, sleep disorder, inflammatory disease, and red flags such as chest pain, syncope, hypoxia, weight loss, or neurological deficits.

Syndrome

Post-infectious fatigue with cognitive symptoms and exertional intolerance.

Capacity Failure

Energy transformation, regulation, cognition, participation.

Coupling Conditions

Sleep disruption, deconditioning, work pressure, stress, nutrition, mood, activity pattern, social support, uncertainty.

Wise Perturbation

Validate the symptom as real. Exclude danger and treatable contributors based on syndrome. Support pacing, sleep, nutrition, gradual functional planning, and follow-up. Avoid forcing rapid return beyond tolerance.

Repair Trajectory

Energy becomes more predictable, brain fog improves, activity tolerance increases gradually, patient understands pacing and warning signs, participation returns.

17. Worked Case 5: Fatigue in Frailty

An 88-year-old woman is described by family as “tired and not herself.” She is eating less, walking less, and sleeping more. She recently started a sedative for insomnia.

Danger

Delirium, infection, dehydration, AKI, medication toxicity, falls, depression, hypoxia, hypoglycemia.

Syndrome

Frailty decompensation with reduced intake, mobility decline, increased sleepiness, and recent sedative exposure.

Capacity Failure

Energy, cognition, mobility, nutrition/hydration, agency, safety.

Coupling Conditions

Frailty, sedative, poor intake, sleep disruption, baseline cognition, home support, infection risk, medicine burden.

Wise Perturbation

Assess vital signs, glucose, oxygenation, hydration, infection, renal function, medicines, cognition, falls risk, and caregiver support. Review sedative harm. Support nutrition, mobility, and safe care.

Repair Trajectory

More alert, eating better, walking safer, sedative plan reviewed, caregiver supported, danger excluded or treated.

18. Common Student Pitfalls

Pitfall 1: Dismissing Fatigue as Vague

Fatigue may be the first sign of serious disease.

Pitfall 2: Ordering Broad Tests Without a Syndrome

Clarify the pattern first.

Pitfall 3: Missing Anemia or Bleeding

Always ask about exertional symptoms, pallor, bleeding, black stools, and medication risks.

Pitfall 4: Missing Depression or Suicidal Risk

Mood and safety are part of fatigue assessment.

Pitfall 5: Confusing Weakness With Fatigue

True weakness may signal neurological or muscle disease.

Pitfall 6: Ignoring Sleep

Poor sleep can drive fatigue, pain, mood, cognition, blood pressure, and glucose problems.

Pitfall 7: Ignoring Medicines

Medication harm is a common and treatable cause.

Pitfall 8: Saying “Tests Are Normal” as if the Patient Is Well

Normal tests do not erase suffering or functional impairment.

19. Clinical Practice Box

When assessing fatigue, complete this structure:

What does the patient mean by fatigue?
Sleepy, weak, breathless, low energy, low motivation, post-exertional exhaustion?

Time course:

Functional impact:

Red flags:
Weight loss, fever, bleeding, chest pain, dyspnea, syncope, confusion, neurological signs, suicidal thoughts?

Capacity failure:
Energy, oxygen delivery, circulation, clearance, defense, regulation, agency, participation?

Likely syndrome pattern:

Dangerous causes to exclude:

Coupling conditions:
Medicines, sleep, mood, pain, nutrition, work, caregiving, access?

Initial investigations or assessment:

Wise perturbation:

Repair trajectory:

20. Mini-Case for Practice

A 57-year-old man presents with three months of fatigue. He is short of breath on stairs, has lost weight, and has noticed intermittent black stools. He takes an NSAID for back pain and says he has been "pushing through" because of work.

Apply the fatigue approach.

Danger

Severe anemia, gastrointestinal bleeding, malignancy, cardiac strain, syncope risk.

Syndrome

Chronic fatigue with exertional dyspnea, weight loss, and possible melena in the context of NSAID use.

Capacity Failure

Oxygen delivery, energy transformation, circulation reserve, participation.

Coupling Conditions

NSAID use, work pressure, delayed presentation, chronic pain, possible poor health literacy around black stools, access to care.

Wise Perturbation

Assess vital signs, pallor, hemodynamic stability, hemoglobin, iron deficiency pattern, stool history, medication risk, abdominal symptoms, and need for urgent investigation or referral according to local pathways. Review NSAID harm and ensure follow-up is owned.

Repair Trajectory

Bleeding source identified or excluded, hemoglobin stabilized, dizziness and breathlessness improve, harmful medicines reviewed, weight loss investigated, patient understands warning signs and follow-up.

21. Student Takeaway

Fatigue becomes easier when it is made specific.

Do not ask only:

“Is the patient tired?”

Ask:

What kind of tired?
What changed?
What can the patient no longer do?
What danger must not be missed?

What capacity is failing?
What conditions keep fatigue going?
What would repair look like?

Fatigue is not a diagnosis. It is a signal that energy, oxygen delivery, circulation, clearance, regulation, mood, sleep, comfort, or participation may be impaired.

The clinician's task is to turn tiredness into a meaningful clinical pattern and a safe path toward repair.

Chapter 14. Edema Made Easy

Edema means abnormal fluid accumulation in the tissues.

Patients may say:

“My legs are swollen.”
“My shoes are tight.”
“My face is puffy.”
“My belly is swollen.”
“I am gaining weight quickly.”
“My skin feels stretched.”
“I am short of breath and swollen.”

Edema may be mild and chronic.
It may also signal heart failure, kidney disease, liver disease, venous obstruction, medication harm, severe infection, malnutrition, or life-threatening fluid overload.

The first task is not simply to prescribe a diuretic.

The first task is to ask:

Why is fluid leaving its proper compartment, and is the patient in danger?

Edema becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Edema Dangerous?

Edema is dangerous when it is associated with:

- breathlessness
- pulmonary edema
- hypoxia
- chest pain
- acute kidney injury
- severe oliguria
- severe hypertension
- hypotension or shock
- rapid weight gain
- tense ascites
- cellulitis or skin breakdown
- unilateral painful leg swelling
- suspected deep vein thrombosis
- severe hypoalbuminemia

- nephrotic syndrome
- liver failure
- pregnancy-related danger where relevant
- facial, tongue, or airway swelling
- medication reaction or anaphylaxis
- frailty with immobility or falls risk

The danger-first question is:

Is this swelling threatening oxygenation, circulation, clearance, skin integrity, mobility, or airway safety?

2. Immediate Red Flags in Edema

Urgent assessment is needed if edema is associated with:

- severe shortness of breath
- low oxygen saturation
- inability to lie flat
- frothy sputum
- chest pain
- syncope
- severe hypertension with symptoms
- very low urine output
- rapidly worsening kidney function
- confusion
- painful swollen calf
- sudden unilateral leg swelling
- fever with red swollen limb
- severe abdominal distension with pain or breathlessness
- swelling of lips, tongue, throat, or face
- rash or allergic symptoms
- widespread edema with severe weakness or poor intake
- tense painful skin
- black or infected wounds
- frailty with inability to walk safely

Edema with breathlessness is not just a leg problem.

Edema with low urine output is not just a cosmetic problem.

Edema with unilateral pain is not just “fluid retention.”

3. Edema Is a Syndrome, Not a Diagnosis

“Swelling” alone is too broad.

The clinician must form an edema syndrome.

Ask:

- Where is the swelling?
- Is it unilateral or bilateral?
- Is it pitting or non-pitting?
- Is it acute or chronic?
- Is it painful?
- Is it red, hot, or tender?
- Is there breathlessness?
- Is there orthopnea?
- Is there abdominal swelling?
- Is there facial puffiness?
- Is urine output reduced?
- Is urine frothy?
- Is there weight gain?
- Is there jaundice?
- Is there a history of heart, kidney, liver, thyroid, venous, or lymphatic disease?
- Are there new medicines?
- Is the patient pregnant or postpartum where relevant?
- Is there immobility, cancer, recent surgery, or clot risk?
- What are the vital signs?
- What is the patient’s baseline?

The goal is to move from:

“The patient has swollen legs”

to:

“The patient has bilateral pitting edema with orthopnea, crackles, and reduced urine output.”

That second statement gives direction.

4. Common Edema Syndrome Patterns

Bilateral Leg Edema With Dyspnea

Pattern:

- swelling of both legs
- breathlessness
- orthopnea

- reduced exercise tolerance
- crackles
- raised jugular venous pressure where present
- possible rapid weight gain
- possible reduced urine output

Possible causes:

- heart failure
- renal failure with fluid overload
- pulmonary hypertension
- valvular disease
- medication-related fluid retention
- severe anemia contributing to heart failure

Threatened capacities:

Circulation, **oxygenation**, **clearance**, **mobility**, and **sleep**.

Bilateral Leg Edema Without Dyspnea

Pattern:

- leg swelling
- often worse by evening
- may improve with elevation
- no respiratory symptoms
- stable vital signs

Possible causes:

- venous insufficiency
- medication-related edema
- obesity
- immobility
- mild heart, kidney, liver, or thyroid disease
- low albumin
- dependent edema

Threatened capacities:

Mobility, **skin integrity**, **comfort**, and sometimes **circulation**.

Unilateral Painful Leg Swelling

Pattern:

- one leg swollen

- pain or tenderness
- warmth
- calf swelling
- possible redness
- risk factors for thrombosis

Possible causes:

- deep vein thrombosis
- cellulitis
- ruptured Baker's cyst
- trauma
- venous obstruction
- lymphedema

Threatened capacities:

Vascular flow, **mobility**, **comfort**, and, if pulmonary embolism develops, **oxygenation** and **circulation**.

Edema With Frothy Urine or Heavy Proteinuria

Pattern:

- generalized swelling
- periorbital puffiness
- leg edema
- frothy urine
- low albumin where measured
- possible high cholesterol
- possible reduced kidney function

Possible causes:

- nephrotic syndrome
- glomerular disease
- diabetic kidney disease
- other kidney disorders

Threatened capacities:

Clearance, **fluid balance**, **vascular integrity**, and **skin integrity**.

Edema With Reduced Urine Output

Pattern:

- swelling
- oliguria

- rising creatinine
- possible hyperkalemia
- possible breathlessness
- possible fluid overload

Possible causes:

- acute kidney injury
- chronic kidney disease decompensation
- obstruction
- sepsis
- heart failure
- medication-related kidney injury

Threatened capacities:

Clearance, **circulation**, **oxygenation**, and **electrical stability**.

Edema With Ascites or Jaundice

Pattern:

- abdominal swelling
- leg edema
- jaundice
- easy bruising
- low albumin
- confusion in severe disease
- gastrointestinal bleeding risk
- alcohol or viral hepatitis history where relevant

Possible causes:

- cirrhosis
- portal hypertension
- malignancy
- heart failure
- severe hypoalbuminemia

Threatened capacities:

Liver transformation, **circulation**, **nutrition**, **clearance**, **cognition**, and **comfort**.

Facial, Tongue, or Airway Swelling

Pattern:

- facial swelling

- lip or tongue swelling
- throat tightness
- voice change
- wheeze
- rash
- hypotension in anaphylaxis
- possible ACE inhibitor exposure or allergy trigger

Possible causes:

- angioedema
- anaphylaxis
- allergic reaction
- medication reaction

Threatened capacities:

Airway, **breathing**, and **circulation**.

This is an emergency if airway involvement is possible.

Chronic Non-Pitting Edema

Pattern:

- firm swelling
- often chronic
- skin thickening
- recurrent cellulitis
- may be unilateral or bilateral

Possible causes:

- lymphedema
- chronic venous disease
- post-surgical or post-radiation changes
- malignancy obstruction
- filarial disease in relevant settings

Threatened capacities:

Lymphatic drainage, **skin integrity**, **mobility**, **comfort**, and **participation**.

5. Capacity Failure in Edema

Edema matters because it signals disturbance in fluid distribution and life-capacity.

Circulation

The heart or vascular system may not maintain effective forward flow.

Signals include:

- dyspnea
- orthopnea
- raised venous pressure
- leg swelling
- pulmonary edema
- fatigue
- reduced exercise tolerance

Clearance

The kidneys may not clear salt and water adequately.

Signals include:

- reduced urine output
- rising creatinine
- hyperkalemia
- fluid overload
- hypertension
- acidosis
- drug accumulation

Vascular Integrity

Fluid may move out of the vascular compartment because of increased pressure, inflammation, low oncotic pressure, or vascular injury.

Signals include:

- pitting edema
- low albumin
- nephrotic syndrome
- sepsis
- inflammation
- venous obstruction

Skin Integrity

Edema stretches the skin and impairs healing.

Signals include:

- tight skin
- weeping edema
- cellulitis
- ulcers
- pressure injury
- fungal infection
- pain
- reduced mobility

Mobility

Swollen legs are heavy, painful, and unstable.

Signals include:

- difficulty walking
- falls risk
- inability to put on shoes
- reduced transfers
- fear of movement

Comfort and Dignity

Edema can cause embarrassment, discomfort, poor sleep, inability to dress, and distress.

The clinician should not treat swelling as merely cosmetic.

6. Bedside Assessment of Edema

Look First

Observe:

- breathing effort
- ability to lie flat
- distress
- leg size and symmetry
- skin color
- redness
- wounds
- weeping skin
- abdominal distension
- facial swelling
- general frailty
- mobility

If the patient is swollen and breathless, assess oxygenation and circulation urgently.

Vital Signs

Check:

- respiratory rate
- oxygen saturation
- oxygen requirement
- pulse
- blood pressure
- temperature
- level of consciousness
- urine output if available
- weight trend where available

Edema with hypoxia, tachypnea, hypotension, severe hypertension, fever, or confusion is higher risk.

Focused History

Ask about:

- onset
- progression
- unilateral or bilateral
- pain
- redness or warmth
- dyspnea
- orthopnea
- chest pain
- palpitations
- cough
- urine output
- frothy urine
- abdominal swelling
- jaundice
- weight gain
- diet and salt intake
- alcohol history where relevant
- liver disease
- kidney disease
- heart disease
- diabetes
- thyroid symptoms
- recent surgery or immobility
- cancer
- pregnancy/postpartum where relevant
- travel or clot risk

- medicines

Medicine Review

Important medicines that may contribute to edema or fluid problems include:

- calcium channel blockers
- NSAIDs
- steroids
- insulin in some contexts
- thiazolidinediones where used
- hormones
- vasodilators
- gabapentinoids
- some anti-inflammatory or immunosuppressive therapies

Medicines may also worsen kidney function or fluid balance.

Ask:

- What was recently started?
- What dose was changed?
- What has been stopped?
- Are diuretics being taken?
- Are medicines being missed because of cost, side effects, or confusion?

7. Physical Examination

Examine:

Edema Characteristics

- site
- symmetry
- pitting or non-pitting
- tenderness
- warmth
- erythema
- skin breakdown
- ulcers
- varicose veins
- calf size difference
- lymphatic skin changes

Cardiovascular Signs

- pulse
- blood pressure
- jugular venous pressure where appropriate
- heart sounds
- murmurs
- gallop rhythm where present
- peripheral perfusion
- signs of heart failure

Respiratory Signs

- crackles
- wheeze
- reduced breath sounds
- pleural effusion signs
- respiratory effort
- oxygenation

Abdominal Signs

- ascites
- hepatomegaly
- splenomegaly
- tenderness
- jaundice
- collateral veins
- signs of chronic liver disease

Renal and Systemic Signs

- pallor
- rash
- joint signs
- blood pressure
- urine output
- signs of dehydration despite edema

A patient can be edematous and intravascularly depleted, especially in sepsis, liver disease, nephrotic syndrome, or aggressive diuresis.

8. Initial Investigations

Investigations depend on the edema syndrome.

Common investigations may include:

- renal function and electrolytes
- urine dipstick for protein and blood
- urine protein assessment where indicated
- liver tests
- albumin
- full blood count
- glucose or diabetes assessment where relevant
- thyroid function where suggested
- ECG
- chest X-ray if dyspnea, heart failure, pneumonia, or effusion suspected
- natriuretic peptides where used for heart failure assessment
- echocardiography where heart failure or valve disease is suspected
- ultrasound for suspected DVT according to local pathway
- abdominal ultrasound where ascites, liver disease, obstruction, or malignancy concern exists
- inflammatory markers or cultures where cellulitis or infection suspected
- pregnancy testing where relevant
- further renal, hepatic, cardiac, or malignancy workup based on the syndrome

Testing should answer:

- Is the patient fluid overloaded?
- Is kidney clearance impaired?
- Is protein being lost in urine?
- Is albumin low?
- Is liver disease present?
- Is heart failure likely?
- Is DVT possible?
- Is infection present?
- Is medicine harm contributing?
- Is the patient safe for outpatient care?

9. Dangerous Diagnoses Not to Miss

Acute Heart Failure / Pulmonary Edema

Clues:

- breathlessness
- orthopnea
- crackles
- leg edema
- rapid weight gain
- hypoxia
- severe hypertension or hypotension
- chest pain or arrhythmia

Capacity failure:

Circulation, **oxygenation**, **clearance**, **sleep**, **mobility**

Wise action:

Assess oxygenation, ECG, renal function, potassium, fluid status, and possible triggers. Treat congestion according to local guidance and monitor renal function, electrolytes, blood pressure, urine output, and symptoms.

Acute Kidney Injury With Fluid Overload

Clues:

- reduced urine output
- rising creatinine
- edema
- breathlessness
- hyperkalemia
- acidosis
- medication triggers
- obstruction risk

Capacity failure:

Clearance, **fluid balance**, **electrical stability**, **oxygenation**

Wise action:

Urgent renal assessment, medicine review, potassium monitoring, fluid balance, obstruction assessment, and escalation if severe or worsening.

Deep Vein Thrombosis

Clues:

- unilateral leg swelling
- pain
- warmth
- tenderness
- recent surgery
- immobility
- cancer
- previous clot
- pregnancy/postpartum risk where relevant

Capacity failure:

Venous flow, **mobility**, **comfort**

Danger:

Pulmonary embolism.

Wise action:

Assess according to local DVT pathway. Consider PE symptoms. Balance anticoagulation decisions with bleeding risk and diagnostic pathway.

Cellulitis or Necrotizing Infection

Clues:

- red, hot, painful swollen limb
- fever
- systemic illness
- rapidly spreading redness
- severe pain
- blisters or necrosis
- diabetes or immunosuppression

Capacity failure:

Defense, **skin integrity**, **comfort**, **circulation**

Wise action:

Assess severity, mark spread where useful, treat according to local antibiotic guidance, escalate urgently if necrotizing infection is possible.

Nephrotic Syndrome

Clues:

- generalized edema
- periorbital swelling
- frothy urine
- heavy proteinuria
- low albumin
- hyperlipidemia where measured
- thrombosis risk

Capacity failure:

Vascular oncotic stability, **clearance**, **skin integrity**, **circulation**

Wise action:

Confirm proteinuria, assess renal function, blood pressure, complications, and need for renal referral.

Cirrhosis With Ascites

Clues:

- abdominal distension
- leg edema
- jaundice
- bruising
- confusion
- gastrointestinal bleeding risk
- low albumin
- history of liver disease or alcohol use where relevant

Capacity failure:

Liver transformation, **circulation**, **nutrition**, **cognition**, **comfort**

Wise action:

Assess severity, infection risk, renal function, electrolytes, bleeding risk, encephalopathy, and need for specialist input.

Angioedema or Anaphylaxis

Clues:

- facial swelling
- lip or tongue swelling
- throat tightness
- voice change
- wheeze
- hypotension
- rash
- ACE inhibitor or allergen exposure

Capacity failure:

Airway, **breathing**, **circulation**

Wise action:

Emergency assessment and treatment according to local protocol. Call for help early.

10. Wise Perturbation in Edema

Treatment depends on the syndrome.

Do not treat all edema with diuretics.

Ask:

- Is the patient breathless or hypoxic?
- Is edema generalized, bilateral, unilateral, or localized?
- Is kidney function impaired?
- Is the patient intravascularly depleted despite edema?
- Is albumin low?
- Is there heart failure?
- Is there liver disease?
- Is there DVT?
- Is there infection?
- Is a medicine causing the edema?
- Is the skin at risk?
- Is mobility impaired?
- What harm could treatment cause?

Diuretics

May help heart failure or fluid overload.

Can harm by causing:

- dehydration
- AKI
- electrolyte disturbance
- hypotension
- dizziness
- falls
- gout flare in susceptible patients

Monitor:

- symptoms
- weight where available
- edema
- urine output
- blood pressure
- renal function
- electrolytes
- dizziness
- mobility

Compression

May help venous edema in selected patients.

But it should not be used blindly.

Consider arterial circulation, skin condition, heart failure severity, patient comfort, and local practice.

Elevation and Mobility

Leg elevation and movement may help dependent edema and venous return.

But immobility itself worsens edema, thrombosis risk, deconditioning, and skin injury.

Medicine Review

Stopping or changing an offending medicine may be more effective than adding another treatment.

Examples include edema from calcium channel blockers or NSAID-related fluid retention.

Skin Protection

Edematous skin is fragile.

Care includes:

- inspecting skin
- preventing wounds
- treating cellulitis
- managing weeping
- pressure injury prevention
- foot care in diabetes
- footwear assessment
- hygiene and moisture care

Treating the Cause

Edema improves when the cause is addressed:

- heart failure treated
- kidney obstruction relieved
- nephrotic syndrome assessed
- liver disease managed
- DVT treated
- cellulitis treated
- medication harm corrected
- nutrition improved

- mobility restored

11. Repair Trajectory in Edema

Repair depends on cause and capacity failure.

Repair markers include:

- breathlessness improves
- oxygen requirement decreases
- edema reduces
- weight stabilizes or decreases where fluid overload is being treated
- urine output improves
- renal function stable or improving
- potassium safe
- blood pressure safe
- skin less tense
- wounds healing
- cellulitis improving
- pain reducing
- walking easier
- sleep improving
- ascites less uncomfortable
- medicine plan understood
- follow-up blood tests arranged
- patient knows when to seek help

Edema repair is not only smaller legs.

It is safer circulation, oxygenation, clearance, skin, mobility, comfort, and support.

12. Safety-Netting in Edema

Safety-netting should be specific.

Advise urgent review if swelling is associated with:

- worsening breathlessness
- inability to lie flat
- chest pain
- fainting
- new confusion
- very low urine output
- rapid weight gain

- one painful swollen leg
- coughing blood
- fever or spreading redness
- blackened skin or severe pain
- swelling of lips, tongue, throat, or face
- severe dizziness after diuretics
- weakness or palpitations suggesting electrolyte disturbance
- worsening abdominal swelling with pain or fever

Also explain:

- what cause is suspected
- what treatment is intended to do
- what monitoring is needed
- when blood tests should be repeated
- what medicine changes were made
- who owns follow-up
- what symptoms mean danger

Use teach-back:

“Can you tell me what swelling symptoms would make you seek urgent help?”

13. Worked Case 1: Edema With Dyspnea

A 76-year-old woman with hypertension and CKD presents with swollen legs, orthopnea, crackles, and reduced urine output.

Danger

Pulmonary edema, acute heart failure, AKI, hyperkalemia, ACS, arrhythmia.

Syndrome

Bilateral leg edema with dyspnea, orthopnea, crackles, and renal vulnerability.

Capacity Failure

Circulation, oxygenation, clearance, sleep, mobility.

Coupling Conditions

CKD, hypertension, medicines, salt intake, NSAID use if present, diuretic adherence, frailty, home support.

Wise Perturbation

Assess oxygenation, ECG, renal function, potassium, urine output, fluid status, blood pressure, and triggers. Treat congestion carefully according to local guidance. Monitor renal function, electrolytes, blood pressure, urine output, symptoms, and dizziness.

Repair Trajectory

Breathlessness improves, orthopnea reduces, edema decreases, oxygenation safe, urine output adequate, potassium safe, renal function stable, walking and sleep improve.

14. Worked Case 2: One Swollen Leg

A 58-year-old man develops painful swelling of the left calf after a long period of immobility. He has no fever but feels mildly short of breath.

Danger

DVT with possible pulmonary embolism.

Syndrome

Unilateral painful leg swelling with immobility and mild dyspnea.

Capacity Failure

Venous flow, mobility, comfort, and possibly oxygenation.

Coupling Conditions

Immobility, clot risk, bleeding risk, previous VTE, cancer risk, medicines, access to imaging, ability to return if worse.

Wise Perturbation

Assess vital signs, oxygenation, leg findings, PE symptoms, bleeding risk, and use local DVT/PE diagnostic pathway. Escalate if unstable or significantly breathless.

Repair Trajectory

Diagnosis clarified, anticoagulation or alternative plan established if indicated, pain/swelling monitored, breathlessness assessed, bleeding risk understood, follow-up arranged.

15. Worked Case 3: Edema and Frothy Urine

A 41-year-old patient presents with puffy eyes, swollen ankles, and frothy urine.

Danger

Nephrotic syndrome, kidney disease, severe hypoalbuminemia, thrombosis risk, hypertension, AKI.

Syndrome

Generalized edema with periorbital swelling and frothy urine.

Capacity Failure

Fluid balance, vascular oncotic stability, clearance, vascular integrity.

Coupling Conditions

Diabetes, autoimmune symptoms, infection history, medicines, family history, blood pressure, access to renal care.

Wise Perturbation

Check urine protein, renal function, albumin, blood pressure, and assess for complications. Arrange renal evaluation where indicated. Avoid assuming simple fluid retention.

Repair Trajectory

Proteinuria evaluated, renal function monitored, edema controlled safely, blood pressure managed, complications prevented, follow-up secured.

16. Worked Case 4: Edema From Medicine

A 64-year-old woman develops bilateral ankle swelling after starting a new calcium channel blocker. She has no dyspnea, normal oxygen saturation, normal urine output, and stable renal function.

Danger

Immediate danger appears low, but heart, kidney, liver, venous, and medication causes should be considered.

Syndrome

Bilateral ankle edema after new medication, without systemic instability.

Capacity Failure

Comfort and mobility are affected; circulation may be locally altered.

Coupling Conditions

Medication timing, blood pressure control, other medicines, venous insufficiency, mobility, salt intake, patient distress.

Wise Perturbation

Review medication relationship. Consider dose adjustment or alternative therapy according to clinical context. Avoid adding diuretics reflexively if medicine-related edema is likely and no fluid overload is present.

Repair Trajectory

Swelling improves after medicine adjustment, blood pressure remains controlled, patient understands cause, mobility and comfort improve.

17. Worked Case 5: Facial Swelling

A 59-year-old man on an ACE inhibitor develops lip and tongue swelling. He feels his throat is tight.

Danger

Angioedema with possible airway compromise.

Syndrome

Acute facial, lip, and tongue swelling with throat symptoms in the context of ACE inhibitor use.

Capacity Failure

Airway is threatened.

Coupling Conditions

Medication exposure, previous episodes, allergy history, access to emergency care, airway anatomy.

Wise Perturbation

This requires urgent emergency assessment and airway-focused management according to local protocol. Stop the suspected offending medicine and document clearly.

Repair Trajectory

Airway remains safe, swelling resolves, recurrence prevented, medication avoidance understood, follow-up arranged.

18. Common Student Pitfalls

Pitfall 1: Prescribing Diuretics for All Edema

Not all edema is fluid overload. Some edema is venous, lymphatic, medication-related, renal protein loss, liver-related, allergic, inflammatory, or obstructive.

Pitfall 2: Missing Pulmonary Edema

Leg swelling with breathlessness is higher risk.

Pitfall 3: Missing DVT

Unilateral painful swelling should not be dismissed as simple edema.

Pitfall 4: Ignoring Urine Output

Edema with oliguria suggests clearance danger.

Pitfall 5: Ignoring Medicines

Medication-related edema and medication-related kidney injury are common.

Pitfall 6: Forgetting Skin

Edema damages skin and increases infection risk.

Pitfall 7: Over-Diuresis

Reducing swelling at the cost of AKI, hypotension, electrolyte disturbance, and falls is not repair.

Pitfall 8: Missing Airway Swelling

Facial, tongue, throat, or voice change with swelling is emergency danger.

19. Clinical Practice Box

When assessing edema, complete this structure:

Location:
Unilateral, bilateral, generalized, facial, abdominal?

Time course:
Acute, chronic, rapidly worsening?

Danger features:
Breathlessness, hypoxia, chest pain, oliguria, painful unilateral leg, fever, airway symptoms?

Syndrome:
What pattern is present?

Capacity failure:
Circulation, clearance, oxygenation, vascular integrity, skin, mobility, comfort?

Likely causes:
Heart, kidney, liver, venous, lymphatic, medicine, infection, allergy, nutrition?

Medicines:
What could be causing or worsening edema?

Initial investigations:
Renal function, electrolytes, urine protein, albumin, liver tests, ECG, chest imaging, DVT pathway, others?

Wise perturbation:
Diuresis, medicine review, compression, infection treatment, renal/cardiac/liver workup, emergency care?

Repair trajectory:
What should improve, and what harm must be monitored?

20. Mini-Case for Practice

A 70-year-old man presents with swollen ankles and increasing breathlessness over one week. He now sleeps on three pillows. He has CKD, hypertension, and knee pain. He has been taking ibuprofen daily. His oxygen saturation is lower than usual, and he has crackles at both lung bases.

Apply the edema approach.

Danger

Pulmonary edema, heart failure, AKI, hyperkalemia, NSAID-related fluid retention or kidney injury, ACS or arrhythmia as possible triggers.

Syndrome

Bilateral leg edema with progressive dyspnea, orthopnea, crackles, CKD, and NSAID exposure.

Capacity Failure

Circulation, oxygenation, clearance, sleep, mobility, comfort.

Coupling Conditions

CKD, hypertension, NSAID use, pain, salt intake, medicine adherence, renal function, potassium, home support, follow-up access.

Wise Perturbation

Assess oxygenation, vital signs, ECG, renal function, potassium, urine output, medication list, and volume status. Treat fluid overload according to local guidance, review and likely stop NSAID if harmful, monitor renal function and electrolytes closely, and reassess respiratory response.

Repair Trajectory

Breathlessness improves, oxygenation becomes safer, orthopnea reduces, edema decreases, urine output adequate, potassium safe, renal function stable, pain plan made safer, patient understands medicine changes and follow-up.

21. Student Takeaway

Edema becomes easier when the clinician asks:

Where is the fluid?
How fast did it appear?
Is it unilateral, bilateral, generalized, abdominal, or facial?
Is breathing affected?
Is urine output reduced?
Is the skin safe?
Could this be heart, kidney, liver, venous, lymphatic, medicine-related, infectious, allergic, or nutritional?
What capacity is failing?
What treatment helps without causing harm?

Edema is not just swelling.

It is a visible sign that fluid balance, circulation, clearance, vascular integrity, skin, mobility, comfort, or airway safety may be under threat.

Chapter 15. Syncope Made Easy

Syncope means a transient loss of consciousness caused by temporary reduction in blood flow to the brain.

Patients may say:

“I fainted.”
“I blacked out.”
“I collapsed.”
“I passed out.”
“I woke up on the floor.”
“Everything went dark.”

Syncope is common, and many causes are benign.

But syncope can also be the first warning of a dangerous cardiac rhythm, pulmonary embolism, internal bleeding, severe dehydration, structural heart disease, acute coronary syndrome, seizure, stroke mimic, medication harm, or serious systemic illness.

The first task is not to label the episode as “vasovagal.”

The first task is to ask:

Was this faint dangerous, and is the patient safe now?

Syncope becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Syncope Dangerous?

Syncope is dangerous when it suggests failure of circulation, rhythm, oxygenation, brain regulation, or whole-body reserve.

Dangerous causes include:

- arrhythmia
- acute coronary syndrome
- structural heart disease
- aortic stenosis
- pulmonary embolism
- major bleeding
- gastrointestinal bleeding
- ruptured ectopic pregnancy where relevant
- severe dehydration

- sepsis
- hypoglycemia
- seizure
- stroke or transient ischemic attack mimic
- subarachnoid hemorrhage
- aortic dissection
- medication-induced hypotension
- electrolyte disturbance
- anaphylaxis
- exertional syncope
- syncope with injury
- syncope in frailty with unsafe mobility

The danger-first question is:

Did the brain lose perfusion because something serious is failing?

2. Immediate Red Flags in Syncope

Urgent assessment is needed if syncope is associated with:

- chest pain
- palpitations before collapse
- breathlessness
- syncope during exertion
- syncope while lying down
- abnormal ECG
- known structural heart disease
- known heart failure
- family history of sudden death
- severe anemia or bleeding
- black stools
- hypotension
- persistent tachycardia or bradycardia
- low oxygen saturation
- severe headache
- focal neurological signs
- prolonged confusion after the event
- seizure activity
- pregnancy or postpartum state where relevant
- recent surgery or immobility
- active cancer or previous venous thromboembolism
- major injury from the fall
- recurrent unexplained episodes
- older age with frailty or polypharmacy
- abnormal electrolytes
- syncope after new medicine or dose change

Syncope with red flags should not be dismissed as a simple faint.

3. Syncope Is a Syndrome, Not a Diagnosis

“Collapse” is too broad.

The clinician must form a syncope syndrome.

Ask:

- What was the patient doing before the event?
- Was it during exertion, standing, sitting, lying down, urinating, coughing, swallowing, or after pain or emotion?
- Was there warning?
- Was there dizziness, nausea, sweating, warmth, blurred vision, or tunnel vision?
- Were there palpitations?
- Was there chest pain?
- Was there breathlessness?
- Was there headache?
- Was there weakness or neurological symptom?
- How long was the loss of consciousness?
- Was there shaking?
- Was there tongue biting?
- Was there incontinence?
- How quickly did the patient recover?
- Was there confusion afterward?
- Was there injury?
- Has this happened before?
- What medicines is the patient taking?
- What are the vital signs now?
- What is the ECG?
- What is the patient’s baseline and context?

The goal is to move from:

“The patient fainted”

to:

“The patient had sudden collapse without warning during exertion, with known aortic stenosis.”

or:

“The patient became lightheaded after standing, with poor intake and new antihypertensive therapy.”

or:

“The patient collapsed after palpitations, with abnormal ECG.”

The syndrome gives direction.

4. Syncope Versus Other Causes of Collapse

Not every collapse is syncope.

Other possibilities include:

- seizure
- hypoglycemia
- mechanical fall
- stroke
- intoxication
- sleep attack
- psychogenic non-epileptic attack
- head injury
- vertigo with fall
- cataplexy
- severe weakness
- delirium or frailty-related collapse

A true syncopal episode usually involves brief loss of consciousness with spontaneous recovery due to transient cerebral hypoperfusion.

Features suggesting seizure rather than syncope may include prolonged confusion afterward, lateral tongue biting, witnessed rhythmic tonic-clonic activity, aura, prolonged postictal sleep, or repeated unprovoked episodes.

But some brief jerking can occur during syncope, so the history must be careful.

Features suggesting mechanical fall include no loss of consciousness, trip hazard, poor balance, pain, neuropathy, poor vision, or mobility impairment.

Features suggesting hypoglycemia include sweating, hunger, confusion, diabetes medicines, missed meals, and improvement after glucose.

The clinician should ask:

Was this truly syncope, or another form of collapse?

5. Common Syncope Syndrome Patterns

Vasovagal Syncope

Pattern:

- trigger such as pain, fear, emotion, heat, prolonged standing, blood draw, or dehydration
- warning symptoms such as nausea, sweating, warmth, blurred vision, tunnel vision, yawning, or lightheadedness
- brief loss of consciousness
- rapid recovery when lying flat
- usually normal ECG and no high-risk cardiac history

Capacity failure:

Temporary autonomic regulation and circulation mismatch.

Important caution:

Do not diagnose vasovagal syncope if red flags are present.

Orthostatic Syncope

Pattern:

- occurs after standing
- dizziness or lightheadedness on standing
- poor oral intake
- dehydration
- diuretics or antihypertensives
- autonomic dysfunction
- older age or frailty
- possible postural blood pressure drop

Capacity failure:

Circulation regulation fails when posture changes.

Cardiac Arrhythmic Syncope

Pattern:

- sudden collapse
- little or no warning
- palpitations before event
- syncope while sitting or lying
- abnormal ECG
- structural heart disease
- family history of sudden death
- recurrent unexplained episodes

Capacity failure:

Electrical rhythm instability causing abrupt circulation failure.

Structural Cardiac Syncope

Pattern:

- exertional syncope
- chest pain or breathlessness
- known murmur or valve disease
- heart failure
- severe aortic stenosis or hypertrophic cardiomyopathy context
- abnormal cardiac examination or ECG

Capacity failure:

Heart cannot increase output adequately during demand.

Syncope From Bleeding or Volume Loss

Pattern:

- dizziness
- weakness
- pallor
- tachycardia
- hypotension
- black stools or vomiting blood
- heavy bleeding
- abdominal pain
- recent trauma
- anticoagulants or NSAID use

Capacity failure:

Circulating volume and oxygen delivery are failing.

Syncope From Pulmonary Embolism

Pattern:

- sudden collapse
- breathlessness
- pleuritic chest pain
- tachycardia
- hypoxia
- hemoptysis

- leg swelling
- recent surgery, immobility, cancer, pregnancy/postpartum state, previous VTE

Capacity failure:

Oxygenation and circulation may be failing due to obstructed pulmonary blood flow.

Situational Syncope

Pattern:

- syncope during or after urination, defecation, coughing, swallowing, or laughing
- often mediated through reflex autonomic change
- may occur in older adults or with dehydration, alcohol, or medicines

Capacity failure:

Transient reflex circulation regulation failure.

Medication-Related Syncope

Pattern:

- new medicine or dose increase
- antihypertensives
- diuretics
- nitrates
- alpha-blockers
- sedatives
- antidepressants
- antipsychotics
- opioids
- alcohol or other substances
- hypoglycemic agents

Capacity failure:

Circulation, cognition, glucose regulation, or mobility safety may be impaired by treatment.

6. Capacity Failure in Syncope

Syncope matters because it signals temporary failure of cerebral perfusion or another collapse mechanism.

Circulation

The most central capacity in syncope is circulation.

The brain briefly does not receive enough blood flow.

Signals include:

- hypotension
- bradycardia
- tachyarrhythmia
- bleeding
- dehydration
- poor perfusion
- structural heart disease

Rhythm Regulation

Electrical rhythm may fail.

Signals include:

- palpitations
- sudden collapse without warning
- abnormal ECG
- heart disease
- family history of sudden death

Oxygenation

Hypoxia may contribute to collapse.

Signals include:

- breathlessness
- low oxygen saturation
- pulmonary embolism
- pneumonia
- severe anemia
- respiratory failure

Oxygen Delivery

Even if oxygen saturation is normal, anemia or bleeding may reduce oxygen delivery.

Signals include:

- pallor
- fatigue
- exertional dyspnea

- black stools
- tachycardia
- low hemoglobin

Regulation

Autonomic regulation may fail with posture, dehydration, pain, emotion, or medicines.

Signals include:

- prodrome
- standing trigger
- heat
- poor intake
- postural symptoms
- medication effects

Mobility and Safety

Syncope can cause injury.

Signals include:

- head injury
- fractures
- falls
- fear of walking
- frailty
- unsafe home environment

A syncopal episode is not over when consciousness returns. The cause and injury risk remain.

7. Bedside Assessment of Syncope

Look First

Assess whether the patient is now safe.

Look for:

- consciousness
- breathing
- pallor
- sweating
- injury

- distress
- confusion
- neurological signs
- bleeding
- signs of shock
- breathlessness
- frailty

If the patient is still unstable, use the sick patient approach.

Vital Signs

Check:

- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- glucose where relevant
- lying and standing blood pressure where safe and appropriate
- urine output if unwell or admitted

Persistent abnormal vital signs after syncope increase concern.

ECG

An ECG is central in syncope assessment, especially when cardiac cause is possible.

Look for:

- bradyarrhythmia
- tachyarrhythmia
- conduction block
- ischemic changes
- long QT
- pre-excitation
- signs suggesting structural or inherited cardiac risk
- electrolyte-related changes

An abnormal ECG changes the syndrome.

Focused History

Ask the patient and witnesses.

Witness history is often more reliable than patient memory.

Ask about:

- posture before collapse
- activity before collapse
- prodrome
- palpitations
- chest pain
- dyspnea
- seizure-like activity
- color change
- duration
- recovery time
- confusion afterward
- injury
- incontinence
- tongue biting
- previous episodes
- family history
- medicines
- alcohol or substances
- hydration and intake
- bleeding symptoms
- pregnancy possibility where relevant
- recent surgery, immobility, or clot risk
- baseline function and falls history

Examination

Examine:

- cardiovascular system
- murmurs
- pulse regularity
- signs of heart failure
- respiratory system
- neurological status
- signs of bleeding
- hydration
- abdomen if pain or bleeding possible
- calves if DVT possible
- injury from fall
- gait and mobility in older patients

8. Initial Investigations

Investigations should be guided by the syndrome.

Common investigations may include:

- ECG
- glucose
- full blood count if anemia or bleeding possible
- renal function and electrolytes
- pregnancy test where relevant
- troponin if ACS suspected according to local pathway
- oxygen saturation and chest assessment where respiratory cause possible
- D-dimer or imaging according to local PE pathway where clinically appropriate
- orthostatic blood pressure where safe
- telemetry or rhythm monitoring when arrhythmia suspected
- echocardiography where structural heart disease suspected
- CT brain only when indicated by head injury, neurological signs, anticoagulation context, severe headache, or other local criteria
- further neurological testing when seizure or neurological disorder is suspected

Do not order a brain scan reflexively for every faint.

Many syncope causes are cardiovascular, volume-related, medication-related, or reflex.

9. Dangerous Diagnoses Not to Miss

Arrhythmia

Clues:

- sudden collapse without warning
- palpitations before syncope
- syncope while sitting or lying
- abnormal ECG
- known heart disease
- family history of sudden death
- recurrent unexplained syncope

Capacity failure:

Rhythm regulation and **circulation**

Wise action:

Urgent ECG review, monitoring, electrolyte assessment, senior/cardiology input depending on severity.

Acute Coronary Syndrome

Clues:

- chest pain
- sweating
- nausea
- breathlessness
- cardiovascular risk factors
- abnormal ECG
- syncope in older or diabetic patient

Capacity failure:

Coronary circulation

Wise action:

Local ACS pathway and urgent escalation if high-risk.

Aortic Stenosis or Structural Heart Disease

Clues:

- exertional syncope
- murmur
- breathlessness
- chest pain
- known valve disease
- heart failure signs

Capacity failure:

Cardiac output reserve

Wise action:

Senior assessment and cardiac evaluation.

Pulmonary Embolism

Clues:

- syncope with dyspnea
- pleuritic chest pain
- tachycardia
- hypoxia
- hemoptysis
- leg swelling
- recent surgery or immobility
- cancer
- previous VTE

- pregnancy/postpartum risk where relevant

Capacity failure:

Oxygenation and **circulation**

Wise action:

Assess stability and follow local PE pathway. Escalate if unstable.

Major Bleeding

Clues:

- black stools
- vomiting blood
- abdominal pain
- heavy bleeding
- anticoagulation
- NSAID use
- pallor
- tachycardia
- hypotension
- weakness

Capacity failure:

Circulating volume, **oxygen delivery**, **circulation**

Wise action:

Assess hemodynamic stability, hemoglobin, bleeding source, medicine risks, and urgent referral or admission according to local practice.

Hypoglycemia

Clues:

- diabetes medicines
- missed meals
- sweating
- confusion
- weakness
- seizure-like activity
- rapid improvement after glucose

Capacity failure:

Energy regulation and **cognition**

Wise action:

Check glucose early and treat according to local protocol.

Seizure

Clues:

- aura
- prolonged rhythmic movements
- lateral tongue biting
- prolonged confusion after event
- incontinence
- postictal sleep
- known epilepsy
- neurological lesion

Capacity failure:

Brain regulation

Wise action:

Assess safety, glucose, electrolytes, medication adherence, triggers, and neurological pathway where needed.

Medication Harm

Clues:

- recent medicine start or dose increase
- postural symptoms
- bradycardia
- hypotension
- dehydration
- polypharmacy
- frailty
- renal impairment

Capacity failure:

Circulation regulation, **cognition**, **mobility safety**

Wise action:

Medicine review is essential.

10. Wise Perturbation in Syncope

Treatment depends on the syndrome and danger.

Ask:

- Is the patient stable now?
- Was this true syncope?
- Is there cardiac danger?
- Is there bleeding?
- Is there PE risk?
- Is glucose abnormal?
- Is there seizure concern?
- Are medicines contributing?
- Is the patient injured?
- Is discharge safe?

If Unstable

Use ABCDE, support failing capacity, call for help, monitor, and treat the likely danger.

If Arrhythmia Suspected

Obtain ECG, monitor rhythm, check electrolytes, review medicines, and escalate.

If Orthostatic Syncope Suspected

Assess hydration, lying/standing blood pressure where safe, medicines, bleeding, autonomic symptoms, and falls risk.

Treatment may include hydration, medicine adjustment, slow position change advice, compression where appropriate, and addressing underlying causes.

If Vasovagal Syncope Suspected

Explain the benign reflex pattern only after red flags are absent.

Advise on triggers, hydration, recognizing warning symptoms, lying down safely, and follow-up if recurrent or changing.

If Bleeding Suspected

Assess hemodynamics, hemoglobin, stool or bleeding history, anticoagulants/NSAIDs, and urgent care pathway.

If Medication-Related

Review and adjust medicines. Avoid simply labeling the patient as frail or anxious.

If Injury Occurred

Assess head injury, fractures, anticoagulation status, pain, mobility, and safety.

The fall caused by syncope may itself become a major problem.

11. Repair Trajectory in Syncope

Repair is not only that the patient woke up.

Repair means:

- immediate danger excluded or treated
- vital signs stable
- ECG assessed
- glucose safe
- bleeding considered
- cardiac risk addressed
- PE risk addressed when relevant
- seizure or neurological concern clarified
- medicines reviewed
- injury assessed
- recurrence risk reduced
- patient understands warning signs
- follow-up arranged
- mobility and discharge safety assessed

For older patients, repair also means:

- falls risk addressed
- walking assessed
- home safety considered
- caregiver informed
- orthostatic symptoms managed
- medicine burden reviewed

A patient who has recovered consciousness may still be unsafe if the cause remains dangerous or the next faint may injure them.

12. Safety-Netting in Syncope

Safety-netting should be specific.

Advise urgent review if syncope recurs or is associated with:

- chest pain
- palpitations
- breathlessness
- fainting during exercise
- fainting while lying down
- severe headache
- weakness or speech trouble
- black stools or bleeding
- persistent dizziness
- injury
- confusion
- seizure activity
- low glucose symptoms
- worsening weakness
- new medication side effects

Also explain:

- what cause is suspected
- what has been checked
- what remains uncertain
- what medicines were changed
- what follow-up is needed
- what activities should be avoided until reviewed, such as driving or high-risk work, according to local rules

Use teach-back:

“Can you tell me what symptoms would make you seek urgent help?”

13. Worked Case 1: Vasovagal Syncope

A 24-year-old student faints during a blood draw. Before fainting, he felt warm, nauseated, sweaty, and his vision narrowed. He recovered quickly when lying down. Vital signs and ECG are normal. There is no chest pain, dyspnea, family history of sudden death, or exertional syncope.

Danger

Danger appears low after assessment. Cardiac and neurological red flags are absent.

Syndrome

Vasovagal syncope triggered by blood draw with typical prodrome and rapid recovery.

Capacity Failure

Temporary autonomic regulation and circulation mismatch.

Coupling Conditions

Fear of needles, fasting, dehydration, heat, anxiety, prolonged standing.

Wise Perturbation

Reassure with explanation. Advise hydration, avoiding prolonged standing, recognizing prodrome, lying down when warning occurs, and seeking review if episodes change, occur with exertion, chest pain, palpitations, or no warning.

Repair Trajectory

Patient understands the benign pattern, avoids injury during future prodrome, and knows warning signs.

14. Worked Case 2: Exertional Syncope

A 68-year-old man collapses while climbing stairs. He had no warning. He reports exertional chest tightness and breathlessness. Examination reveals a systolic murmur.

Danger

Structural heart disease, aortic stenosis, arrhythmia, ACS.

Syndrome

Exertional syncope without prodrome with chest symptoms and murmur.

Capacity Failure

Cardiac output reserve and circulation are threatened.

Coupling Conditions

Age, possible valve disease, coronary risk factors, medications, activity level, access to urgent cardiac evaluation.

Wise Perturbation

Urgent ECG, vital signs, cardiac assessment, senior input, and cardiac investigation according to local pathway. Avoid reassurance or discharge without addressing cardiac danger.

Repair Trajectory

Cardiac risk clarified, rhythm and structural disease assessed, activity risk explained, treatment plan and follow-up secured.

15. Worked Case 3: Syncope and Black Stools

A 72-year-old woman faints when standing. She has felt weak for several days and reports black stools. She takes an anticoagulant and an NSAID.

Danger

Gastrointestinal bleeding, severe anemia, hypotension, shock.

Syndrome

Syncope with orthostatic symptoms, weakness, melena, and bleeding-risk medicines.

Capacity Failure

Circulating volume, oxygen delivery, circulation reserve.

Coupling Conditions

Anticoagulant, NSAID, age, possible ulcer disease, delayed presentation, renal function, support at home.

Wise Perturbation

Assess vital signs, postural symptoms if safe, hemoglobin, renal function, stool/bleeding history, medication risks, and need for urgent admission or GI pathway according to local practice. Review bleeding-risk medicines urgently.

Repair Trajectory

Hemodynamics stabilize, bleeding controlled or investigated, hemoglobin stable, medicines reviewed, dizziness resolves, follow-up clear.

16. Worked Case 4: Syncope After New Blood Pressure Medicine

An 83-year-old man faints after standing from bed at night. He recently had his blood pressure medicine increased. He has poor oral intake and reports dizziness on standing.

Danger

Orthostatic hypotension, dehydration, medication harm, injury from fall. Also consider arrhythmia and bleeding depending on assessment.

Syndrome

Postural syncope after antihypertensive increase with poor intake and dizziness.

Capacity Failure

Circulation regulation, mobility safety, agency.

Coupling Conditions

Age, frailty, antihypertensive therapy, possible diuretic use, dehydration, nocturia, home safety, fall risk, baseline mobility.

Wise Perturbation

Check vital signs, ECG, glucose, lying/standing BP where safe, renal function/electrolytes, medicine list, hydration status, injury assessment, and falls risk. Adjust medicines as appropriate and create a safer standing/night-time plan.

Repair Trajectory

Dizziness improves, standing BP safer, hydration improves, medicine plan simplified, falls risk reduced, caregiver informed where relevant.

17. Worked Case 5: Syncope With Palpitations

A 46-year-old patient collapses suddenly after feeling rapid palpitations. There was no nausea, warmth, or warning. Recovery was quick. ECG shows an abnormal rhythm pattern.

Danger

Arrhythmic syncope.

Syndrome

Sudden syncope preceded by palpitations with abnormal ECG.

Capacity Failure

Rhythm regulation and circulation.

Coupling Conditions

Family history, stimulant use, electrolyte disturbance, thyroid disease, structural heart disease, medicines, inherited arrhythmia risk, access to monitoring.

Wise Perturbation

Urgent ECG review, rhythm monitoring, electrolyte and relevant metabolic assessment, medicine/substance review, and senior/cardiology input.

Repair Trajectory

Rhythm risk clarified, dangerous arrhythmia treated or monitored, recurrence risk reduced, patient knows restrictions and warning signs.

18. Common Student Pitfalls

Pitfall 1: Calling Every Faint Vasovagal

Vasovagal syncope has a pattern. Do not use the label when red flags are present.

Pitfall 2: Forgetting ECG

ECG is central in syncope assessment.

Pitfall 3: Missing Bleeding

Ask about black stools, vomiting blood, heavy bleeding, anticoagulants, and NSAIDs.

Pitfall 4: Missing PE

Syncope with dyspnea, pleuritic chest pain, tachycardia, hypoxia, or clot risk should raise concern.

Pitfall 5: Ignoring Exertional Syncope

Syncope during exertion is high-risk.

Pitfall 6: Confusing Seizure and Syncope

Get witness history and ask about recovery, tongue biting, postictal confusion, and triggers.

Pitfall 7: Ignoring Medicines

Medicines commonly cause hypotension, bradycardia, hypoglycemia, sedation, and falls.

Pitfall 8: Forgetting Injury and Falls Risk

The cause matters, but so does the damage caused by the collapse.

19. Clinical Practice Box

When assessing syncope, complete this structure:

Was it true syncope or another collapse?

What was the patient doing before the event?

Was there prodrome?
Nausea, warmth, sweating, tunnel vision, dizziness?

Were there danger symptoms?
Chest pain, palpitations, dyspnea, exertion, lying down, severe headache, bleeding?

What did witnesses see?

How quickly did the patient recover?

Vital signs and glucose:

ECG findings:

Capacity failure:
Circulation, rhythm, oxygenation, oxygen delivery, regulation, mobility safety?

Coupling conditions:
Medicines, dehydration, frailty, heart disease, bleeding risk, clot risk, home safety?

Wise perturbation:

Repair trajectory and safety-net:

20. Mini-Case for Practice

A 75-year-old man presents after fainting in the bathroom at night. He felt dizzy when standing, then woke on the floor. He has been eating poorly after a recent infection. His medicines include a diuretic, alpha-blocker, and antihypertensive. He has a bruised forehead.

Apply the syncope approach.

Danger

Orthostatic syncope, dehydration, medication harm, head injury, arrhythmia, bleeding, electrolyte disturbance, AKI, falls risk.

Syndrome

Nocturnal postural syncope with poor intake, high-risk medicines, and head injury.

Capacity Failure

Circulation regulation, clearance if AKI is present, mobility safety, cognition if head injury or delirium is present.

Coupling Conditions

Age, infection recovery, poor intake, diuretic, alpha-blocker, antihypertensive, nocturia, home bathroom safety, frailty, possible renal impairment, caregiver support.

Wise Perturbation

Assess vital signs, orthostatic blood pressure where safe, ECG, glucose, renal function, electrolytes, hydration, head injury risk, medication list, and mobility. Review medicines that may contribute to hypotension. Address falls prevention and ensure safe follow-up.

Repair Trajectory

Dizziness improves, hydration and renal function stabilize, medicine plan safer, head injury risk addressed, walking safe, bathroom/night-time safety plan created, recurrence risk reduced.

21. Student Takeaway

Syncope becomes easier when the clinician asks:

Was this true syncope?
Was it dangerous?
Was there warning?
Was it exertional, supine, or sudden?
Were there palpitations, chest pain, dyspnea, bleeding, or neurological features?
What does the ECG show?
What capacity failed?
What conditions made the faint possible?
Is the patient safe now, and what would prevent recurrence?

Syncope is not over because the patient woke up.

The clinician must understand why the brain briefly lost perfusion, what danger remains, and how repair will protect the patient from the next collapse.

Chapter 16. Confusion Made Easy

Confusion is one of the most important presentations in Internal Medicine.

It may be subtle.
It may fluctuate.
It may be mistaken for dementia, depression, stubbornness, anxiety, intoxication, or "old age."
It may be the first sign of hypoxia, hypoglycemia, sepsis, stroke, medication toxicity, urinary retention, constipation, renal failure, liver failure, pain, withdrawal, or head injury.

Confusion is never "just confusion" until danger has been considered.

The first question is not:

"Does this patient have dementia?"

The first question is:

"Is this an acute change, and what danger is causing it?"

Confusion becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Confusion Dangerous?

Confusion can be dangerous because it may signal failure of brain regulation, oxygenation, circulation, glucose control, clearance, defense, or medication safety.

Dangerous causes include:

- hypoxia
- hypoglycemia
- sepsis
- stroke
- seizure or postictal state
- head injury
- intracranial bleeding
- meningitis or encephalitis
- hypercapnia
- medication toxicity
- alcohol or sedative withdrawal
- opioid or sedative excess
- acute kidney injury
- liver failure
- severe electrolyte disturbance

- hypercalcemia
- thyroid crisis or severe hypothyroidism
- urinary retention
- constipation
- pain
- dehydration
- delirium in frailty
- suicidal or safeguarding risk

The danger-first question is:

What reversible danger could be disturbing this patient's brain now?

2. Immediate Red Flags in Confusion

Urgent assessment is needed when confusion is associated with:

- low oxygen saturation
- breathlessness
- fever
- low blood pressure
- tachypnea
- hypoglycemia or hyperglycemia
- new focal neurological signs
- seizure
- severe headache
- neck stiffness
- recent fall or head injury
- anticoagulant use
- reduced consciousness
- severe agitation with risk of harm
- new hallucinations or paranoia
- severe dehydration
- poor urine output
- jaundice
- very abnormal electrolytes
- suspected overdose
- alcohol or sedative withdrawal
- sudden onset
- rapidly worsening mental state
- family saying, **"This is not normal for them."**

Family and nursing concern are crucial. A relative who says, **"He was not like this yesterday,"** is giving important clinical data.

3. Confusion Is a Syndrome, Not a Diagnosis

“Confusion” alone is too broad.

The clinician must form a confusion syndrome.

Ask:

- Is this acute or chronic?
- Is it sudden, gradual, or fluctuating?
- What is the patient’s baseline?
- Is attention impaired?
- Is the patient drowsy or agitated?
- Is there fever?
- Is there hypoxia?
- Is glucose abnormal?
- Is there pain?
- Is there urinary retention?
- Is there constipation?
- Is there dehydration?
- Are there new medicines?
- Have medicines been stopped suddenly?
- Is there alcohol or sedative dependence?
- Was there a fall?
- Are there focal neurological signs?
- Is there known dementia?
- What does family or caregiver say?
- What are the vital signs?
- What is the environment like?
- Is the patient safe now?

The goal is to move from:

“The patient is confused”

to:

“This is acute fluctuating confusion with fever, tachypnea, low oxygen saturation, and poor intake in a frail older patient.”

That second statement reveals danger.

4. Delirium Versus Dementia

A major task is distinguishing delirium from dementia.

Delirium

Delirium is an acute disturbance of attention, awareness, and cognition, usually caused by an underlying medical, medication-related, environmental, or physiological stressor.

Typical features:

- acute onset
- fluctuating course
- impaired attention
- altered level of consciousness
- disorganized thinking
- sleep-wake disturbance
- hallucinations or agitation may occur
- may be hyperactive, hypoactive, or mixed

Delirium is often reversible, but it is dangerous.

It usually means the brain is being overwhelmed by illness or stress.

Dementia

Dementia is a chronic progressive decline in cognition affecting memory, function, and daily life.

Typical features:

- gradual onset
- progressive course
- memory impairment
- functional decline
- usually more stable day-to-day than delirium
- attention may be relatively preserved early

Dementia increases the risk of delirium.

A patient with dementia can still have delirium.

The key question is:

Is this patient different from their usual baseline?

If yes, think delirium until proven otherwise.

5. Hyperactive, Hypoactive, and Mixed Delirium

Delirium does not always look dramatic.

Hyperactive Delirium

The patient may be:

- agitated
- restless
- pulling at lines
- hallucinating
- shouting
- trying to climb out of bed
- frightened
- aggressive because they are disoriented

This form is often recognized quickly.

Hypoactive Delirium

The patient may be:

- quiet
- drowsy
- withdrawn
- slow to respond
- eating poorly
- not engaging
- staying in bed
- appearing depressed or tired

This form is easily missed.

Hypoactive delirium can be just as dangerous.

Mixed Delirium

The patient fluctuates between agitation and drowsiness.

A patient may be restless at night and sleepy during the day.

The fluctuating course is an important clue.

6. Common Confusion Syndrome Patterns

Confusion With Fever

Pattern:

- acute confusion
- fever
- tachypnea
- weakness
- poor intake
- possible hypotension
- possible urinary, respiratory, abdominal, skin, or device source

Possible causes:

- sepsis
- pneumonia
- urinary infection
- pyelonephritis
- meningitis
- cellulitis
- intra-abdominal infection
- endocarditis
- tropical or travel-related infection where relevant

Threatened capacities:

Defense, **circulation**, **cognition**, **regulation**, **clearance**.

Confusion With Hypoxia or Breathlessness

Pattern:

- confusion
- low oxygen saturation
- dyspnea
- tachypnea
- cough, wheeze, crackles, or chest pain
- possible drowsiness

Possible causes:

- pneumonia
- COPD exacerbation
- asthma exacerbation
- pulmonary edema
- pulmonary embolism
- pneumothorax
- hypercapnia
- severe anemia

Threatened capacities:

Oxygenation, **ventilation**, **cognition**, **circulation**.

Confusion With Low Glucose

Pattern:

- confusion
- sweating
- trembling
- hunger
- weakness
- seizure or collapse in severe cases
- diabetes medicines
- missed meals
- poor intake
- renal impairment

Possible cause:

- hypoglycemia

Threatened capacities:

Energy regulation, **cognition**, **safety**.

This is reversible danger.

Confusion After New Medicine

Pattern:

- confusion after starting or increasing a medicine
- sedation or agitation
- falls
- dry mouth
- urinary retention
- constipation
- reduced mobility
- renal impairment increasing drug accumulation

Possible causes:

- sedatives
- opioids
- anticholinergics
- antihistamines
- antipsychotics
- antidepressants
- anticonvulsants
- steroids

- polypharmacy
- drug interactions
- renal or liver impairment affecting clearance

Threatened capacities:

Regulation, **cognition**, **mobility**, **clearance**, **agency**.

Confusion After Fall or Head Injury

Pattern:

- confusion
- fall
- head strike
- headache
- vomiting
- drowsiness
- anticoagulant use
- focal signs
- worsening over time

Possible causes:

- concussion
- intracranial bleeding
- subdural hematoma
- stroke causing fall
- syncope leading to injury

Threatened capacities:

Cognition, **brain integrity**, **mobility**, **safety**.

Confusion With Urinary Retention or Constipation

Pattern:

- confusion
- agitation or restlessness
- abdominal discomfort
- reduced urine output or overflow
- suprapubic fullness
- constipation
- poor intake
- pain
- opioid or anticholinergic use

Possible causes:

- urinary retention
- constipation
- fecal impaction
- medication effect

Threatened capacities:

Regulation, **comfort**, **clearance**, **dignity**.

These are often missed and treatable.

Confusion With Jaundice or Liver Disease

Pattern:

- confusion
- jaundice
- abdominal swelling
- tremor or asterixis where present
- gastrointestinal bleeding
- infection
- constipation
- sedatives
- alcohol-related or chronic liver disease context

Possible causes:

- hepatic encephalopathy
- sepsis
- bleeding
- electrolyte disturbance
- medication harm

Threatened capacities:

Transformation, **clearance**, **cognition**, **regulation**.

Confusion With Kidney Failure

Pattern:

- confusion
- reduced urine output
- edema
- nausea
- itch

- hyperkalemia
- acidosis
- medication accumulation

Possible causes:

- AKI
- advanced CKD
- uremia
- electrolyte disturbance
- drug toxicity

Threatened capacities:

Clearance, **regulation**, **cognition**, **electrical stability**.

Confusion With Alcohol or Sedative Withdrawal

Pattern:

- agitation
- tremor
- sweating
- tachycardia
- hypertension
- hallucinations
- seizures
- insomnia
- history of dependence or sudden reduction

Possible causes:

- alcohol withdrawal
- benzodiazepine withdrawal
- sedative withdrawal

Threatened capacities:

Regulation, **cognition**, **circulation**, **safety**.

7. Capacity Failure in Confusion

Confusion matters because the brain is a whole-body warning system.

Cognition

The patient cannot attend, understand, remember, or reason normally.

Signals include:

- poor attention
- disorientation
- memory disturbance
- disorganized thinking
- inability to follow instructions

Regulation

The brain-body system is unstable.

Signals include:

- fluctuating awareness
- sleep-wake reversal
- agitation
- drowsiness
- hallucinations
- seizures
- temperature, glucose, oxygen, or electrolyte disturbance

Oxygenation and Ventilation

The brain may be confused because oxygen is low or carbon dioxide is high.

Signals include:

- hypoxia
- dyspnea
- tachypnea
- drowsiness
- COPD or respiratory failure context

Energy

The brain may be confused because glucose is too low or metabolic energy is inadequate.

Signals include:

- hypoglycemia
- poor intake
- sepsis
- liver or kidney failure
- severe anemia

Clearance

The brain may be affected by accumulation of toxins, medicines, uremia, ammonia, or electrolytes.

Signals include:

- AKI
- CKD
- liver failure
- polypharmacy
- sedatives
- opioids
- abnormal sodium, calcium, or other electrolytes

Mobility and Safety

Confusion creates immediate risk.

Signals include:

- falls
- wandering
- pulling lines
- aspiration
- inability to call for help
- unsafe discharge
- medication errors

Agency and Dignity

Confusion can strip a patient of control, privacy, and voice.

A confused patient still deserves explanation, reassurance, respect, and protection.

8. Bedside Assessment of Confusion

Look First

Observe:

- alert or drowsy
- agitated or withdrawn
- frightened
- breathing comfortably or not
- signs of pain

- hydration
- skin color
- fever
- tremor
- injuries
- catheter or retention signs
- environment
- hearing aids or glasses
- family presence

A quiet confused patient can be very sick.

Vital Signs

Check:

- respiratory rate
- oxygen saturation
- oxygen requirement
- pulse
- blood pressure
- temperature
- level of consciousness
- glucose
- urine output where relevant

Glucose and oxygenation should be checked early.

Establish Baseline

Ask family, caregiver, nursing staff, or previous notes:

- What is normal for this patient?
- When were they last normal?
- Is this sudden or gradual?
- Does the confusion fluctuate?
- Has this happened before?
- What usually helps?
- What is their usual mobility?
- Do they have dementia?
- Do they manage medicines normally?

Baseline is essential.

Without baseline, chronic dementia and acute delirium may be confused.

Assess Attention

Delirium is strongly associated with impaired attention.

Simple bedside checks include:

- Can the patient stay engaged?
- Can they follow a simple instruction?
- Can they repeat days of the week backward?
- Can they count backward?
- Do they drift off or become distracted?

The exact tool may vary, but the principle is the same:

Poor attention suggests delirium.

Review Medicines

Look for:

- new medicines
- dose increases
- missed medicines
- sedatives
- opioids
- anticholinergics
- antihistamines
- antidepressants
- antipsychotics
- anticonvulsants
- steroids
- alcohol or sedative withdrawal
- renal or liver impairment causing accumulation

Medicine review is one of the highest-yield parts of confusion assessment.

Examine for Treatable Triggers

Check for:

- hypoxia
- infection
- dehydration
- pain
- urinary retention
- constipation
- hypoglycemia
- electrolyte disturbance
- head injury
- stroke signs

- withdrawal
- pressure injury
- sleep disruption
- sensory impairment

Delirium often has more than one trigger.

9. Initial Investigations

Investigations depend on severity and syndrome.

Common initial investigations may include:

- glucose
- oxygen saturation
- full blood count
- renal function and electrolytes
- liver tests
- calcium where relevant
- infection assessment based on symptoms and examination
- urinalysis only when clinically meaningful, not as a reflex explanation for all confusion
- chest X-ray where respiratory infection or hypoxia is possible
- ECG where arrhythmia, drug effect, electrolyte disturbance, or ACS is possible
- blood gas where hypoxia, hypercapnia, acidosis, shock, or severe respiratory illness is suspected
- CT brain where focal neurological signs, head injury, anticoagulation, severe headache, seizure, reduced consciousness, or other local criteria suggest need
- toxicology or drug levels where overdose or specific toxicity is possible
- thyroid, B12, HIV, syphilis, autoimmune, or other tests when chronic or atypical patterns suggest them

Testing should answer:

- Is there reversible danger?
- Is there infection?
- Is oxygenation or ventilation failing?
- Is glucose unsafe?
- Is clearance impaired?
- Are electrolytes abnormal?
- Is there medicine toxicity?
- Is there brain injury or stroke?
- Is the patient safe in the current setting?

10. Dangerous Diagnoses Not to Miss

Hypoglycemia

Clues:

- diabetes medicines
- missed meals
- sweating
- tremor
- collapse
- seizure
- confusion
- renal impairment

Capacity failure:

Energy regulation and **cognition**

Wise action:

Check glucose early and treat according to local protocol.

Hypoxia or Hypercapnia

Clues:

- breathlessness
- low oxygen saturation
- COPD
- pneumonia
- pulmonary edema
- drowsiness
- headache
- respiratory failure

Capacity failure:

Oxygenation, **ventilation**, **cognition**

Wise action:

Assess breathing urgently, support oxygenation according to local guidance, consider blood gas where appropriate, and escalate if drowsy or worsening.

Sepsis

Clues:

- fever or hypothermia

- tachypnea
- hypotension
- confusion
- poor perfusion
- oliguria
- infection source

Capacity failure:

Defense, **circulation**, **cognition**, **clearance**

Wise action:

Treat according to local sepsis pathway and reassess.

Stroke

Clues:

- sudden confusion with focal weakness
- speech disturbance
- visual loss
- facial droop
- ataxia
- neglect
- acute severe neurological change

Capacity failure:

Brain integrity, **cognition**, **mobility**, **agency**

Wise action:

Urgent stroke pathway according to local protocols.

Head Injury or Intracranial Bleeding

Clues:

- fall
- head strike
- headache
- vomiting
- drowsiness
- anticoagulation
- focal signs
- worsening mental state

Capacity failure:

Brain integrity, **cognition**, **safety**

Wise action:

Assess injury risk and follow local imaging/observation guidance.

Medication Toxicity

Clues:

- new medicine
- polypharmacy
- renal or liver impairment
- sedation
- dry mouth
- urinary retention
- constipation
- falls
- abnormal pupils or respiratory depression in some toxicities

Capacity failure:

Regulation, **clearance**, **cognition**, **mobility**

Wise action:

Review, hold, reverse, reduce, or monitor medicines according to risk and local guidance.

Alcohol or Sedative Withdrawal

Clues:

- agitation
- tremor
- sweating
- hallucinations
- seizures
- tachycardia
- hypertension
- insomnia
- history of dependence

Capacity failure:

Regulation, **cognition**, **circulation**, **safety**

Wise action:

Treat according to local withdrawal protocol and monitor closely.

Urinary Retention and Constipation

Clues:

- agitation
- abdominal discomfort
- reduced urine output
- overflow incontinence
- suprapubic fullness
- opioid or anticholinergic use
- immobility
- constipation history

Capacity failure:

Comfort, **clearance**, **regulation**, **dignity**

Wise action:

Look for and relieve the cause. These are common, treatable delirium triggers.

11. Wise Perturbation in Confusion

The goal is not simply to sedate the patient.

The goal is to identify and reverse triggers, protect safety, reduce distress, preserve dignity, and support repair.

Ask:

- Is the patient safe now?
- Is airway, breathing, circulation, glucose, or consciousness threatened?
- What is the baseline?
- What reversible triggers are present?
- What medicines may be causing harm?
- Is the patient in pain?
- Is there retention or constipation?
- Is infection present?
- Is oxygenation adequate?
- Is the patient frightened?
- What support will reduce confusion?
- Does the patient need senior help or closer monitoring?

Non-Drug Delirium Care

Helpful measures include:

- calm explanation
- reorientation
- family presence where possible
- glasses and hearing aids
- adequate lighting during day
- sleep protection at night
- hydration and nutrition
- pain control
- mobility support
- avoiding unnecessary lines and catheters
- toileting support
- constipation treatment
- retention relief
- minimizing ward moves
- reducing noise
- familiar objects where possible

These are not “soft extras.” They are treatment for brain regulation.

Sedation

Sedation should not be reflexive.

It may be needed when the patient is at immediate risk of harming themselves or others and non-drug measures are insufficient.

But sedation can worsen:

- delirium
- falls
- aspiration
- respiratory depression
- immobility
- loss of dignity
- prolonged hospitalization

If sedation is needed, use the safest local approach, lowest effective intensity, clear indication, close monitoring, and regular review.

The question is:

Are we calming danger and distress, or merely silencing the patient?

12. Repair Trajectory in Confusion

Repair means more than the patient becoming quiet.

Repair markers include:

- oxygenation safe
- glucose safe
- infection treated
- pain controlled
- retention relieved
- constipation addressed
- harmful medicines stopped or reduced
- hydration and nutrition improved
- sleep-wake rhythm improving
- attention improving
- orientation returning
- agitation reducing without over-sedation
- mobility safer
- family recognizes return toward baseline
- patient understands more
- discharge safety improves
- dignity protected

A sedated patient is not necessarily a repaired patient.

A quiet patient may still be delirious.

Repair is clearer attention, safer regulation, and return toward baseline.

13. Safety-Netting in Confusion

Confusion safety-netting matters especially at discharge.

Advise urgent review if there is:

- worsening confusion
- new drowsiness
- fever
- breathlessness
- fall or head injury
- poor intake
- inability to pass urine
- severe constipation
- new weakness or speech difficulty
- seizure

- low glucose symptoms
- new agitation or hallucinations
- inability to take medicines safely
- caregiver unable to cope
- unsafe behavior
- suicidal thoughts or self-harm risk

Explain to family:

- the likely cause of confusion
- what has been treated
- what may fluctuate
- what medicines changed
- what warning signs matter
- who to contact
- what follow-up is needed
- how to support sleep, hydration, orientation, and safety

Use teach-back with caregivers when possible.

14. Worked Case 1: Confusion With Fever

An 82-year-old woman with mild dementia becomes acutely confused. She has fever, tachypnea, poor oral intake, and low blood pressure.

Danger

Sepsis, delirium, shock, hypoxia, hypoglycemia, AKI, dehydration.

Syndrome

Acute fluctuating confusion with fever, tachypnea, hypotension, and poor intake in a vulnerable older patient.

Capacity Failure

Defense, circulation, cognition, regulation, clearance, energy, mobility.

Coupling Conditions

Dementia, frailty, poor intake, medicines, infection source, renal function, family support, baseline mobility.

Wise Perturbation

ABCDE assessment, oxygenation, glucose, infection source search, renal function and electrolytes, urine output, medicine review, and treatment according to local sepsis/infection guidance. Involve family for baseline and reassurance. Prevent falls and delirium harm.

Repair Trajectory

Blood pressure stabilizes, respiratory rate improves, fever settles, urine output improves, attention clears, oral intake returns, mobility becomes safer, family recognizes improvement.

15. Worked Case 2: Confusion After Medicine

An 87-year-old man becomes drowsy and confused after starting a sleeping tablet. He has CKD and has fallen twice.

Danger

Medication toxicity, falls, head injury, hypoxia, hypoglycemia, AKI, delirium.

Syndrome

Acute drowsy confusion after sedative exposure in frailty and renal vulnerability.

Capacity Failure

Regulation, cognition, mobility, safety, clearance.

Coupling Conditions

Sedative, CKD, frailty, sleep problem, polypharmacy, falls risk, home safety, baseline cognition.

Wise Perturbation

Assess vitals, oxygenation, glucose, injury, renal function, and medicine list. Hold or review sedative according to clinical judgment. Treat sleep disruption non-pharmacologically where possible. Address falls risk and caregiver support.

Repair Trajectory

Alertness improves, falls stop, sleep plan safer, cognition returns toward baseline, medicine burden reduced, home safety addressed.

16. Worked Case 3: Confusion and Urinary Retention

A 79-year-old man is restless and confused after surgery. He keeps trying to get out of bed. He has lower abdominal discomfort and has passed little urine.

Danger

Urinary retention, pain, delirium, AKI, medication effect, infection.

Syndrome

Acute postoperative agitation with oliguria and suprapubic discomfort.

Capacity Failure

Comfort, clearance, regulation, cognition, mobility safety.

Coupling Conditions

Recent surgery, anesthesia, opioids, anticholinergics, prostate disease, immobility, unfamiliar ward, sleep disruption.

Wise Perturbation

Assess bladder, pain, vitals, oxygenation, glucose, medicines, renal function, and infection risk. Relieve retention according to local practice. Avoid reflex sedation before treating the cause.

Repair Trajectory

Pain and agitation reduce, urine drains, renal function safe, attention improves, mobility safer, sleep improves.

17. Worked Case 4: Confusion With COPD

A 70-year-old man with COPD is drowsy and confused during an exacerbation. He is breathless and wheezy.

Danger

Respiratory failure, hypercapnia, hypoxia, pneumonia, sepsis, medication effect.

Syndrome

Acute confusion and drowsiness with severe dyspnea in COPD.

Capacity Failure

Ventilation, oxygenation, cognition, regulation, energy.

Coupling Conditions

COPD severity, previous CO_2 retention, infection trigger, inhaler use, oxygen therapy, sedatives, frailty.

Wise Perturbation

Urgent respiratory assessment, oxygen according to local COPD guidance, bronchodilator treatment, blood gas where appropriate, infection assessment, senior/respiratory escalation because drowsiness suggests danger.

Repair Trajectory

Drowsiness improves, respiratory rate stabilizes, oxygenation safer, ventilation supported if needed, wheeze reduces, patient can speak and participate.

18. Worked Case 5: Confusion After Fall on Anticoagulant

An 81-year-old woman on anticoagulation falls at home and becomes increasingly confused over the next day.

Danger

Intracranial bleeding, head injury, delirium, bleeding elsewhere, syncope cause, fracture, infection.

Syndrome

Worsening confusion after fall and head injury risk in anticoagulated older patient.

Capacity Failure

Brain integrity, cognition, mobility, safety, circulation if bleeding.

Coupling Conditions

Anticoagulation, frailty, fall risk, home environment, baseline cognition, medications, delayed presentation.

Wise Perturbation

Urgent assessment of vitals, neurological status, injury, anticoagulation, glucose, and local head injury imaging/observation pathway. Do not attribute confusion to dementia without addressing head injury danger.

Repair Trajectory

Intracranial danger excluded or treated, neurological status stable, fall cause assessed, anticoagulation reviewed, mobility and home safety addressed.

19. Common Student Pitfalls

Pitfall 1: Calling Acute Confusion “Dementia”

Dementia is chronic. Acute change is delirium until proven otherwise.

Pitfall 2: Missing Hypoactive Delirium

A quiet, sleepy patient may be seriously unwell.

Pitfall 3: Forgetting Glucose

Check glucose early.

Pitfall 4: Forgetting Oxygen and Carbon Dioxide

Respiratory failure can present as confusion or drowsiness.

Pitfall 5: Treating Agitation With Sedation Before Looking for Causes

Pain, retention, constipation, hypoxia, hypoglycemia, infection, and medicine toxicity are common triggers.

Pitfall 6: Ignoring Medicines

Medicines commonly cause or worsen confusion.

Pitfall 7: Ignoring Family Baseline

Family often knows whether this is new.

Pitfall 8: Discharging Without Support

A confused patient may not understand medicines, warning signs, or how to stay safe.

20. Clinical Practice Box

When assessing confusion, complete this structure:

Is this acute or chronic?

What is the baseline? Who confirmed it?

Is attention impaired or fluctuating?

Danger screen:
Oxygen, glucose, infection, stroke, seizure, head injury, hypotension, withdrawal, overdose?

Vital signs:

Medicines and substances:

Pain, retention, constipation, hydration, sleep:

Capacity failure:
Cognition, regulation, oxygenation, clearance, energy, mobility, safety, dignity?

Likely triggers:

Wise perturbation:

Repair trajectory:
How will we know the brain is recovering?

Safety-net and caregiver plan:

21. Mini-Case for Practice

A 84-year-old man with known dementia is brought in by his daughter. She says, “He is much worse today.” He is drowsy, has a new cough, is breathing fast, has oxygen saturation below his usual level, and has eaten very little.

Apply the confusion approach.

Danger

Hypoxia, pneumonia, sepsis, delirium, dehydration, hypoglycemia, AKI, medication toxicity, aspiration risk.

Syndrome

Acute deterioration in cognition with cough, tachypnea, hypoxia, and poor intake in a patient with baseline dementia.

Capacity Failure

Oxygenation, defense, cognition, regulation, energy, clearance, mobility safety.

Coupling Conditions

Dementia, age, frailty, aspiration risk, poor intake, medicines, baseline function, daughter’s collateral history, home support.

Wise Perturbation

Assess airway, breathing, circulation, consciousness, glucose, oxygenation, full vital signs, chest findings, infection severity, renal function, electrolytes, hydration, and medicines. Treat respiratory infection and hypoxia according to local guidance. Involve daughter to establish baseline and support orientation. Prevent falls and delirium harm.

Repair Trajectory

Oxygenation improves, respiratory rate lowers, fever if present settles, oral intake improves, attention clears toward baseline, daughter recognizes improvement, mobility and discharge safety are reassessed.

22. Student Takeaway

Confusion becomes easier when the clinician asks:

Is this acute?
What is the baseline?
Is this delirium?
What danger is disturbing the brain?
Is oxygen low?
Is glucose low?
Is there infection?
Could medicines, pain, retention, constipation, dehydration, withdrawal, or head injury explain this?
How will we know the patient is returning toward baseline?

Confusion is a whole-body warning sign.

The brain often becomes disorganized when oxygenation, circulation, clearance, energy, defense, medicines, pain, sleep, or environment overwhelm the patient's reserve.

The safe clinician does not dismiss confusion.

The safe clinician protects the patient while searching for what is reversible.

Chapter 17. Headache Made Easy

Headache is one of the most common symptoms in medicine.

Most headaches are not dangerous.
Many are migraine, tension-type headache, sinus-related discomfort, medication-overuse headache, dehydration, stress, poor sleep, eye strain, or viral illness.

But headache can also be the first sign of a life-threatening condition.

A dangerous headache may signal bleeding, infection, raised intracranial pressure, stroke, temporal arteritis, severe hypertension with end-organ involvement, venous thrombosis, carbon monoxide exposure, malignancy, or medication-related harm.

The first task is not to decide whether the headache is "just migraine."

The first task is to ask:

Is this headache dangerous?

Headache becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Headache Dangerous?

A headache is dangerous when it may represent threat to brain integrity, circulation, infection control, pressure regulation, vision, cognition, or life.

Dangerous causes include:

- subarachnoid hemorrhage
- intracranial bleeding
- meningitis
- encephalitis
- stroke
- cerebral venous sinus thrombosis
- raised intracranial pressure
- brain tumor or mass lesion
- temporal arteritis
- acute glaucoma
- hypertensive emergency
- carbon monoxide poisoning
- head injury
- severe sinus or orbital infection
- pregnancy-related hypertensive disorders where relevant

- medication toxicity or withdrawal
- immunosuppression-related infection
- headache with systemic malignancy

The danger-first question is:

What dangerous cause of headache must not be missed in this patient?

2. Immediate Red Flags in Headache

Urgent assessment is needed when headache is associated with:

- sudden thunderclap onset
- “worst headache of life”
- collapse or syncope
- seizure
- confusion or reduced consciousness
- fever
- neck stiffness
- rash
- focal neurological signs
- new weakness or numbness
- speech difficulty
- visual loss
- double vision
- papilledema if found
- persistent vomiting
- severe headache after head injury
- anticoagulant use
- cancer history
- immunosuppression
- pregnancy or postpartum state where relevant
- age over 50 with new headache
- jaw claudication or scalp tenderness
- severe hypertension with neurological, cardiac, renal, or visual symptoms
- headache triggered by exertion, coughing, or sex
- progressive worsening over days to weeks
- morning headache with vomiting
- headache different from usual pattern
- new headache in a patient with HIV, transplant, chemotherapy, or chronic steroid use

A familiar headache pattern may be managed differently from a new, severe, progressive, or neurologically associated headache.

The key question is:

Is this headache new, severe, sudden, progressive, systemic, neurological, or different?

3. Headache Is a Syndrome, Not a Diagnosis

“Headache” alone is too broad.

The clinician must form a headache syndrome.

Ask:

- When did it start?
- Was onset sudden or gradual?
- Did it reach maximum intensity immediately?
- Where is the pain?
- What does it feel like?
- How severe is it?
- Is it constant or episodic?
- Is it worsening?
- Is this headache different from previous headaches?
- Is there fever?
- Is there neck stiffness?
- Is there vomiting?
- Is there photophobia?
- Is there visual disturbance?
- Is there weakness, numbness, speech difficulty, or imbalance?
- Is there confusion or drowsiness?
- Was there trauma?
- Is there pregnancy or postpartum context where relevant?
- Are there cancer, immune, clotting, or anticoagulant risks?
- Are there jaw symptoms or scalp tenderness?
- Are there eye symptoms?
- Are other people in the home affected?
- What medicines are used, including analgesics?
- What are the vital signs?
- What is the neurological examination?

The goal is to move from:

“The patient has a headache”

to:

“This is a sudden thunderclap headache with vomiting and neck stiffness.”

or:

“This is recurrent unilateral throbbing headache with nausea, photophobia, and full recovery between attacks.”

or:

“This is new headache in an older patient with scalp tenderness and visual symptoms.”

The syndrome determines danger and next steps.

4. Common Headache Syndrome Patterns

Thunderclap Headache

Pattern:

- sudden onset
- reaches maximum intensity rapidly
- severe pain
- may have vomiting, collapse, neck stiffness, or neurological symptoms

Possible causes:

- subarachnoid hemorrhage
- intracranial hemorrhage
- reversible cerebral vasoconstriction syndrome
- cerebral venous thrombosis
- cervical artery dissection
- pituitary apoplexy
- severe hypertensive emergency

Threatened capacities:

Brain integrity, **vascular integrity**, **circulation**, **cognition**.

This pattern is high-risk.

Headache With Fever and Neck Stiffness

Pattern:

- headache
- fever
- neck stiffness
- photophobia
- vomiting
- confusion
- rash in some cases
- reduced consciousness in severe cases

Possible causes:

- meningitis
- encephalitis
- sepsis
- intracranial infection

Threatened capacities:

Defense, **regulation**, **cognition**, **circulation**, **dignity/safety**.

Headache With Focal Neurological Signs

Pattern:

- headache
- weakness
- numbness
- speech difficulty
- visual loss
- facial droop
- ataxia
- seizure
- confusion

Possible causes:

- stroke
- intracranial hemorrhage
- mass lesion
- abscess
- cerebral venous thrombosis
- migraine with aura, only after danger is considered

Threatened capacities:

Brain integrity, **mobility**, **cognition**, **agency**.

Progressive Headache

Pattern:

- worsening over days to weeks
- may be worse in morning
- may be associated with vomiting
- may worsen with cough or straining
- may have visual symptoms
- may have cancer or immune risk

Possible causes:

- raised intracranial pressure
- brain tumor
- abscess
- subdural hematoma
- hydrocephalus
- medication-related intracranial pressure disturbance

Threatened capacities:

Pressure regulation, **brain integrity**, **vision**, **cognition**.

New Headache After Age 50

Pattern:

- new headache in older patient
- scalp tenderness
- jaw pain while chewing
- visual symptoms
- systemic symptoms
- weight loss
- polymyalgia symptoms

Possible causes:

- temporal arteritis
- malignancy
- intracranial mass
- subdural hematoma
- vascular disease

Threatened capacities:

Vision, **vascular integrity**, **comfort**, **participation**.

Temporal arteritis is especially important because untreated disease can threaten vision.

Headache With Eye Pain or Visual Loss

Pattern:

- severe eye pain
- red eye
- blurred vision
- halos
- nausea or vomiting

- headache around eye

Possible causes:

- acute angle-closure glaucoma
- optic neuritis
- orbital cellulitis
- temporal arteritis
- migraine, only after danger is considered

Threatened capacities:

Vision, **comfort**, **neurological function**.

Recurrent Migraine-Like Headache

Pattern:

- recurrent attacks
- often unilateral but may be bilateral
- throbbing or pulsating
- moderate to severe
- worsened by activity
- nausea or vomiting
- photophobia or phonophobia
- aura in some patients
- return to baseline between attacks

Possible cause:

- migraine

Threatened capacities:

Comfort, **regulation**, **agency**, **participation**.

Important caution:

A patient with migraine can still develop a dangerous headache. Ask whether this episode is typical or different.

Tension-Type Headache Pattern

Pattern:

- bilateral pressure or tight band sensation
- mild to moderate
- not usually worsened by routine activity

- no major nausea or vomiting
- often associated with stress, posture, poor sleep, neck tension

Possible cause:

- tension-type headache

Threatened capacities:

Comfort, **sleep**, **participation**.

Medication-Overuse Headache

Pattern:

- frequent or daily headache
- regular use of analgesics or migraine medicines
- headache returns as medication wears off
- increasing medicine use over time

Possible cause:

- medication-overuse headache

Threatened capacities:

Comfort, **agency**, **treatment safety**.

Headache With Sinus or Facial Symptoms

Pattern:

- facial pressure
- nasal congestion
- purulent discharge
- fever in some cases
- worse leaning forward
- dental or facial pain

Possible causes:

- acute sinusitis
- dental infection
- viral upper respiratory infection
- migraine misinterpreted as sinus headache

Threatened capacities:

Comfort, **defense**, **sleep**.

5. Capacity Failure in Headache

Headache matters because several capacities may be threatened.

Brain Integrity

The brain or surrounding structures may be injured by bleeding, stroke, infection, mass, trauma, or pressure.

Signals include:

- sudden severe onset
- neurological signs
- seizure
- confusion
- progressive worsening
- vomiting
- reduced consciousness

Vascular Integrity

Blood vessels may be leaking, dissecting, inflamed, or obstructed.

Signals include:

- thunderclap onset
- neck pain
- neurological symptoms
- severe hypertension
- temporal tenderness
- jaw claudication
- postpartum or clot risk context

Defense

Infection or inflammation may be affecting the nervous system.

Signals include:

- fever
- neck stiffness
- rash
- immunosuppression

- altered mental state
- focal signs

Pressure Regulation

Intracranial pressure may be increased.

Signals include:

- morning headache
- vomiting
- worse with cough or straining
- visual symptoms
- papilledema
- progressive pattern
- drowsiness

Vision

Some headaches threaten sight.

Signals include:

- visual loss
- eye pain
- halos
- red eye
- scalp tenderness
- jaw claudication
- optic symptoms

Comfort and Participation

Even non-dangerous headache can be disabling.

Signals include:

- inability to work
- poor sleep
- nausea
- light sensitivity
- fear of recurrence
- excessive medicine use
- reduced family or social participation

A life-coherent clinician treats both danger and suffering.

6. Bedside Assessment of Headache

Look First

Observe:

- distress
- drowsiness
- confusion
- fever
- rash
- neck stiffness
- photophobia
- vomiting
- neurological weakness
- speech problems
- visual distress
- eye redness
- trauma
- severe hypertension signs
- frailty or systemic illness

A patient with headache who is confused, febrile, collapsed, or neurologically abnormal requires urgent attention.

Vital Signs

Check:

- blood pressure
- temperature
- pulse
- respiratory rate
- oxygen saturation
- level of consciousness
- glucose where confusion, collapse, seizure, or diabetes is present

Severe hypertension with symptoms should not be ignored, but high blood pressure may also be a response to pain. Interpret in context and look for end-organ danger.

Focused History

Ask about:

- onset
- speed to maximum intensity
- severity

- location
- character
- duration
- recurrence
- triggers
- trauma
- fever
- neck stiffness
- vomiting
- visual symptoms
- neurological symptoms
- pregnancy/postpartum where relevant
- cancer
- immunosuppression
- anticoagulation
- previous headaches
- whether this is typical or different
- analgesic frequency
- caffeine, alcohol, substances
- carbon monoxide exposure risk
- family or household members with similar symptoms

Neurological Examination

Assess:

- level of consciousness
- orientation
- speech
- cranial nerves
- pupils
- visual fields where possible
- limb power
- sensation
- coordination
- gait where safe
- neck stiffness
- fundoscopy where skilled and available
- signs of trauma

A normal neurological examination is reassuring but does not exclude all serious causes, especially early subarachnoid hemorrhage, meningitis, or raised pressure.

Eye and Temporal Assessment

When relevant, assess:

- visual acuity

- red eye
- pupil shape and reaction
- eye pain
- halos
- scalp tenderness
- temporal artery tenderness
- jaw claudication
- polymyalgia symptoms

Vision-threatening causes must be taken seriously.

7. Initial Investigations

Investigations depend on the syndrome and danger features.

Common investigations may include:

- glucose if confusion, collapse, seizure, or diabetes is present
- full blood count if infection, anemia, malignancy, or systemic illness is possible
- renal function and electrolytes where systemic illness, dehydration, medicines, or severe hypertension are relevant
- inflammatory markers where infection, temporal arteritis, or inflammatory disease is possible
- blood cultures where meningitis, sepsis, or severe infection is suspected
- pregnancy testing where relevant
- CT brain or other neuroimaging according to local pathways when red flags are present
- lumbar puncture where meningitis or subarachnoid hemorrhage evaluation requires it and imaging/safety considerations are addressed according to local practice
- ECG and cardiac evaluation if syncope, chest pain, severe hypertension, or vascular concern is present
- eye pressure or urgent ophthalmology assessment where acute glaucoma is suspected
- temporal artery pathway where temporal arteritis is suspected
- toxicology or carboxyhemoglobin testing where exposure suggests carbon monoxide or toxin risk

Testing should answer:

- Is there bleeding?
- Is there infection?
- Is there raised pressure?
- Is there stroke or focal brain disease?
- Is vision threatened?
- Is there systemic inflammation?
- Is the patient safe for outpatient management?
- What must be treated now?

8. Dangerous Diagnoses Not to Miss

Subarachnoid Hemorrhage

Clues:

- thunderclap onset
- worst headache of life
- vomiting
- neck stiffness
- collapse or syncope
- reduced consciousness
- neurological signs
- exertional or sexual trigger in some cases

Capacity failure:

Vascular integrity, **brain integrity**, **cognition**

Wise action:

Urgent emergency assessment and neuroimaging pathway according to local protocols. Do not reassure after a severe thunderclap headache without appropriate evaluation.

Meningitis or Encephalitis

Clues:

- fever
- headache
- neck stiffness
- photophobia
- confusion
- seizure
- rash
- immunosuppression
- reduced consciousness

Capacity failure:

Defense, **regulation**, **cognition**, **circulation**

Wise action:

Urgent assessment and treatment according to local pathway. Escalate early.

Stroke or Intracranial Hemorrhage

Clues:

- focal neurological signs
- sudden onset
- severe headache
- speech disturbance
- visual loss
- weakness
- ataxia
- anticoagulation
- severe hypertension with neurological features

Capacity failure:

Brain integrity, **mobility**, **agency**, **cognition**

Wise action:

Urgent stroke or emergency pathway.

Raised Intracranial Pressure

Clues:

- progressive headache
- vomiting
- worse in morning
- worse with cough or straining
- visual symptoms
- papilledema where found
- drowsiness
- cancer or immune risk

Capacity failure:

Pressure regulation, **brain integrity**, **vision**

Wise action:

Urgent imaging and senior assessment according to local pathway.

Temporal Arteritis

Clues:

- new headache after age 50
- scalp tenderness
- jaw claudication

- visual symptoms
- polymyalgia symptoms
- systemic symptoms
- raised inflammatory markers where measured

Capacity failure:

Vision and **vascular integrity**

Wise action:

Urgent assessment and treatment according to local pathway because vision may be threatened.

Acute Angle-Closure Glaucoma

Clues:

- severe eye pain
- headache
- red eye
- blurred vision
- halos around lights
- nausea or vomiting
- fixed or abnormal pupil where present

Capacity failure:

Vision and **comfort**

Wise action:

Urgent ophthalmology or emergency pathway.

Cerebral Venous Sinus Thrombosis

Clues:

- headache with pregnancy/postpartum context where relevant
- thrombosis risk
- malignancy
- infection
- neurological symptoms
- seizure
- progressive or unusual headache

Capacity failure:

Vascular drainage, **brain integrity**, **pressure regulation**

Wise action:

Urgent assessment and imaging pathway where suspected.

Carbon Monoxide Poisoning

Clues:

- headache
- dizziness
- nausea
- confusion
- multiple household members affected
- exposure to generators, faulty heaters, fires, enclosed combustion sources
- symptoms improve away from exposure

Capacity failure:

Oxygen delivery, **brain regulation**, **energy**

Wise action:

Remove from exposure, urgent assessment, oxygen treatment according to local emergency guidance, and public safety response.

Hypertensive Emergency

Clues:

- severe blood pressure elevation with neurological symptoms
- visual symptoms
- chest pain
- breathlessness
- kidney injury
- confusion
- seizure

Capacity failure:

Vascular regulation, **brain integrity**, **circulation**, **clearance**

Wise action:

Assess for end-organ damage and manage according to local emergency guidance. Do not treat the number alone without assessing the patient.

9. Wise Perturbation in Headache

Treatment depends on the headache syndrome.

Ask:

- Is there a red flag?
- Is this a new or different headache?
- Is the onset thunderclap?
- Are there neurological signs?
- Is there fever or neck stiffness?
- Is vision threatened?
- Is the patient immunosuppressed?
- Is there pregnancy/postpartum context where relevant?
- Is there trauma or anticoagulation?
- Is this likely primary headache after danger is considered?
- What treatment relieves suffering with least harm?
- What follow-up is needed?

If Red Flags Are Present

Do not treat as simple migraine or tension headache.

Escalate, investigate, and follow local emergency pathways.

If Migraine Is Likely

Consider:

- pain severity
- nausea/vomiting
- hydration
- triggers
- frequency
- disability
- medication overuse
- pregnancy status where relevant
- contraindications to medicines
- need for prevention if frequent

Treat according to local practice while safety-netting for change in pattern or danger features.

If Tension-Type Headache Is Likely

Consider:

- stress

- sleep
- posture
- neck strain
- screen use
- anxiety
- analgesic use
- depression
- occupational factors

Treatment may include explanation, simple analgesia where safe, sleep and stress support, posture and movement strategies, and follow-up if persistent.

If Medication-Overuse Headache Is Likely

Ask about frequency of analgesic or migraine medicine use.

Repair often requires explanation, a withdrawal or reduction plan, alternative strategies, prevention, and follow-up.

If Sinus or Dental Source Is Likely

Assess for fever, facial tenderness, nasal discharge, dental infection, eye involvement, and systemic illness.

Escalate if orbital symptoms, severe systemic illness, immunosuppression, or neurological features are present.

10. Repair Trajectory in Headache

Repair depends on the cause.

Repair markers include:

- dangerous causes excluded or treated
- pain improving
- vomiting controlled
- hydration restored
- neurological status stable
- fever settling if infection
- vision protected
- blood pressure safely managed where relevant
- patient understands diagnosis
- triggers identified where possible
- medication overuse addressed
- recurrence plan clear
- follow-up arranged

- safety-net understood
- participation restored

In migraine, repair may mean fewer attacks, shorter attacks, less nausea, less disability, reduced medication overuse, and restored function.

In meningitis, repair means infection controlled, mental state improving, complications monitored, and safe recovery.

In temporal arteritis, repair means vision protected and inflammation treated according to pathway.

In palliative disease, repair may mean relief of pain and fear, not cure.

11. Safety-Netting in Headache

Headache safety-netting must be specific.

Advise urgent review if headache is:

- sudden and severe
- the worst headache ever
- associated with fever or neck stiffness
- associated with confusion or drowsiness
- associated with seizure
- associated with weakness, numbness, speech trouble, or visual loss
- worsening over time
- different from usual headaches
- following head injury
- associated with persistent vomiting
- associated with fainting
- associated with eye pain or red eye
- associated with new rash
- occurring in pregnancy/postpartum context where relevant
- occurring with cancer or immunosuppression
- associated with very high blood pressure and symptoms
- affecting multiple household members with dizziness or nausea

Also explain:

- what diagnosis is most likely
- what danger signs were checked
- what treatment is intended to do
- how often medicines may be used safely
- what follow-up is needed
- when to return sooner

Use teach-back:

“Can you tell me which headache symptoms would make you seek urgent help?”

12. Worked Case 1: Thunderclap Headache

A 48-year-old patient develops sudden severe headache during exercise. It reaches maximum intensity within seconds and is followed by vomiting.

Danger

Subarachnoid hemorrhage, intracranial bleeding, arterial dissection, cerebral venous thrombosis, other vascular headache.

Syndrome

Thunderclap headache with vomiting after exertion.

Capacity Failure

Vascular integrity, brain integrity, regulation, comfort.

Coupling Conditions

Hypertension, anticoagulation, family history, vascular disease, exertional trigger, access to emergency care.

Wise Perturbation

Urgent emergency assessment and neuroimaging pathway according to local protocols. Do not reassure or treat as migraine without excluding danger.

Repair Trajectory

Dangerous bleeding or vascular cause excluded or treated, neurological status stable, pain controlled, follow-up and safety instructions clear.

13. Worked Case 2: Headache With Fever

A 27-year-old patient presents with fever, severe headache, neck stiffness, photophobia, and confusion.

Danger

Meningitis, encephalitis, sepsis, intracranial infection.

Syndrome

Headache with fever, neck stiffness, photophobia, and altered mental state.

Capacity Failure

Defense, regulation, cognition, circulation, comfort.

Coupling Conditions

Immune status, exposure history, rash, travel, vaccination status where relevant, delay before presentation, support system.

Wise Perturbation

Urgent assessment, senior/emergency escalation, infection treatment according to local meningitis/sepsis pathway, and appropriate investigations without unsafe delay.

Repair Trajectory

Fever settles, mental state improves, headache reduces, neurological status stable, infection source identified or treated, complications monitored.

14. Worked Case 3: New Headache in Older Patient

A 72-year-old woman develops a new temporal headache with scalp tenderness and jaw pain while chewing. She reports blurred vision.

Danger

Temporal arteritis with threatened vision.

Syndrome

New temporal headache after age 50 with scalp tenderness, jaw claudication, and visual symptoms.

Capacity Failure

Vision and vascular integrity are threatened.

Coupling Conditions

Age, systemic symptoms, polymyalgia symptoms, access to urgent assessment, risk of permanent visual loss.

Wise Perturbation

Urgent assessment and treatment according to local temporal arteritis pathway. Do not delay when visual symptoms are present.

Repair Trajectory

Vision protected, headache improves, inflammation monitored, diagnosis clarified, specialist follow-up arranged.

15. Worked Case 4: Recurrent Migraine Pattern

A 34-year-old woman has recurrent unilateral throbbing headaches with nausea, photophobia, and need to lie in a dark room. The pattern has been similar for years, and neurological examination is normal.

Danger

Danger appears lower if the pattern is typical, stable, and without red flags. Still ask whether this attack is different, sudden, progressive, or associated with neurological deficits beyond usual aura.

Syndrome

Recurrent migraine-like headache with nausea and light sensitivity.

Capacity Failure

Comfort, regulation, agency, participation.

Coupling Conditions

Sleep, stress, hormonal pattern where relevant, dehydration, meals, screen exposure, medication use, family responsibilities, work impact, analgesic overuse.

Wise Perturbation

Treat acute attacks according to local practice and contraindications. Assess frequency, disability, triggers, medication overuse, and need for preventive strategy if frequent or disabling. Provide safety-net for change in pattern.

Repair Trajectory

Attacks become less severe or frequent, nausea controlled, medicine use safe, patient resumes work and family roles, warning signs understood.

16. Worked Case 5: Daily Headache and Analgesic Use

A 45-year-old patient reports daily headaches for months. They take painkillers most days. The headaches now return whenever the medicine wears off.

Danger

Assess for red flags first: new neurological signs, cancer, immune suppression, progressive pattern, raised pressure symptoms, infection, and other danger features.

Syndrome

Chronic daily headache with frequent analgesic use.

Capacity Failure

Comfort, agency, treatment safety, participation.

Coupling Conditions

Medication overuse, stress, sleep, anxiety, work pressure, migraine history, access to follow-up, fear of stopping medicines.

Wise Perturbation

Explain medication-overuse possibility clearly and nonjudgmentally. Plan reduction or withdrawal according to local practice, provide alternatives, consider preventive treatment where appropriate, and arrange follow-up.

Repair Trajectory

Analgesic overuse reduces, headache frequency gradually improves, patient regains confidence, function improves, relapse plan clear.

17. Worked Case 6: Headache in the Household

A family presents with headache, dizziness, nausea, and fatigue after sleeping in a home using a generator nearby.

Danger

Carbon monoxide poisoning.

Syndrome

Multiple household members with headache, dizziness, nausea, and possible exposure to combustion source.

Capacity Failure

Oxygen delivery, brain regulation, energy.

Coupling Conditions

Generator use, ventilation, home safety, children or elderly in household, delayed recognition, public health risk.

Wise Perturbation

Remove from exposure, urgent medical assessment, oxygen treatment according to local emergency guidance, and ensure the environment is made safe before return.

Repair Trajectory

Symptoms improve, oxygen delivery restored, exposure source removed, household protected, recurrence prevented.

18. Common Student Pitfalls

Pitfall 1: Treating Every Headache as Migraine

Migraine is common, but danger must be considered first.

Pitfall 2: Missing Thunderclap Headache

Sudden maximum-intensity headache is high-risk.

Pitfall 3: Ignoring Fever and Neck Stiffness

Headache with fever and neck stiffness may be meningitis.

Pitfall 4: Missing New Headache in Older Patients

New headache after age 50 deserves careful assessment, especially with visual symptoms or jaw pain.

Pitfall 5: Ignoring Eye Symptoms

Eye pain, red eye, halos, or visual loss can signal vision-threatening disease.

Pitfall 6: Overusing Pain Relief Without Reviewing Medication Overuse

Frequent analgesic use can perpetuate headache.

Pitfall 7: Assuming Normal Neurology Means No Danger

Some serious headaches may initially have a normal neurological examination.

Pitfall 8: Weak Safety-Netting

Headache safety-netting must be specific and understandable.

19. Clinical Practice Box

When assessing headache, complete this structure:

Onset:
Sudden, gradual, thunderclap, progressive?

Severity and pattern:
Worst ever, new, recurrent, typical, different?

Danger features:
Fever, neck stiffness, confusion, seizure, neurological signs, visual loss, trauma, cancer, immunosuppression, pregnancy/postpartum, age over 50?

Vital signs:
Blood pressure, temperature, pulse, oxygen saturation, consciousness, glucose if relevant?

Neurological and eye findings:

Syndrome:
What headache pattern is present?

Capacity failure:
Brain integrity, vascular integrity, defense, pressure regulation, vision, comfort, participation?

Wise perturbation:
Emergency pathway, imaging, infection treatment, eye referral, migraine care, medication review, safety-net?

Repair trajectory:
What should improve, and what danger must remain excluded?

20. Mini-Case for Practice

A 56-year-old man presents with a new severe headache that began suddenly while lifting a heavy object. He vomited twice. He says it is unlike any headache he has had before. Neurological examination is currently normal.

Apply the headache approach.

Danger

Subarachnoid hemorrhage and other vascular causes must be considered despite a normal neurological examination.

Syndrome

Thunderclap headache with vomiting after exertion, different from previous headaches.

Capacity Failure

Vascular integrity, brain integrity, regulation, comfort.

Coupling Conditions

Exertional trigger, age, blood pressure, anticoagulant use if present, vascular risk factors, delay to care, access to emergency imaging.

Wise Perturbation

Urgent emergency assessment and neuroimaging pathway according to local protocols. Avoid diagnosing migraine or muscle strain until dangerous causes are appropriately excluded.

Repair Trajectory

Dangerous bleeding or vascular cause excluded or treated, pain controlled safely, neurological status remains stable, patient receives clear explanation and follow-up plan.

21. Student Takeaway

Headache becomes easier when the clinician asks:

Is this headache dangerous?
Was onset sudden?
Is it the worst or different?
Are there fever, neck stiffness, confusion, seizure, neurological signs, visual symptoms, trauma, cancer, immunosuppression, pregnancy/postpartum context, or age over 50 with new headache?
What capacity is threatened: brain integrity, vascular integrity, defense, pressure regulation, vision, comfort, or participation?
What treatment or pathway protects the patient with least harm?
How will we know the patient is safe and repairing?

Most headaches are not life-threatening.

But the safe clinician first protects the patient from the dangerous few.

Chapter 18. Abdominal Pain Made Easy

Abdominal pain is one of the most common and challenging presentations in Internal Medicine.

It can come from the stomach, bowel, liver, gallbladder, pancreas, kidneys, urinary tract, blood vessels, abdominal wall, lungs, heart, pelvis, metabolism, medicines, infection, inflammation, or malignancy.

Some abdominal pain is mild and self-limited.

Some abdominal pain is life-threatening.

The first task is not to decide quickly that the pain is "gastritis," "constipation," "gastroenteritis," or "nonspecific abdominal pain."

The first task is to ask:

Is this abdominal pain dangerous?

Abdominal pain becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Abdominal Pain Dangerous?

Abdominal pain is dangerous when it may represent perforation, obstruction, ischemia, bleeding, sepsis, shock, organ failure, vascular catastrophe, or pregnancy-related emergency where relevant.

Dangerous causes include:

- perforated viscus
- bowel obstruction
- bowel ischemia
- appendicitis
- diverticulitis with perforation or abscess
- pancreatitis
- cholecystitis
- cholangitis
- ruptured abdominal aortic aneurysm
- aortic dissection
- ectopic pregnancy where relevant
- ovarian torsion where relevant
- testicular torsion presenting as lower abdominal pain where relevant
- pyelonephritis
- obstructed infected kidney
- severe gastroenteritis with dehydration or sepsis
- gastrointestinal bleeding

- diabetic ketoacidosis
- adrenal crisis
- myocardial infarction presenting as epigastric pain
- pneumonia presenting with upper abdominal pain
- medication-related ulceration or bleeding
- malignancy with obstruction or perforation

The danger-first question is:

Could this abdominal pain represent infection, obstruction, bleeding, ischemia, perforation, shock, or organ failure?

2. Immediate Red Flags in Abdominal Pain

Urgent assessment is needed when abdominal pain is associated with:

- severe pain
- sudden onset
- pain out of proportion to examination
- rigid abdomen
- guarding or rebound tenderness
- persistent vomiting
- vomiting blood
- black stools
- rectal bleeding
- syncope or collapse
- hypotension
- tachycardia
- fever with systemic illness
- confusion
- jaundice
- severe dehydration
- reduced urine output
- pregnancy or possible pregnancy where relevant
- severe testicular or pelvic pain where relevant
- abdominal distension
- inability to pass stool or flatus
- known abdominal aortic aneurysm
- older age with new severe abdominal pain
- anticoagulant use
- immunosuppression
- recent abdominal surgery or procedure
- peritoneal dialysis
- diabetes with vomiting or abdominal pain
- severe metabolic disturbance
- unexplained weight loss

A patient with abdominal pain and abnormal vital signs should be treated as potentially unstable until proven otherwise.

3. Abdominal Pain Is a Syndrome, Not a Diagnosis

“Abdominal pain” alone is too broad.

The clinician must form an abdominal pain syndrome.

Ask:

- Where is the pain?
- Did it start suddenly or gradually?
- Is it constant, colicky, burning, cramping, sharp, tearing, or dull?
- Does it radiate?
- How severe is it?
- Is it worsening?
- Is it related to meals?
- Is it related to movement?
- Is there vomiting?
- Is there diarrhea?
- Is there constipation?
- Is there abdominal distension?
- Is there fever?
- Is there jaundice?
- Is there urinary pain or frequency?
- Is there flank pain?
- Is there chest pain or breathlessness?
- Is there vaginal bleeding, missed period, or pregnancy possibility where relevant?
- Is there testicular pain where relevant?
- Are there black stools or bleeding?
- What medicines is the patient taking?
- What surgeries has the patient had?
- What are the vital signs?
- What is the abdominal examination?
- What is the patient’s baseline and reserve?

The goal is to move from:

“The patient has abdominal pain”

to:

“This is sudden severe epigastric pain radiating to the back with vomiting and systemic illness.”

or:

“This is right upper quadrant pain with fever and jaundice.”

or:

“This is colicky abdominal pain with vomiting, distension, and no flatus after previous abdominal surgery.”

The syndrome directs the danger screen.

4. Common Abdominal Pain Syndrome Patterns

Epigastric Pain

Pattern:

- upper central abdominal pain
- may be burning, gnawing, severe, or radiating to the back
- may be related to meals
- may be associated with nausea or vomiting
- may mimic chest pain

Possible causes:

- gastritis
- peptic ulcer disease
- pancreatitis
- biliary disease
- myocardial infarction
- reflux
- medication-related injury, especially NSAIDs
- perforated ulcer if sudden severe pain with peritonism

Threatened capacities:

Comfort, **digestion**, **circulation**, **defense**, and sometimes **cardiac circulation**.

Right Upper Quadrant Pain

Pattern:

- right upper abdominal pain
- may radiate to right shoulder or back
- may follow fatty meals
- may have fever
- may have jaundice
- may have vomiting

Possible causes:

- biliary colic
- cholecystitis
- cholangitis
- hepatitis
- liver abscess
- hepatic congestion
- right lower lobe pneumonia
- pulmonary embolism in some contexts

Threatened capacities:

Bile flow, **liver transformation**, **defense**, **comfort**, and sometimes **circulation**.

Right Lower Quadrant Pain

Pattern:

- lower right abdominal pain
- may begin near umbilicus and migrate
- may have fever, nausea, anorexia
- may have guarding
- may have urinary or gynecological mimics where relevant

Possible causes:

- appendicitis
- terminal ileitis
- Crohn’s disease
- mesenteric adenitis
- ovarian torsion or cyst where relevant
- ectopic pregnancy where relevant
- ureteric stone
- cecal diverticulitis

Threatened capacities:

Defense, **bowel integrity**, **comfort**, and sometimes **fertility/reproductive safety** where relevant.

Left Lower Quadrant Pain

Pattern:

- lower left abdominal pain
- fever
- change in bowel habit
- tenderness

- older age or known diverticular disease

Possible causes:

- diverticulitis
- colitis
- constipation
- bowel obstruction
- ischemic colitis
- ureteric stone
- gynecological causes where relevant

Threatened capacities:

Bowel integrity, **defense**, **comfort**, and sometimes **circulation**.

Colicky Abdominal Pain With Vomiting and Distension

Pattern:

- cramping or colicky pain
- vomiting
- abdominal distension
- constipation
- inability to pass flatus
- high-pitched or absent bowel sounds depending on stage
- previous abdominal surgery or hernia risk

Possible causes:

- bowel obstruction
- incarcerated hernia
- volvulus
- malignancy
- severe constipation or fecal impaction

Threatened capacities:

Bowel passage, **fluid balance**, **circulation**, **comfort**, and **nutrition/hydration**.

Sudden Severe Pain With Peritonism

Pattern:

- sudden severe pain
- rigid abdomen
- guarding
- rebound tenderness

- patient lies still
- fever or shock may develop

Possible causes:

- perforated ulcer
- perforated bowel
- ruptured appendix
- ischemic bowel
- ruptured ectopic pregnancy where relevant
- severe pancreatitis
- ruptured aneurysm

Threatened capacities:

Bowel integrity, **defense**, **circulation**, and **life**.

Pain Out of Proportion

Pattern:

- severe pain
- relatively mild early examination findings
- older age or vascular risk
- atrial fibrillation
- low-flow state
- metabolic acidosis or rising lactate where measured

Possible cause:

- mesenteric ischemia

Threatened capacities:

Bowel perfusion, **vascular integrity**, **circulation**, and **life**.

This pattern must not be missed.

Flank Pain

Pattern:

- pain in flank or back
- may radiate to groin
- urinary symptoms
- fever if infection
- nausea or vomiting
- hematuria where present

Possible causes:

- ureteric stone
- pyelonephritis
- obstructed infected kidney
- renal infarct
- musculoskeletal pain
- abdominal aortic aneurysm in older or vascular-risk patients

Threatened capacities:

Clearance, **urinary drainage**, **defense**, **comfort**, and sometimes **vascular integrity**.

Abdominal Pain With Diarrhea and Vomiting

Pattern:

- cramping abdominal pain
- diarrhea
- vomiting
- fever in some cases
- exposure to food, water, sick contacts, or travel
- dehydration in severe cases

Possible causes:

- gastroenteritis
- food poisoning
- inflammatory bowel disease flare
- colitis
- ischemic colitis
- medication-related diarrhea
- C. difficile where relevant
- sepsis in vulnerable patients

Threatened capacities:

Hydration, **clearance**, **defense**, **circulation**, and **energy**.

Abdominal Pain With Jaundice

Pattern:

- abdominal pain
- yellow eyes or skin
- dark urine
- pale stools
- itching

- fever if infection
- confusion in severe liver disease

Possible causes:

- cholangitis
- biliary obstruction
- hepatitis
- pancreatobiliary malignancy
- liver failure
- hemolysis with abdominal symptoms

Threatened capacities:

Liver transformation, **bile flow**, **defense**, **clearance**, and **cognition**.

Abdominal Pain With Metabolic Illness

Pattern:

- abdominal pain
- vomiting
- dehydration
- rapid breathing
- confusion
- diabetes or endocrine disease
- abnormal glucose or electrolytes

Possible causes:

- diabetic ketoacidosis
- adrenal crisis
- hypercalcemia
- uremia
- medication or toxin effect

Threatened capacities:

Regulation, **energy**, **clearance**, **circulation**, and **cognition**.

5. Capacity Failure in Abdominal Pain

Abdominal pain matters because it may signal failure of several life capacities.

Bowel Integrity

The bowel may be inflamed, obstructed, ischemic, or perforated.

Signals include:

- severe pain
- guarding
- distension
- vomiting
- constipation
- inability to pass flatus
- blood in stool
- shock
- pain out of proportion

Defense and Tolerance

Infection or inflammation may be present.

Signals include:

- fever
- tachycardia
- raised inflammatory features
- localized tenderness
- abscess
- peritonitis
- sepsis

Circulation

Abdominal pain may threaten perfusion or reflect bleeding.

Signals include:

- hypotension
- tachycardia
- syncope
- pallor
- black stools
- vomiting blood
- severe pain
- vascular risk
- low urine output

Clearance

Kidneys, liver, biliary system, or bowel drainage may be impaired.

Signals include:

- reduced urine output
- jaundice
- dark urine
- pale stools
- rising creatinine
- hyperkalemia
- acidosis
- obstruction

Nutrition and Hydration

Vomiting, diarrhea, poor intake, and pain can rapidly reduce capacity.

Signals include:

- dehydration
- dizziness
- AKI
- weakness
- poor oral intake
- electrolyte disturbance

Comfort and Mobility

Abdominal pain can prevent movement, sleep, eating, toileting, breathing deeply, or participating in care.

Severe pain itself is a capacity failure.

6. Bedside Assessment of Abdominal Pain

Look First

Observe:

- distress
- stillness or restlessness
- pallor
- sweating
- dehydration
- jaundice
- confusion
- breathlessness

- abdominal distension
- vomiting
- guarding
- inability to move
- frailty
- signs of shock

A patient with peritonitis often lies still.

A patient with colicky pain may writhe or move.

A patient with shock and abdominal pain is high-risk.

Vital Signs

Check:

- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- glucose where relevant
- urine output if unwell or admitted

Abdominal pain with tachycardia, hypotension, fever, tachypnea, confusion, or oliguria is dangerous.

Focused History

Ask about:

- location
- onset
- radiation
- severity
- character
- progression
- relation to meals
- vomiting
- diarrhea
- constipation
- flatus
- bleeding
- weight loss
- fever
- jaundice
- urinary symptoms

- chest pain
- breathlessness
- pregnancy possibility where relevant
- menstrual or pelvic symptoms where relevant
- testicular symptoms where relevant
- previous surgery
- hernias
- gallstones
- ulcers
- pancreatitis
- alcohol use where relevant
- diabetes
- vascular disease
- atrial fibrillation
- medicines
- anticoagulants
- NSAIDs
- steroids
- immunosuppressants
- recent antibiotics
- travel, food, and water exposure

Examination

Examine with dignity and adequate exposure.

Assess:

- general appearance
- hydration
- jaundice
- abdomen shape and distension
- scars
- hernias
- visible peristalsis
- tenderness location
- guarding
- rebound
- rigidity
- masses
- organ enlargement
- bowel sounds
- percussion tenderness
- ascites signs where relevant
- costovertebral angle tenderness
- rectal examination where indicated and appropriate
- pelvic or testicular examination where indicated and appropriate
- chest examination for pneumonia or cardiac causes
- cardiovascular examination for shock, arrhythmia, or vascular disease

Do not forget that lower lobe pneumonia, myocardial infarction, and diabetic ketoacidosis can present with abdominal pain.

7. Initial Investigations

Investigations depend on the syndrome and severity.

Common investigations may include:

- full blood count
- renal function and electrolytes
- liver tests
- bilirubin and cholestatic enzymes where biliary disease is possible
- amylase or lipase where pancreatitis is possible
- glucose and ketones where diabetes or metabolic illness is possible
- inflammatory markers where infection or inflammation is suspected
- lactate or blood gas where shock, ischemia, sepsis, or acidosis is possible
- urinalysis
- urine culture where urinary infection is possible
- pregnancy test where relevant
- ECG and cardiac biomarkers where epigastric pain, chest symptoms, older age, diabetes, or cardiac risk is present
- stool testing where severe, persistent, bloody, travel-related, or antibiotic-associated diarrhea is present
- abdominal ultrasound where biliary, renal, ascites, or pelvic pathology is suspected
- abdominal X-ray in selected obstruction or perforation contexts according to local practice
- CT abdomen where serious intra-abdominal pathology is suspected and available
- chest X-ray where perforation, pneumonia, or cardiopulmonary cause is possible
- blood cultures where sepsis or severe infection is possible

Testing should answer:

- Is there infection?
- Is there obstruction?
- Is there perforation?
- Is there ischemia?
- Is there bleeding?
- Is there pancreatitis?
- Is there biliary obstruction?
- Is kidney function threatened?
- Is pregnancy-related danger possible?
- Is this actually cardiac or respiratory?
- Does the patient need urgent surgical, medical, obstetric, gynecological, urological, or emergency input?

8. Dangerous Diagnoses Not to Miss

Perforation

Clues:

- sudden severe pain
- rigid abdomen
- guarding
- rebound tenderness
- shock
- history of ulcer disease, NSAID use, diverticulitis, malignancy, or recent procedure

Capacity failure:

Bowel integrity, **defense**, **circulation**

Wise action:

Urgent surgical/emergency assessment, imaging pathway, resuscitation, antibiotics according to local guidance, and close monitoring.

Bowel Obstruction

Clues:

- colicky pain
- vomiting
- abdominal distension
- constipation
- inability to pass flatus
- previous surgery
- hernia
- malignancy

Capacity failure:

Bowel passage, **hydration**, **electrolyte balance**, **comfort**

Wise action:

Assess severity, hydration, electrolytes, imaging, surgical input where indicated, and monitor for strangulation or perforation.

Mesenteric Ischemia

Clues:

- severe pain out of proportion
- older age
- atrial fibrillation
- vascular disease
- shock or low-flow state
- metabolic acidosis or high lactate where measured
- bloody stool in some cases

Capacity failure:

Bowel perfusion, **vascular integrity**, **circulation**

Wise action:

Urgent senior/surgical/vascular assessment. Do not be reassured by a soft abdomen early if the pain is severe and risk is high.

Appendicitis

Clues:

- periumbilical pain migrating to right lower quadrant
- anorexia
- nausea
- fever
- localized tenderness
- guarding if complicated

Capacity failure:

Defense, **bowel integrity**, **comfort**

Wise action:

Surgical assessment according to local practice. Consider mimics and pregnancy/pelvic causes where relevant.

Cholangitis

Clues:

- fever
- right upper quadrant pain
- jaundice
- confusion or hypotension in severe cases

Capacity failure:

Bile flow, **defense**, **circulation**, **cognition**

Wise action:

Urgent assessment, antibiotics according to local guidance, imaging, and source control planning.

Pancreatitis

Clues:

- severe epigastric pain
- radiation to back
- vomiting
- alcohol or gallstone risk where relevant
- systemic inflammation
- shock or organ failure in severe cases

Capacity failure:

Inflammatory tolerance, **fluid balance**, **circulation**, **comfort**, **nutrition**

Wise action:

Assess severity, fluids carefully with reassessment, pain control, oxygenation, renal function, electrolytes, cause, and complications according to local pathway.

Abdominal Aortic Aneurysm Rupture

Clues:

- older age
- vascular disease
- sudden abdominal, back, or flank pain
- collapse
- hypotension
- pulsatile mass where present
- known aneurysm

Capacity failure:

Vascular integrity and **circulation**

Wise action:

Emergency vascular/surgical assessment. This is life-threatening.

Ectopic Pregnancy

Where clinically relevant, consider when abdominal or pelvic pain is associated with:

- missed period
- positive pregnancy test
- vaginal bleeding
- syncope
- shoulder tip pain
- hypotension

Capacity failure:

Circulation, **reproductive safety**, **life**

Wise action:

Pregnancy test and urgent obstetric/gynecological assessment according to local pathway.

Diabetic Ketoacidosis

Clues:

- abdominal pain
- vomiting
- dehydration
- rapid deep breathing
- high glucose
- ketones
- diabetes
- confusion or drowsiness

Capacity failure:

Energy regulation, **acid-base regulation**, **hydration**, **circulation**, **cognition**

Wise action:

Urgent metabolic assessment and treatment according to local DKA protocol.

Myocardial Infarction Presenting as Epigastric Pain

Clues:

- epigastric discomfort
- nausea
- sweating
- breathlessness
- older age
- diabetes

- CKD
- cardiovascular risk
- exertional symptoms

Capacity failure:

Coronary circulation

Wise action:

ECG and cardiac pathway where risk suggests. Do not assume indigestion.

9. Wise Perturbation in Abdominal Pain

Treatment depends on danger, syndrome, and capacity failure.

Ask:

- Is the patient unstable?
- Is surgery or emergency input needed?
- Is there sepsis?
- Is there obstruction?
- Is there perforation?
- Is there bleeding?
- Is there metabolic danger?
- Is pain controlled?
- Is vomiting causing dehydration?
- Is kidney function threatened?
- Could medicines be causing harm?
- Is pregnancy-related danger possible where relevant?
- What monitoring is needed?
- When must the patient be reassessed?

Analgesia

Pain relief is important.

Do not withhold analgesia simply because diagnosis is uncertain.

But choose analgesia wisely, considering:

- blood pressure
- renal function
- liver function
- delirium risk
- constipation

- respiratory risk
- opioid sensitivity
- NSAID harm
- bleeding risk

Monitor response and sedation.

Fluids

Vomiting, diarrhea, sepsis, bleeding, and pancreatitis may require fluid support.

But fluids can harm in heart failure, kidney failure, or frailty if not reassessed.

Monitor:

- blood pressure
- pulse
- urine output
- lungs
- edema
- electrolytes
- renal function

Antibiotics

May be needed in sepsis, cholangitis, pyelonephritis, peritonitis, diverticulitis with systemic features, or other bacterial infections according to local guidance.

Antibiotics are not a substitute for source control when obstruction, abscess, perforation, or infected collection is present.

Antiemetics

Vomiting control may protect hydration, comfort, and oral intake.

Consider side effects, QT risk where relevant, sedation, and interactions.

Bowel Rest and Decompression

May be needed in obstruction, severe vomiting, pancreatitis, or surgical abdomen depending on local practice.

Medicine Review

Abdominal pain may be caused or worsened by:

- NSAIDs

- anticoagulants
- steroids
- opioids
- iron
- metformin in acute metabolic illness contexts
- GLP-1 receptor agonists in some contexts
- antibiotics causing diarrhea
- immunosuppressants
- alcohol or substances

Review medicines carefully.

Escalation

Call senior or surgical/emergency help when:

- peritonitis
- shock
- persistent severe pain
- suspected perforation
- obstruction
- ischemia
- cholangitis
- ruptured aneurysm
- ectopic pregnancy
- severe pancreatitis
- gastrointestinal bleeding
- DKA
- diagnostic uncertainty with an unwell patient

Escalation is part of safe abdominal pain care.

10. Repair Trajectory in Abdominal Pain

Repair depends on cause.

General repair markers include:

- pain improving
- vital signs stable
- vomiting controlled
- hydration improving
- urine output adequate
- fever settling
- abdominal tenderness improving
- bowel function returning where relevant

- jaundice improving where relevant
- renal function stable
- electrolytes safe
- infection source controlled
- bleeding stopped or excluded
- surgical danger excluded or treated
- patient eating and drinking
- mobility restored
- medicine harms reviewed
- safety-net understood
- follow-up arranged

Repair is not only a normal scan or a lower pain score.

Repair means the patient's bowel integrity, circulation, hydration, clearance, comfort, and safety are improving.

11. Safety-Netting in Abdominal Pain

Abdominal pain safety-netting must be specific.

Advise urgent review if there is:

- worsening or severe pain
- persistent vomiting
- vomiting blood
- black stools or rectal bleeding
- fainting or severe dizziness
- fever or rigors
- confusion
- yellow eyes or skin
- inability to pass stool or gas
- abdominal swelling
- new chest pain or breathlessness
- reduced urine output
- severe weakness
- pain moving or localizing sharply
- pregnancy possibility with pain or bleeding where relevant
- testicular pain where relevant
- inability to eat or drink
- pain not improving as expected

Also explain:

- what diagnosis is most likely
- what danger has been considered
- what uncertainty remains

- what medicine to take or avoid
- when to return
- what follow-up is needed
- who will review results

Use teach-back:

“Can you tell me what abdominal pain symptoms would make you seek urgent help?”

12. Worked Case 1: Right Upper Quadrant Pain With Jaundice

A 68-year-old woman presents with fever, right upper quadrant pain, jaundice, and confusion.

Danger

Cholangitis with sepsis.

Syndrome

Fever, jaundice, right upper quadrant pain, and altered mental state.

Capacity Failure

Defense, bile flow, liver transformation, circulation, cognition.

Coupling Conditions

Gallstones, age, dehydration, kidney function, anticoagulation if present, access to imaging and source control.

Wise Perturbation

Urgent assessment, vital signs, glucose, renal function, liver tests, blood cultures where appropriate, antibiotics according to local guidance, imaging, senior/surgical or gastroenterology input for source control.

Repair Trajectory

Blood pressure and mental state improve, fever settles, pain improves, bilirubin and liver trajectory improve, source control completed if needed.

13. Worked Case 2: Colicky Pain and Vomiting

A 74-year-old man with previous abdominal surgery has colicky abdominal pain, vomiting, distension, and has not passed stool or flatus.

Danger

Bowel obstruction, strangulation, perforation, dehydration, AKI, electrolyte disturbance.

Syndrome

Colicky abdominal pain with vomiting, distension, obstipation, and previous surgery.

Capacity Failure

Bowel passage, hydration, electrolyte regulation, circulation, comfort.

Coupling Conditions

Previous surgery, adhesions, age, hernia risk, malignancy risk, medicines, frailty, renal function.

Wise Perturbation

Assess vital signs, hydration, abdominal signs, hernias, renal function, electrolytes, imaging according to local pathway, analgesia and antiemetics, fluid support if needed, surgical input.

Repair Trajectory

Vomiting controlled, hydration and electrolytes corrected, pain improves, bowel function returns or obstruction treated, renal function stable.

14. Worked Case 3: Epigastric Pain in Diabetes

A 62-year-old man with diabetes and CKD presents with epigastric discomfort, nausea, sweating, and weakness. He thinks it is indigestion.

Danger

Acute coronary syndrome, pancreatitis, peptic ulcer disease, DKA, biliary disease.

Syndrome

Epigastric discomfort with autonomic symptoms in a high cardiovascular-risk patient.

Capacity Failure

Coronary circulation may be threatened. Comfort and energy are affected.

Coupling Conditions

Diabetes, CKD, hypertension, possible delayed presentation, medicines, NSAID use if present.

Wise Perturbation

Check vital signs, ECG, glucose, cardiac pathway according to local guidance, renal function, and abdominal assessment. Do not dismiss as gastritis until cardiac danger is addressed.

Repair Trajectory

Cardiac danger excluded or treated, symptoms controlled, diagnosis clarified, renal-safe plan made, patient understands warning signs.

15. Worked Case 4: Severe Pain Out of Proportion

An 81-year-old man with atrial fibrillation develops sudden severe abdominal pain. Examination is initially not very impressive, but he looks very distressed.

Danger

Mesenteric ischemia.

Syndrome

Sudden severe abdominal pain out of proportion to examination in a patient with atrial fibrillation.

Capacity Failure

Bowel perfusion, vascular integrity, circulation.

Coupling Conditions

Atrial fibrillation, anticoagulation status, vascular disease, age, delayed presentation, renal function.

Wise Perturbation

Urgent senior/surgical/vascular assessment, blood tests including metabolic status where available, imaging pathway according to local practice, resuscitation and monitoring. Do not reassure because the abdomen is initially soft.

Repair Trajectory

Bowel perfusion threat confirmed or excluded, pain controlled, circulation supported, timely definitive management arranged.

16. Worked Case 5: Vomiting and Abdominal Pain in Diabetes

A 35-year-old patient with diabetes presents with abdominal pain, vomiting, thirst, dehydration, and rapid deep breathing.

Danger

Diabetic ketoacidosis or severe metabolic disturbance.

Syndrome

Abdominal pain and vomiting with dehydration and abnormal breathing in diabetes.

Capacity Failure

Energy regulation, acid-base regulation, hydration, circulation, cognition.

Coupling Conditions

Insulin omission, infection, poor access to medicines, vomiting, dehydration, education, psychosocial stress.

Wise Perturbation

Urgent glucose and ketone assessment, electrolytes, renal function, acid-base assessment where available, infection search, and treatment according to local DKA protocol.

Repair Trajectory

Hydration improves, glucose and ketones become safer, acidosis resolves, vomiting stops, mental state stable, trigger identified, sick-day plan reviewed.

17. Worked Case 6: Gastroenteritis With Dehydration

A 45-year-old patient presents with cramping abdominal pain, vomiting, diarrhea, dizziness, and poor urine output after eating at a gathering.

Danger

Dehydration, AKI, electrolyte disturbance, sepsis, bloody diarrhea or invasive infection if present.

Syndrome

Acute gastroenteritis syndrome with volume depletion.

Capacity Failure

Hydration, circulation, clearance, energy, comfort.

Coupling Conditions

Food exposure, water access, kidney disease if present, medicines such as diuretics or ACE inhibitors, age, frailty, ability to drink, home support.

Wise Perturbation

Assess vital signs, hydration, urine output, renal function/electrolytes if significant, stool red flags, oral or IV rehydration depending on severity, antiemetic if appropriate, and safety-netting. Avoid unnecessary antibiotics unless indicated by syndrome and local guidance.

Repair Trajectory

Vomiting stops, diarrhea improves, oral intake returns, urine output improves, dizziness resolves, renal function safe, patient understands warning signs.

18. Common Student Pitfalls

Pitfall 1: Calling Abdominal Pain “Gastritis” Too Early

Epigastric pain may be ACS, pancreatitis, biliary disease, ulcer, perforation, or metabolic illness.

Pitfall 2: Missing Surgical Abdomen

Guarding, rigidity, shock, obstruction, perforation, or pain out of proportion require urgent escalation.

Pitfall 3: Forgetting Pregnancy Testing Where Relevant

Pregnancy-related emergencies must not be missed in abdominal or pelvic pain.

Pitfall 4: Ignoring Vital Signs

Abdominal pain with abnormal vital signs is not benign until proven otherwise.

Pitfall 5: Missing Bowel Obstruction

Vomiting, distension, constipation, and no flatus are key clues.

Pitfall 6: Missing Mesenteric Ischemia

Severe pain with few early findings in a vascular-risk patient is dangerous.

Pitfall 7: Missing Cardiac Causes

Myocardial infarction may present as epigastric pain, especially in older, diabetic, or CKD patients.

Pitfall 8: Treating Pain Without Reassessment

Analgesia is appropriate, but response and evolving signs must be monitored.

19. Clinical Practice Box

When assessing abdominal pain, complete this structure:

Location and radiation:

Onset and time course:
Sudden, gradual, colicky, constant, worsening?

Danger features:
Shock, fever, guarding, vomiting, bleeding, jaundice, obstruction, pregnancy possibility, severe pain, confusion?

Syndrome:
What abdominal pain pattern is present?

Capacity failure:
Bowel integrity, defense, circulation, clearance, hydration, nutrition, comfort?

Likely causes:
Medical, surgical, vascular, urinary, biliary, pancreatic, gynecological, metabolic, cardiac, medication-related?

Medicines and risks:
NSAIDs, anticoagulants, steroids, diabetes medicines, opioids, immunosuppression?

Initial investigations:
Bloods, urine, pregnancy test where relevant, ECG, imaging, cultures, glucose/ketones, others?

Wise perturbation:
Analgesia, fluids, antiemetics, antibiotics, source control, surgical input, metabolic pathway?

Repair trajectory:
What should improve, and what harm must be monitored?

20. Mini-Case for Practice

A 77-year-old woman presents with severe abdominal pain, vomiting, distension, and no bowel movement for two days. She has had previous abdominal surgery. Her pulse is fast, and she looks dehydrated.

Apply the abdominal pain approach.

Danger

Bowel obstruction, strangulation, perforation, dehydration, AKI, electrolyte disturbance, sepsis.

Syndrome

Colicky abdominal pain with vomiting, distension, constipation, and previous abdominal surgery.

Capacity Failure

Bowel passage, hydration, electrolyte regulation, circulation, comfort, clearance.

Coupling Conditions

Previous surgery, age, frailty, adhesions, possible hernia, medicines, baseline kidney function, home support.

Wise Perturbation

Urgent assessment of vital signs, abdominal signs, hydration, hernias, renal function, electrolytes, and imaging according to local pathway. Provide analgesia, antiemetic, fluid support if needed, and early surgical input. Reassess for worsening pain, peritonism, fever, shock, or reduced urine output.

Repair Trajectory

Pain improves, vomiting controlled, hydration restored, urine output improves, electrolytes safe, obstruction resolves or is treated, bowel function returns, and discharge risk is reassessed.

21. Student Takeaway

Abdominal pain becomes easier when the clinician asks:

Is this pain dangerous?
Where is it?
How did it start?
Is there vomiting, bleeding, fever, jaundice, distension, urinary symptoms, pregnancy possibility, or shock?
Is this medical, surgical, vascular, metabolic, urinary, biliary, pancreatic, cardiac, medication-related, or pelvic?
What capacity is failing?
What treatment protects the patient with least harm?
How will we know the patient is repairing?

Abdominal pain is not merely a stomach complaint.

It may be a signal of threatened bowel integrity, circulation, clearance, hydration, defense, metabolism, comfort, or life itself.

Chapter 19. Vomiting and Diarrhea Made Easy

Vomiting and diarrhea are common presentations in Internal Medicine.

They may be brief and self-limited.
They may be caused by viral gastroenteritis, food poisoning, medication effects, alcohol, anxiety, migraine, pregnancy, or dietary intolerance.

But vomiting and diarrhea can also become dangerous.

They can cause dehydration, shock, acute kidney injury, electrolyte disturbance, hypoglycemia, delirium, sepsis, gastrointestinal bleeding, bowel obstruction, diabetic ketoacidosis, adrenal crisis, or severe inflammatory disease.

The first task is not simply to stop the vomiting or diarrhea.

The first task is to ask:

Is the patient losing fluid, electrolytes, blood, circulation, clearance, or safety?

Vomiting and diarrhea become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Dangerous?

Most vomiting and diarrhea settle with time and supportive care.

But danger is present when the patient cannot maintain hydration, circulation, glucose, electrolytes, kidney function, consciousness, or safe self-care.

Dangerous causes and consequences include:

- severe dehydration
- shock
- acute kidney injury
- hyperkalemia or hypokalemia
- hyponatremia or hypernatremia
- hypoglycemia
- sepsis
- bloody diarrhea
- severe colitis
- bowel obstruction
- bowel ischemia
- perforation
- pancreatitis

- diabetic ketoacidosis
- adrenal crisis
- gastrointestinal bleeding
- medication toxicity
- antibiotic-associated diarrhea
- C. difficile infection where relevant
- severe foodborne infection
- pregnancy-related vomiting where relevant
- frailty decompensation
- unsafe discharge because the patient cannot drink, walk, think, or access help

The danger-first question is:

Can this patient safely replace what they are losing?

If the answer is no, the presentation is higher risk.

2. Immediate Red Flags

Urgent assessment is needed when vomiting or diarrhea is associated with:

- low blood pressure
- fainting or severe dizziness
- tachycardia
- confusion or drowsiness
- severe weakness
- reduced urine output
- inability to keep fluids down
- severe abdominal pain
- abdominal distension
- guarding or rigidity
- persistent vomiting
- blood in vomit
- black stools
- bloody diarrhea
- high fever or rigors
- recent antibiotics or hospitalization
- immunosuppression
- frailty or older age
- pregnancy where relevant
- diabetes with vomiting
- chronic kidney disease
- heart failure
- adrenal insufficiency or chronic steroid use
- severe headache or neurological signs
- weight loss
- suspected poisoning or toxin exposure

- multiple affected persons after shared food or water exposure

Vomiting and diarrhea with abnormal vital signs are not minor symptoms until proven otherwise.

3. Vomiting and Diarrhea Are Syndromes, Not Diagnoses

“Vomiting” and “diarrhea” are symptoms.

The clinician must form a syndrome.

Ask:

- Which came first: vomiting, diarrhea, or abdominal pain?
- How many episodes?
- How long has it been going on?
- Is there fever?
- Is there blood?
- Is there severe abdominal pain?
- Is there distension?
- Is the patient passing urine?
- Can the patient drink?
- Is there dizziness on standing?
- Is there confusion?
- Is there recent travel?
- Did others eat the same food?
- Is there recent antibiotic use?
- Is there immunosuppression?
- Are there chronic bowel symptoms?
- Is there diabetes?
- Is there kidney disease or heart failure?
- What medicines are being taken?
- Could medicines be causing or worsening the problem?
- Is pregnancy possible where relevant?
- What are the vital signs?

The goal is to move from:

“The patient has vomiting and diarrhea”

to:

“This is acute vomiting and watery diarrhea after shared food exposure, with dehydration but no blood or severe abdominal pain.”

or:

“This is bloody diarrhea with fever and abdominal pain after recent antibiotics.”

or:

“This is vomiting with abdominal distension, colicky pain, and no flatus.”

The syndrome directs the danger screen.

4. Common Syndrome Patterns

Acute Watery Diarrhea With Vomiting

Pattern:

- sudden onset
- watery diarrhea
- vomiting
- cramping abdominal pain
- possible low-grade fever
- exposure to sick contact, food, or water
- usually no blood

Possible causes:

- viral gastroenteritis
- food poisoning
- toxin-mediated illness
- bacterial gastroenteritis
- travel-related diarrhea depending on context

Threatened capacities:

Hydration, **circulation**, **clearance**, **energy**, and **comfort**.

Vomiting First, Then Diarrhea

Pattern:

- vomiting prominent early
- diarrhea follows
- several people may be affected
- rapid onset after food exposure

Possible causes:

- food toxin illness
- viral gastroenteritis
- contaminated food or water

Threatened capacities:

Hydration, **electrolyte regulation**, and **energy**.

Bloody Diarrhea

Pattern:

- diarrhea with blood or mucus
- abdominal pain
- fever may be present
- tenesmus may occur
- dehydration may develop

Possible causes:

- invasive bacterial infection
- inflammatory bowel disease flare
- ischemic colitis
- severe colitis
- malignancy if chronic
- medication-related colitis in some contexts

Threatened capacities:

Bowel integrity, **defense**, **circulation**, **hydration**, and **comfort**.

Diarrhea After Antibiotics or Hospitalization

Pattern:

- diarrhea after recent antibiotics
- recent hospitalization or healthcare exposure
- abdominal pain
- fever
- systemic illness in severe cases

Possible causes:

- antibiotic-associated diarrhea
- C. difficile infection where relevant
- medication-related diarrhea

Threatened capacities:

Bowel integrity, **defense/tolerance**, **hydration**, and **circulation**.

Vomiting Without Diarrhea

Pattern:

- repeated vomiting
- no diarrhea
- abdominal pain may or may not be present
- headache, dizziness, chest symptoms, pregnancy, metabolic illness, or obstruction clues may exist

Possible causes:

- bowel obstruction
- pancreatitis
- gastritis
- peptic disease
- raised intracranial pressure
- migraine
- vestibular disorder
- myocardial infarction
- diabetic ketoacidosis
- adrenal crisis
- pregnancy-related nausea/vomiting where relevant
- medication or toxin effect

Threatened capacities depend on cause but often include **hydration**, **clearance**, **energy**, and **regulation**.

Vomiting With Abdominal Distension and No Flatus

Pattern:

- vomiting
- distension
- colicky abdominal pain
- constipation
- inability to pass gas
- previous surgery or hernia risk

Possible causes:

- bowel obstruction
- ileus
- incarcerated hernia
- malignancy
- volvulus
- severe constipation or fecal impaction

Threatened capacities:

Bowel passage, **hydration**, **electrolyte regulation**, **circulation**, and **comfort**.

Vomiting With Diabetes

Pattern:

- vomiting
- abdominal pain
- thirst
- polyuria or dehydration
- rapid deep breathing
- fatigue or drowsiness
- high or low glucose depending on context

Possible causes:

- diabetic ketoacidosis
- hyperosmolar state
- hypoglycemia
- gastroparesis
- infection
- medicine-related nausea
- pancreatitis

Threatened capacities:

Energy regulation, **hydration**, **acid-base balance**, **clearance**, and **cognition**.

Chronic Diarrhea

Pattern:

- diarrhea lasting weeks or longer
- weight loss, blood, nocturnal symptoms, anemia, or systemic features may be present
- may be intermittent or persistent

Possible causes:

- inflammatory bowel disease
- malabsorption
- chronic infection
- irritable bowel syndrome
- medication-related diarrhea
- endocrine disease
- malignancy
- pancreatic insufficiency
- bile acid diarrhea
- food intolerance

Threatened capacities:

Nutrition, **hydration**, **energy**, **bowel integrity**, and **participation**.

5. Capacity Failure in Vomiting and Diarrhea

Vomiting and diarrhea matter because they threaten several core capacities.

Hydration

Fluid loss may exceed intake.

Signals include:

- thirst
- dry mouth
- dizziness
- reduced urine output
- tachycardia
- hypotension
- poor skin turgor where useful
- weakness
- confusion

Circulation

Severe fluid loss can reduce perfusion.

Signals include:

- low blood pressure
- fainting
- tachycardia
- cold peripheries
- poor urine output
- altered mental state

Clearance

Kidney function can worsen when circulation and hydration fall.

Signals include:

- oliguria
- rising creatinine
- hyperkalemia
- acidosis

- drug accumulation

Electrolyte and Acid-Base Regulation

Vomiting and diarrhea can disturb potassium, sodium, bicarbonate, and acid-base balance.

Signals include:

- weakness
- palpitations
- confusion
- cramps
- arrhythmia
- severe dehydration
- abnormal blood results

Energy Regulation

Poor intake, vomiting, diabetes medicines, and infection can cause glucose danger.

Signals include:

- hypoglycemia
- hyperglycemia
- ketosis
- drowsiness
- sweating
- tremor
- abdominal pain
- rapid breathing

Bowel Integrity

Bloody diarrhea, severe abdominal pain, or distension may indicate bowel inflammation, ischemia, obstruction, or perforation.

Signals include:

- blood
- severe pain
- guarding
- fever
- distension
- no flatus
- shock
- pain out of proportion

Agency and Safety

A patient who cannot drink, walk, think clearly, access a toilet, obtain fluids, or return if worse may be unsafe at home.

This is especially important in frailty.

6. Bedside Assessment

Look First

Observe:

- distress
- dehydration
- drowsiness
- confusion
- pallor
- sweating
- abdominal distension
- severe pain
- vomiting frequency
- frailty
- ability to sit, stand, and drink
- whether the patient looks toxic or septic

A patient who looks weak, dry, confused, or shocked needs urgent assessment.

Vital Signs

Check:

- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- glucose where relevant
- urine output
- weight trend where relevant

Postural symptoms may be important if it is safe to assess.

Focused History

Ask about:

- duration
- frequency of vomiting and stool
- blood or mucus
- black stools
- abdominal pain
- distension
- fever
- travel
- food and water exposure
- sick contacts
- recent antibiotics
- hospitalization
- immune status
- pregnancy possibility where relevant
- diabetes
- kidney disease
- heart failure
- liver disease
- inflammatory bowel disease
- previous abdominal surgery
- hernia
- medicines
- alcohol or substance use
- ability to drink
- urine output
- dizziness or fainting
- home support

Medicine Review

Important medicines include:

- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- metformin in relevant acute illness contexts
- insulin
- sulfonylureas
- GLP-1 receptor agonists
- antibiotics
- laxatives
- magnesium-containing medicines
- opioids causing constipation or ileus
- steroids
- immunosuppressants
- chemotherapy
- anticoagulants

- alcohol or recreational substances

Vomiting and diarrhea can make usual medicines unsafe by changing hydration, kidney function, glucose, and electrolytes.

7. Physical Examination

Examine for:

- hydration status
- perfusion
- abdominal tenderness
- guarding
- rigidity
- rebound
- distension
- bowel sounds where useful
- hernias
- jaundice
- rash
- fever source
- flank tenderness
- rectal bleeding where examination is indicated and appropriate
- neurological signs if vomiting with headache or confusion
- chest signs if pneumonia or cardiac cause is possible
- signs of frailty and mobility impairment

The abdominal examination is important, but the whole patient matters.

A metabolic, cardiac, neurological, or infectious condition may present with vomiting.

8. Initial Investigations

Investigations depend on severity and syndrome.

Common investigations may include:

- renal function and electrolytes
- glucose
- ketones where diabetes, vomiting, or metabolic illness is possible
- full blood count
- inflammatory markers where infection or inflammation is suspected
- liver tests
- amylase or lipase if pancreatitis is possible

- venous or arterial blood gas where shock, acidosis, DKA, severe dehydration, or respiratory concern exists
- urinalysis
- pregnancy test where relevant
- stool culture or testing if bloody diarrhea, severe illness, outbreak, travel, immunosuppression, prolonged symptoms, or public health concern exists
- C. difficile testing where recent antibiotics or healthcare exposure is relevant
- ECG if electrolyte disturbance, chest symptoms, syncope, or severe illness is present
- abdominal imaging if obstruction, perforation, pancreatitis complications, severe pain, distension, or surgical abdomen is suspected
- blood cultures where sepsis is possible

Testing should answer:

- Is the patient dehydrated?
- Is kidney function impaired?
- Are electrolytes unsafe?
- Is glucose unsafe?
- Is there acidosis?
- Is there infection or severe inflammation?
- Is there blood loss?
- Is there obstruction or surgical disease?
- Does the patient need admission, escalation, or urgent referral?

9. Dangerous Diagnoses Not to Miss

Severe Dehydration and Shock

Clues:

- dizziness
- fainting
- tachycardia
- hypotension
- dry mouth
- reduced urine output
- confusion
- cold peripheries
- inability to drink

Capacity failure:

Hydration, **circulation**, **clearance**

Wise action:

Assess urgently, replace fluid according to severity and comorbidity, monitor response, urine output, renal function, electrolytes, and lungs.

Acute Kidney Injury

Clues:

- reduced urine output
- dehydration
- vomiting or diarrhea
- CKD
- diuretics
- ACE inhibitor or ARB
- NSAID use
- sepsis
- older age or frailty

Capacity failure:

Clearance, **electrolyte regulation**, **medicine safety**

Wise action:

Check renal function and electrolytes, review medicines, restore hydration if appropriate, monitor urine output, and escalate if severe.

Bloody Diarrhea or Severe Colitis

Clues:

- blood or mucus
- fever
- severe abdominal pain
- dehydration
- recent antibiotics
- travel
- inflammatory bowel disease
- immunosuppression

Capacity failure:

Bowel integrity, **defense**, **hydration**, **circulation**

Wise action:

Assess severity, hydration, stool testing where appropriate, avoid unsafe assumptions, and escalate if systemic illness, severe pain, or dehydration.

Bowel Obstruction

Clues:

- vomiting
- distension
- colicky pain
- constipation
- no flatus
- previous surgery
- hernia
- malignancy

Capacity failure:

Bowel passage, **hydration**, **electrolytes**, **comfort**

Wise action:

Urgent assessment, imaging and surgical input according to local pathway, fluid/electrolyte correction, analgesia and antiemetics.

Diabetic Ketoacidosis

Clues:

- diabetes
- vomiting
- abdominal pain
- dehydration
- rapid deep breathing
- high glucose
- ketones
- drowsiness
- infection or insulin omission

Capacity failure:

Energy regulation, **acid-base regulation**, **hydration**, **cognition**

Wise action:

Urgent metabolic assessment and treatment according to local DKA protocol.

Adrenal Crisis

Clues:

- vomiting
- abdominal pain
- severe weakness
- hypotension
- dehydration
- history of adrenal insufficiency
- chronic steroid use
- recent steroid interruption
- infection or stress trigger

Capacity failure:

Circulation regulation, **energy**, **salt-water balance**

Wise action:

Emergency assessment and treatment according to local protocol. Do not delay if strongly suspected.

Gastrointestinal Bleeding

Clues:

- vomiting blood
- black stools
- bloody stool
- dizziness
- syncope
- pallor
- tachycardia
- hypotension
- NSAIDs
- anticoagulants
- liver disease

Capacity failure:

Circulation, **oxygen delivery**, **bowel integrity**

Wise action:

Assess hemodynamic stability, hemoglobin, bleeding risk medicines, and urgent referral/admission according to local pathways.

Sepsis

Clues:

- fever or low temperature

- tachypnea
- hypotension
- confusion
- severe abdominal pain
- poor perfusion
- oliguria
- immunosuppression

Capacity failure:

Defense, **circulation**, **cognition**, **clearance**

Wise action:

Treat according to local sepsis pathway and search for source.

10. Wise Perturbation

Treatment depends on the syndrome and capacity failure.

Ask:

- Is the patient stable?
- Can they drink?
- Are they passing urine?
- Is kidney function safe?
- Are electrolytes safe?
- Is glucose safe?
- Is there blood?
- Is there severe abdominal pain or obstruction?
- Is infection severe?
- Could antibiotics be needed or harmful?
- Which medicines should be held, adjusted, or continued?
- Is home management safe?

Oral Rehydration

When the patient can drink and danger is low, oral rehydration is often appropriate.

It supports hydration, circulation, kidney function, and energy.

The plan should be specific:

- small frequent sips
- replace ongoing losses
- continue food as tolerated

- avoid dehydration
- return if unable to drink or urine falls

Intravenous Fluids

May be needed if:

- severe dehydration
- shock
- persistent vomiting
- inability to drink
- AKI
- severe electrolyte disturbance
- frailty with poor intake
- sepsis or significant systemic illness

Fluids must be monitored, especially in heart failure, CKD, and frailty.

Antiemetics

May help vomiting and allow oral intake.

Consider:

- sedation
- QT risk where relevant
- extrapyramidal effects with some agents
- interactions
- underlying obstruction or surgical abdomen

Antiemetics should not hide danger without reassessment.

Antidiarrheal Medicines

May be useful in selected mild non-bloody diarrhea.

Avoid or use caution when there is:

- bloody diarrhea
- high fever
- suspected severe infection
- severe colitis
- toxic appearance
- significant abdominal distension
- possible C. difficile

Local guidance should be followed.

Antibiotics

Most simple viral gastroenteritis does not need antibiotics.

Antibiotics may be needed in selected cases such as severe bacterial disease, sepsis, traveler's diarrhea in specific contexts, immunosuppression, or defined infections according to local guidance.

Antibiotics can also cause diarrhea.

Use carefully.

Medicine Review During Acute Illness

Vomiting and diarrhea may require temporary review of medicines that affect kidney function, fluid balance, glucose, or bleeding risk.

Examples include:

- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- metformin in relevant acute illness contexts
- insulin or sulfonylureas when intake is poor
- anticoagulants when bleeding is present
- nephrotoxic medicines
- sedatives if delirium risk is high

Medicine decisions should be individualized and clearly explained.

11. Repair Trajectory

Repair is shown by:

- vomiting reduced or stopped
- diarrhea frequency decreasing
- patient able to drink
- thirst improving
- dizziness resolving
- urine output improving
- blood pressure and pulse stable
- mental state clear
- abdominal pain improving
- fever settling
- renal function stable or improving
- electrolytes safe
- glucose safe

- no blood or bleeding controlled
- bowel obstruction or surgical danger excluded or treated
- medicines reviewed
- patient understands oral intake and warning signs
- follow-up arranged where needed

Repair is not only fewer stools.

Repair means hydration, circulation, clearance, electrolytes, glucose, comfort, and safety are restored.

12. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- inability to keep fluids down
- very little or no urine
- fainting or severe dizziness
- confusion or drowsiness
- blood in stool
- black stool
- vomiting blood
- severe or worsening abdominal pain
- abdominal swelling
- persistent fever
- signs of dehydration
- worsening weakness
- chest pain or breathlessness
- high or low glucose in diabetes
- ongoing vomiting in pregnancy where relevant
- diarrhea after antibiotics with fever or severe pain
- symptoms in a frail, elderly, immunosuppressed, or kidney disease patient that are worsening
- symptoms not improving as expected

Also explain:

- what fluids to take
- how to replace ongoing losses
- what medicines to continue, stop, or seek advice about
- when to resume normal eating
- what test results need follow-up
- when review is needed

Use teach-back:

“Can you tell me what symptoms would make you seek urgent help?”

13. Worked Case 1: Acute Gastroenteritis With Dehydration

A 43-year-old patient develops vomiting and watery diarrhea after a family gathering. Several others are also unwell. The patient is dizzy on standing and has passed little urine.

Danger

Dehydration, AKI, electrolyte disturbance, syncope risk.

Syndrome

Acute vomiting and watery diarrhea after shared food exposure with reduced urine output and postural symptoms.

Capacity Failure

Hydration, circulation, clearance, energy, comfort.

Coupling Conditions

Fluid access, ability to drink, kidney disease if present, medicines, work demands, household illness, food exposure.

Wise Perturbation

Assess vital signs, hydration, urine output, renal function and electrolytes if significant, and ability to drink. Use oral or IV rehydration depending on severity. Review medicines that may worsen AKI. Safety-net clearly.

Repair Trajectory

Vomiting settles, oral intake improves, urine output returns, dizziness resolves, renal function remains safe, diarrhea decreases.

14. Worked Case 2: Diarrhea After Antibiotics

A 76-year-old woman develops frequent diarrhea, abdominal pain, and fever one week after antibiotics for pneumonia.

Danger

Antibiotic-associated colitis, C. difficile infection where relevant, dehydration, sepsis, AKI.

Syndrome

Diarrhea with fever and abdominal pain after recent antibiotics in an older patient.

Capacity Failure

Bowel integrity, defense/tolerance, hydration, circulation, clearance.

Coupling Conditions

Age, recent antibiotics, recent hospitalization, frailty, kidney function, medicines, home support.

Wise Perturbation

Assess severity, hydration, vital signs, abdominal findings, renal function and electrolytes, stool testing according to local guidance, and infection control precautions where relevant. Treat according to local pathway if confirmed or strongly suspected.

Repair Trajectory

Diarrhea frequency reduces, fever settles, abdominal pain improves, hydration and renal function stabilize, infection control addressed, recurrence risk explained.

15. Worked Case 3: Vomiting With Diabetes

A 29-year-old patient with type 1 diabetes presents with vomiting, abdominal pain, thirst, and rapid breathing. They missed insulin because they were not eating.

Danger

Diabetic ketoacidosis.

Syndrome

Vomiting and abdominal pain with dehydration and abnormal breathing in type 1 diabetes after insulin omission.

Capacity Failure

Energy regulation, acid-base regulation, hydration, circulation, cognition.

Coupling Conditions

Insulin access, sick-day understanding, infection trigger, vomiting, fear of insulin while not eating, social support.

Wise Perturbation

Urgent glucose, ketone, electrolyte, renal, and acid-base assessment. Treat according to local DKA pathway. Identify trigger and provide sick-day education before discharge.

Repair Trajectory

Ketones clear, acidosis resolves, hydration improves, vomiting stops, glucose safer, insulin plan restored, patient understands not to stop basal insulin without advice.

16. Worked Case 4: Vomiting and Distension

An 81-year-old man with previous abdominal surgery presents with vomiting, distension, colicky pain, and no flatus.

Danger

Bowel obstruction, strangulation, perforation, dehydration, AKI, electrolyte disturbance.

Syndrome

Vomiting with abdominal distension, colicky pain, obstipation, and previous surgery.

Capacity Failure

Bowel passage, hydration, electrolyte regulation, circulation, comfort.

Coupling Conditions

Adhesions, hernia risk, age, frailty, medicines, baseline kidney function, access to surgery.

Wise Perturbation

Urgent abdominal assessment, vital signs, renal function, electrolytes, imaging according to local pathway, analgesia, antiemetics, fluid support, and surgical input.

Repair Trajectory

Vomiting controlled, hydration restored, electrolytes safe, obstruction resolved or treated, bowel function returns, pain improves.

17. Worked Case 5: Vomiting Blood

A 70-year-old man presents with vomiting blood and dizziness. He takes an NSAID and an anticoagulant.

Danger

Upper gastrointestinal bleeding, shock, severe anemia, aspiration risk.

Syndrome

Hematemesis with dizziness and bleeding-risk medicines.

Capacity Failure

Circulation, oxygen delivery, bowel/vascular integrity, safety.

Coupling Conditions

NSAID, anticoagulant, age, ulcer risk, liver disease if present, alcohol use where relevant, delayed presentation.

Wise Perturbation

Assess airway if ongoing vomiting, circulation, vital signs, hemoglobin, renal function, coagulation context, medicine risks, and urgent GI/emergency pathway according to local practice.

Repair Trajectory

Bleeding controlled, hemodynamics stable, hemoglobin monitored, medicine risks addressed, source identified or managed, follow-up clear.

18. Common Student Pitfalls

Pitfall 1: Assuming All Vomiting and Diarrhea Is Viral

Most may be self-limited, but danger must be checked first.

Pitfall 2: Ignoring Urine Output

Urine output is a key marker of hydration and kidney perfusion.

Pitfall 3: Forgetting Electrolytes

Vomiting and diarrhea can cause dangerous electrolyte problems.

Pitfall 4: Missing DKA

Vomiting and abdominal pain in diabetes should trigger glucose and ketone thinking.

Pitfall 5: Missing Obstruction

Vomiting with distension and no flatus is not simple gastroenteritis.

Pitfall 6: Giving Antidiarrheals in Bloody or Febrile Diarrhea Without Care

This can be unsafe in severe infection or colitis.

Pitfall 7: Forgetting Medicine Harm

Diuretics, ACE inhibitors, ARBs, NSAIDs, diabetes medicines, antibiotics, opioids, and anticoagulants may all change risk.

Pitfall 8: Discharging Without Hydration Safety

A patient who cannot drink, pass urine, walk safely, or return if worse may not be safe.

19. Clinical Practice Box

When assessing vomiting and diarrhea, complete this structure:

Main symptom:
Vomiting, diarrhea, both, blood, abdominal pain, distension?

Time course and severity:

Danger features:
Hypotension, confusion, oliguria, blood, fever, severe pain, distension, diabetes, frailty, CKD, immunosuppression?

Syndrome:
What pattern is present?

Capacity failure:
Hydration, circulation, clearance, electrolytes, glucose, bowel integrity, comfort, safety?

Coupling conditions:
Medicines, kidney disease, diabetes, heart failure, antibiotics, travel, food/water exposure, home support?

Initial investigations:
Renal function, electrolytes, glucose, ketones, stool testing, blood count, imaging, others?

Wise perturbation:
Oral fluids, IV fluids, antiemetic, antibiotics if indicated, medicine review, surgical input, metabolic pathway?

Repair trajectory:
What should improve, and what harm must be monitored?

Safety-net:

20. Mini-Case for Practice

A 69-year-old woman with diabetes and CKD develops vomiting and diarrhea for two days. She has eaten very little but continued her usual diabetes medicines and blood pressure tablets. She is dizzy, weak, and has passed very little urine.

Apply the vomiting and diarrhea approach.

Danger

Dehydration, AKI, hypoglycemia or hyperglycemia, electrolyte disturbance, medication harm, syncope, frailty decompensation.

Syndrome

Acute vomiting and diarrhea with poor intake, oliguria, dizziness, diabetes, CKD, and ongoing medicine exposure.

Capacity Failure

Hydration, circulation, clearance, glucose regulation, electrolyte balance, energy, mobility safety.

Coupling Conditions

Diabetes, CKD, poor intake, continued medicines during acute illness, age, home support, ability to drink, follow-up access.

Wise Perturbation

Assess vital signs, glucose, renal function, electrolytes, hydration, urine output, and medicine list. Provide rehydration according to severity and comorbidities. Review medicines that may become unsafe during dehydration or poor intake. Monitor glucose and kidney function. Safety-net clearly and arrange follow-up.

Repair Trajectory

Dizziness improves, urine output returns, glucose remains safe, kidney function stabilizes, electrolytes correct, oral intake resumes, medicine plan is safely restarted or adjusted, patient understands sick-day warning signs.

21. Student Takeaway

Vomiting and diarrhea become easier when the clinician asks:

Can this patient replace what they are losing?
Is circulation safe?
Is urine output adequate?
Are glucose and electrolytes safe?
Is there blood, fever, severe pain, distension, diabetes, CKD, frailty, immunosuppression, pregnancy, or recent antibiotics?
What capacity is failing?

What treatment restores hydration and safety without causing harm?
How will we know repair is happening?

Vomiting and diarrhea are not merely stomach symptoms.

They can threaten hydration, circulation, clearance, electrolytes, glucose regulation, bowel integrity, comfort, and life itself.

Chapter 20. Weight Loss Made Easy

Weight loss is a powerful clinical signal.

Sometimes it is intentional and healthy.
Sometimes it follows grief, stress, poor appetite, diet change, medication, infection, or increased activity.
Sometimes it reveals serious disease.

Unintentional weight loss may signal malignancy, chronic infection, inflammatory disease, endocrine disorder, gastrointestinal disease, heart failure, kidney disease, liver disease, depression, dementia, medication harm, food insecurity, frailty, or neglect.

The first task is not to assume cancer.

The first task is to ask:

Is this weight loss intentional, explained, dangerous, or a sign of failing life-capacity?

Weight loss becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Weight Loss Dangerous?

Weight loss becomes dangerous when it is unintentional, progressive, unexplained, associated with systemic symptoms, or causing weakness, frailty, dehydration, malnutrition, falls, immune vulnerability, or inability to live normally.

Dangerous causes and contexts include:

- malignancy
- tuberculosis or chronic infection
- HIV-related illness
- endocarditis
- inflammatory bowel disease
- autoimmune disease
- hyperthyroidism
- uncontrolled diabetes
- adrenal insufficiency
- chronic kidney disease
- chronic liver disease
- heart failure
- chronic lung disease
- malabsorption
- chronic pancreatitis

- dysphagia or swallowing disorder
- depression
- dementia
- eating disorder
- substance use disorder
- medication adverse effects
- neglect or abuse
- food insecurity
- frailty and sarcopenia
- chronic pain limiting appetite or movement
- advanced progressive disease

The danger-first question is:

Is this patient losing reserve, strength, immunity, function, dignity, or safety?

2. Immediate Red Flags in Weight Loss

Careful or urgent assessment is needed when weight loss is associated with:

- unexplained fever
- night sweats
- persistent cough
- coughing blood
- blood in stool
- black stools
- vomiting blood
- persistent vomiting
- difficulty swallowing
- painful swallowing
- new change in bowel habit
- persistent diarrhea
- severe abdominal pain
- jaundice
- lymph node swelling
- breast, testicular, abdominal, or other mass
- severe fatigue
- progressive weakness
- confusion
- dehydration
- very poor oral intake
- recurrent falls
- depression with suicidal thoughts
- suspected neglect or abuse
- severe pain
- uncontrolled diabetes symptoms
- palpitations, tremor, heat intolerance

- immunosuppression
- older age with rapid functional decline
- known cancer or previous cancer
- persistent abnormal vital signs

Weight loss with fever, night sweats, bleeding, dysphagia, persistent pain, or functional collapse should not be dismissed.

3. Weight Loss Is a Syndrome, Not a Diagnosis

“Weight loss” alone is too broad.

The clinician must form a weight loss syndrome.

Ask:

- Is the weight loss intentional or unintentional?
- How much weight was lost?
- Over what time?
- Is it documented or estimated?
- Is appetite reduced or preserved?
- Is intake reduced?
- Is the patient unable to obtain food?
- Is there nausea, vomiting, diarrhea, pain, dysphagia, or early satiety?
- Is there fever or night sweats?
- Is there cough or breathlessness?
- Is there blood loss?
- Is there change in bowel habit?
- Is there polyuria or thirst?
- Is there tremor, heat intolerance, or palpitations?
- Is there low mood, grief, anxiety, or hopelessness?
- Is memory declining?
- Are medicines suppressing appetite or causing nausea?
- Is there alcohol or substance use?
- Is the patient losing muscle, fat, or fluid?
- What function has changed?
- What are the vital signs?
- What does the examination show?

The goal is to move from:

“The patient is losing weight”

to:

“This is unintentional progressive weight loss with night sweats, chronic cough, and fatigue.”

or:

“This is weight loss with increased appetite, tremor, heat intolerance, and palpitations.”

or:

“This is weight loss in a frail older person with poor intake, memory decline, and inability to shop.”

The syndrome guides the differential diagnosis.

4. Common Weight Loss Syndrome Patterns

Weight Loss With Fever and Night Sweats

Pattern:

- unintentional weight loss
- fever
- night sweats
- fatigue
- poor appetite
- possible cough, lymph nodes, murmur, rash, joint symptoms, or exposure history

Possible causes:

- tuberculosis
- HIV-related illness
- endocarditis
- lymphoma
- occult abscess
- autoimmune disease
- chronic inflammatory disease
- malignancy

Threatened capacities:

Defense, **tolerance**, **energy**, **repair**, and **participation**.

Weight Loss With Gastrointestinal Symptoms

Pattern:

- weight loss
- abdominal pain
- diarrhea

- vomiting
- early satiety
- dysphagia
- blood in stool
- change in bowel habit
- greasy stools or malabsorption symptoms

Possible causes:

- gastrointestinal malignancy
- inflammatory bowel disease
- malabsorption
- chronic pancreatitis
- peptic disease
- chronic infection
- celiac disease where relevant
- bowel obstruction
- medication-related gastrointestinal intolerance

Threatened capacities:

Nutrition, **hydration**, **bowel integrity**, **energy**, and **comfort**.

Weight Loss With Increased Appetite

Pattern:

- weight loss despite eating more
- heat intolerance
- tremor
- palpitations
- sweating
- anxiety
- diarrhea
- muscle weakness

Possible causes:

- hyperthyroidism
- uncontrolled diabetes
- malabsorption
- chronic infection or malignancy in some contexts

Threatened capacities:

Energy transformation, **regulation**, **circulation**, and **muscle strength**.

Weight Loss With Thirst and Polyuria

Pattern:

- weight loss
- thirst
- frequent urination
- blurred vision
- fatigue
- infections
- possible vomiting or abdominal pain if severe

Possible causes:

- uncontrolled diabetes
- hyperglycemic crisis
- diabetes-related catabolism

Threatened capacities:

Glucose regulation, **hydration**, **energy**, **clearance**, and **defense**.

Weight Loss With Low Mood

Pattern:

- weight loss
- reduced appetite
- insomnia or oversleeping
- loss of interest
- fatigue
- poor concentration
- guilt or hopelessness
- social withdrawal
- possible suicidal thoughts

Possible causes:

- depression
- grief
- demoralization
- anxiety
- chronic illness burden
- social isolation

Threatened capacities:

Agency, **energy**, **participation**, **comfort**, and **safety**.

Weight Loss With Cognitive Decline

Pattern:

- weight loss
- missed meals
- food left uneaten
- medication errors
- poor shopping or cooking
- decline in hygiene
- wandering
- social withdrawal
- caregiver concern

Possible causes:

- dementia
- delirium
- depression
- neglect
- frailty
- social vulnerability

Threatened capacities:

Cognition, **nutrition**, **agency**, **safety**, and **dignity**.

Weight Loss With Breathlessness or Edema

Pattern:

- weight loss or muscle wasting
- breathlessness
- fatigue
- edema or orthopnea
- chronic cough
- reduced exercise tolerance

Possible causes:

- heart failure cachexia
- chronic lung disease
- malignancy
- chronic infection
- advanced kidney or liver disease

Threatened capacities:

Energy, **oxygenation**, **circulation**, **mobility**, and **participation**.

Weight Loss With Pain

Pattern:

- weight loss
- persistent pain
- night pain
- bone pain
- abdominal pain
- back pain
- poor sleep
- reduced appetite

Possible causes:

- malignancy
- inflammatory disease
- chronic infection
- peptic disease
- pancreatitis
- severe chronic pain syndrome
- medication-related gastrointestinal harm

Threatened capacities:

Comfort, **energy**, **repair**, **sleep**, and **participation**.

Weight Loss in Frailty

Pattern:

- slow or rapid weight loss
- reduced appetite
- weakness
- falls
- low activity
- muscle loss
- social isolation
- polypharmacy
- cognitive impairment
- poor dentition
- swallowing difficulty
- caregiver strain

Possible causes:

- frailty syndrome
- sarcopenia

- chronic disease
- depression
- dementia
- malignancy or infection
- food insecurity
- medication effects
- swallowing disorder

Threatened capacities:

Reserve, **mobility**, **nutrition**, **cognition**, **immunity**, **repair**, and **dignity**.

5. Capacity Failure in Weight Loss

Weight loss matters because it may signal loss of reserve.

Nutrition

The patient may not be receiving, absorbing, or using enough nutrients.

Signals include:

- reduced intake
- early satiety
- vomiting
- diarrhea
- malabsorption
- poor dentition
- dysphagia
- food insecurity
- low albumin in some contexts
- muscle wasting

Energy Transformation

The body may be breaking down tissue to meet metabolic demand.

Signals include:

- fatigue
- muscle loss
- weakness
- increased appetite with weight loss
- hyperglycemia
- hyperthyroid symptoms
- chronic inflammation

Defense and Tolerance

Chronic infection, inflammation, or malignancy may be driving catabolism.

Signals include:

- fever
- night sweats
- lymphadenopathy
- chronic cough
- inflammatory symptoms
- recurrent infections
- raised inflammatory features where measured

Repair

Weight loss reduces healing capacity.

Signals include:

- poor wound healing
- pressure injuries
- recurrent infections
- slow recovery after illness
- frailty progression

Mobility

Weight loss often includes muscle loss.

Signals include:

- weakness
- falls
- difficulty rising from chair
- reduced walking speed
- loss of independence
- sarcopenia

Cognition and Agency

Weight loss may reflect inability to plan, obtain, prepare, or remember meals.

Signals include:

- dementia
- depression

- delirium
- poor health literacy
- social isolation
- neglect
- inability to shop or cook

Dignity and Participation

Weight loss can cause shame, fear, dependency, and loss of role.

The clinician should ask:

What has this weight loss taken from the patient's life?

6. Bedside Assessment of Weight Loss

Confirm the Weight Loss

Ask:

- What was the usual weight?
- What is the current weight?
- Over what period?
- Was it measured or estimated?
- Are clothes looser?
- Has appetite changed?
- Was the weight loss intentional?
- Was there diet or exercise change?
- Has fluid loss or diuresis affected weight?

Documented weight trends are valuable.

Unintentional weight loss over a short period is more concerning than stable weight or planned weight change.

Clarify Intake

Ask:

- How many meals per day?
- What does the patient eat in a typical day?
- Any nausea or vomiting?
- Any early satiety?
- Any swallowing difficulty?
- Any dental problems?

- Any pain with eating?
- Any diarrhea?
- Any food avoidance?
- Can the patient afford food?
- Can the patient shop and cook?
- Does anyone help?
- Is the patient afraid to eat because of symptoms?

Poor intake may have medical, psychological, functional, or social causes.

Review Systemic Symptoms

Ask about:

- fever
- night sweats
- fatigue
- cough
- hemoptysis
- lymph nodes
- pain
- rash
- joint symptoms
- change in bowel habit
- bleeding
- jaundice
- urinary symptoms
- thirst and polyuria
- palpitations
- tremor
- heat intolerance
- depression
- memory change

Review Medicines

Medicines may cause weight loss through nausea, poor appetite, taste change, diarrhea, dry mouth, sedation, confusion, or metabolic effects.

Review:

- diabetes medicines
- thyroid medicines
- stimulants
- antidepressants
- antibiotics
- chemotherapy
- immunosuppressants

- opioids
- digoxin
- diuretics
- metformin
- GLP-1 receptor agonists where used
- alcohol and other substances
- over-the-counter preparations
- supplements

Ask what started before the weight loss began.

Assess Function

Ask:

- Can the patient shop?
- Can they cook?
- Can they feed themselves?
- Can they swallow safely?
- Can they walk?
- Have they fallen?
- Are they weaker?
- Are they sleeping more?
- Can they manage medicines?
- Are they socially isolated?
- What has changed in daily life?

Weight loss is often a functional syndrome, not only a metabolic one.

7. Physical Examination

Examination should look for both cause and consequence.

Assess:

- general appearance
- muscle wasting
- fat loss
- dehydration
- pallor
- jaundice
- lymphadenopathy
- fever
- oral health
- dentition
- swallowing clues

- thyroid enlargement or tremor
- pulse and rhythm
- signs of heart failure
- chest findings
- abdominal masses
- hepatosplenomegaly
- ascites
- rectal examination where indicated and appropriate
- skin lesions
- pressure injuries
- joint inflammation
- neurological weakness
- gait and balance
- cognitive state
- mood and affect

Do not examine only the organ suggested by the first symptom.

Unintentional weight loss often requires whole-person examination.

8. Initial Investigations

Investigations should be guided by the weight loss syndrome.

Common initial tests may include:

- full blood count
- renal function and electrolytes
- liver tests
- glucose or HbA1c where diabetes is possible
- thyroid function
- inflammatory markers where infection, inflammation, or malignancy is possible
- calcium where malignancy, endocrine disease, or systemic symptoms suggest
- iron studies, B12, or folate where anemia or malnutrition is possible
- urinalysis
- HIV or TB testing where risk or syndrome suggests
- stool testing where chronic diarrhea or blood is present
- fecal occult blood or colorectal pathway according to local practice where indicated
- chest X-ray where cough, systemic symptoms, smoking, TB, malignancy, or respiratory disease is possible
- abdominal imaging where mass, pain, jaundice, abnormal liver tests, or GI symptoms suggest
- age-appropriate cancer screening review
- depression and cognitive screening where indicated
- nutritional assessment
- further endoscopy, imaging, autoimmune, endocrine, or specialist testing based on findings

Testing should answer:

- Is this weight loss explained?
- Is there anemia?
- Is there inflammation?
- Is there infection?
- Is there malignancy concern?
- Is there endocrine disease?
- Is there organ failure?
- Is there malabsorption?
- Is nutrition unsafe?
- Does the patient need urgent referral or admission?

9. Dangerous Diagnoses Not to Miss

Malignancy

Clues:

- unexplained weight loss
- persistent fatigue
- anemia
- blood in stool
- change in bowel habit
- dysphagia
- chronic cough
- hemoptysis
- lymphadenopathy
- persistent pain
- night sweats
- mass
- jaundice
- previous cancer

Capacity failure:

Energy, **repair**, **nutrition**, **participation**

Wise action:

Targeted assessment and referral according to local cancer pathways where concerning features are present.

Tuberculosis or Chronic Infection

Clues:

- weight loss

- fever
- night sweats
- chronic cough
- hemoptysis
- exposure risk
- immunosuppression
- lymph nodes
- fatigue

Capacity failure:

Defense, **energy**, **repair**

Wise action:

Assess exposure, respiratory symptoms, immune status, chest imaging and testing according to local infectious disease pathways.

Endocarditis

Clues:

- prolonged fever
- weight loss
- night sweats
- murmur
- embolic signs
- prosthetic valve
- intravenous drug use
- indwelling line
- persistent bacteremia

Capacity failure:

Defense, **circulation**, **vascular integrity**, **energy**

Wise action:

Blood cultures and cardiac evaluation according to local pathways; specialist input where suspected.

Hyperthyroidism

Clues:

- weight loss despite appetite
- tremor
- palpitations
- heat intolerance

- sweating
- diarrhea
- anxiety
- muscle weakness
- goiter or eye signs where present

Capacity failure:

Regulation, **energy transformation**, **circulation**, **muscle function**

Wise action:

Check thyroid function and manage according to local practice, with urgency if severe systemic features are present.

Uncontrolled Diabetes

Clues:

- weight loss
- thirst
- polyuria
- blurred vision
- fatigue
- recurrent infections
- vomiting or abdominal pain if severe
- dehydration

Capacity failure:

Glucose regulation, **hydration**, **energy**, **defense**

Wise action:

Check glucose, ketones where indicated, hydration, infection, and treat according to severity.

Dysphagia or Obstructive Symptoms

Clues:

- difficulty swallowing
- food sticking
- weight loss
- regurgitation
- vomiting
- aspiration
- anemia
- smoking or alcohol risk where relevant

Capacity failure:

Nutrition, **airway protection**, **energy**, **comfort**

Wise action:

Urgent evaluation according to local pathway where progressive dysphagia or red flags are present.

Depression With Self-Neglect or Suicidal Risk

Clues:

- low mood
- poor appetite
- weight loss
- hopelessness
- social withdrawal
- poor self-care
- thoughts of death
- inability to function

Capacity failure:

Agency, **nutrition**, **participation**, **safety**

Wise action:

Assess suicide risk, self-neglect, support, and medical contributors. Treat as both mental health and whole-person safety concern.

Dementia, Neglect, or Food Insecurity

Clues:

- missed meals
- empty fridge
- unpaid bills
- poor hygiene
- medication errors
- caregiver concern
- isolation
- weight loss in frailty
- unexplained bruising or fearfulness

Capacity failure:

Cognition, **nutrition**, **agency**, **dignity**, **safety**

Wise action:

Assess capacity, safeguarding, caregiver support, home situation, nutrition, and need for social or community support.

10. Wise Perturbation in Weight Loss

Treatment should not begin and end with “eat more.”

Ask:

- Is there danger?
- Is intake low, absorption poor, metabolism increased, or tissue breakdown occurring?
- Is there malignancy, infection, inflammation, endocrine disease, or organ failure?
- Is depression, dementia, food insecurity, or neglect present?
- Is medicine causing weight loss?
- What capacity is failing?
- What support makes nutrition possible?
- What follow-up ensures the patient is not lost?

Nutritional Support

Nutritional support may include:

- food access
- meal planning
- oral nutritional supplements where appropriate
- dental care
- swallowing assessment
- nausea control
- pain control
- constipation treatment
- treating diarrhea
- caregiver support
- social support
- dietitian referral where available

Nutrition must be feasible, culturally acceptable, affordable, and safe.

Treat the Cause

Weight loss improves when the driver is treated:

- infection treated
- endocrine disease corrected
- malignancy evaluated and managed

- depression treated
- medicine harm reduced
- dysphagia investigated
- chronic pain controlled
- diarrhea managed
- food insecurity addressed
- dementia support arranged

Avoid Harm

Do not prescribe appetite stimulants, supplements, or high-calorie plans without thinking.

Ask:

- Is swallowing safe?
- Is there fluid restriction?
- Is diabetes affected?
- Is kidney disease affected?
- Is liver disease affected?
- Is refeeding risk present in severe malnutrition?
- Will the patient actually obtain and take the supplement?
- What adverse effects might occur?

Follow-Up Is Essential

Unintentional weight loss should not be left open-ended.

A safe plan includes:

- what has been found
- what remains uncertain
- what tests are pending
- who will review results
- when the patient will be weighed again
- what symptoms require urgent review
- what referral is needed
- who supports food, medicines, transport, and appointments

11. Repair Trajectory in Weight Loss

Repair may be slow.

Markers include:

- weight stabilizes
- appetite improves

- oral intake increases
- nausea, pain, diarrhea, or swallowing improves
- strength improves
- walking improves
- falls reduce
- mood improves
- fever or night sweats settle
- glucose stabilizes
- thyroid or endocrine markers improve where relevant
- infection treated
- inflammation improves
- malignancy evaluation completed where needed
- medicines reviewed
- food access secured
- caregiver support arranged
- patient regains participation

Weight gain is not always immediate.

In advanced disease, repair may mean slowing weight loss, reducing suffering, improving intake pleasure, and supporting dignity rather than reversing the disease.

12. Safety-Netting in Weight Loss

Safety-netting should be specific.

Advise urgent review if there is:

- rapid ongoing weight loss
- fever or night sweats
- blood in stool
- black stools
- vomiting blood
- persistent vomiting
- inability to swallow
- worsening abdominal pain
- jaundice
- severe weakness
- fainting
- confusion
- dehydration
- breathlessness
- chest pain
- severe depression or suicidal thoughts
- inability to obtain or prepare food
- new lump or swelling
- persistent cough or coughing blood

- very high or low glucose symptoms

Also explain:

- what causes are being considered
- what tests are pending
- when results will be reviewed
- what follow-up is scheduled
- what support is needed for food and medicines
- when to return sooner

Use teach-back:

“Can you tell me what changes would make you seek help before the next appointment?”

13. Worked Case 1: Weight Loss With Night Sweats

A 59-year-old man reports three months of weight loss, night sweats, fatigue, and a persistent cough.

Danger

Tuberculosis, malignancy, chronic infection, HIV-related illness, inflammatory disease.

Syndrome

Chronic unintentional weight loss with night sweats and respiratory symptoms.

Capacity Failure

Defense, energy, repair, oxygenation if lung disease is significant, participation.

Coupling Conditions

Exposure history, smoking, immune status, housing, travel, occupational risk, access to testing, family contacts.

Wise Perturbation

Perform careful respiratory, systemic, and exposure assessment. Arrange chest imaging and targeted infectious/malignancy workup according to local pathways. Consider infection control where relevant. Ensure follow-up is owned.

Repair Trajectory

Cause identified or excluded, cough improves, fever/night sweats settle, weight stabilizes, energy improves, household or contact risk addressed if infectious.

14. Worked Case 2: Weight Loss With Increased Appetite

A 46-year-old woman reports weight loss despite eating more. She has palpitations, tremor, heat intolerance, and loose stools.

Danger

Hyperthyroidism with cardiovascular strain. Severe thyrotoxicosis if marked systemic features are present.

Syndrome

Weight loss with increased appetite and hyperadrenergic symptoms.

Capacity Failure

Regulation, energy transformation, circulation, muscle strength.

Coupling Conditions

Thyroid disease history, medicines, iodine exposure, stress, cardiovascular risk, access to follow-up.

Wise Perturbation

Check thyroid function, pulse/rhythm, blood pressure, weight trend, and complications. Treat according to local thyroid guidance and severity. Escalate if severe systemic instability occurs.

Repair Trajectory

Palpitations reduce, tremor improves, weight stabilizes, bowel pattern improves, sleep and energy recover, thyroid status monitored.

15. Worked Case 3: Weight Loss and Dysphagia

A 67-year-old man has progressive difficulty swallowing solids, weight loss, and regurgitation. He has reduced appetite because eating is uncomfortable.

Danger

Esophageal malignancy or obstructive disease, aspiration, malnutrition, dehydration.

Syndrome

Progressive dysphagia with unintentional weight loss.

Capacity Failure

Nutrition, swallowing safety, energy, comfort, dignity.

Coupling Conditions

Smoking and alcohol history where relevant, dental status, aspiration risk, social support, ability to prepare soft foods, access to urgent investigation.

Wise Perturbation

Urgent evaluation according to local dysphagia/cancer pathway. Assess hydration, nutrition, aspiration risk, and food consistency. Do not treat as simple reflux without addressing red flags.

Repair Trajectory

Diagnosis clarified, swallowing plan made safer, nutrition supported, aspiration risk reduced, treatment pathway initiated.

16. Worked Case 4: Weight Loss in Depression

A 38-year-old patient has lost weight over two months. They report low mood, poor sleep, loss of interest, guilt, reduced appetite, and social withdrawal.

Danger

Depression with possible suicidal risk. Also consider thyroid disease, anemia, infection, malignancy, and substance use depending on assessment.

Syndrome

Weight loss with depressive symptoms and reduced participation.

Capacity Failure

Agency, nutrition, energy, sleep, participation, safety.

Coupling Conditions

Stress, grief, trauma, social support, work pressure, stigma, finances, access to mental health care, substance use.

Wise Perturbation

Assess suicidal thoughts, self-neglect, function, supports, and medical contributors. Create a care plan that addresses mood, sleep, nutrition, safety, and follow-up.

Repair Trajectory

Safety secured, appetite improves, sleep improves, weight stabilizes, patient reconnects with support, mood and participation improve.

17. Worked Case 5: Weight Loss in Frailty

An 89-year-old woman has lost weight, walks more slowly, eats little, and has fallen twice. Her daughter says she forgets meals and sometimes leaves food uneaten.

Danger

Frailty progression, dementia, depression, malnutrition, falls, dehydration, neglect, infection, malignancy.

Syndrome

Weight loss with frailty, reduced intake, cognitive concern, and falls.

Capacity Failure

Nutrition, mobility, cognition, reserve, safety, dignity.

Coupling Conditions

Memory impairment, food preparation, caregiver support, dentition, swallowing, medicines, social isolation, home safety, finances, mood.

Wise Perturbation

Assess cognition, mood, nutrition, swallowing, dentition, medicines, infection, malignancy red flags, mobility, falls risk, and home support. Involve family and community resources where available. Make food access and safety central to the plan.

Repair Trajectory

Weight stabilizes, meals supported, falls reduce, walking improves or is protected, cognition assessed, caregiver support strengthened, home risk reduced.

18. Worked Case 6: Weight Loss and Diabetes Symptoms

A 51-year-old man reports weight loss, thirst, frequent urination, blurred vision, and fatigue.

Danger

Uncontrolled diabetes, dehydration, infection, hyperglycemic crisis if severe.

Syndrome

Weight loss with polyuria, polydipsia, visual symptoms, and fatigue.

Capacity Failure

Glucose regulation, hydration, energy, clearance, defense.

Coupling Conditions

Diet, access to care, infection, family history, medicines, health literacy, work schedule, ability to monitor glucose.

Wise Perturbation

Check glucose, ketones if symptomatic or severe, renal function, electrolytes, infection signs, and treat according to local diabetes guidance and severity. Provide education and follow-up.

Repair Trajectory

Glucose becomes safer, thirst and polyuria improve, weight stabilizes, vision symptoms settle, patient understands treatment and warning signs.

19. Common Student Pitfalls

Pitfall 1: Assuming All Weight Loss Is Cancer

Cancer must be considered, but infection, endocrine disease, depression, dementia, malabsorption, medication harm, and food insecurity are also important.

Pitfall 2: Assuming Weight Loss Is Healthy

Unintentional weight loss is not automatically beneficial, even in a patient with obesity.

Pitfall 3: Ignoring Appetite

Weight loss with poor appetite means something different from weight loss despite increased appetite.

Pitfall 4: Missing Dysphagia

Difficulty swallowing with weight loss is a major red flag.

Pitfall 5: Missing Depression or Dementia

Mood and cognition are central to nutrition.

Pitfall 6: Forgetting Medicines

Medicines commonly affect appetite, nausea, taste, bowel function, metabolism, and weight.

Pitfall 7: Failing to Document Weight

Estimated weight loss is useful, but measured trends are better.

Pitfall 8: No Follow-Up Plan

Unexplained weight loss must not be left without ownership.

20. Clinical Practice Box

When assessing weight loss, complete this structure:

Intentional or unintentional?

Amount and time course:

Appetite:
Increased, reduced, normal, early satiety, dysphagia?

Associated symptoms:
Fever, night sweats, cough, bleeding, diarrhea, pain, jaundice, polyuria, tremor, mood, memory?

Functional impact:
Weakness, falls, reduced walking, poor self-care, missed meals?

Danger features:

Capacity failure:
Nutrition, energy, defense, repair, mobility, cognition, agency, dignity?

Coupling conditions:
Medicines, food access, dental/swallowing, mood, cognition, caregiver support, finances?

Initial investigations:

Wise perturbation:

Repair trajectory:

21. Mini-Case for Practice

A 74-year-old man presents with six months of unintentional weight loss. He reports reduced appetite, early satiety, fatigue, and dark stools. He takes aspirin and an NSAID for arthritis.

Apply the weight loss approach.

Danger

Gastrointestinal malignancy, chronic gastrointestinal bleeding, anemia, peptic ulcer disease, medication-related bleeding, malnutrition.

Syndrome

Chronic unintentional weight loss with early satiety, fatigue, dark stools, and bleeding-risk medicines.

Capacity Failure

Nutrition, oxygen delivery, energy, circulation reserve, comfort.

Coupling Conditions

Age, aspirin, NSAID use, arthritis pain, delayed presentation, possible anemia, access to investigation, home support.

Wise Perturbation

Assess vital signs, weight trend, pallor, abdominal findings, hemoglobin, iron deficiency, renal function, stool/bleeding history, medicine risks, and urgent gastrointestinal evaluation according to local pathway. Review NSAID and aspirin risks in context.

Repair Trajectory

Bleeding source identified or excluded, hemoglobin stabilized, harmful medicine risk addressed, nutrition supported, weight stabilizes, fatigue improves, follow-up clearly owned.

22. Student Takeaway

Weight loss becomes easier when the clinician asks:

Was it intentional?
How much was lost, and how quickly?
Is appetite reduced or increased?
Are there fever, night sweats, bleeding, dysphagia, diarrhea, pain, jaundice, diabetes symptoms, mood symptoms, or memory decline?
What capacity is failing?
Is the patient losing strength, reserve, immunity, function, dignity, or safety?
What condition must be treated or changed for weight to stabilize?

Weight loss is not only a number.

It is a signal that nutrition, energy, defense, repair, mobility, cognition, agency, participation, or dignity may be under threat.

Chapter 21. Anemia Made Easy

Anemia means there is not enough effective red cell mass or hemoglobin to carry oxygen adequately for the body's needs.

Patients may say:

"I am tired."
"I feel weak."
"I get breathless on stairs."
"I feel dizzy."
"My heart races."
"I look pale."
"I nearly fainted."
"I have chest discomfort when I walk."

Anemia is common, but it should never be treated as only a laboratory abnormality.

Anemia matters because it threatens **oxygen delivery**, **energy**, **circulation reserve**, **mobility**, **cognition**, and sometimes **life**.

The first task is not simply to prescribe iron.

The first task is to ask:

Why is oxygen-carrying capacity reduced, how severe is the loss, and is the patient safe now?

Anemia becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Anemia Dangerous?

Anemia becomes dangerous when oxygen delivery is no longer adequate for the patient's needs.

Danger depends not only on the hemoglobin number, but also on:

- speed of onset
- symptoms
- bleeding
- cardiovascular disease
- age
- frailty
- pregnancy status where relevant
- kidney disease
- heart failure

- infection or inflammation
- ongoing blood loss
- oxygenation
- functional decline
- ability to compensate

A young healthy person with slowly developing mild anemia may remain stable.

An older patient with coronary disease may develop chest pain, syncope, heart failure, or confusion with a smaller drop in hemoglobin.

The danger-first question is:

Is this patient's oxygen delivery failing now?

2. Immediate Red Flags in Anemia

Urgent assessment is needed when anemia is associated with:

- chest pain
- severe breathlessness
- syncope or near-syncope
- hypotension
- tachycardia at rest
- signs of shock
- black stools
- vomiting blood
- heavy visible bleeding
- rapidly falling hemoglobin
- severe weakness
- confusion
- low oxygen saturation from another cause
- heart failure symptoms
- known coronary disease
- pregnancy where relevant
- anticoagulant use
- severe abdominal pain
- jaundice with dark urine
- fever with systemic illness
- severe kidney disease
- inability to walk or perform basic function
- frailty with acute decline

Anemia with active bleeding, chest pain, syncope, shock, or heart failure is not a routine outpatient problem.

3. Anemia Is a Syndrome, Not Just a Number

A low hemoglobin result is not enough.

The clinician must form an anemia syndrome.

Ask:

- How low is the hemoglobin?
- Is it acute or chronic?
- Is the patient symptomatic?
- Is there active bleeding?
- Is there evidence of iron deficiency?
- Is there evidence of hemolysis?
- Is there kidney disease?
- Is there chronic inflammation?
- Is there nutritional deficiency?
- Is there marrow failure?
- Is there malignancy?
- Is there pregnancy where relevant?
- Is the patient on anticoagulants, antiplatelets, NSAIDs, or chemotherapy?
- What is the mean cell volume?
- What is the reticulocyte response?
- What are the white cells and platelets doing?
- What is the patient's functional baseline?

The goal is to move from:

"The patient has anemia"

to:

"This is symptomatic microcytic anemia with dark stools and NSAID use."

or:

"This is normocytic anemia in chronic kidney disease with reduced exercise tolerance."

or:

"This is macrocytic anemia with neuropathy and poor nutrition."

or:

"This is anemia with jaundice, dark urine, and raised reticulocytes suggesting hemolysis."

The syndrome directs the cause and urgency.

4. Common Anemia Syndrome Patterns

Microcytic Anemia

Pattern:

- low hemoglobin
- small red cells
- fatigue
- exertional dyspnea
- pallor
- possible pica
- possible restless legs
- possible bleeding history

Common causes:

- iron deficiency
- chronic blood loss
- gastrointestinal bleeding
- heavy menstrual bleeding where relevant
- malabsorption
- chronic inflammation
- thalassemia trait or inherited hemoglobin disorder in relevant populations

Threatened capacities:

Oxygen delivery, **energy**, **circulation reserve**, and **mobility**.

Important question:

Where is iron being lost, not absorbed, or insufficiently supplied?

Normocytic Anemia

Pattern:

- low hemoglobin
- normal red cell size
- fatigue or dyspnea
- may occur with chronic disease or acute illness

Common causes:

- acute blood loss
- chronic kidney disease
- anemia of inflammation
- early iron deficiency

- marrow disease
- endocrine disease
- hemolysis
- mixed deficiencies
- chronic infection or malignancy

Threatened capacities:

Oxygen delivery, **energy**, **repair**, and **circulation reserve**.

Important question:

Is this underproduction, blood loss, inflammation, kidney disease, or hemolysis?

Macrocytic Anemia

Pattern:

- low hemoglobin
- large red cells
- fatigue
- glossitis in some cases
- neuropathy or cognitive symptoms in B12 deficiency
- alcohol or liver disease context
- medication exposure
- thyroid disease

Common causes:

- vitamin B12 deficiency
- folate deficiency
- alcohol use
- liver disease
- hypothyroidism
- marrow disorders
- medications affecting DNA synthesis
- reticulocytosis after bleeding or hemolysis

Threatened capacities:

Oxygen delivery, **neurological function**, **cognition**, **energy**, and **participation**.

Important question:

Is there a reversible nutritional, medication, liver, thyroid, or marrow cause?

Anemia With Bleeding

Pattern:

- fatigue
- dizziness
- syncope
- pallor
- tachycardia
- black stools
- vomiting blood
- rectal bleeding
- heavy menstrual bleeding where relevant
- anticoagulant, antiplatelet, or NSAID use

Common causes:

- gastrointestinal bleeding
- peptic ulcer disease
- malignancy
- angiodysplasia
- inflammatory bowel disease
- hemorrhoidal bleeding, though do not assume this without assessment
- gynecological bleeding where relevant
- trauma

Threatened capacities:

Circulation, **oxygen delivery**, **energy**, and **safety**.

Important question:

Is bleeding active, severe, or recurrent?

Anemia With Jaundice or Dark Urine

Pattern:

- fatigue
- pallor
- jaundice
- dark urine
- back or abdominal pain in some cases
- splenomegaly in some cases
- high reticulocyte response where present

Common causes:

- hemolysis
- autoimmune hemolytic anemia
- inherited red cell disorders

- drug-induced hemolysis
- malaria or other infections where relevant
- transfusion reaction
- mechanical hemolysis

Threatened capacities:

Oxygen delivery, **red cell integrity**, **clearance**, and **circulation**.

Important question:

Are red cells being destroyed faster than they can be replaced?

Anemia With Kidney Disease

Pattern:

- fatigue
- reduced exercise tolerance
- known CKD
- fluid overload may coexist
- hypertension
- abnormal renal function
- iron deficiency may also be present

Common causes:

- reduced erythropoietin production
- iron deficiency
- inflammation
- blood loss from procedures or dialysis where relevant
- medication effects

Threatened capacities:

Oxygen delivery, **clearance**, **energy**, and **cardiovascular reserve**.

Important question:

How are kidney clearance, iron status, inflammation, and cardiovascular risk interacting?

Anemia With Pancytopenia

Pattern:

- anemia
- low white cells
- low platelets

- infections
- bruising or bleeding
- fatigue
- weight loss or fevers may be present

Common causes:

- marrow failure
- leukemia
- lymphoma
- aplastic anemia
- severe B12 or folate deficiency
- hypersplenism
- medications
- chemotherapy
- chronic infection

Threatened capacities:

Oxygen delivery, **defense**, **clotting**, **repair**, and **life**.

Important question:

Is the bone marrow failing or being suppressed?

5. Capacity Failure in Anemia

Anemia matters because hemoglobin is part of oxygen delivery.

Oxygen Delivery

The blood carries less oxygen to tissues.

Signals include:

- fatigue
- breathlessness on exertion
- dizziness
- palpitations
- chest discomfort
- pallor
- syncope

Circulation Reserve

The heart may compensate by increasing rate and output.

Signals include:

- tachycardia
- palpitations
- exertional chest pain
- heart failure symptoms
- worsening angina
- low blood pressure if bleeding

Energy

Cells receive less oxygen for work.

Signals include:

- weakness
- reduced walking distance
- poor concentration
- inability to exercise
- low stamina
- reduced participation

Cognition

Severe anemia or anemia in frailty may impair mental clarity.

Signals include:

- confusion
- dizziness
- poor attention
- falls
- worsening delirium risk

Repair and Immunity

Anemia often coexists with malnutrition, inflammation, kidney disease, or chronic illness.

Signals include:

- poor wound healing
- recurrent infection
- frailty
- slow recovery
- chronic fatigue

Dignity and Participation

Anemia can gradually shrink life.

Patients may stop walking, working, cooking, worshiping, caring for family, or socializing because they lack energy.

The clinician should ask:

What has anemia taken from this patient's daily life?

6. Bedside Assessment of Anemia

Look First

Observe:

- pallor
- breathlessness
- fatigue
- dizziness
- frailty
- distress
- jaundice
- bruising
- bleeding
- weight loss
- edema
- signs of chronic illness
- ability to walk or sit up

A pale, breathless, dizzy patient with black stools is different from a stable patient with mild chronic anemia.

Vital Signs

Check:

- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- postural symptoms where safe
- urine output if unwell or bleeding

Tachycardia, hypotension, syncope, or shock suggests urgent circulation danger.

Focused History

Ask about symptoms:

- fatigue
- breathlessness
- dizziness
- palpitations
- chest pain
- syncope
- poor concentration
- reduced exercise tolerance
- restless legs
- pica
- neuropathy
- weight loss
- fever
- night sweats

Ask about bleeding:

- black stools
- red blood in stool
- vomiting blood
- heavy menstrual bleeding where relevant
- blood in urine
- nosebleeds
- easy bruising
- recent surgery
- trauma
- anticoagulants or antiplatelets

Ask about intake and absorption:

- diet
- appetite
- weight loss
- alcohol use
- vomiting
- diarrhea
- malabsorption symptoms
- previous gastric or bowel surgery
- chronic inflammatory bowel symptoms

Ask about chronic disease:

- kidney disease
- liver disease
- inflammatory disease

- autoimmune disease
- malignancy
- chronic infection
- thyroid disease
- pregnancy where relevant

Ask about medicines:

- NSAIDs
- aspirin
- anticoagulants
- antiplatelets
- chemotherapy
- immunosuppressants
- anticonvulsants
- metformin where B12 deficiency is possible
- proton pump inhibitors in long-term contexts where relevant
- other medicines that may suppress marrow or cause bleeding

7. Physical Examination

Examine for cause and consequence.

Assess:

- pallor
- jaundice
- bruising or petechiae
- lymphadenopathy
- fever
- weight loss
- glossitis
- mouth ulcers
- koilonychia where present
- neuropathy or vibration sense if B12 deficiency suspected
- heart rate and rhythm
- murmurs
- heart failure signs
- lung signs
- abdominal masses
- liver or spleen enlargement
- rectal examination where indicated and appropriate
- pelvic assessment where relevant and appropriate
- signs of chronic liver disease
- signs of kidney disease
- joint swelling or inflammatory disease
- skin ulcers or chronic wounds

- gait and falls risk in frailty

A careful examination can prevent the mistake of treating anemia without finding the cause.

8. Initial Investigations

Investigations depend on severity and pattern.

Common investigations may include:

- full blood count with indices
- reticulocyte count
- blood film where available and indicated
- ferritin and iron studies
- B12 and folate where macrocytosis, neuropathy, malnutrition, or risk factors are present
- renal function and electrolytes
- liver tests
- thyroid function where indicated
- inflammatory markers where chronic inflammation, infection, or malignancy is possible
- hemolysis markers where jaundice, dark urine, or high reticulocytes suggest
- stool testing or GI pathway where occult bleeding or iron deficiency requires evaluation
- urinalysis for blood or protein
- pregnancy testing where relevant
- coagulation profile where bleeding, liver disease, or anticoagulation is relevant
- infection testing where syndrome suggests
- autoimmune testing where indicated
- bone marrow or hematology evaluation when marrow failure, pancytopenia, abnormal cells, or unexplained severe anemia is suspected

Testing should answer:

- Is anemia acute or chronic?
- Is it microcytic, normocytic, or macrocytic?
- Is the marrow responding?
- Is there blood loss?
- Is there iron deficiency?
- Is there hemolysis?
- Is kidney disease contributing?
- Is inflammation or malignancy possible?
- Are other cell lines affected?
- Is the patient safe now?

9. A Simple Way to Think About Causes

A practical anemia framework asks:

Is the body losing blood, destroying blood, or failing to make blood?

Blood Loss

Examples:

- gastrointestinal bleeding
- menstrual bleeding where relevant
- trauma
- surgery
- urinary bleeding
- recurrent nosebleeds
- anticoagulant-related bleeding

Key clues:

- low iron
- black stools
- visible bleeding
- hypotension if acute
- tachycardia
- anticoagulant or NSAID use

Blood Destruction

Examples:

- hemolysis
- autoimmune hemolysis
- inherited red cell disorders
- infection-related hemolysis
- mechanical valve hemolysis
- drug-induced hemolysis

Key clues:

- jaundice
- dark urine
- high reticulocytes
- elevated bilirubin pattern
- splenomegaly
- sudden drop in hemoglobin

Poor Production

Examples:

- iron deficiency
- B12 or folate deficiency
- chronic kidney disease
- inflammation
- marrow failure
- malignancy
- thyroid disease
- liver disease
- alcohol
- medication suppression
- chronic infection

Key clues:

- low reticulocyte response
- nutritional risk
- CKD
- chronic disease
- abnormal white cells or platelets
- weight loss
- recurrent infections
- bruising

This framework prevents random thinking.

10. Dangerous Diagnoses Not to Miss

Gastrointestinal Bleeding

Clues:

- black stools
- vomiting blood
- red blood in stool
- dizziness
- syncope
- abdominal pain
- NSAID use
- aspirin
- anticoagulation
- liver disease
- low blood pressure or tachycardia

Capacity failure:

Circulation and **oxygen delivery**

Wise action:

Assess hemodynamic stability, bleeding severity, hemoglobin trend, medicines, renal function, and urgent GI/emergency pathway according to local practice.

Colorectal or Gastrointestinal Malignancy

Clues:

- iron deficiency anemia
- weight loss
- change in bowel habit
- blood in stool
- abdominal mass
- early satiety
- dysphagia
- older age
- family history

Capacity failure:

Oxygen delivery, **nutrition**, **repair**, **participation**

Wise action:

Investigate iron deficiency and red flags according to local cancer pathways. Do not simply prescribe iron without considering source.

Hemolysis

Clues:

- jaundice
- dark urine
- rapid anemia
- back or abdominal pain in some contexts
- high reticulocyte response
- splenomegaly
- recent medicine exposure
- autoimmune disease
- infection or travel exposure where relevant

Capacity failure:

Red cell integrity, **oxygen delivery**, **clearance**

Wise action:

Evaluate urgently if severe or rapidly progressive. Identify cause and monitor kidney function, bilirubin, and hemodynamic stability.

Pancytopenia or Marrow Failure

Clues:

- anemia plus low white cells and platelets
- infections
- bruising
- bleeding
- weight loss
- lymphadenopathy
- abnormal blood film
- chemotherapy or marrow-toxic medicine exposure

Capacity failure:

Oxygen delivery, **defense**, **clotting**, **repair**

Wise action:

Urgent hematology assessment where suspected.

Anemia With ACS or Heart Failure

Clues:

- chest pain
- breathlessness
- palpitations
- edema
- known coronary disease
- older age
- severe or rapid anemia

Capacity failure:

Oxygen delivery and **circulation reserve**

Wise action:

Treat anemia in the context of cardiac risk. Assess for active bleeding, ischemia, heart failure, and need for urgent care.

Severe B12 Deficiency With Neurological Features

Clues:

- macrocytic anemia
- numbness
- tingling
- gait disturbance
- cognitive changes
- glossitis
- poor diet
- malabsorption
- gastric surgery
- autoimmune risk

Capacity failure:

Oxygen delivery, **neurological function**, **mobility**, **cognition**

Wise action:

Recognize early because neurological injury may become persistent if untreated.

11. Wise Perturbation in Anemia

Treatment depends on cause, severity, symptoms, and patient context.

Do not treat the hemoglobin number alone.

Ask:

- Is the patient unstable?
- Is there active bleeding?
- Is oxygen delivery failing?
- Is there cardiac disease?
- Is anemia acute or chronic?
- What type of anemia is present?
- Is the marrow responding?
- What is the likely cause?
- What treatment restores capacity?
- What harm could treatment cause?
- What follow-up confirms repair?

Iron Therapy

Iron may help iron deficiency, but the cause of iron deficiency must be sought.

Questions:

- Why is iron low?

- Is there bleeding?
- Is there malabsorption?
- Is intake inadequate?
- Is the patient able to tolerate oral iron?
- Is intravenous iron needed according to local practice?
- How will response be monitored?

Do not give iron and ignore possible gastrointestinal bleeding.

Vitamin B12 or Folate Replacement

Replacement may be needed where deficiency is confirmed or strongly suspected.

Questions:

- Is there neuropathy?
- Is malabsorption present?
- Is diet the cause?
- Is long-term therapy needed?
- Are both B12 and folate status considered appropriately?

Treating Blood Loss

If bleeding is present, treatment must address:

- source of bleeding
- hemodynamic stability
- anticoagulants/antiplatelets
- need for urgent endoscopy or procedural care
- transfusion decisions according to local practice
- prevention of recurrence

Transfusion

Transfusion may be lifesaving in severe symptomatic anemia, active bleeding, or inadequate oxygen delivery.

But transfusion can also cause harm, including fluid overload, reactions, and other risks.

The decision should consider symptoms, rate of blood loss, cardiovascular disease, hemodynamic status, goals of care, and local guidelines.

Erythropoiesis-Stimulating Therapy

In chronic kidney disease or selected settings, stimulating red cell production may be appropriate under relevant guidance.

This requires assessment of iron status, risks, targets, and specialist input where appropriate.

Medicine Review

Adjust medicines that contribute to anemia or bleeding:

- NSAIDs
- anticoagulants
- antiplatelets
- marrow-suppressing drugs
- alcohol
- medicines affecting absorption or nutrition
- chemotherapy or immunosuppression

Medicine review is not optional.

12. Repair Trajectory in Anemia

Repair depends on the cause.

Repair markers include:

- bleeding stopped or controlled
- hemoglobin stabilizing or rising
- reticulocyte response appropriate where relevant
- iron, B12, or folate deficiency corrected
- breathlessness improves
- dizziness improves
- palpitations settle
- chest pain absent
- walking distance improves
- energy improves
- cognition improves if affected
- kidney function stable
- heart failure not worsened
- source investigated
- medicines reviewed
- patient understands treatment and warning signs
- follow-up blood tests arranged

Repair is not merely a higher hemoglobin.

Repair means oxygen delivery, function, safety, and cause control are improving.

13. Safety-Netting in Anemia

Safety-netting should be specific.

Advise urgent review if there is:

- chest pain
- worsening breathlessness
- fainting
- severe dizziness
- black stools
- vomiting blood
- rectal bleeding
- heavy ongoing bleeding
- palpitations with weakness
- new confusion
- severe fatigue limiting basic activity
- jaundice or dark urine
- fever with worsening weakness
- worsening pallor
- new bruising or bleeding
- inability to tolerate treatment
- symptoms worsening despite therapy

Also explain:

- likely cause
- what treatment is intended to do
- what side effects may occur
- what tests are pending
- when blood count should be repeated
- who will review results
- what investigation is needed to find the source
- when to return earlier

Use teach-back:

“Can you tell me what symptoms would make you seek urgent help?”

14. Worked Case 1: Iron Deficiency With Dark Stools

A 69-year-old man presents with fatigue, exertional dyspnea, dizziness, and dark stools. He takes aspirin and ibuprofen for arthritis. Blood tests show microcytic anemia.

Danger

Gastrointestinal bleeding, severe anemia, syncope, cardiac strain, medication-related ulcer disease, malignancy.

Syndrome

Symptomatic microcytic anemia with possible melena and NSAID/aspirin exposure.

Capacity Failure

Oxygen delivery, circulation reserve, energy, mobility.

Coupling Conditions

NSAID use, aspirin, chronic pain, age, possible delayed presentation, cardiovascular risk, access to GI investigation.

Wise Perturbation

Assess vital signs, hemodynamic stability, hemoglobin trend, renal function, stool history, medication risks, and need for urgent GI or emergency pathway according to local practice. Treat iron deficiency while investigating the source. Review NSAID harm.

Repair Trajectory

Bleeding source identified or excluded, hemoglobin stabilizes, dizziness improves, breathlessness improves, harmful medicine risk reduced, follow-up owned.

15. Worked Case 2: Macrocytic Anemia and Neuropathy

A 58-year-old woman reports fatigue, numbness in her feet, unsteady gait, and memory difficulty. Blood tests show macrocytic anemia.

Danger

Vitamin B12 deficiency with neurological involvement, marrow disease, thyroid or liver disease, medication effect.

Syndrome

Macrocytic anemia with neurological symptoms.

Capacity Failure

Oxygen delivery, neurological function, mobility, cognition, participation.

Coupling Conditions

Diet, malabsorption, gastric surgery history, autoimmune risk, medicines, alcohol use, social support, falls risk.

Wise Perturbation

Assess B12 and folate status, neurological signs, diet, absorption risk, thyroid/liver status, and medicines. Treat deficiency according to local practice and address falls risk. Do not dismiss numbness as unrelated.

Repair Trajectory

Hemoglobin improves, neurological symptoms stabilize or improve, gait safer, cognition improves where reversible, long-term replacement plan clarified.

16. Worked Case 3: Anemia in CKD

A 76-year-old man with chronic kidney disease reports fatigue and reduced walking distance. His anemia is normocytic. There is no obvious bleeding.

Danger

Reduced oxygen delivery, cardiovascular strain, progression of CKD, occult iron deficiency, chronic inflammation.

Syndrome

Normocytic anemia in CKD with functional limitation.

Capacity Failure

Oxygen delivery, clearance, energy, mobility, cardiovascular reserve.

Coupling Conditions

CKD stage, iron status, inflammation, medicines, nutrition, cardiovascular disease, access to monitoring, frailty.

Wise Perturbation

Assess iron status, renal function, inflammation, bleeding risk, and CKD anemia pathway according to local practice. Avoid assuming all anemia is “just CKD” without checking reversible contributors.

Repair Trajectory

Energy and walking improve, hemoglobin stabilizes, iron status corrected if needed, kidney function monitored, treatment burden reasonable.

17. Worked Case 4: Anemia With Jaundice

A 34-year-old patient develops fatigue, jaundice, dark urine, and shortness of breath. Hemoglobin has fallen rapidly.

Danger

Hemolysis, severe anemia, renal stress, possible autoimmune or drug-induced cause, infection-related hemolysis depending on context.

Syndrome

Rapid anemia with jaundice and dark urine.

Capacity Failure

Red cell integrity, oxygen delivery, clearance, circulation reserve.

Coupling Conditions

Recent medicines, autoimmune symptoms, infection or travel exposure, inherited conditions, pregnancy where relevant, transfusion history.

Wise Perturbation

Urgent assessment of hemolysis, renal function, severity, and cause. Escalate according to severity. Monitor oxygen delivery, urine, bilirubin, and hemodynamics.

Repair Trajectory

Hemolysis controlled, hemoglobin stabilizes, jaundice improves, urine clears, renal function remains safe, cause identified.

18. Worked Case 5: Anemia With Pancytopenia

A 63-year-old patient presents with fatigue, bruising, recurrent infections, and weight loss. Blood count shows anemia, low platelets, and low white cells.

Danger

Marrow failure, leukemia, lymphoma, severe B12 deficiency, medication toxicity, infection.

Syndrome

Anemia with pancytopenia, bruising, infections, and weight loss.

Capacity Failure

Oxygen delivery, defense, clotting, repair, energy.

Coupling Conditions

Age, medicines, chemotherapy exposure, alcohol, nutritional status, infection risk, malignancy risk, access to hematology care.

Wise Perturbation

Urgent evaluation, blood film where available, repeat count, infection assessment, bleeding risk assessment, medication review, and hematology input.

Repair Trajectory

Diagnosis clarified, infection and bleeding risk managed, blood counts monitored, treatment plan started, patient protected from avoidable harm.

19. Common Student Pitfalls

Pitfall 1: Treating Anemia Without Finding the Cause

Iron deficiency is not a final diagnosis. Ask why iron is low.

Pitfall 2: Ignoring Symptoms

A hemoglobin value must be interpreted with symptoms, speed of onset, and comorbidities.

Pitfall 3: Missing GI Bleeding

Always ask about black stools, vomiting blood, red blood per rectum, NSAIDs, aspirin, anticoagulants, and weight loss.

Pitfall 4: Missing B12 Neuropathy

Macrocytosis with numbness, gait problems, or cognitive symptoms needs attention.

Pitfall 5: Assuming Anemia in CKD Has Only One Cause

CKD anemia may coexist with iron deficiency, inflammation, bleeding, or malnutrition.

Pitfall 6: Forgetting Hemolysis

Anemia with jaundice and dark urine is a different syndrome from iron deficiency.

Pitfall 7: Ignoring Other Cell Lines

Low white cells or platelets may signal marrow disease.

Pitfall 8: Using Transfusion as a Substitute for Diagnosis

Transfusion may stabilize, but the cause still needs investigation.

20. Clinical Practice Box

When assessing anemia, complete this structure:

How severe is the anemia, and how fast did it develop?

Is the patient symptomatic?
Fatigue, dyspnea, dizziness, chest pain, syncope, palpitations?

Is there active bleeding?
Black stools, vomiting blood, rectal bleeding, heavy menstrual bleeding where relevant, anticoagulants, NSAIDs?

What is the red cell pattern?
Microcytic, normocytic, macrocytic?

Is the marrow responding?
Reticulocytes high or low where available?

Are other cell lines affected?
White cells, platelets?

Capacity failure:
Oxygen delivery, circulation reserve, energy, cognition, mobility, defense, clotting?

Likely cause:
Blood loss, destruction, poor production?

Wise perturbation:
Iron, B12/folate, bleeding control, transfusion, medicine review, renal pathway, hematology referral?

Repair trajectory:
What should improve, and what must be monitored?

21. Mini-Case for Practice

A 72-year-old woman presents with worsening fatigue, dizziness, and shortness of breath on walking. She has noticed black stools for two weeks but thought it was due to food. She takes an anticoagulant for atrial fibrillation and an NSAID for knee pain.

Apply the anemia approach.

Danger

Gastrointestinal bleeding, severe anemia, syncope, cardiac strain, anticoagulant-related bleeding, NSAID-related ulcer disease.

Syndrome

Symptomatic anemia with melena and bleeding-risk medicines.

Capacity Failure

Oxygen delivery, circulation reserve, energy, mobility, safety.

Coupling Conditions

Anticoagulant, NSAID, age, atrial fibrillation, knee pain, possible renal impairment, delayed recognition of melena, home support.

Wise Perturbation

Assess vital signs, hemodynamic stability, hemoglobin, renal function, medication risks, stool history, and need for urgent GI/emergency pathway according to local practice. Review anticoagulant and NSAID risk in context. Treat anemia while finding and controlling the bleeding source.

Repair Trajectory

Bleeding controlled or excluded, hemoglobin stabilizes, dizziness and breathlessness improve, medicine plan becomes safer, follow-up and warning signs are clear.

22. Student Takeaway

Anemia becomes easier when the clinician asks:

Is oxygen delivery failing?
Is the patient symptomatic or unstable?
Is there bleeding?
Is the anemia microcytic, normocytic, or macrocytic?
Is blood being lost, destroyed, or not produced?
Are other blood cell lines affected?
What capacity is impaired?
What treatment restores oxygen delivery while addressing the cause?
How will repair be monitored?

Anemia is not only a low hemoglobin.

It is a signal that oxygen delivery, energy, circulation reserve, cognition, mobility, repair, defense, or dignity may be under threat.

Chapter 22. Jaundice Made Easy

Jaundice means yellow discoloration of the skin, eyes, or mucous membranes caused by increased bilirubin.

Patients may say:

“My eyes are yellow.”
“My skin looks yellow.”
“My urine is dark.”
“My stool is pale.”
“I am itching all over.”
“I have abdominal pain and fever.”
“I feel weak and unwell.”

Jaundice is not a diagnosis.

It is a visible sign that bilirubin production, liver processing, bile flow, blood breakdown, or systemic illness may be disturbed.

Some jaundice is mild and stable.
Some jaundice is dangerous and urgent.

The first task is not simply to order liver tests.

The first task is to ask:

Is this jaundice caused by liver injury, bile obstruction, infection, hemolysis, or systemic danger?

Jaundice becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Jaundice Dangerous?

Jaundice becomes dangerous when it is associated with sepsis, liver failure, biliary obstruction, bleeding, confusion, severe abdominal pain, hemolysis, malignancy, medication toxicity, or rapid deterioration.

Dangerous causes and contexts include:

- cholangitis
- obstructive jaundice
- gallstone obstruction
- pancreatic or biliary malignancy
- acute hepatitis

- acute liver failure
- decompensated cirrhosis
- alcoholic hepatitis where relevant
- drug-induced liver injury
- acetaminophen toxicity
- hemolysis
- sepsis-associated cholestasis
- leptospirosis or other infections where relevant
- malaria or other hemolytic infections where relevant
- sickle cell hepatobiliary complications where relevant
- pregnancy-related liver disease where relevant
- autoimmune liver disease
- vascular liver disease
- metastatic malignancy

The danger-first question is:

Is this jaundice threatening liver transformation, bile flow, circulation, cognition, clotting, clearance, or life?

2. Immediate Red Flags in Jaundice

Urgent assessment is needed when jaundice is associated with:

- fever
- rigors
- right upper quadrant pain
- confusion
- low blood pressure
- tachypnea
- severe vomiting
- severe abdominal pain
- bleeding or easy bruising
- black stools or vomiting blood
- drowsiness
- severe weakness
- rapidly worsening jaundice
- very dark urine and pale stools
- severe itching with progressive symptoms
- weight loss
- painless progressive jaundice
- palpable abdominal mass
- known cirrhosis with deterioration
- heavy alcohol use with systemic illness where relevant
- recent acetaminophen overdose or high-risk use
- new medication or supplement exposure
- pregnancy or postpartum state where relevant

- immunosuppression
- recent travel or infection exposure
- anemia with jaundice and dark urine
- reduced urine output
- ascites or leg swelling
- severe hypoglycemia where present

Jaundice with fever and abdominal pain may be cholangitis.

Jaundice with confusion may be liver failure, sepsis, severe metabolic disturbance, or encephalopathy.

Jaundice with weight loss and pale stools may be obstruction or malignancy.

3. Jaundice Is a Syndrome, Not a Diagnosis

“Jaundice” alone is too broad.

The clinician must form a jaundice syndrome.

Ask:

- When did the yellow color begin?
- Is it worsening?
- Is the urine dark?
- Are stools pale?
- Is there itching?
- Is there fever?
- Is there abdominal pain?
- Is the pain right upper quadrant, epigastric, or diffuse?
- Is there vomiting?
- Is there confusion or drowsiness?
- Is there bleeding or bruising?
- Is there weight loss?
- Is there poor appetite?
- Is there alcohol use where relevant?
- Are there new medicines, herbal products, supplements, or toxins?
- Is there acetaminophen exposure?
- Is there recent travel?
- Is there viral hepatitis risk?
- Is there sexual, blood, needle, tattoo, or occupational exposure where relevant?
- Is there known gallstone disease?
- Is there known liver disease?
- Is there anemia, dark urine, or back pain suggesting hemolysis?
- Is there pregnancy where relevant?
- What are the vital signs?
- What does the abdomen show?

The goal is to move from:

“The patient is jaundiced”

to:

“This is jaundice with fever, right upper quadrant pain, and confusion.”

or:

“This is painless progressive jaundice with pale stools, dark urine, itching, and weight loss.”

or:

“This is jaundice with anemia, dark urine, and rapid hemoglobin fall.”

The syndrome directs urgency and cause.

4. Common Jaundice Syndrome Patterns

Jaundice With Fever and Right Upper Quadrant Pain

Pattern:

- jaundice
- fever or rigors
- right upper quadrant pain
- vomiting
- confusion or hypotension in severe cases

Possible causes:

- cholangitis
- infected obstructed bile duct
- gallstone obstruction with infection
- liver abscess
- severe cholecystitis with biliary involvement

Threatened capacities:

Bile flow, **defense**, **circulation**, **liver transformation**, **cognition**.

This is a high-risk pattern.

Painless Progressive Jaundice

Pattern:

- progressive yellowing
- dark urine
- pale stools
- itching
- weight loss
- poor appetite
- minimal pain or no pain
- possible palpable gallbladder or abdominal mass

Possible causes:

- pancreatic cancer
- cholangiocarcinoma
- biliary stricture
- ampullary tumor
- metastatic obstruction
- chronic pancreatitis stricture

Threatened capacities:

Bile flow, **nutrition**, **comfort**, **dignity**, **repair**.

This pattern requires careful evaluation.

Jaundice With Dark Urine and Pale Stools

Pattern:

- yellow eyes or skin
- tea-colored urine
- pale or clay-colored stools
- itching
- possible abdominal pain

Possible causes:

- obstructive jaundice
- cholestatic hepatitis
- bile duct obstruction
- drug-induced cholestasis
- primary biliary or sclerosing cholangitis where relevant

Threatened capacities:

Bile flow, **liver transformation**, **comfort**, **nutrition**.

Jaundice With Malaise, Nausea, and Tender Liver

Pattern:

- jaundice
- fatigue
- nausea
- vomiting
- poor appetite
- right upper quadrant discomfort
- dark urine
- systemic viral-like symptoms

Possible causes:

- acute viral hepatitis
- drug-induced hepatitis
- alcohol-related hepatitis where relevant
- autoimmune hepatitis
- toxin-related liver injury
- ischemic hepatitis in shock context

Threatened capacities:

Liver transformation, **energy**, **clearance**, **coagulation**, **cognition** if severe.

Jaundice With Confusion or Bleeding

Pattern:

- jaundice
- confusion
- drowsiness
- bruising
- bleeding
- low glucose in severe cases
- ascites or edema where chronic liver disease exists
- systemic illness

Possible causes:

- acute liver failure
- decompensated cirrhosis
- severe hepatitis
- sepsis
- drug toxicity
- hepatic encephalopathy
- gastrointestinal bleeding precipitating encephalopathy

Threatened capacities:

Transformation, **detoxification**, **clotting**, **cognition**, **circulation**, **life**.

This is high-risk.

Jaundice With Anemia and Dark Urine

Pattern:

- jaundice
- fatigue
- pallor
- dark urine
- back or abdominal pain in some cases
- rapid drop in hemoglobin
- splenomegaly in some cases

Possible causes:

- hemolysis
- autoimmune hemolytic anemia
- inherited red cell disorder
- drug-induced hemolysis
- malaria or other hemolytic infection where relevant
- transfusion reaction
- mechanical hemolysis

Threatened capacities:

Red cell integrity, **oxygen delivery**, **bilirubin clearance**, **kidney safety**.

Jaundice in Known Cirrhosis

Pattern:

- worsening jaundice
- ascites
- leg swelling
- confusion
- bleeding
- infection
- kidney dysfunction
- muscle wasting
- poor intake

Possible causes:

- decompensated cirrhosis
- infection
- gastrointestinal bleeding
- alcohol-related injury where relevant
- hepatocellular carcinoma
- portal vein thrombosis
- medication harm
- kidney-liver interaction

Threatened capacities:

Liver transformation, **circulation**, **clearance**, **cognition**, **nutrition**, **clotting**.

Jaundice After New Medicine or Supplement

Pattern:

- jaundice after starting a medication, herbal product, supplement, or toxin exposure
- itching
- rash or fever in some cases
- abdominal symptoms
- liver test abnormalities

Possible causes:

- drug-induced liver injury
- cholestatic drug reaction
- severe hypersensitivity reaction
- acetaminophen toxicity
- herbal or supplement-related hepatotoxicity

Threatened capacities:

Liver transformation, **clearance**, **tolerance**, **coagulation** if severe.

5. A Simple Way to Think About Jaundice

Jaundice becomes easier when grouped into three broad mechanisms.

Before the Liver: Too Much Bilirubin Production

This is often due to increased red cell breakdown.

Examples:

- hemolysis

- inherited red cell disorders
- transfusion reaction
- malaria or other hemolytic infection where relevant
- large hematoma breakdown

Common clues:

- anemia
- pallor
- dark urine
- raised reticulocytes where measured
- splenomegaly
- less prominent pale stools unless there is cholestasis

Main capacity failure:

Oxygen delivery and **red cell integrity**.

In the Liver: Impaired Processing or Injury

The liver cells are injured or unable to process bilirubin properly.

Examples:

- viral hepatitis
- alcohol-related hepatitis where relevant
- drug-induced liver injury
- ischemic hepatitis
- autoimmune hepatitis
- cirrhosis
- metabolic liver disease

Common clues:

- malaise
- nausea
- poor appetite
- tender liver
- high liver enzymes depending on pattern
- clotting disturbance if severe
- confusion if severe

Main capacity failure:

Liver transformation, **clearance**, and **coagulation**.

After the Liver: Blocked Bile Flow

Bile cannot drain properly.

Examples:

- gallstone in common bile duct
- pancreatic cancer
- cholangiocarcinoma
- biliary stricture
- pancreatitis-related obstruction
- primary sclerosing cholangitis where relevant
- external compression

Common clues:

- dark urine
- pale stools
- itching
- cholestatic liver test pattern
- dilated bile ducts on imaging where present
- fever and pain if cholangitis

Main capacity failure:

Bile flow and **comfort**, with danger if infected.

This structure prevents scattered thinking.

6. Capacity Failure in Jaundice

Jaundice matters because bilirubin elevation often reflects deeper capacity failure.

Liver Transformation

The liver may be unable to metabolize, detoxify, synthesize, and regulate.

Signals include:

- jaundice
- nausea
- poor appetite
- coagulopathy
- low albumin in chronic disease
- hypoglycemia in severe acute disease
- confusion
- ascites

Bile Flow

Bile may be obstructed or poorly transported.

Signals include:

- dark urine
- pale stools
- itching
- right upper quadrant pain
- cholestatic liver tests
- recurrent cholangitis

Defense

Infection may be present, especially with obstruction.

Signals include:

- fever
- rigors
- abdominal pain
- hypotension
- confusion
- raised inflammatory features where measured

Clotting

The liver produces important clotting factors.

Signals include:

- easy bruising
- bleeding
- prolonged clotting tests where measured
- gastrointestinal bleeding
- severe liver injury

Cognition

Liver failure or sepsis may impair brain function.

Signals include:

- confusion
- sleep reversal
- drowsiness

- asterixis where present
- agitation
- coma in severe cases

Circulation and Clearance

Severe liver disease can disturb fluid balance, kidney perfusion, and circulation.

Signals include:

- ascites
- edema
- low blood pressure
- kidney dysfunction
- reduced urine output
- infection vulnerability

Comfort, Nutrition, and Dignity

Jaundice can cause severe itching, poor appetite, fatigue, social embarrassment, fear, and sleep loss.

The clinician should treat these seriously.

7. Bedside Assessment of Jaundice

Look First

Observe:

- yellow sclerae
- jaundiced skin
- distress
- itching or scratch marks
- confusion
- drowsiness
- fever
- dehydration
- bruising
- bleeding
- abdominal distension
- edema
- muscle wasting
- signs of chronic liver disease
- pain behavior

A jaundiced patient who is febrile, confused, hypotensive, bleeding, or severely weak is high-risk.

Vital Signs

Check:

- temperature
- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- level of consciousness
- glucose where severe illness or liver failure is possible
- urine output if unwell or admitted

Fever, hypotension, tachypnea, confusion, or hypoglycemia increases urgency.

Focused History

Ask about:

- onset and progression
- dark urine
- pale stools
- itching
- fever or rigors
- abdominal pain
- vomiting
- appetite and weight loss
- bleeding or bruising
- confusion or sleep reversal
- alcohol use where relevant
- acetaminophen use
- prescribed medicines
- over-the-counter medicines
- herbal products and supplements
- recent antibiotics
- statins, antiepileptics, tuberculosis medicines, or other liver-relevant medicines where relevant
- viral hepatitis risk
- travel
- food and water exposure
- sexual or blood exposure where relevant
- tattoos, piercings, needle exposure where relevant
- gallstones
- previous liver disease
- family history
- autoimmune symptoms
- pregnancy where relevant

- occupational or toxin exposure

Examination

Assess:

- scleral icterus
- scratch marks
- bruising or petechiae
- fever source
- mental state
- asterixis where appropriate
- hydration
- lymph nodes
- abdominal tenderness
- right upper quadrant tenderness
- liver size
- spleen size
- ascites
- abdominal mass
- signs of chronic liver disease
- edema
- stool color history if available
- rectal bleeding where indicated and appropriate
- signs of anemia or hemolysis

The examination should look for cause, severity, and complications.

8. Initial Investigations

Investigations depend on syndrome and severity.

Common investigations may include:

- bilirubin with direct/indirect fraction where available
- liver enzymes
- cholestatic enzymes
- albumin
- clotting profile
- full blood count
- renal function and electrolytes
- glucose
- inflammatory markers where infection is possible
- blood cultures if cholangitis or sepsis is suspected
- amylase or lipase where pancreatitis is possible
- hemolysis tests where anemia, dark urine, or rapid bilirubin rise suggests

- viral hepatitis testing where relevant
- autoimmune liver tests where suggested by pattern
- acetaminophen level or toxicity pathway where exposure is possible
- urine testing where helpful
- pregnancy testing where relevant
- abdominal ultrasound as common first imaging when obstruction, gallstones, biliary dilation, liver disease, or ascites is suspected
- CT or MR imaging according to local pathway if obstruction, malignancy, abscess, or complex disease is suspected
- endoscopic or interventional biliary assessment where obstruction or cholangitis requires it
- specialist referral based on severity and cause

Testing should answer:

- Is bilirubin mainly unconjugated or conjugated?
- Is the pattern hepatocellular or cholestatic?
- Is liver synthetic function impaired?
- Is infection present?
- Is obstruction present?
- Is hemolysis present?
- Is kidney function affected?
- Is the patient developing liver failure?
- Is urgent source control needed?

9. Dangerous Diagnoses Not to Miss

Cholangitis

Clues:

- jaundice
- fever or rigors
- right upper quadrant pain
- confusion or hypotension in severe cases
- gallstones or biliary disease history

Capacity failure:

Bile flow, **defense**, **circulation**, **cognition**, **liver transformation**

Wise action:

Urgent assessment, antibiotics according to local guidance, blood cultures where appropriate and safe, imaging, and early specialist input for biliary drainage or source control when indicated.

Acute Liver Failure

Clues:

- jaundice
- confusion or encephalopathy
- bleeding or abnormal clotting
- severe weakness
- hypoglycemia
- recent drug/toxin exposure
- viral hepatitis risk
- rapidly worsening illness

Capacity failure:

Liver transformation, **clotting**, **clearance**, **cognition**, **glucose regulation**, **life**

Wise action:

Emergency assessment and urgent specialist input. Identify drug/toxin, viral, ischemic, autoimmune, and other causes according to local pathway.

Obstructive Malignancy

Clues:

- painless progressive jaundice
- dark urine
- pale stools
- itching
- weight loss
- poor appetite
- abdominal or back pain in some cases
- older age
- palpable gallbladder or mass where present

Capacity failure:

Bile flow, **nutrition**, **comfort**, **repair**

Wise action:

Prompt imaging and referral according to local pathways. Address itching, nutrition, and emotional distress while diagnosis is clarified.

Drug-Induced Liver Injury

Clues:

- new medicine, supplement, herbal product, or toxin exposure

- jaundice
- itching
- rash or fever in some cases
- abnormal liver tests
- acetaminophen exposure where relevant

Capacity failure:

Liver transformation, **tolerance**, **clearance**, **clotting** if severe.

Wise action:

Stop suspected harmful agents where appropriate, assess severity and synthetic function, and escalate if jaundice, coagulopathy, encephalopathy, or severe systemic features are present.

Hemolysis

Clues:

- anemia
- jaundice
- dark urine
- rapid hemoglobin fall
- splenomegaly
- high reticulocyte response where measured
- medication, infection, autoimmune, inherited, or transfusion context

Capacity failure:

Red cell integrity, **oxygen delivery**, **bilirubin clearance**, **kidney safety**

Wise action:

Assess severity, hemolysis markers, renal function, cause, and need for urgent hematology or specialist input.

Decompensated Cirrhosis

Clues:

- jaundice
- ascites
- edema
- confusion
- gastrointestinal bleeding
- bruising
- muscle wasting
- infection

- renal dysfunction

Capacity failure:

Liver transformation, **circulation**, **clearance**, **clotting**, **cognition**, **nutrition**

Wise action:

Assess for triggers such as infection, bleeding, alcohol-related injury where relevant, medication harm, dehydration, kidney dysfunction, or malignancy. Escalate according to severity.

Pancreatitis With Biliary Obstruction

Clues:

- epigastric pain radiating to back
- vomiting
- jaundice
- gallstone risk
- systemic inflammation

Capacity failure:

Inflammatory tolerance, **bile flow**, **fluid balance**, **circulation**, **comfort**

Wise action:

Assess severity, fluids with careful monitoring, pain control, biliary imaging, and specialist input where obstruction or cholangitis is suspected.

10. Wise Perturbation in Jaundice

Treatment depends on the syndrome and danger.

Ask:

- Is the patient septic?
- Is there cholangitis?
- Is bile flow obstructed?
- Is liver synthetic function failing?
- Is the patient confused?
- Is there bleeding?
- Is there hemolysis?
- Is a drug or toxin responsible?
- Is alcohol contributing where relevant?
- Is there malignancy concern?

- Is kidney function affected?
- What needs urgent specialist input?
- What symptoms need relief now?

Antibiotics and Source Control

If cholangitis or sepsis is suspected, antibiotics may be urgent according to local guidance.

But antibiotics alone may not be enough.

If the bile duct is obstructed and infected, source control or drainage may be needed.

Ask:

Does this patient need biliary decompression, drainage, or urgent procedural review?

Stopping Harmful Medicines or Toxins

If drug-induced liver injury or toxicity is possible:

- identify all prescribed medicines
- ask about over-the-counter medicines
- ask about acetaminophen
- ask about herbal products and supplements
- ask about alcohol and substances where relevant
- stop suspected harmful agents where appropriate
- follow local toxicity pathways for specific exposures

Do not forget that “natural” supplements can still harm the liver.

Treating Itching

Itching can be severe and disabling.

Treatment depends on cause and local practice, but the clinician should not ignore it.

Itching affects sleep, mood, skin, dignity, and quality of life.

Nutrition and Hydration

Jaundiced patients may have nausea, poor appetite, fat malabsorption, alcohol-related malnutrition, malignancy-related cachexia, or frailty.

Support may include:

- hydration
- nausea control

- nutrition assessment
- vitamin considerations in chronic cholestasis or malnutrition contexts
- alcohol support where relevant
- dietitian involvement where available

Managing Confusion

Confusion in jaundice may reflect:

- hepatic encephalopathy
- sepsis
- hypoglycemia
- intracranial disease
- withdrawal
- medication toxicity
- renal failure

Do not assume all confusion in liver disease is hepatic encephalopathy without assessing reversible dangers.

Managing Coagulopathy and Bleeding Risk

If clotting is impaired or bleeding is present, assess urgency, source, medicines, liver function, and need for specialist or emergency input.

11. Repair Trajectory in Jaundice

Repair depends on cause.

Repair markers include:

- fever settles
- abdominal pain improves
- blood pressure stabilizes
- confusion clears
- itching improves
- bilirubin begins to fall where expected
- liver enzymes trend appropriately
- clotting stabilizes
- glucose remains safe
- urine output adequate
- kidney function stable
- bile flow restored where obstructed
- infection source controlled
- hemolysis stops where relevant
- harmful medicine stopped

- nutrition improves
- weight stabilizes
- follow-up arranged
- patient understands warning signs

Repair is not simply “the eyes look less yellow.”

Repair means liver transformation, bile flow, cognition, clotting, comfort, nutrition, and safety are improving.

12. Safety-Netting in Jaundice

Safety-netting should be specific.

Advise urgent review if there is:

- fever or rigors
- right upper quadrant pain
- worsening jaundice
- confusion or drowsiness
- fainting or severe weakness
- vomiting blood
- black stools
- easy bruising or bleeding
- severe vomiting
- severe abdominal pain
- reduced urine output
- pale stools and dark urine worsening
- severe itching with deterioration
- weight loss or poor intake
- new swelling of abdomen or legs
- severe low mood or distress
- jaundice after new medicine, supplement, or acetaminophen exposure
- pregnancy or postpartum jaundice where relevant

Also explain:

- what pattern of jaundice is suspected
- what tests are pending
- whether obstruction, hepatitis, hemolysis, or liver failure is being assessed
- what medicines or substances to avoid
- who will review the results
- when follow-up will occur
- what symptoms mean emergency

Use teach-back:

“Can you tell me what jaundice symptoms would make you seek urgent help?”

13. Worked Case 1: Jaundice With Fever and Pain

A 69-year-old woman presents with fever, rigors, right upper quadrant pain, jaundice, and new confusion.

Danger

Cholangitis with sepsis, biliary obstruction, shock, liver dysfunction.

Syndrome

Jaundice with fever, right upper quadrant pain, rigors, and altered mental state.

Capacity Failure

Bile flow, defense, circulation, cognition, liver transformation.

Coupling Conditions

Gallstones, age, dehydration, diabetes if present, kidney function, anticoagulation if present, access to imaging and biliary drainage.

Wise Perturbation

Urgent assessment, vital signs, glucose, renal function, liver tests, clotting, blood cultures where appropriate and safe, antibiotics according to local guidance, imaging, and early specialist input for source control.

Repair Trajectory

Fever settles, blood pressure stabilizes, confusion clears, pain improves, bilirubin and cholestatic pattern improve, obstruction relieved if present, kidney function safe.

14. Worked Case 2: Painless Progressive Jaundice

A 72-year-old man presents with progressive yellow eyes, dark urine, pale stools, severe itching, poor appetite, and weight loss. He has little pain.

Danger

Obstructive malignancy, pancreaticobiliary cancer, biliary obstruction, malnutrition.

Syndrome

Painless progressive obstructive jaundice with weight loss and pale stools.

Capacity Failure

Bile flow, nutrition, comfort, repair, dignity.

Coupling Conditions

Age, weight loss, access to imaging, family support, itching-related sleep loss, emotional distress, possible frailty.

Wise Perturbation

Prompt imaging and referral according to local pathways. Assess liver tests, clotting, renal function, nutrition, and symptom burden. Treat itching and support nutrition while diagnosis is clarified.

Repair Trajectory

Obstruction defined, treatment pathway initiated, itching reduced, nutrition supported, bilirubin monitored, patient and family understand next steps.

15. Worked Case 3: Jaundice After New Medicine

A 45-year-old patient develops jaundice, itching, fatigue, and dark urine three weeks after starting a new medication and herbal supplement.

Danger

Drug-induced liver injury, cholestatic hepatitis, severe hypersensitivity if rash or systemic features are present, liver failure if synthetic function is impaired.

Syndrome

New jaundice after medication and supplement exposure.

Capacity Failure

Liver transformation, tolerance, bile flow, comfort, clearance.

Coupling Conditions

Medication timing, supplement use, alcohol use where relevant, other liver disease, renal function, access to follow-up, understanding of medicine risk.

Wise Perturbation

Review and stop suspected harmful agents where appropriate. Assess liver pattern, clotting, bilirubin, renal function, symptoms, and severity. Escalate if confusion, bleeding, worsening jaundice, or impaired synthetic function is present.

Repair Trajectory

Harmful exposure removed, symptoms stabilize, bilirubin and liver tests improve over time, patient understands avoidance and documentation.

16. Worked Case 4: Jaundice With Anemia

A 36-year-old patient presents with fatigue, pallor, yellow eyes, dark urine, and shortness of breath. Hemoglobin has fallen rapidly.

Danger

Hemolysis, severe anemia, kidney injury, autoimmune or drug-induced hemolysis, infection-related hemolysis depending on context.

Syndrome

Jaundice with anemia, dark urine, and rapid hemoglobin fall.

Capacity Failure

Red cell integrity, oxygen delivery, bilirubin clearance, circulation reserve.

Coupling Conditions

Recent medications, autoimmune symptoms, infection or travel exposure, inherited red cell disorder risk, pregnancy where relevant, transfusion history.

Wise Perturbation

Assess hemolysis, oxygen delivery, renal function, severity, and cause. Escalate if anemia is severe, rapidly worsening, or symptomatic. Monitor urine output and kidney safety.

Repair Trajectory

Hemoglobin stabilizes, hemolysis controlled, jaundice improves, urine clears, breathlessness reduces, cause identified.

17. Worked Case 5: Known Cirrhosis With New Confusion

A 58-year-old man with known cirrhosis presents with worsening jaundice, abdominal swelling, sleep reversal, and confusion. His family reports black stools.

Danger

Decompensated cirrhosis, hepatic encephalopathy, gastrointestinal bleeding, sepsis, kidney dysfunction, worsening liver failure.

Syndrome

Known cirrhosis with worsening jaundice, ascites, confusion, and possible GI bleeding.

Capacity Failure

Liver transformation, clotting, cognition, circulation, clearance, nutrition.

Coupling Conditions

Cirrhosis severity, bleeding risk, infection, alcohol use where relevant, medicines, constipation, dehydration, kidney function, family support.

Wise Perturbation

Assess airway and consciousness, vital signs, glucose, hemoglobin, renal function, electrolytes, liver tests, clotting, infection triggers, bleeding, medicines, and ascites complications. Escalate according to severity and local liver/GI pathways.

Repair Trajectory

Bleeding controlled or excluded, infection treated if present, mental state improves, renal function stabilizes, ascites managed, jaundice trajectory understood, family receives clear plan.

18. Common Student Pitfalls

Pitfall 1: Treating Jaundice as “Liver Tests Only”

Jaundice is a clinical syndrome. Look for fever, pain, confusion, bleeding, obstruction, hemolysis, and drug exposure.

Pitfall 2: Missing Cholangitis

Jaundice with fever and right upper quadrant pain is dangerous.

Pitfall 3: Missing Painless Obstruction

Painless progressive jaundice with pale stools, dark urine, itching, and weight loss may indicate malignancy.

Pitfall 4: Forgetting Medicines and Supplements

Drug-induced liver injury is easy to miss unless specifically asked about.

Pitfall 5: Forgetting Hemolysis

Jaundice with anemia and dark urine is not primarily a bile duct problem.

Pitfall 6: Ignoring Confusion

Jaundice with confusion may signal liver failure, sepsis, hypoglycemia, bleeding, or encephalopathy.

Pitfall 7: Ignoring Clotting

The liver is essential for clotting. Bleeding risk matters.

Pitfall 8: Poor Follow-Up

Jaundice requires ownership of results and trajectory. A patient must not be told simply, “We will see what happens,” without a clear plan.

19. Clinical Practice Box

When assessing jaundice, complete this structure:

Time course:
Acute, progressive, recurrent, chronic?

Associated symptoms:
Fever, pain, itching, dark urine, pale stools, weight loss, confusion, bleeding?

Danger features:
Cholangitis, liver failure, obstruction, hemolysis, sepsis, bleeding, drug toxicity?

Syndrome pattern:
Obstructive, hepatocellular, hemolytic, cirrhotic decompensation, drug-related?

Capacity failure:
Liver transformation, bile flow, defense, clotting, cognition, oxygen delivery, comfort?

Exposure history:
Medicines, acetaminophen, supplements, alcohol, travel, viral hepatitis risk, toxins?

Initial investigations:
Liver tests, bilirubin fraction, clotting, full blood count, renal function, glucose, hemolysis tests, hepatitis tests, ultrasound, others?

Wise perturbation:
Antibiotics, source control, stop harmful medicine, treat hemolysis, urgent referral, symptom relief, nutrition support?

Repair trajectory:
What should improve, and what danger must be monitored?

20. Mini-Case for Practice

A 64-year-old woman presents with yellow eyes, dark urine, pale stools, fever, chills, and right upper quadrant pain. Her daughter says she has become slightly confused today. Her blood pressure is lower than usual.

Apply the jaundice approach.

Danger

Cholangitis with sepsis, biliary obstruction, shock, liver dysfunction, AKI.

Syndrome

Jaundice with fever, chills, right upper quadrant pain, pale stools, dark urine, confusion, and low blood pressure.

Capacity Failure

Bile flow, defense, circulation, cognition, liver transformation, clearance.

Coupling Conditions

Gallstones or biliary disease, age, dehydration, diabetes if present, kidney function, medicine use, access to imaging and urgent source control.

Wise Perturbation

Urgent ABCDE assessment, vital signs, glucose, renal function, electrolytes, liver tests, clotting, full blood count, cultures where appropriate and safe, antibiotics according to local guidance, imaging, fluids with reassessment, and early specialist input for biliary source control.

Repair Trajectory

Blood pressure stabilizes, confusion clears, fever and rigors settle, pain improves, urine output remains adequate, kidney function stable, bilirubin and cholestatic markers improve, obstruction is relieved if present.

21. Student Takeaway

Jaundice becomes easier when the clinician asks:

Is there fever and pain?
Is bile flow blocked?
Is the liver injured?
Are red cells being destroyed?
Is the patient confused or bleeding?
Are medicines, supplements, toxins, alcohol, infection, gallstones, malignancy, or cirrhosis involved?
What capacity is failing?
What treatment protects liver transformation, bile flow, clotting, cognition, comfort, and life?

Jaundice is not only yellow skin.

It is a visible signal that liver transformation, bile flow, red cell integrity, defense, clotting, cognition, comfort, nutrition, or life may be under threat.

Chapter 23. Acute Kidney Injury Made Easy

Acute kidney injury means a sudden decline in kidney function.

Patients may not say:

“My kidneys are injured.”

They may say:

“I am passing less urine.”
“I feel weak.”
“I am vomiting.”
“My legs are swollen.”
“I feel short of breath.”
“I am dizzy.”
“I am confused.”
“The blood test showed my kidney numbers are worse.”

Acute kidney injury, or AKI, is common in Internal Medicine.

It may occur with dehydration, sepsis, heart failure, urinary obstruction, bleeding, medicines, contrast exposure, rhabdomyolysis, severe hypertension, liver disease, glomerulonephritis, or multisystem illness.

AKI is not just a creatinine problem.

AKI matters because the kidneys help maintain:

- fluid balance
- potassium balance
- acid-base balance
- toxin clearance
- medicine clearance
- blood pressure regulation
- volume safety
- internal biochemical stability

The first task is not simply to “give fluids.”

The first task is to ask:

Why has kidney capacity fallen, and what danger has this created?

AKI becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This AKI Dangerous?

AKI becomes dangerous when kidney failure threatens potassium balance, acid-base balance, fluid balance, toxin clearance, medicine safety, circulation, oxygenation, or consciousness.

Dangerous consequences include:

- hyperkalemia
- severe metabolic acidosis
- pulmonary edema
- severe fluid overload
- very low urine output
- uremic symptoms
- confusion
- pericarditis in severe renal failure
- uncontrolled hypertension
- severe hypotension or shock
- sepsis
- obstructed infected kidney
- rapidly rising creatinine
- medication toxicity
- severe rhabdomyolysis
- acute glomerulonephritis
- AKI in frailty or multimorbidity
- AKI with heart failure, cirrhosis, or advanced CKD

The danger-first question is:

Is the patient's internal stability failing because the kidneys can no longer clear, regulate, or balance safely?

2. Immediate Red Flags in AKI

Urgent assessment is needed when AKI is associated with:

- potassium elevation or ECG changes
- very low or no urine output
- severe breathlessness
- pulmonary edema
- low oxygen saturation
- severe acidosis
- confusion or drowsiness
- seizures
- chest pain or pericarditic pain

- severe hypertension with symptoms
- hypotension or shock
- sepsis
- fever with flank pain
- suspected obstruction
- abdominal or pelvic mass
- known single kidney
- severe dehydration
- ongoing vomiting or diarrhea
- major bleeding
- rhabdomyolysis or dark urine after muscle injury
- rapidly rising creatinine
- nephrotoxic medicine exposure
- contrast exposure in vulnerable patient
- pregnancy or postpartum context where relevant
- known advanced CKD
- heart failure with fluid overload
- liver disease with circulatory instability

AKI with hyperkalemia, pulmonary edema, severe acidosis, uremic symptoms, or obstruction is high-risk.

3. AKI Is a Syndrome, Not Just a Creatinine

A rising creatinine is important, but it is not enough.

The clinician must form an AKI syndrome.

Ask:

- Is the AKI acute, chronic, or acute-on-chronic?
- What was the baseline creatinine?
- How fast is creatinine rising?
- Is urine output reduced?
- Is the patient dehydrated or fluid overloaded?
- Is blood pressure low or high?
- Is there sepsis?
- Is there heart failure?
- Is there liver disease?
- Is there urinary obstruction?
- Are there urinary symptoms?
- Is there flank pain?
- Is there hematuria or proteinuria?
- Are there casts where available?
- Are medicines contributing?
- Are there toxins or contrast exposure?
- Is there rhabdomyolysis?

- Is there a systemic inflammatory disease?
- Is potassium safe?
- Is acid-base status safe?
- Is the patient confused, breathless, or swollen?

The goal is to move from:

“The creatinine is high”

to:

“This is AKI with vomiting, poor intake, hypotension, NSAID use, and low urine output.”

or:

“This is AKI with edema, pulmonary congestion, heart failure, and rising potassium.”

or:

“This is AKI with urinary retention and bilateral hydronephrosis.”

The syndrome determines treatment.

4. A Simple Way to Think About AKI

AKI becomes easier when grouped into three broad mechanisms:

Before the Kidney: Reduced Perfusion

The kidneys are structurally capable, but they are not receiving enough effective blood flow.

Common causes:

- dehydration
- vomiting and diarrhea
- bleeding
- sepsis
- low blood pressure
- heart failure
- liver disease with circulatory dysfunction
- over-diuresis
- poor oral intake
- third spacing
- medicines affecting kidney perfusion

Key clues:

- thirst
- dizziness
- low blood pressure
- tachycardia
- dry mucosa
- poor intake
- low urine output
- recent fluid loss
- sepsis signs
- heart failure or cirrhosis context

Main capacity failure:

Circulation to the kidney and **clearance**.

In the Kidney: Intrinsic Kidney Injury

The kidney tissue itself is injured.

Common causes:

- acute tubular injury from ischemia or sepsis
- nephrotoxic medicines
- contrast-related injury in vulnerable patients
- glomerulonephritis
- interstitial nephritis
- rhabdomyolysis
- vasculitis
- thrombotic microangiopathy
- severe hypertension
- myeloma-related kidney disease

Key clues:

- persistent AKI despite perfusion correction
- blood or protein in urine
- casts where available
- systemic symptoms
- rash, fever, eosinophilia in some drug reactions
- muscle pain and dark urine in rhabdomyolysis
- severe hypertension
- abnormal immune features

Main capacity failure:

Kidney tissue function, **filtration**, and **biochemical regulation**.

After the Kidney: Obstruction

Urine is made but cannot drain properly.

Common causes:

- prostate enlargement
- urethral obstruction
- bladder outlet obstruction
- urinary retention
- bilateral ureteric obstruction
- obstructed single kidney
- stones
- malignancy
- pelvic mass
- catheter blockage

Key clues:

- difficulty passing urine
- weak stream
- suprapubic pain
- palpable bladder
- hydronephrosis
- flank pain
- recurrent urinary infection
- known prostate disease
- known malignancy
- sudden low urine output after catheter problem

Main capacity failure:

Urine drainage and **clearance**.

This three-part structure prevents scattered thinking.

5. Common AKI Syndrome Patterns

AKI With Vomiting or Diarrhea

Pattern:

- vomiting or diarrhea
- poor oral intake
- dizziness
- reduced urine output
- low blood pressure or postural symptoms
- diuretics, ACE inhibitor, ARB, NSAID, or diabetes medicines may be present

Possible causes:

- volume depletion
- medication-amplified kidney hypoperfusion
- sepsis or gastroenteritis
- electrolyte disturbance

Threatened capacities:

Hydration, **circulation**, **clearance**, **electrolyte balance**, **medicine safety**.

AKI With Sepsis

Pattern:

- fever or low temperature
- tachypnea
- hypotension
- confusion
- poor perfusion
- reduced urine output
- infection source

Possible causes:

- septic kidney injury
- hypoperfusion
- inflammatory kidney injury
- nephrotoxic exposure during illness

Threatened capacities:

Defense, **circulation**, **clearance**, **cognition**, **fluid balance**.

AKI With Heart Failure

Pattern:

- edema
- breathlessness
- orthopnea
- crackles
- raised venous pressure where present
- reduced urine output
- rising creatinine
- diuretic use
- low or high blood pressure

Possible causes:

- cardiorenal syndrome
- renal congestion
- poor forward flow
- over-diuresis
- medicine effects
- acute coronary syndrome or arrhythmia as trigger

Threatened capacities:

Circulation, **oxygenation**, **clearance**, **fluid balance**.

AKI With Urinary Retention

Pattern:

- reduced or absent urine output
- suprapubic discomfort
- lower urinary tract symptoms
- overflow incontinence
- confusion or agitation in older patients
- enlarged bladder
- catheter blockage where relevant

Possible causes:

- bladder outlet obstruction
- prostate disease
- medication-induced retention
- constipation
- neurological bladder
- catheter blockage

Threatened capacities:

Urine drainage, **clearance**, **comfort**, **dignity**, **cognition**.

AKI With Flank Pain and Fever

Pattern:

- flank pain
- fever
- vomiting
- urinary symptoms
- sepsis features
- reduced urine output

- possible stone history

Possible causes:

- pyelonephritis
- obstructed infected kidney
- renal abscess
- stone with infection

Threatened capacities:

Defense, **urinary drainage**, **clearance**, **circulation**.

Obstructed infection is high-risk.

AKI With Hematuria and Proteinuria

Pattern:

- AKI
- blood in urine
- protein in urine
- edema
- hypertension
- systemic symptoms
- rash, joint pain, or pulmonary symptoms in some cases

Possible causes:

- glomerulonephritis
- vasculitis
- lupus nephritis
- infection-related glomerular disease
- severe hypertension

Threatened capacities:

Filtration, **vascular integrity**, **clearance**, **blood pressure regulation**.

AKI With Muscle Injury or Dark Urine

Pattern:

- muscle pain
- weakness
- dark urine
- recent immobilization, seizure, trauma, exertion, heat illness, statin or toxin exposure where relevant

- high muscle enzymes where measured

Possible cause:

- rhabdomyolysis

Threatened capacities:

Kidney tubular function, **clearance**, **potassium balance**, **fluid balance**.

AKI With New Medicine Exposure

Pattern:

- AKI after medicine start, dose change, illness, or drug combination
- possible rash, fever, eosinophilia in interstitial nephritis
- possible dehydration or sepsis increasing vulnerability

Possible contributors:

- NSAIDs
- ACE inhibitors or ARBs in vulnerable states
- diuretics
- certain antibiotics
- contrast exposure in vulnerable patients
- antivirals or antifungals in some contexts
- chemotherapy
- immunosuppressants
- lithium
- herbal or supplement nephrotoxins
- combinations of medicines during dehydration

Threatened capacities:

Clearance, **medicine safety**, **electrolyte balance**.

6. Capacity Failure in AKI

AKI matters because kidney capacity supports whole-body stability.

Clearance

The kidneys cannot remove waste products and many medicines normally.

Signals include:

- rising creatinine
- nausea
- poor appetite
- confusion in severe cases
- drug accumulation
- uremic symptoms

Potassium Regulation

The kidneys may not excrete potassium safely.

Signals include:

- hyperkalemia
- weakness
- palpitations
- ECG changes
- arrhythmia risk

Potassium danger can be immediate.

Acid-Base Regulation

The kidneys help maintain acid-base balance.

Signals include:

- metabolic acidosis
- tachypnea
- weakness
- shock or severe illness context
- respiratory compensation

Fluid Balance

The kidneys may not maintain safe volume.

Signals include:

- edema
- pulmonary edema
- low urine output
- hypertension
- breathlessness
- or dehydration if kidney injury follows fluid loss

Blood Pressure Regulation

AKI may occur because blood pressure is too low, or it may worsen high blood pressure.

Signals include:

- hypotension
- severe hypertension
- orthostatic symptoms
- renal vascular disease context

Medicine Safety

Many medicines become more dangerous in AKI.

Signals include:

- sedation
- hypoglycemia
- bleeding risk
- electrolyte disturbance
- toxicity
- prolonged drug effect

Dignity and Participation

AKI may lead to hospitalization, catheterization, fluid restriction, dialysis discussion, fear, and loss of independence.

The patient needs explanation, not only numbers.

7. Bedside Assessment of AKI

Look First

Observe:

- dehydration
- fluid overload
- breathlessness
- edema
- confusion
- sepsis signs
- pain
- urinary discomfort
- catheter bag output
- frailty

- weakness
- vomiting or diarrhea
- rash
- jaundice
- muscle tenderness

The first look should ask:

Dry, wet, septic, obstructed, toxic, or medicine-injured?

Vital Signs

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- urine output
- weight trend where available
- fluid balance where admitted
- glucose where relevant

AKI with abnormal vital signs is higher risk.

Fluid Status Assessment

Assess for dehydration:

- thirst
- dry mucosa
- reduced skin turgor where useful
- dizziness
- low blood pressure
- tachycardia
- poor intake
- vomiting or diarrhea
- concentrated urine

Assess for fluid overload:

- edema
- crackles
- raised venous pressure where present
- orthopnea
- rapid weight gain

- high blood pressure
- pulmonary edema

Important:

A patient can be edematous and still have poor effective arterial circulation, especially in heart failure, cirrhosis, nephrotic syndrome, or sepsis.

Do not oversimplify fluid status.

Urine Output

Ask:

- How much urine is being passed?
- Has it reduced?
- Is there pain or difficulty passing urine?
- Is there urgency or frequency?
- Is there blood?
- Is urine dark?
- Is there a catheter?
- Is the catheter blocked?
- Is there suprapubic pain?
- Is there known prostate disease or pelvic malignancy?

Urine output is a vital sign for kidney capacity.

Medicine Review

Review all medicines, including over-the-counter and herbal products.

Important groups include:

- NSAIDs
- ACE inhibitors
- ARBs
- diuretics
- mineralocorticoid receptor antagonists
- antibiotics with kidney effects
- contrast exposure
- metformin in relevant acute illness contexts
- insulin and sulfonylureas because hypoglycemia risk may rise
- anticoagulants because bleeding risk may change
- opioids and sedatives because accumulation may occur
- lithium
- chemotherapy
- immunosuppressants
- supplements or herbal nephrotoxins

Ask:

Which medicine became unsafe because the patient became acutely ill?

8. Physical Examination

Examine for cause and consequence.

Assess:

- hydration
- edema
- lungs for crackles
- heart failure signs
- blood pressure pattern
- fever source
- abdomen
- bladder distension
- flank tenderness
- prostate or pelvic context where relevant and appropriate
- skin rash
- joint swelling
- signs of vasculitis
- muscle tenderness or swelling
- signs of chronic liver disease
- neurological state
- catheter function
- wounds or infection sites

AKI is often a whole-body syndrome. The kidney number is the clue, not the whole story.

9. Initial Investigations

Investigations depend on severity and suspected cause.

Common investigations may include:

- repeat renal function and electrolytes
- potassium
- bicarbonate or acid-base status where severe illness is suspected
- glucose
- full blood count
- inflammatory markers where infection or inflammation is possible
- urinalysis for blood, protein, glucose, ketones, specific gravity where useful

- urine microscopy where available and indicated
- urine culture if infection is suspected
- creatine kinase where rhabdomyolysis is possible
- liver tests where systemic illness, cirrhosis, or hepatorenal context is possible
- ECG where potassium abnormality or severe illness is suspected
- blood gas where acidosis, shock, respiratory distress, or severe AKI is present
- renal ultrasound where obstruction, hydronephrosis, single kidney, uncertain cause, or persistent AKI is possible
- bladder scan where retention is possible
- autoimmune or glomerulonephritis tests where hematuria, proteinuria, hypertension, systemic features, or pulmonary-renal features exist
- drug levels where relevant and available
- imaging or cultures guided by sepsis source

Testing should answer:

- Is potassium dangerous?
- Is there acidosis?
- Is the patient fluid overloaded or depleted?
- Is urine output low?
- Is obstruction present?
- Is infection present?
- Is there intrinsic renal disease?
- Are medicines contributing?
- Is dialysis-level support being approached?
- What must be done now?

10. Dangerous Diagnoses Not to Miss

Hyperkalemia

Clues:

- AKI
- low urine output
- CKD
- potassium-raising medicines
- acidosis
- muscle breakdown
- weakness
- palpitations
- ECG changes

Capacity failure:

Potassium regulation and **electrical stability**

Wise action:

Check potassium urgently when AKI is significant. Obtain ECG when indicated. Treat according to local hyperkalemia protocol. Identify and stop contributors where appropriate.

Pulmonary Edema

Clues:

- breathlessness
- orthopnea
- crackles
- hypoxia
- edema
- fluid overload
- low urine output
- heart failure or kidney failure context

Capacity failure:

Fluid balance, **oxygenation**, **circulation**

Wise action:

Assess oxygenation, volume status, renal function, potassium, and need for urgent escalation. Treat according to local heart-kidney guidance.

Obstructed Kidney or Urinary Retention

Clues:

- low urine output
- suprapubic pain
- enlarged bladder
- prostate symptoms
- catheter blockage
- hydronephrosis
- flank pain
- single kidney
- pelvic malignancy

Capacity failure:

Urine drainage and **clearance**

Wise action:

Bladder scan, catheter assessment where relevant, renal imaging where indicated, and urgent relief of obstruction according to local pathway.

Obstructed Infected Kidney

Clues:

- fever
- flank pain
- sepsis
- stone history
- hydronephrosis
- AKI
- vomiting
- hypotension

Capacity failure:

Defense, **urine drainage**, **clearance**, **circulation**

Wise action:

This is high-risk. Treat sepsis according to local guidance and involve urology/emergency services urgently for source control.

Severe Dehydration or Shock

Clues:

- vomiting
- diarrhea
- poor intake
- bleeding
- hypotension
- tachycardia
- oliguria
- dizziness
- dry mucosa
- confusion

Capacity failure:

Circulation, **hydration**, **kidney perfusion**, **clearance**

Wise action:

Restore perfusion carefully, reassess after each intervention, and monitor urine output, lungs, renal function, and electrolytes.

Rhabdomyolysis

Clues:

- muscle pain
- dark urine
- weakness
- trauma
- immobilization
- seizures
- heat illness
- strenuous exertion
- toxins or medicines
- high creatine kinase where measured

Capacity failure:

Tubular kidney function, **potassium regulation**, **fluid balance**

Wise action:

Assess severity, potassium, renal function, urine output, fluid needs, and complications according to local pathway.

Glomerulonephritis or Vasculitis

Clues:

- hematuria
- proteinuria
- edema
- hypertension
- AKI
- rash
- joint pains
- hemoptysis
- systemic illness

Capacity failure:

Filtration, **vascular integrity**, **clearance**, **blood pressure regulation**

Wise action:

Urgent renal evaluation where suspected. Do not treat as simple dehydration if urine findings and systemic features suggest intrinsic disease.

Medication Toxicity

Clues:

- AKI
- new medicine
- dehydration
- polypharmacy
- CKD
- confusion
- hypoglycemia
- bleeding
- high drug levels where measured
- bradycardia or hypotension depending on medicine

Capacity failure:

Clearance and **medicine safety**

Wise action:

Review all medicines. Hold, adjust, reverse, or monitor harmful medicines according to clinical context and local guidance.

11. Wise Perturbation in AKI

Treatment depends on cause and danger.

Do not give fluids reflexively.

Do not give diuretics reflexively.

Do not ignore potassium.

Ask:

- Is the patient dry, overloaded, obstructed, septic, bleeding, or intrinsically kidney-injured?
- Is potassium safe?
- Is acid-base status safe?
- Is oxygenation safe?
- Is urine output adequate?
- Are medicines worsening AKI?
- Is obstruction present?
- Does the patient need urgent specialist input?
- What will show repair?

Fluids

Fluids may help AKI caused by dehydration, hypovolemia, or sepsis-related hypoperfusion.

But fluids can harm if the patient is overloaded, has heart failure, pulmonary edema, or severe kidney failure.

Use reassessment:

- blood pressure
- pulse
- lungs
- oxygenation
- urine output
- edema
- weight
- renal function
- electrolytes

The question is:

Did the fluid restore perfusion, or did it create overload?

Diuretics

Diuretics may help fluid overload.

They do not automatically repair kidney injury.

Monitor:

- breathlessness
- urine output
- weight
- blood pressure
- renal function
- electrolytes
- dizziness
- perfusion

Relieving Obstruction

If obstruction is present, kidney repair depends on drainage.

This may require:

- catheter management
- relief of retention
- urology input
- imaging

- decompression of obstructed kidney

Obstruction must not be missed because it can be reversible.

Medicine Review

A wise AKI plan usually includes medicine review.

Consider holding, reducing, or monitoring medicines that become unsafe during AKI, depending on context.

Examples include medicines affecting:

- kidney perfusion
- potassium
- fluid balance
- glucose
- bleeding risk
- sedation
- drug clearance

Any medicine changes must be documented clearly and restarted thoughtfully when safe.

Treating Sepsis or Underlying Illness

If sepsis, bleeding, heart failure, liver disease, or metabolic illness caused AKI, treating the kidney number alone will fail.

Treat the whole syndrome.

Escalation

Seek senior, renal, urology, intensive care, or emergency input when there is:

- dangerous hyperkalemia
- pulmonary edema
- severe acidosis
- anuria
- rapidly worsening AKI
- suspected obstruction with infection
- glomerulonephritis
- severe rhabdomyolysis
- uremic complications
- AKI in advanced CKD
- diagnostic uncertainty with deterioration
- possible need for dialysis-level support

Escalation is not failure. It is protection of capacity.

12. Repair Trajectory in AKI

Repair is shown by more than creatinine improvement.

Repair markers include:

- potassium safe
- acid-base status safer
- urine output improving
- creatinine stabilizing or falling
- breathlessness improving if overloaded
- edema improving where appropriate
- dehydration corrected where present
- blood pressure stable
- sepsis controlled
- obstruction relieved
- nephrotoxic medicines stopped or adjusted
- medication plan safe
- glucose safe
- mental state clear
- appetite improving
- patient understands sick-day and medicine instructions
- follow-up blood tests arranged
- baseline kidney function clarified

AKI recovery may lag behind clinical improvement.

A patient may feel better while creatinine is still abnormal.

A patient may have improving creatinine but unsafe potassium or medicines.

Repair must include the whole kidney safety field.

13. Discharge Safety After AKI

Discharge after AKI requires care.

Ask:

- Is creatinine stable or improving?
- Is potassium safe?
- Is urine output adequate?
- Is the patient eating and drinking?
- Is fluid overload controlled?

- Has obstruction been relieved or excluded?
- Have medicines been reviewed?
- Which medicines should remain stopped?
- Which medicines should restart later?
- Who will repeat blood tests?
- When will blood tests be repeated?
- Does the patient understand warning signs?
- Is there follow-up for CKD risk?
- Is the patient safe at home?

Discharge is unsafe if the patient leaves with unclear medicine changes and no plan to recheck renal function.

14. Safety-Netting in AKI

Safety-netting should be specific.

Advise urgent review if there is:

- very little or no urine
- worsening breathlessness
- chest pain
- palpitations
- fainting
- confusion or drowsiness
- severe weakness
- persistent vomiting or diarrhea
- inability to drink
- swelling rapidly worsening
- fever or rigors
- flank pain with fever
- blood in urine
- severe muscle pain or dark urine
- dizziness after medicine changes
- high or low glucose symptoms
- worsening blood pressure symptoms
- recurrence after discharge

Also explain:

- what caused or may have caused AKI
- what medicines were stopped or changed
- what medicines must not be restarted without advice
- what blood tests need repeating
- what fluid advice applies
- what symptoms mean danger
- who owns follow-up

Use teach-back:

“Can you tell me which kidney warning signs would make you seek urgent help?”

15. Worked Case 1: AKI With Vomiting and NSAID Use

A 70-year-old man presents after three days of vomiting and poor intake. He has CKD and arthritis. He has continued ibuprofen and his usual blood pressure tablets. His creatinine has risen, and he has passed little urine.

Danger

AKI on CKD, dehydration, hyperkalemia, medication-related kidney injury, hypotension, electrolyte disturbance.

Syndrome

AKI with volume depletion, CKD, oliguria, and NSAID exposure during acute illness.

Capacity Failure

Hydration, circulation to the kidney, clearance, potassium regulation, medicine safety.

Coupling Conditions

CKD, vomiting, poor intake, NSAID use, antihypertensives, age, pain, sick-day knowledge, access to follow-up.

Wise Perturbation

Assess vital signs, fluid status, urine output, potassium, renal function, acid-base status if severe, and medicine list. Restore hydration carefully if depleted, stop harmful contributors where appropriate, monitor electrolytes and urine output, and arrange follow-up.

Repair Trajectory

Urine output improves, creatinine stabilizes or falls, potassium remains safe, vomiting settles, medicine plan revised, patient understands what to do during future illness.

16. Worked Case 2: AKI With Breathlessness and Edema

A 78-year-old woman with heart failure presents with swollen legs, orthopnea, crackles, low oxygen saturation, and rising creatinine.

Danger

Pulmonary edema, cardiorenal syndrome, hyperkalemia, respiratory failure, arrhythmia or ACS trigger.

Syndrome

AKI with fluid overload and heart failure.

Capacity Failure

Circulation, oxygenation, clearance, fluid balance.

Coupling Conditions

Heart failure, CKD, diuretics, salt intake, medication adherence, arrhythmia, ischemia, frailty, home support.

Wise Perturbation

Assess oxygenation, ECG, potassium, renal function, fluid status, urine output, blood pressure, and triggers. Treat congestion according to local guidance while monitoring renal function and electrolytes closely.

Repair Trajectory

Breathlessness improves, oxygen requirement decreases, edema reduces, urine output adequate, potassium safe, creatinine stabilizes, trigger addressed.

17. Worked Case 3: AKI With Urinary Retention

An 82-year-old man presents with confusion, lower abdominal discomfort, and reduced urine output. His bladder is distended. Creatinine is elevated.

Danger

Post-renal AKI from urinary retention, delirium, hyperkalemia, infection, bladder injury.

Syndrome

AKI with urinary retention, discomfort, and confusion.

Capacity Failure

Urine drainage, clearance, comfort, cognition, dignity.

Coupling Conditions

Prostate disease, anticholinergic medicines, constipation, immobility, frailty, infection, catheter access and follow-up.

Wise Perturbation

Assess vitals, glucose, potassium, renal function, infection, bladder volume, and medicines. Relieve retention according to local practice. Monitor for urine output, electrolytes, renal recovery, and post-obstruction complications.

Repair Trajectory

Urine drains, discomfort improves, confusion clears, creatinine stabilizes or improves, potassium safe, cause of retention addressed.

18. Worked Case 4: AKI With Fever and Flank Pain

A 56-year-old woman presents with fever, vomiting, right flank pain, low blood pressure, and AKI. She has a history of kidney stones.

Danger

Obstructed infected kidney, pyelonephritis with sepsis, shock, AKI, hyperkalemia.

Syndrome

AKI with fever, flank pain, vomiting, hypotension, and stone risk.

Capacity Failure

Defense, urinary drainage, clearance, circulation.

Coupling Conditions

Stone disease, dehydration, sepsis, kidney function, access to imaging and urology, antibiotic timing, diabetes if present.

Wise Perturbation

Urgent sepsis assessment and treatment according to local guidance, renal function and potassium assessment, cultures where appropriate and safe, imaging for obstruction, and early urology/emergency input if obstruction is suspected.

Repair Trajectory

Blood pressure stabilizes, fever settles, pain improves, obstruction relieved if present, urine output adequate, renal function improves, infection controlled.

19. Worked Case 5: AKI With Blood and Protein in Urine

A 39-year-old patient presents with AKI, high blood pressure, leg swelling, blood and protein on urine testing, and joint pains.

Danger

Glomerulonephritis, vasculitis, rapidly progressive kidney disease, severe hypertension.

Syndrome

AKI with hematuria, proteinuria, edema, hypertension, and systemic symptoms.

Capacity Failure

Filtration, vascular integrity, clearance, blood pressure regulation.

Coupling Conditions

Autoimmune symptoms, infection history, medicines, family history, access to renal assessment, severity of hypertension.

Wise Perturbation

Urgent renal evaluation, repeat urine assessment, renal function and electrolytes, blood pressure management according to local practice, and targeted immune/infectious workup. Avoid treating as simple dehydration.

Repair Trajectory

Diagnosis clarified, kidney injury stabilized, blood pressure controlled, proteinuria/hematuria monitored, renal follow-up secured.

20. Common Student Pitfalls

Pitfall 1: Treating Creatinine Instead of the Patient

AKI is not only a lab value. Assess urine output, potassium, fluid status, medicines, and cause.

Pitfall 2: Giving Fluids to Everyone

Fluids help some AKI and harm others. Fluid overload can worsen oxygenation.

Pitfall 3: Missing Hyperkalemia

Potassium danger can kill before creatinine becomes the main issue.

Pitfall 4: Forgetting Obstruction

Urinary retention and obstructed kidneys are reversible causes that must be checked.

Pitfall 5: Ignoring Medicines

AKI makes many usual medicines unsafe.

Pitfall 6: Missing Sepsis

Low urine output may be an early sign of poor perfusion in sepsis.

Pitfall 7: Missing Intrinsic Kidney Disease

Hematuria, proteinuria, rash, joint pain, and hypertension suggest more than dehydration.

Pitfall 8: Discharging Without a Kidney Plan

AKI needs follow-up blood tests and medicine reconciliation.

21. Clinical Practice Box

When assessing AKI, complete this structure:

Baseline kidney function:
Known or unknown? Acute or acute-on-chronic?

Current danger:
Potassium, acidosis, pulmonary edema, oliguria/anuria, confusion, sepsis, obstruction?

Urine output:

Fluid status:
Dry, overloaded, mixed, uncertain?

Likely mechanism:
Before kidney, in kidney, or after kidney?

Medicines and toxins:
NSAIDs, ACE inhibitor/ARB, diuretics, antibiotics, contrast, diabetes medicines, lithium, supplements?

Urine findings:
Protein, blood, infection, casts if available?

Initial investigations:
Renal function, potassium, ECG if needed, urine, cultures, CK, imaging, bladder scan, others?

Wise perturbation:
Fluids, diuresis, relieve obstruction, stop harmful medicines, treat sepsis, manage potassium, escalate?

Repair trajectory:
Creatinine, urine output, potassium, fluid status, symptoms, medicines, follow-up?

22. Mini-Case for Practice

A 73-year-old woman with diabetes, hypertension, and CKD presents with diarrhea and poor intake for four days. She has continued taking ibuprofen for back pain, a diuretic, and her usual blood pressure medicines. She is dizzy when standing and has passed very little urine. Blood tests show AKI and elevated potassium.

Apply the AKI approach.

Danger

AKI on CKD, hyperkalemia, dehydration, medication-related kidney injury, hypotension, electrolyte disturbance, possible sepsis depending on context.

Syndrome

AKI with volume depletion, oliguria, CKD, diarrhea, poor intake, NSAID exposure, diuretic use, and elevated potassium.

Capacity Failure

Hydration, circulation to the kidneys, clearance, potassium regulation, medicine safety, mobility safety.

Coupling Conditions

CKD, diabetes, diarrhea, poor intake, NSAID use, diuretic, antihypertensives, age, back pain, sick-day understanding, access to follow-up.

Wise Perturbation

Assess vital signs, fluid status, ECG if potassium is concerning, repeat potassium, renal function, urine output, glucose, infection features, and medicine list. Treat hyperkalemia according to local protocol if needed. Restore hydration carefully if volume depleted. Stop or hold harmful contributors where appropriate. Monitor urine output, electrolytes, renal function, blood pressure, and signs of overload.

Repair Trajectory

Potassium becomes safe, dizziness improves, urine output increases, creatinine stabilizes or falls, diarrhea resolves, medicines are restarted only when safe, and follow-up blood tests are arranged.

23. Student Takeaway

AKI becomes easier when the clinician asks:

Is potassium safe?
Is the patient making urine?

Is the patient dry, overloaded, septic, obstructed, or intrinsically kidney-injured?
What was the baseline kidney function?
Which medicines are helping, and which have become harmful?
Is obstruction present?
Is there blood or protein in the urine?
What capacity is failing: clearance, potassium balance, acid-base balance, fluid balance, medicine safety, or circulation?
How will kidney repair be monitored?

AKI is not only a rise in creatinine.

It is a warning that the body's internal chemistry, fluid balance, medicine safety, and survival reserve may be unstable.

The safe clinician treats the cause, protects against danger, reviews medicines, monitors the trajectory, and makes sure kidney recovery is not lost after discharge.

Chapter 24. Polyuria and Polydipsia Made Easy

Polyuria means passing an abnormally large amount of urine.

Polydipsia means excessive thirst or fluid intake.

Patients may say:

“I am always thirsty.”
“I am passing urine all the time.”
“I wake up all night to urinate.”
“My mouth is dry.”
“I cannot stop drinking water.”
“I am losing weight.”
“My sugar may be high.”
“I feel weak and dehydrated.”

Polyuria and polydipsia are common, but they should not be dismissed.

They may signal uncontrolled diabetes, hypercalcemia, kidney concentrating problems, diuretic use, diabetes insipidus, primary polydipsia, chronic kidney disease, electrolyte disturbance, pregnancy-related changes where relevant, or recovery from acute kidney injury.

The first task is not simply to tell the patient to drink less.

The first task is to ask:

Is the patient losing water because of glucose, salt, kidney disease, hormones, medicines, or excess intake — and is the body’s internal balance safe?

Polyuria and polydipsia become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Dangerous?

Polyuria and polydipsia become dangerous when water loss, glucose disturbance, sodium disturbance, kidney dysfunction, or dehydration threatens circulation, cognition, energy, or life.

Dangerous causes and contexts include:

- severe hyperglycemia
- diabetic ketoacidosis
- hyperosmolar hyperglycemic state
- severe dehydration
- acute kidney injury

- hypernatremia
- hyponatremia
- hypercalcemia
- diabetes insipidus
- adrenal or endocrine disturbance
- severe infection causing hyperglycemia
- osmotic diuresis from medicines or solutes
- diuretic overuse
- post-obstructive diuresis
- recovery phase after acute tubular injury
- lithium-related concentrating defect
- psychiatric or behavioral excess water intake with hyponatremia risk
- frailty with inability to access fluids or toilet safely
- unsafe nocturia with falls
- pregnancy-related diabetes or dehydration where relevant

The danger-first question is:

Is the patient becoming dehydrated, hyperglycemic, hyponatremic, hypernatremic, confused, weak, or unsafe?

2. Immediate Red Flags

Urgent assessment is needed when polyuria or polydipsia is associated with:

- severe thirst with dehydration
- confusion or drowsiness
- vomiting
- abdominal pain
- rapid deep breathing
- severe weakness
- fainting or severe dizziness
- very high glucose
- ketones where diabetes is present or suspected
- rapid weight loss
- low blood pressure
- tachycardia
- reduced urine output after a period of polyuria
- very high or very low sodium
- severe hypercalcemia symptoms
- known diabetes with acute illness
- new diabetes symptoms in a child, young adult, pregnant person, or frail older person
- fever or sepsis symptoms
- recent head injury, brain surgery, pituitary disease, or severe neurological illness
- lithium use
- diuretic use with dizziness or electrolyte abnormality
- nocturia causing falls

- inability to drink enough to match losses

Polyuria with thirst is the body asking for water.

Polyuria with confusion or dehydration means compensation may be failing.

3. Polyuria Is Not the Same as Frequency

Students often confuse polyuria with urinary frequency.

Polyuria

Polyuria means high total urine volume.

The patient passes large amounts of urine.

Possible causes include:

- diabetes mellitus
- diabetes insipidus
- primary polydipsia
- hypercalcemia
- hypokalemia
- diuretics
- kidney concentrating defects
- post-obstructive diuresis
- recovery from AKI
- excess fluid intake

Urinary Frequency

Frequency means passing urine often, but each amount may be small.

Possible causes include:

- urinary tract infection
- bladder irritation
- overactive bladder
- prostate disease
- pregnancy-related pressure where relevant
- anxiety
- high caffeine intake
- incomplete emptying
- urinary retention with overflow

The key question is:

Is the patient passing large total volumes, or passing small amounts frequently?

A simple practical question is:

“When you pass urine, is it a large amount each time or just a little?”

4. Polyuria and Polydipsia Are Syndromes, Not Diagnoses

The clinician must form a syndrome.

Ask:

- How long has this been happening?
- How many times per day?
- How many times at night?
- Are urine volumes large?
- How much fluid is the patient drinking?
- Is thirst intense?
- Is there weight loss?
- Is there fatigue?
- Is there blurred vision?
- Is there nausea, vomiting, or abdominal pain?
- Is there rapid breathing?
- Is there fever or infection?
- Is there confusion?
- Is there dizziness on standing?
- Is there known diabetes?
- Are glucose readings high?
- Are there ketones?
- Is there kidney disease?
- Are there diuretics?
- Is there lithium use?
- Is there high calcium history?
- Is there head injury, pituitary disease, neurosurgery, or brain tumor history?
- Is the patient drinking because of thirst or habit?
- What are the sodium, glucose, calcium, potassium, and kidney function?
- Is the patient safe at night with toileting?

The goal is to move from:

“The patient urinates a lot”

to:

“This is new large-volume polyuria with thirst, weight loss, blurred vision, and high glucose.”

or:

“This is large-volume dilute urine after pituitary surgery with rising sodium.”

or:

“This is nocturia and frequency with small volumes, dysuria, and urgency.”

The syndrome changes the diagnosis.

5. Common Syndrome Patterns

Polyuria With Thirst, Weight Loss, and Blurred Vision

Pattern:

- thirst
- large-volume urination
- nocturia
- weight loss
- fatigue
- blurred vision
- recurrent infections
- high glucose where measured

Possible causes:

- diabetes mellitus
- severe hyperglycemia
- diabetic ketoacidosis if vomiting, abdominal pain, ketones, or deep breathing are present
- hyperosmolar hyperglycemic state especially in older or frail patients

Threatened capacities:

Glucose regulation, **hydration**, **energy**, **clearance**, **defense**, and **cognition**.

Polyuria With Vomiting or Abdominal Pain in Diabetes

Pattern:

- known or suspected diabetes
- vomiting
- abdominal pain
- thirst
- polyuria
- dehydration
- rapid deep breathing
- drowsiness or confusion

- ketones where measured

Possible cause:

- diabetic ketoacidosis

Threatened capacities:

Energy regulation, **acid-base regulation**, **hydration**, **circulation**, and **cognition**.

This is high-risk.

Polyuria With Severe Thirst and Dilute Urine

Pattern:

- very large urine volumes
- intense thirst
- preference for cold water in some cases
- nocturia
- dehydration if water access is limited
- high sodium if intake cannot keep up
- history of pituitary disease, head injury, neurosurgery, lithium, or kidney disease may be present

Possible causes:

- central diabetes insipidus
- nephrogenic diabetes insipidus
- kidney concentrating defect

Threatened capacities:

Water balance, **sodium regulation**, **circulation**, **cognition**.

Excess Drinking With Low Sodium

Pattern:

- very high water intake
- frequent urination
- possible psychiatric illness or behavioral pattern
- low sodium where measured
- headache, nausea, confusion, seizure in severe cases

Possible cause:

- primary polydipsia with hyponatremia risk

Threatened capacities:

Sodium regulation, **brain regulation**, **cognition**, and **safety**.

Polyuria With High Calcium Symptoms

Pattern:

- thirst
- polyuria
- constipation
- nausea
- abdominal pain
- bone pain
- fatigue
- confusion
- kidney stones
- dehydration

Possible causes:

- hypercalcemia from malignancy, hyperparathyroidism, vitamin D excess, granulomatous disease, medicines, or other causes

Threatened capacities:

Calcium regulation, **kidney concentrating ability**, **clearance**, **cognition**, **comfort**.

Polyuria After Relief of Urinary Obstruction

Pattern:

- recent catheterization or obstruction relief
- very high urine output
- thirst
- dizziness
- electrolyte disturbance
- AKI recovery

Possible cause:

- post-obstructive diuresis

Threatened capacities:

Fluid balance, **electrolyte regulation**, **circulation**, **clearance**.

Nocturia Without True Polyuria

Pattern:

- waking at night to pass urine
- small or moderate volumes
- urgency or poor stream
- edema redistributing at night
- sleep disruption
- heart failure, sleep apnea, prostate disease, bladder disorder, evening diuretics, or high evening fluid intake may contribute

Possible causes:

- nocturnal polyuria
- prostate disease
- overactive bladder
- heart failure
- sleep apnea
- evening diuretic effect
- insomnia with opportunistic voiding

Threatened capacities:

Sleep, **mobility**, **falls safety**, **comfort**, and **participation**.

Frequency With Dysuria

Pattern:

- frequent small-volume urination
- burning
- urgency
- suprapubic pain
- fever or flank pain if upper infection
- not necessarily high total urine volume

Possible causes:

- urinary tract infection
- cystitis
- prostatitis where relevant
- urethritis where relevant
- bladder irritation

Threatened capacities:

Comfort, **defense**, **urinary drainage**, and sometimes **clearance** if upper infection or obstruction exists.

6. Capacity Failure in Polyuria and Polydipsia

Polyuria and polydipsia matter because water balance is central to life.

Hydration

The patient may not be able to replace urinary losses.

Signals include:

- thirst
- dry mouth
- dizziness
- tachycardia
- hypotension
- reduced skin turgor where useful
- weakness
- confusion
- rising creatinine

Glucose Regulation

High glucose can pull water into urine.

Signals include:

- thirst
- polyuria
- weight loss
- blurred vision
- infections
- fatigue
- ketones or metabolic decompensation where severe

Sodium Regulation

Water loss or excess water intake can disturb sodium.

Signals include:

- confusion
- headache
- lethargy
- seizures
- severe thirst
- dehydration
- very dilute or very concentrated urine depending on cause

Kidney Concentrating Ability

The kidneys may be unable to concentrate urine.

Signals include:

- large volumes of dilute urine
- nocturia
- high sodium if water intake insufficient
- lithium exposure
- kidney disease
- diabetes insipidus

Circulation

Severe water loss reduces circulating volume.

Signals include:

- dizziness
- syncope
- hypotension
- tachycardia
- AKI
- poor perfusion

Sleep and Mobility

Nocturia may cause:

- insomnia
- falls
- fatigue
- fear of drinking
- reduced daytime function
- caregiver burden

Agency and Dignity

Frequent urination may cause embarrassment, social withdrawal, anxiety about travel, work disruption, and loss of independence.

The clinician should ask:

How has this changed the patient's daily life?

7. Bedside Assessment

Look First

Observe:

- dehydration
- weakness
- confusion
- weight loss
- drowsiness
- rapid breathing
- distress
- frailty
- ability to drink
- mobility and falls risk
- access to toilet
- evidence of infection

The patient who is thirsty and alert is different from the patient who is thirsty, vomiting, confused, and breathing deeply.

Vital Signs

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- weight
- glucose
- urine output if measured
- postural symptoms where safe

Glucose should be checked early when thirst and polyuria are present.

Confirm Volume of Urine

Ask:

- How many times do you pass urine in 24 hours?
- Is each amount large?
- How many times at night?
- How much do you drink in a day?

- Do you wake because you need to urinate, or are you awake and then decide to urinate?
- Is urine pale and dilute?
- Is there urgency or burning?
- Is there poor stream?
- Is there leakage?
- Has there been recent catheterization or obstruction relief?

A fluid diary may be useful when the diagnosis is unclear.

Clarify Thirst

Ask:

- Are you drinking because you are intensely thirsty?
- Are you drinking because your mouth is dry?
- Are you drinking out of habit?
- Are you drinking to prevent symptoms?
- Do you crave cold water?
- What happens if you cannot access water?
- Do you drink through the night?

Intense thirst suggests water loss or osmotic disturbance.

Habitual intake may suggest primary polydipsia, anxiety, dry mouth, or medication effect.

Medicine Review

Important contributors include:

- diuretics
- SGLT2 inhibitors where used
- lithium
- steroids
- antipsychotics causing dry mouth or polydipsia
- anticholinergics causing dry mouth
- caffeine
- alcohol
- high-dose vitamin D or calcium supplements
- osmotic agents
- recent IV fluids
- medicines affecting glucose
- medicines affecting kidney function

Ask what changed before the symptom began.

8. Physical Examination

Examine for cause and consequence.

Assess:

- hydration
- weight loss
- oral dryness
- blood pressure and postural symptoms
- mental state
- respiratory pattern
- abdominal tenderness
- signs of infection
- skin infections or candidiasis
- foot infection in diabetes
- thyroid signs
- signs of hypercalcemia such as dehydration or confusion
- neurological signs if pituitary, hypothalamic, or brain disease is possible
- edema and heart failure signs if nocturia or fluid redistribution is present
- bladder distension if urinary retention or overflow is possible
- frailty and mobility safety

The examination should determine whether the patient is dry, overloaded, infected, metabolically unstable, or neurologically vulnerable.

9. Initial Investigations

Investigations depend on severity and syndrome.

Common investigations may include:

- capillary or plasma glucose
- urine dipstick for glucose, ketones, infection, protein, and specific gravity where available
- ketones where diabetes or metabolic illness is possible
- renal function and electrolytes
- sodium
- potassium
- calcium
- bicarbonate or blood gas where DKA, acidosis, or severe illness is possible
- HbA1c where diabetes assessment is needed and the setting is appropriate
- serum and urine osmolality where diabetes insipidus or primary polydipsia is suspected
- urine sodium or other urine studies where clinically appropriate
- full blood count and inflammatory markers where infection or systemic illness is possible
- thyroid function where suggested by symptoms
- pregnancy testing where relevant
- medication levels such as lithium where relevant and available
- pituitary or brain imaging pathway where central diabetes insipidus or pituitary disease is suspected

- renal imaging where obstruction, post-obstructive state, or structural disease is suspected

Testing should answer:

- Is glucose high?
- Are ketones present?
- Is sodium high or low?
- Is calcium high?
- Is kidney function safe?
- Is urine dilute or concentrated?
- Is there infection?
- Is this osmotic diuresis, water diuresis, urinary frequency, or nocturia?
- Does the patient need urgent treatment?

10. Dangerous Diagnoses Not to Miss

Diabetic Ketoacidosis

Clues:

- diabetes or new diabetes symptoms
- thirst
- polyuria
- weight loss
- vomiting
- abdominal pain
- dehydration
- rapid deep breathing
- ketones
- confusion or drowsiness

Capacity failure:

Glucose regulation, **acid-base regulation**, **hydration**, **circulation**, **cognition**

Wise action:

Urgent assessment and treatment according to local DKA protocol. Do not treat as simple gastroenteritis.

Hyperosmolar Hyperglycemic State

Clues:

- severe hyperglycemia
- profound dehydration

- polyuria
- thirst
- older age or frailty
- infection trigger
- confusion or drowsiness
- minimal ketosis compared with DKA in many cases

Capacity failure:

Glucose regulation, **water balance**, **circulation**, **cognition**, **clearance**

Wise action:

Urgent assessment, careful fluid and electrolyte management according to local protocol, search for trigger, and close monitoring.

Diabetes Insipidus

Clues:

- very large volumes of dilute urine
- intense thirst
- nocturia
- high sodium if unable to drink enough
- pituitary disease, head injury, neurosurgery, brain disease, lithium, or kidney concentrating defect context

Capacity failure:

Water balance, **sodium regulation**, **circulation**, **cognition**

Wise action:

Check sodium, osmolality pattern where available, hydration status, medication history, and seek specialist input where suspected.

Hypercalcemia

Clues:

- thirst
- polyuria
- constipation
- abdominal pain
- nausea
- confusion
- weakness
- kidney stones

- dehydration
- malignancy or hyperparathyroidism context

Capacity failure:

Calcium regulation, **kidney concentrating ability**, **clearance**, **cognition**, **comfort**

Wise action:

Check calcium, renal function, hydration, severity, ECG where relevant, and treat according to local hypercalcemia pathway.

Severe Hyponatremia From Excess Water Intake

Clues:

- excessive fluid intake
- headache
- nausea
- confusion
- seizure
- low sodium
- psychiatric illness or behavioral water drinking in some cases

Capacity failure:

Sodium regulation, **brain regulation**, **cognition**, **safety**

Wise action:

Urgent assessment and correction according to local hyponatremia guidance. Avoid rapid correction without expertise.

Post-Obstructive Diuresis

Clues:

- recent relief of urinary obstruction
- very high urine output
- thirst
- dizziness
- electrolyte changes
- AKI recovery

Capacity failure:

Fluid balance, **sodium/potassium regulation**, **circulation**, **clearance**

Wise action:

Monitor urine output, fluid balance, blood pressure, renal function, and electrolytes. Replace losses carefully according to local guidance.

Diuretic-Related Dehydration or Electrolyte Disturbance

Clues:

- diuretic use
- thirst
- dizziness
- falls
- cramps
- weakness
- hyponatremia, hypokalemia, AKI, or dehydration
- poor intake or hot weather exposure

Capacity failure:

Fluid balance, **electrolyte regulation**, **circulation**, **mobility safety**

Wise action:

Review indication, dose, timing, intake, renal function, electrolytes, and falls risk.

11. Wise Perturbation

Treatment depends on the pattern.

Do not treat all polyuria by restricting water.

Do not treat all thirst as anxiety.

Ask:

- Is glucose high?
- Are ketones present?
- Is sodium high or low?
- Is calcium high?
- Is the patient dehydrated?
- Is urine truly high volume?
- Is urine dilute or concentrated?
- Are medicines contributing?
- Is there diabetes insipidus?
- Is this urinary frequency rather than polyuria?

- Is nocturia causing falls?
- What treatment restores balance without causing harm?

If Hyperglycemia Is Present

Treat according to severity.

Consider:

- DKA or hyperosmolar emergency
- infection trigger
- dehydration
- kidney function
- electrolytes
- medication adherence
- new diabetes education
- sick-day understanding
- follow-up

If Water Diuresis Is Suspected

Consider diabetes insipidus or primary polydipsia.

Do not advise severe water restriction without appropriate assessment, especially if diabetes insipidus is possible.

The wrong advice can cause dangerous sodium disturbance.

If Medicine-Related

Review:

- diuretic dose and timing
- lithium toxicity or chronic lithium effect
- SGLT2-related urinary symptoms or dehydration risk where used
- dry mouth medicines causing excess drinking
- caffeine and alcohol intake
- steroids causing hyperglycemia

Treatment may be as simple as changing timing, dose, or medicine — but only after understanding the cause.

If Nocturia Is the Main Problem

Assess:

- evening fluids

- diuretic timing
- heart failure or edema
- sleep apnea symptoms
- prostate or bladder symptoms
- diabetes
- falls risk
- lighting and toilet access
- mobility aids

Nocturia treatment should protect sleep and prevent falls.

If Frequency With Dysuria Is Present

Think urinary tract infection or bladder irritation rather than true polyuria.

Assess infection danger, urinary symptoms, fever, flank pain, pregnancy context where relevant, and obstruction risk.

12. Repair Trajectory

Repair is shown by:

- thirst improving
- urine volume normalizing
- nocturia reducing
- glucose becoming safer
- ketones clearing if present
- sodium stabilizing
- calcium correcting
- kidney function stable
- dizziness improving
- mental state clear
- hydration restored
- sleep improving
- falls risk reduced
- infection treated where present
- medicines adjusted safely
- patient understands fluid and medication advice
- follow-up labs arranged
- underlying cause identified

Repair is not simply fewer trips to the bathroom.

Repair means water balance, glucose, sodium, kidney function, sleep, mobility, and safety are restored.

13. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- vomiting
- abdominal pain
- rapid deep breathing
- confusion or drowsiness
- fainting
- severe weakness
- very high glucose
- ketones
- inability to keep up with thirst
- very little urine after previous polyuria
- severe dehydration
- fever or infection symptoms
- new severe headache
- seizure
- worsening falls or night-time confusion
- very high or low sodium symptoms if known
- worsening symptoms after medicine changes
- new pregnancy-related symptoms where relevant

Also explain:

- what cause is suspected
- what tests are being checked
- what fluid advice applies
- what medicines were changed
- when labs should be repeated
- who will review results
- when to return earlier

Use teach-back:

“Can you tell me what symptoms would make this thirst or urination problem urgent?”

14. Worked Case 1: New Diabetes Symptoms

A 48-year-old man presents with thirst, passing large volumes of urine, waking four times at night, weight loss, blurred vision, and fatigue.

Danger

Uncontrolled diabetes, dehydration, DKA if ketones or systemic symptoms are present, hyperosmolar state if severe.

Syndrome

Polyuria and polydipsia with weight loss, blurred vision, and fatigue.

Capacity Failure

Glucose regulation, hydration, energy, defense, kidney clearance.

Coupling Conditions

Diet, infection trigger, family history, weight, access to testing, health literacy, work schedule, ability to follow treatment.

Wise Perturbation

Check glucose, ketones where indicated, renal function, electrolytes, hydration, infection signs, and severity. Treat according to local diabetes guidance. Provide education, follow-up, and safety-netting.

Repair Trajectory

Thirst and urination reduce, glucose becomes safer, weight stabilizes, blurred vision improves, patient understands treatment and warning signs.

15. Worked Case 2: Vomiting and Polyuria in Type 1 Diabetes

A 22-year-old with type 1 diabetes presents with thirst, polyuria, vomiting, abdominal pain, and rapid breathing after missing insulin.

Danger

Diabetic ketoacidosis.

Syndrome

Polyuria and polydipsia with vomiting, abdominal pain, dehydration, rapid breathing, and insulin omission.

Capacity Failure

Glucose regulation, acid-base regulation, hydration, circulation, cognition.

Coupling Conditions

Insulin access, sick-day knowledge, vomiting, infection trigger, fear of taking insulin when not eating, social support.

Wise Perturbation

Urgent glucose, ketone, electrolyte, renal, and acid-base assessment. Treat according to local DKA protocol. Identify trigger and provide sick-day education.

Repair Trajectory

Ketones clear, acidosis resolves, hydration restored, vomiting stops, glucose safer, insulin plan restored, patient understands future sick-day management.

16. Worked Case 3: Large-Volume Dilute Urine After Pituitary Surgery

A 36-year-old patient develops intense thirst and very large volumes of pale urine after pituitary surgery. Sodium is rising.

Danger

Diabetes insipidus with hypernatremia and dehydration.

Syndrome

Large-volume dilute polyuria with intense thirst and rising sodium after pituitary surgery.

Capacity Failure

Water balance, sodium regulation, circulation, cognition.

Coupling Conditions

Recent surgery, access to water, monitoring intensity, neurological context, medication plan, specialist support.

Wise Perturbation

Monitor fluid balance, urine output, sodium, osmolality pattern where available, hydration, and mental state. Seek endocrine/neurosurgical guidance. Avoid unsafe water restriction.

Repair Trajectory

Urine volume controlled, thirst improves, sodium stabilizes, hydration maintained, neurological status safe, long-term plan clarified.

17. Worked Case 4: Nocturia and Falls

An 82-year-old man wakes five times nightly to urinate. He passes small to moderate amounts, has a weak stream, and recently fell on the way to the bathroom.

Danger

Falls, injury, urinary retention, nocturnal hypotension, sleep deprivation, frailty decline.

Syndrome

Nocturia with lower urinary tract symptoms and falls risk, not clearly true polyuria.

Capacity Failure

Sleep, mobility safety, urinary function, dignity, participation.

Coupling Conditions

Prostate symptoms, evening fluids, diuretic timing, sedatives, poor lighting, mobility impairment, home bathroom distance, caregiver support.

Wise Perturbation

Assess urinary symptoms, bladder emptying, medicines, blood pressure, mobility, falls risks, glucose if relevant, and home safety. Treat urinary and environmental contributors according to local practice.

Repair Trajectory

Night-time voids reduce, falls risk decreases, sleep improves, urinary symptoms managed, home safety improved.

18. Worked Case 5: Polyuria With Hypercalcemia

A 67-year-old woman reports thirst, polyuria, constipation, nausea, fatigue, and confusion. Calcium is high.

Danger

Severe hypercalcemia, dehydration, AKI, confusion, malignancy or endocrine disease.

Syndrome

Polyuria and polydipsia with constipation, nausea, confusion, and hypercalcemia.

Capacity Failure

Calcium regulation, hydration, kidney concentrating ability, clearance, cognition.

Coupling Conditions

Malignancy history, calcium or vitamin D supplements, thiazide use where relevant, kidney function, hydration, frailty.

Wise Perturbation

Assess severity, renal function, hydration, ECG where relevant, medicines, malignancy/endocrine clues, and treat according to local hypercalcemia guidance.

Repair Trajectory

Calcium improves, thirst and polyuria reduce, mental state clears, kidney function stabilizes, cause identified and treated.

19. Common Student Pitfalls

Pitfall 1: Confusing Frequency With Polyuria

Ask whether total urine volume is high.

Pitfall 2: Forgetting Glucose

Thirst and polyuria should trigger glucose assessment.

Pitfall 3: Missing DKA

Vomiting, abdominal pain, deep breathing, ketones, and diabetes symptoms are dangerous.

Pitfall 4: Telling Patients With Diabetes Insipidus to Drink Less

If water loss is hormonal or renal, restricting water can worsen hypernatremia.

Pitfall 5: Ignoring Sodium

Both high and low sodium can cause serious neurological symptoms.

Pitfall 6: Missing Hypercalcemia

Thirst, polyuria, constipation, weakness, and confusion are important clues.

Pitfall 7: Ignoring Nocturia Falls Risk

Night-time urination can cause serious injury in older patients.

Pitfall 8: Forgetting Medicines

Diuretics, lithium, steroids, SGLT2 inhibitors, anticholinergics, caffeine, alcohol, and supplements can all contribute.

20. Clinical Practice Box

When assessing polyuria and polydipsia, complete this structure:

Is it true polyuria or urinary frequency?
Large volumes or small frequent voids?

Fluid intake:
How much? Driven by thirst, dry mouth, habit, or fear?

Danger features:
Vomiting, abdominal pain, confusion, dehydration, deep breathing, high glucose, ketones, sodium disturbance, falls?

Syndrome pattern:
Hyperglycemia, water diuresis, primary polydipsia, nocturia, frequency/UTI, medicine-related, hypercalcemia?

Capacity failure:
Hydration, glucose regulation, sodium regulation, kidney concentrating ability, circulation, sleep, mobility, dignity?

Medicines:
Diuretics, lithium, steroids, SGLT2 inhibitors, anticholinergics, caffeine, alcohol, calcium/vitamin D?

Initial investigations:
Glucose, ketones, urine dip, renal function, sodium, potassium, calcium, osmolality where needed, infection testing?

Wise perturbation:
Treat hyperglycemia, correct dehydration/electrolytes, adjust medicines, assess DI, reduce nocturia risk, manage infection?

Repair trajectory:
What should improve, and what must be monitored?

21. Mini-Case for Practice

A 52-year-old man presents with two months of thirst, passing large volumes of urine, waking several times at night, weight loss, blurred vision, and fatigue. Over the last day he has developed nausea and abdominal discomfort.

Apply the polyuria and polydipsia approach.

Danger

Uncontrolled diabetes, dehydration, ketosis or diabetic ketoacidosis, hyperosmolar state depending on severity, electrolyte disturbance, infection trigger.

Syndrome

Polyuria and polydipsia with weight loss, blurred vision, fatigue, and new gastrointestinal symptoms.

Capacity Failure

Glucose regulation, hydration, energy transformation, electrolyte balance, clearance, cognition if severe.

Coupling Conditions

Delayed diagnosis, diet, infection, access to care, health literacy, work schedule, family history, ability to monitor and treat safely.

Wise Perturbation

Check glucose urgently, assess ketones where indicated, renal function, electrolytes, hydration, vital signs, infection features, and acid-base status if unwell. Treat according to local diabetes or emergency metabolic guidance. Provide education and close follow-up.

Repair Trajectory

Glucose becomes safer, ketones absent or cleared, thirst and urination reduce, hydration improves, nausea resolves, weight stabilizes, vision improves, patient understands warning signs and treatment plan.

22. Student Takeaway

Polyuria and polydipsia become easier when the clinician asks:

Is this true high-volume urine or just frequency?
Is glucose high?
Are ketones present?
Is sodium safe?
Is calcium high?
Is the patient dehydrated or confused?
Are medicines contributing?
Could this be diabetes mellitus, diabetes insipidus, primary polydipsia, hypercalcemia, diuretic effect, nocturia, or urinary infection?
What capacity is failing?
How will water, glucose, sodium, sleep, mobility, and dignity be repaired?

Polyuria and polydipsia are not merely bathroom complaints.

They are signals that water balance, glucose regulation, sodium regulation, kidney concentrating ability, circulation, sleep, mobility, and safety may be under threat.

Chapter 25. Hyperglycemia Made Easy

Hyperglycemia means the blood glucose is higher than it should be.

Patients may say:

“My sugar is high.”
“I am always thirsty.”
“I am passing urine all the time.”
“I am losing weight.”
“My vision is blurry.”
“I feel weak.”
“I am vomiting.”
“I feel drowsy.”
“My wound is not healing.”

Hyperglycemia is common, but it is not always harmless.

Sometimes it is mild and chronic.
Sometimes it is the first sign of diabetes.
Sometimes it reflects infection, steroid therapy, missed medicines, stress illness, pancreatitis, myocardial infarction, stroke, pregnancy-related diabetes where relevant, or medication effect.

Sometimes hyperglycemia is an emergency.

The first task is not simply to lower the number.

The first task is to ask:

Is this high glucose causing dehydration, ketosis, hyperosmolality, infection risk, impaired healing, or metabolic danger?

Hyperglycemia becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Hyperglycemia Dangerous?

Hyperglycemia becomes dangerous when it threatens hydration, energy regulation, acid-base balance, consciousness, circulation, infection control, wound healing, or pregnancy safety where relevant.

Dangerous causes and contexts include:

- diabetic ketoacidosis
- hyperosmolar hyperglycemic state
- severe dehydration

- acute infection
- sepsis
- myocardial infarction
- stroke
- pancreatitis
- steroid-induced severe hyperglycemia
- missed insulin
- new type 1 diabetes
- insulin pump failure where relevant
- severe kidney disease affecting diabetes treatment
- vomiting with diabetes
- altered mental state
- pregnancy-related hyperglycemia where relevant
- frailty with poor intake, dehydration, and high glucose
- infected foot ulcer or soft tissue infection
- recurrent hypoglycemia after overtreatment

The danger-first question is:

Is this hyperglycemia part of metabolic decompensation or serious illness?

2. Immediate Red Flags in Hyperglycemia

Urgent assessment is needed when hyperglycemia is associated with:

- vomiting
- abdominal pain
- rapid deep breathing
- ketones
- severe thirst
- very frequent urination
- dehydration
- confusion or drowsiness
- fainting or severe dizziness
- fever or signs of infection
- chest pain
- breathlessness
- stroke symptoms
- severe weakness
- low blood pressure
- rapid heart rate
- reduced urine output
- pregnancy where relevant
- known type 1 diabetes with illness or missed insulin
- insulin pump failure where relevant
- severe weight loss
- infected foot wound

- severe kidney disease
- inability to keep fluids down
- very high glucose readings that persist despite usual treatment

High glucose with vomiting, ketones, dehydration, altered breathing, or confusion is not routine diabetes care.

It is metabolic danger until proven otherwise.

3. Hyperglycemia Is a Syndrome, Not Just a Number

A glucose value is only part of the clinical picture.

The clinician must form a hyperglycemia syndrome.

Ask:

- How high is the glucose?
- Is this new or chronic?
- Is the patient known to have diabetes?
- What type of diabetes is known or suspected?
- Is the patient taking insulin?
- Has insulin been missed?
- Are ketones present?
- Is there vomiting or abdominal pain?
- Is the patient dehydrated?
- Is the patient confused or drowsy?
- Is there infection?
- Is there chest pain, breathlessness, or stroke symptoms?
- Are steroids being used?
- Are new medicines contributing?
- Is oral intake reduced?
- Is kidney function impaired?
- Is pregnancy possible or confirmed where relevant?
- Is there weight loss?
- Is there polyuria and polydipsia?
- Is the patient safe at home?
- Can the patient monitor glucose and follow a plan?

The goal is to move from:

“The sugar is high”

to:

“This is hyperglycemia with vomiting, abdominal pain, ketones, and rapid breathing in a patient with type 1 diabetes.”

or:

“This is severe hyperglycemia with dehydration and confusion in a frail older patient with infection.”

or:

“This is moderate steroid-associated hyperglycemia in a patient being treated for COPD exacerbation.”

The syndrome determines urgency.

4. Common Hyperglycemia Syndrome Patterns

Hyperglycemia With Thirst, Polyuria, and Weight Loss

Pattern:

- high glucose
- thirst
- large-volume urination
- nocturia
- weight loss
- blurred vision
- fatigue
- recurrent infections

Possible causes:

- new diabetes mellitus
- uncontrolled existing diabetes
- medication-related hyperglycemia
- endocrine disease in selected cases

Threatened capacities:

Glucose regulation, **hydration**, **energy**, **defense**, and **participation**.

Hyperglycemia With Vomiting and Ketones

Pattern:

- high glucose
- ketones
- vomiting
- abdominal pain

- dehydration
- rapid deep breathing
- drowsiness or confusion in severe cases
- known type 1 diabetes, missed insulin, infection, or new diabetes may be present

Possible cause:

- diabetic ketoacidosis

Threatened capacities:

Energy regulation, **acid-base regulation**, **hydration**, **circulation**, and **cognition**.

This is high-risk.

Severe Hyperglycemia With Confusion and Dehydration

Pattern:

- very high glucose
- profound thirst
- dehydration
- weakness
- confusion or drowsiness
- infection trigger common
- older age or frailty common
- ketones may be absent or less prominent than in ketoacidosis

Possible cause:

- hyperosmolar hyperglycemic state

Threatened capacities:

Water balance, **glucose regulation**, **circulation**, **cognition**, and **clearance**.

This is high-risk.

Hyperglycemia During Infection

Pattern:

- high glucose
- fever or infection symptoms
- worsening diabetes control
- dehydration
- poor intake
- increased insulin need

- possible ketones in insulin-deficient patients

Possible causes:

- pneumonia
- urinary infection
- skin or soft tissue infection
- infected diabetic foot
- sepsis
- dental infection
- intra-abdominal infection

Threatened capacities:

Defense, **glucose regulation**, **hydration**, **repair**, and **circulation**.

Infection raises glucose, and high glucose worsens infection risk.

Steroid-Induced Hyperglycemia

Pattern:

- high glucose after starting or increasing steroids
- often worse later in the day depending on steroid pattern
- may occur in known diabetes or previously undiagnosed diabetes
- infection or inflammatory disease may coexist

Possible causes:

- prednisone or other glucocorticoid therapy
- steroid injections in some contexts
- stress illness plus steroid effect

Threatened capacities:

Glucose regulation, **defense**, **repair**, and **treatment safety**.

Hyperglycemia With Poor Intake

Pattern:

- high glucose
- poor appetite
- vomiting or nausea
- missed meals
- continued medicines
- dehydration
- possible ketones

- kidney dysfunction risk

Possible causes:

- acute illness
- infection
- DKA risk if insulin deficient
- medication mismatch
- frailty
- gastrointestinal illness

Threatened capacities:

Glucose regulation, **hydration**, **energy**, **clearance**, and **medicine safety**.

Hyperglycemia With Foot Infection or Wound

Pattern:

- high glucose
- foot ulcer or wound
- redness, swelling, pain, discharge, odor, or necrosis
- reduced sensation
- poor pulses where present
- fever may be absent
- delayed healing

Possible causes:

- diabetic foot infection
- cellulitis
- osteomyelitis
- ischemic wound
- neuropathic ulcer

Threatened capacities:

Defense, **repair**, **skin integrity**, **mobility**, and **limb viability**.

Stress Hyperglycemia in Acute Illness

Pattern:

- high glucose during hospitalization or acute illness
- may occur without known diabetes
- associated with infection, myocardial infarction, stroke, trauma, surgery, or severe physiological stress

Possible causes:

- stress hormone response
- undiagnosed diabetes
- steroid therapy
- enteral/parenteral nutrition where relevant
- acute inflammation

Threatened capacities:

Regulation, **defense**, **repair**, and **vascular safety**.

5. Capacity Failure in Hyperglycemia

Hyperglycemia matters because glucose regulation is connected to many capacities.

Hydration

High glucose pulls water into the urine.

Signals include:

- thirst
- polyuria
- dry mouth
- dizziness
- tachycardia
- low blood pressure
- reduced urine output after dehydration worsens
- AKI

Energy Regulation

High glucose does not mean cells are using energy well.

In insulin deficiency, the body may be unable to use glucose properly and may produce ketones.

Signals include:

- weight loss
- fatigue
- ketones
- abdominal pain
- vomiting
- rapid breathing
- weakness

Acid-Base Balance

In ketoacidosis, acids accumulate.

Signals include:

- rapid deep breathing
- abdominal pain
- vomiting
- drowsiness
- ketones
- acidosis where measured

Cognition

Severe hyperglycemia, dehydration, hyperosmolality, infection, or acidosis can disturb brain function.

Signals include:

- confusion
- drowsiness
- weakness
- delirium
- seizures in severe osmotic disturbance

Defense and Repair

High glucose impairs immune response and tissue healing.

Signals include:

- recurrent infections
- slow wound healing
- foot ulcers
- skin infections
- urinary infections
- fungal infections

Circulation and Vascular Safety

Diabetes and acute hyperglycemia may coexist with vascular disease.

Signals include:

- chest pain
- stroke symptoms
- peripheral vascular disease

- kidney disease
- foot ischemia
- dehydration-related low perfusion

Agency and Participation

Poor glucose control can overwhelm daily life.

Signals include:

- fear of eating
- difficulty affording medicines
- inability to monitor glucose
- work disruption
- shame
- poor sleep from nocturia
- dependence on caregivers

The clinician should ask:

What makes safe glucose care possible or impossible for this patient?

6. Bedside Assessment of Hyperglycemia

Look First

Observe:

- dehydration
- drowsiness
- confusion
- rapid deep breathing
- vomiting
- abdominal pain
- infection signs
- foot wounds
- frailty
- weight loss
- distress
- ability to drink
- ability to self-manage

The patient with high glucose who is alert and drinking is different from the patient who is vomiting, ketotic, and drowsy.

Vital Signs

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- weight where relevant
- urine output if unwell
- glucose
- ketones where indicated

Respiratory rate is especially important.

Rapid deep breathing in hyperglycemia suggests metabolic danger.

Focused History

Ask:

- known diabetes or new symptoms?
- type of diabetes if known?
- usual glucose control?
- home glucose readings?
- ketone readings if used?
- insulin regimen?
- missed insulin?
- medication adherence?
- recent steroid use?
- infection symptoms?
- fever?
- urinary symptoms?
- cough?
- skin or foot wounds?
- chest pain?
- stroke symptoms?
- vomiting or abdominal pain?
- thirst and polyuria?
- weight loss?
- poor intake?
- alcohol or substance use?
- pregnancy where relevant?
- kidney disease?
- access to medicines, food, glucose strips, insulin, refrigeration, and follow-up?
- understanding of sick-day rules?

Medicine Review

Review:

- insulin
- sulfonylureas
- metformin
- SGLT2 inhibitors where used
- GLP-1 receptor agonists where used
- steroids
- thiazide diuretics
- antipsychotics
- immunosuppressants
- enteral or parenteral nutrition
- recent changes or missed medicines

Ask:

Is hyperglycemia due to too little treatment, increased physiological stress, medicine effect, or inability to follow the plan?

7. Physical Examination

Examine for cause and consequence.

Assess:

- hydration
- mental state
- breathing pattern
- abdominal tenderness
- infection source
- chest findings
- urinary or flank tenderness
- skin and soft tissue infection
- foot ulcers
- pulses and sensation in feet where relevant
- oral or genital fungal infection where relevant
- wounds
- signs of sepsis
- signs of dehydration or shock
- signs of stroke or ACS if symptoms suggest
- frailty and mobility
- injection sites where relevant

The foot examination should not be forgotten in a person with diabetes and infection risk.

8. Initial Investigations

Investigations depend on severity and syndrome.

Common investigations may include:

- capillary or plasma glucose
- ketones where type 1 diabetes, vomiting, abdominal pain, acute illness, or marked hyperglycemia suggests risk
- renal function and electrolytes
- sodium and potassium
- bicarbonate or blood gas where DKA, acidosis, severe illness, or altered breathing is suspected
- serum osmolality or calculated osmolar assessment where hyperosmolar state is suspected
- full blood count
- inflammatory markers where infection is suspected
- urinalysis for glucose, ketones, infection, protein
- cultures where infection or sepsis is suspected
- ECG where potassium abnormality, ACS, severe illness, or older high-risk patient is present
- chest X-ray where respiratory infection or cardiopulmonary trigger is possible
- cardiac biomarkers where ACS is suspected
- HbA1c where it helps distinguish chronic diabetes from stress hyperglycemia and setting is appropriate
- pregnancy test where relevant
- foot imaging where deep infection, foreign body, gas, or osteomyelitis is suspected
- lipase or amylase where pancreatitis is suspected

Testing should answer:

- Is this DKA?
- Is this hyperosmolar state?
- Are electrolytes safe?
- Is kidney function safe?
- Is there infection?
- Is there myocardial infarction, stroke, pancreatitis, steroid effect, or medicine issue?
- Can the patient safely be managed outside hospital?
- What follow-up is required?

9. Dangerous Diagnoses Not to Miss

Diabetic Ketoacidosis

Clues:

- type 1 diabetes or insulin deficiency risk

- missed insulin
- new diabetes symptoms
- vomiting
- abdominal pain
- ketones
- rapid deep breathing
- dehydration
- drowsiness or confusion
- infection trigger

Capacity failure:

Energy regulation, **acid-base balance**, **hydration**, **circulation**, **cognition**

Wise action:

Urgent assessment and treatment according to local DKA protocol. Identify trigger and prevent recurrence.

Hyperosmolar Hyperglycemic State

Clues:

- very high glucose
- severe dehydration
- confusion or drowsiness
- older age or frailty
- infection or acute illness trigger
- less prominent ketosis in many cases
- kidney dysfunction may coexist

Capacity failure:

Water balance, **glucose regulation**, **circulation**, **cognition**, **clearance**

Wise action:

Urgent assessment, careful fluids and electrolyte management according to local protocol, and trigger search.

Sepsis With Hyperglycemia

Clues:

- fever or low temperature
- tachypnea
- hypotension
- confusion

- infection source
- high glucose
- poor perfusion
- oliguria

Capacity failure:

Defense, **glucose regulation**, **circulation**, **clearance**, **cognition**

Wise action:

Treat sepsis according to local guidance while managing glucose safely.

Acute Coronary Syndrome or Stroke

Clues:

- chest pain
- breathlessness
- sweating
- nausea
- focal neurological signs
- speech difficulty
- weakness
- high vascular risk
- diabetes
- CKD

Capacity failure:

Circulation, **brain integrity**, **vascular safety**

Wise action:

Do not focus only on glucose. Follow local ACS or stroke pathway when symptoms suggest.

Infected Diabetic Foot

Clues:

- foot ulcer
- redness
- swelling
- warmth
- discharge
- odor
- pain or painless wound due to neuropathy
- black tissue

- fever may be absent
- poor pulses or ischemia

Capacity failure:

Defense, **repair**, **skin integrity**, **mobility**, **limb viability**

Wise action:

Assess wound depth, infection severity, perfusion, neuropathy, systemic illness, glucose, renal function, and need for urgent specialist care according to local pathway.

Steroid-Induced Severe Hyperglycemia

Clues:

- recent steroid start or dose increase
- high glucose after steroid dosing pattern
- infection or inflammation context
- known or undiagnosed diabetes
- thirst, polyuria, dehydration if severe

Capacity failure:

Glucose regulation, **defense**, **repair**, **treatment safety**

Wise action:

Anticipate and monitor. Adjust diabetes treatment according to local guidance while treating the condition requiring steroids.

Medication-Associated Ketoacidosis or Hyperglycemic Decompensation

Some medicines and situations can alter glucose, ketone risk, hydration, or intake.

Clues:

- new medicine
- reduced carbohydrate intake
- vomiting
- dehydration
- acute illness
- insulin reduction
- ketones despite variable glucose patterns in some contexts

Capacity failure:

Energy regulation, **hydration**, **acid-base safety**

Wise action:

Review medicines carefully and follow local safety guidance.

10. Wise Perturbation in Hyperglycemia

Treatment depends on danger, cause, and patient context.

Do not lower glucose blindly without understanding the syndrome.

Ask:

- Is this emergency hyperglycemia?
- Are ketones present?
- Is the patient dehydrated?
- Is sodium or potassium abnormal?
- Is kidney function impaired?
- Is there infection or another trigger?
- Is insulin missing?
- Are steroids involved?
- Is the patient eating?
- What is the risk of hypoglycemia if treatment is intensified?
- Can the patient monitor and follow the plan?
- What education is needed?

Fluids

In significant hyperglycemia, dehydration is common.

Fluids may restore circulation and kidney perfusion.

But fluids require caution in heart failure, kidney disease, frailty, and severe electrolyte disturbance.

Monitor:

- blood pressure
- pulse
- urine output
- lungs
- edema
- sodium
- potassium
- renal function
- mental state

Insulin

Insulin may be needed in emergency hyperglycemia, insulin deficiency, steroid-related hyperglycemia, acute illness, or poor control.

But insulin can cause harm if used without monitoring.

Monitor:

- glucose trend
- potassium
- oral intake
- renal function
- hypoglycemia risk
- timing of meals
- patient understanding

Insulin should restore metabolic capacity, not simply chase numbers.

Oral and Non-Insulin Diabetes Medicines

These may be appropriate in stable chronic hyperglycemia, but acute illness changes risk.

Consider:

- kidney function
- dehydration
- vomiting
- heart failure
- infection
- surgery
- contrast exposure
- pregnancy where relevant
- ability to eat
- hypoglycemia risk
- medication access and cost

Treat the Trigger

Hyperglycemia often worsens because something else is wrong.

Look for:

- infection
- missed insulin or medicines
- steroid therapy
- myocardial infarction
- stroke

- pancreatitis
- pain
- stress
- poor intake
- medicine access problem
- depression or cognitive impairment

Repair requires treating the trigger.

Education and Feasibility

A plan is not wise if the patient cannot carry it out.

Ask:

- Can the patient afford medicines?
- Can they inject insulin correctly?
- Can they store insulin?
- Can they monitor glucose?
- Do they know what to do when sick?
- Can they recognize hypoglycemia?
- Do they have food security?
- Do they have follow-up?
- Is there cognitive impairment?
- Is a caregiver needed?

11. Repair Trajectory in Hyperglycemia

Repair is shown by:

- glucose becomes safer
- ketones clear if present
- acidosis resolves if present
- hydration improves
- thirst and polyuria reduce
- vomiting stops
- mental state clears
- potassium remains safe
- kidney function stabilizes
- infection improves
- wound healing begins
- steroid plan includes glucose monitoring
- insulin or medicine plan is understood
- hypoglycemia is avoided
- patient can eat, drink, monitor, and access care
- follow-up arranged

- sick-day plan understood

Repair is not only a lower glucose reading.

Repair means metabolic safety, hydration, cognition, infection control, treatment feasibility, and prevention of recurrence.

12. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- vomiting
- abdominal pain
- ketones
- rapid deep breathing
- confusion or drowsiness
- severe thirst
- inability to drink
- very high glucose that persists
- low glucose after treatment
- fever or infection symptoms
- chest pain
- stroke symptoms
- worsening foot wound
- reduced urine output
- fainting or severe dizziness
- missed insulin in type 1 diabetes
- pregnancy-related high glucose concerns where relevant
- inability to access medicines or food

Also explain:

- target range or safe range according to the clinical context and local advice
- when to check glucose
- when to check ketones if relevant
- how illness changes diabetes care
- which medicines were changed
- when follow-up is needed
- who reviews results
- what symptoms mean emergency

Use teach-back:

“Can you tell me what high-sugar symptoms would make you seek urgent help?”

13. Worked Case 1: New Diabetes With Weight Loss

A 49-year-old man presents with thirst, polyuria, nocturia, weight loss, fatigue, and blurred vision. A random glucose is high.

Danger

Uncontrolled diabetes, dehydration, DKA if ketones or systemic symptoms are present, hyperosmolar state if severe, infection trigger.

Syndrome

Hyperglycemia with classic osmotic symptoms and weight loss.

Capacity Failure

Glucose regulation, hydration, energy, defense, participation.

Coupling Conditions

Diet, family history, infection, access to care, health literacy, work schedule, affordability of medicines and monitoring.

Wise Perturbation

Assess severity, ketones where indicated, hydration, renal function, electrolytes, infection, and whether emergency care is needed. Begin treatment according to local diabetes guidance and ensure education and follow-up.

Repair Trajectory

Thirst and polyuria reduce, glucose becomes safer, weight stabilizes, blurred vision improves, patient understands treatment and warning signs.

14. Worked Case 2: Type 1 Diabetes With Vomiting

A 21-year-old with type 1 diabetes presents with vomiting, abdominal pain, thirst, high glucose, ketones, and rapid deep breathing after missing insulin.

Danger

Diabetic ketoacidosis.

Syndrome

Hyperglycemia with ketones, vomiting, abdominal pain, dehydration, and respiratory compensation.

Capacity Failure

Energy regulation, acid-base regulation, hydration, circulation, cognition.

Coupling Conditions

Insulin omission, infection trigger, sick-day knowledge, access to insulin, fear of insulin when not eating, social support.

Wise Perturbation

Urgent assessment and treatment according to local DKA protocol. Check electrolytes, renal function, acid-base status, hydration, infection trigger, and insulin access. Educate on sick-day management before discharge.

Repair Trajectory

Ketones clear, acidosis resolves, hydration restored, vomiting stops, glucose becomes safer, insulin plan restored, recurrence prevention addressed.

15. Worked Case 3: Frail Older Patient With Severe Hyperglycemia

An 84-year-old woman with type 2 diabetes presents with confusion, profound thirst, weakness, and very high glucose during a urinary infection. She is dehydrated.

Danger

Hyperosmolar hyperglycemic state, sepsis, dehydration, AKI, electrolyte disturbance, delirium.

Syndrome

Severe hyperglycemia with dehydration and altered mental state in frailty with infection trigger.

Capacity Failure

Water balance, glucose regulation, circulation, cognition, clearance, defense.

Coupling Conditions

Frailty, infection, poor intake, kidney function, medicines, caregiver support, ability to drink, delayed presentation.

Wise Perturbation

Urgent assessment of vitals, hydration, osmolality context where available, sodium, potassium, renal function, infection, urine output, and mental state. Treat according to local hyperosmolar/sepsis guidance with careful monitoring.

Repair Trajectory

Mental state clears, hydration improves, glucose lowers safely, sodium/potassium remain safe, infection improves, renal function stabilizes, discharge support secured.

16. Worked Case 4: Steroid-Induced Hyperglycemia

A 67-year-old man with COPD is treated with prednisone for an exacerbation. His glucose becomes high in the afternoons and evenings. He is eating but worried about the readings.

Danger

Severe hyperglycemia, dehydration, infection, steroid effect, treatment mismatch. DKA is less likely in many type 2 contexts but must be considered if symptoms or ketones suggest.

Syndrome

Steroid-associated hyperglycemia during acute respiratory illness.

Capacity Failure

Glucose regulation, defense, repair, treatment safety.

Coupling Conditions

Steroid dose and timing, baseline diabetes status, infection or exacerbation, inhaler use, diet, monitoring ability, renal function, follow-up.

Wise Perturbation

Monitor glucose pattern, assess symptoms, hydration, infection, and current diabetes therapy. Adjust diabetes treatment according to local practice while continuing necessary COPD care. Plan what happens when steroids reduce or stop.

Repair Trajectory

Glucose pattern becomes safer, COPD improves, dehydration avoided, hypoglycemia avoided when steroids taper, patient understands monitoring and medication adjustments.

17. Worked Case 5: Hyperglycemia and Foot Infection

A 62-year-old patient with diabetes presents with high glucose and a foot ulcer that is red, swollen, and draining fluid. The patient has little pain because of neuropathy.

Danger

Diabetic foot infection, cellulitis, osteomyelitis, sepsis, ischemia, limb threat, poor wound healing.

Syndrome

Hyperglycemia with infected diabetic foot ulcer and neuropathy.

Capacity Failure

Defense, repair, skin integrity, mobility, limb viability, glucose regulation.

Coupling Conditions

Neuropathy, vascular disease, footwear, glucose control, kidney function, access to wound care, ability to offload, social support, prior ulcers.

Wise Perturbation

Assess infection severity, perfusion, neuropathy, wound depth, systemic illness, renal function, glucose, and need for urgent specialist/wound care according to local pathway. Treat infection and support glucose control without causing hypoglycemia.

Repair Trajectory

Infection improves, wound begins to heal, glucose safer, offloading feasible, vascular status addressed, patient understands foot care and follow-up.

18. Common Student Pitfalls

Pitfall 1: Treating the Number Without the Patient

A glucose value must be interpreted with symptoms, ketones, hydration, infection, cognition, and context.

Pitfall 2: Missing DKA

Vomiting, abdominal pain, ketones, rapid deep breathing, and missed insulin are danger signs.

Pitfall 3: Missing Hyperosmolar State

Severe hyperglycemia with dehydration and confusion in older or frail patients is high-risk.

Pitfall 4: Forgetting Infection

Infection can cause hyperglycemia, and hyperglycemia can worsen infection.

Pitfall 5: Ignoring Steroids

Steroids commonly worsen glucose and require monitoring and planning.

Pitfall 6: Causing Hypoglycemia With Overcorrection

Repair means safe glucose, not aggressive lowering without monitoring.

Pitfall 7: Forgetting Kidney Function

Kidney impairment changes medicine safety and hypoglycemia risk.

Pitfall 8: Discharging Without Education

A patient needs to know what to do when sick, when to check glucose or ketones, and when to seek help.

19. Clinical Practice Box

When assessing hyperglycemia, complete this structure:

Glucose level and time course:
New, chronic, sudden worsening?

Danger features:
Vomiting, abdominal pain, ketones, deep breathing, dehydration, confusion, infection, chest pain, stroke symptoms?

Diabetes context:
Known type, new diagnosis, insulin use, missed doses, pump failure, steroid use?

Capacity failure:
Glucose regulation, hydration, acid-base balance, cognition, defense, repair, circulation?

Trigger search:
Infection, missed medicines, steroids, MI, stroke, pancreatitis, poor intake, access problem?

Initial investigations:
Glucose, ketones, renal function, electrolytes, bicarbonate/blood gas, osmolality context, infection workup, ECG if indicated?

Wise perturbation:
Fluids, insulin, medicine adjustment, infection treatment, steroid plan, education, escalation?

Repair trajectory:
Glucose, ketones, hydration, mental state, potassium, kidney function, infection, self-management?

Safety-net:

20. Mini-Case for Practice

A 58-year-old man with type 2 diabetes presents with glucose readings above his usual range, severe thirst, frequent urination, weakness, and a painful boil on his thigh. He has been eating poorly and has not taken all his medicines. He is mildly dehydrated and febrile.

Apply the hyperglycemia approach.

Danger

Infection-driven hyperglycemia, dehydration, sepsis risk, possible ketosis depending on severity and medication context, AKI, worsening soft tissue infection.

Syndrome

Hyperglycemia with osmotic symptoms, poor intake, dehydration, fever, and soft tissue infection.

Capacity Failure

Glucose regulation, hydration, defense, repair, clearance, comfort.

Coupling Conditions

Poor intake, missed medicines, infection, diabetes knowledge, access to medication, kidney function, wound care access, social support.

Wise Perturbation

Assess vital signs, infection severity, hydration, glucose, ketones where indicated, renal function, electrolytes, and wound findings. Treat infection according to local guidance, restore hydration, adjust diabetes treatment safely, and ensure follow-up and wound reassessment.

Repair Trajectory

Fever settles, wound improves, glucose becomes safer, thirst and urination reduce, hydration improves, kidney function remains safe, patient resumes a feasible diabetes plan, warning signs understood.

21. Student Takeaway

Hyperglycemia becomes easier when the clinician asks:

Is this high glucose dangerous now?
Are ketones present?
Is the patient dehydrated, vomiting, breathing deeply, confused, infected, pregnant, frail, or missing insulin?
Is this DKA, hyperosmolar state, infection-related hyperglycemia, steroid effect, new diabetes, treatment failure, or stress hyperglycemia?
What capacity is failing: glucose regulation, hydration, acid-base balance, cognition, defense, repair, or circulation?

What treatment restores metabolic safety without causing hypoglycemia?
Can the patient actually carry out the plan?

Hyperglycemia is not only a number.

It is a signal that energy regulation, water balance, infection defense, wound repair, cognition, circulation, and daily self-management may be under threat.

Chapter 26. Hypoglycemia Made Easy

Hypoglycemia means the blood glucose is too low for safe brain and body function.

Patients may say:

“I feel shaky.”
“I am sweating.”
“I feel weak.”
“I feel hungry.”
“My heart is racing.”
“I feel confused.”
“I nearly fainted.”
“I had a seizure.”
“They found me unconscious.”

Hypoglycemia is one of the most immediately reversible dangers in Internal Medicine.

It can look like anxiety, intoxication, stroke, seizure, syncope, delirium, dementia, weakness, or collapse.

The first task is not to debate the diagnosis.

The first task is to check the glucose.

Hypoglycemia becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Hypoglycemia Dangerous?

Hypoglycemia is dangerous when the brain does not receive enough usable glucose.

Severe hypoglycemia can cause:

- confusion
- agitation
- abnormal behavior
- seizure
- collapse
- coma
- injury
- aspiration
- arrhythmia risk in vulnerable patients
- falls
- driving or occupational danger

- recurrent fear of treatment
- loss of confidence in diabetes care

The danger-first question is:

Is the brain safe now?

If the patient is confused, drowsy, seizing, unconscious, unable to swallow, or at risk of recurrence, hypoglycemia is urgent.

2. Immediate Red Flags in Hypoglycemia

Urgent assessment is needed when hypoglycemia is associated with:

- confusion
- drowsiness
- seizure
- collapse
- loss of consciousness
- inability to swallow safely
- recurrent low glucose
- long-acting insulin or sulfonylurea use
- kidney disease
- liver disease
- sepsis
- alcohol use
- frailty
- pregnancy where relevant
- poor oral intake
- vomiting
- adrenal insufficiency or chronic steroid interruption
- accidental overdose
- intentional overdose or self-harm concern
- hypoglycemia while driving, swimming, operating machinery, or caring for others
- hypoglycemia without warning symptoms
- hypoglycemia in someone living alone
- hypoglycemia in a patient with cognitive impairment

Low glucose with impaired consciousness is a medical emergency.

Low glucose that keeps coming back is also dangerous.

3. Hypoglycemia Is a Syndrome, Not Just a Number

A glucose value is important, but the clinical pattern matters.

The clinician must form a hypoglycemia syndrome.

Ask:

- What was the glucose?
- Was it confirmed?
- What symptoms occurred?
- Was the patient conscious?
- Could the patient swallow?
- Was there seizure or injury?
- Is the patient diabetic?
- What medicines are used?
- Was insulin taken?
- Was a sulfonylurea taken?
- Was food missed?
- Was exercise increased?
- Was alcohol taken?
- Is there vomiting or diarrhea?
- Is kidney function reduced?
- Is liver function impaired?
- Is there infection?
- Was there weight loss or reduced intake?
- Has treatment recently changed?
- Are there recurrent episodes?
- Are warning symptoms still present?
- Could this be accidental or intentional overdose?
- Is the patient safe after treatment?

The goal is to move from:

“The sugar was low”

to:

“This is severe recurrent hypoglycemia in an older patient with CKD taking a sulfonylurea and eating poorly.”

or:

“This is insulin-related hypoglycemia after missed meals and increased exercise.”

or:

“This is unexplained hypoglycemia in a patient without diabetes, with weight loss and liver disease.”

The syndrome determines risk.

4. Common Hypoglycemia Syndrome Patterns

Hypoglycemia With Insulin Use

Pattern:

- known diabetes
- insulin therapy
- missed meal
- delayed meal
- excess insulin dose
- increased exercise
- vomiting
- alcohol use
- renal impairment
- improved insulin sensitivity after weight loss or illness recovery

Possible causes:

- insulin dose too high for intake or activity
- wrong insulin type or timing
- injection error
- renal impairment reducing insulin clearance
- intentional or accidental overdose

Threatened capacities:

Glucose regulation, **cognition**, **safety**, **agency**.

Hypoglycemia With Sulfonylurea Use

Pattern:

- type 2 diabetes
- sulfonylurea medicine
- older age or CKD common
- poor intake
- recurrent or prolonged hypoglycemia
- confusion, falls, or collapse

Possible cause:

- insulin secretion stimulated longer than food intake can support

Threatened capacities:

Glucose regulation, **cognition**, **falls safety**, **medicine safety**.

This can recur after initial correction.

Hypoglycemia With Poor Intake

Pattern:

- low glucose
- poor appetite
- missed meals
- vomiting or diarrhea
- frailty
- infection
- continued diabetes medicines
- weight loss

Possible causes:

- mismatch between medicines and intake
- acute illness
- malnutrition
- frailty
- renal or liver disease

Threatened capacities:

Energy, **glucose regulation**, **hydration**, **clearance**, **mobility safety**.

Hypoglycemia With Alcohol Use

Pattern:

- low glucose
- alcohol intake
- missed meals
- vomiting
- confusion
- collapse
- delayed recognition because symptoms mimic intoxication

Possible causes:

- impaired glucose production during fasting
- poor intake
- diabetes medicines
- liver vulnerability

Threatened capacities:

Energy regulation, **cognition**, **safety**, **liver transformation**.

Hypoglycemia in Frailty or Dementia

Pattern:

- confusion
- falls
- poor intake
- weight loss
- missed meals
- medication errors
- insulin or tablet use
- limited ability to report symptoms
- living alone or dependent on caregiver

Possible causes:

- overtreatment
- poor intake
- medication mismanagement
- kidney impairment
- cognitive decline

Threatened capacities:

Cognition, **nutrition**, **medicine safety**, **mobility**, **dignity**.

Hypoglycemia Without Diabetes

Pattern:

- low glucose in a person not treated for diabetes
- fasting symptoms
- weight loss
- liver disease
- sepsis
- adrenal insufficiency
- kidney failure
- malignancy
- post-surgical gastrointestinal history
- possible accidental, surreptitious, or intentional medicine exposure

Possible causes:

- critical illness

- liver failure
- adrenal insufficiency
- insulinoma or endocrine disorder
- medication exposure
- alcohol-related fasting hypoglycemia
- severe malnutrition
- non-islet cell tumor in rare contexts

Threatened capacities:

Energy regulation, **cognition**, **circulation**, **defense**, **liver transformation**.

This requires careful evaluation.

Recurrent Hypoglycemia Without Warning

Pattern:

- low glucose episodes occur with little shakiness or sweating
- patient becomes confused suddenly
- long-standing diabetes
- frequent prior hypoglycemia
- autonomic warning symptoms reduced

Possible cause:

- impaired awareness of hypoglycemia

Threatened capacities:

Cognition, **agency**, **driving/work safety**, **self-management**.

This is high-risk because the patient loses the early alarm system.

5. Capacity Failure in Hypoglycemia

Hypoglycemia matters because glucose is the brain's immediate fuel.

Energy Regulation

The body cannot maintain safe circulating glucose.

Signals include:

- hunger
- sweating

- tremor
- weakness
- palpitations
- anxiety-like symptoms
- fatigue

Cognition

The brain becomes energy-starved.

Signals include:

- confusion
- irritability
- abnormal behavior
- slurred speech
- poor coordination
- drowsiness
- seizure
- coma

Circulation and Autonomic Response

The body releases stress hormones to defend glucose.

Signals include:

- tachycardia
- sweating
- tremor
- anxiety
- pallor
- palpitations

Mobility and Safety

Hypoglycemia causes falls, accidents, driving risk, burns, drowning, medication errors, and injury.

Signals include:

- collapse
- falls
- wandering
- unsafe driving
- inability to call for help
- living alone

Agency and Dignity

Recurrent hypoglycemia creates fear.

Patients may avoid insulin, overeat defensively, sleep poorly, stop exercising, or lose confidence.

The clinician should ask:

What has fear of low glucose done to this patient's life?

6. Bedside Assessment of Hypoglycemia

Look First

Observe:

- alertness
- confusion
- sweating
- tremor
- pallor
- agitation
- seizure activity
- injury
- ability to swallow
- vomiting
- frailty
- evidence of alcohol or intoxication
- medication containers
- caregiver concern

If the patient is confused or unconscious, check glucose immediately.

Vital Signs

Check:

- glucose
- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- injury assessment if fall or seizure occurred

Glucose is a vital sign in altered mental state.

Confirm the Episode

Ask:

- What was the glucose reading?
- When was it measured?
- Was it before or after treatment?
- What symptoms occurred?
- What treatment was given?
- Did symptoms improve after glucose?
- Did the glucose fall again?
- Was there seizure, fall, injury, or unconsciousness?

Symptoms improving after glucose strongly supports true hypoglycemia, but the cause still matters.

Medication History

Ask specifically about:

- insulin type
- insulin dose
- insulin timing
- missed or delayed meals
- recent dose changes
- injection errors
- sulfonylureas
- other diabetes medicines
- kidney function
- liver disease
- alcohol
- steroids recently stopped
- antibiotics or interacting medicines
- access to food
- access to glucose monitoring
- duplicate medicines
- caregiver administration errors
- accidental overdose
- intentional overdose or self-harm possibility

Medication review is central.

Food, Activity, and Illness

Ask:

- Did the patient eat normally?

- Was a meal missed?
- Was exercise increased?
- Was alcohol taken?
- Is there vomiting or diarrhea?
- Is there infection?
- Has weight changed?
- Has appetite changed?
- Was there a fasting period?
- Is there food insecurity?
- Does the patient understand sick-day changes?

Hypoglycemia is often a mismatch between treatment, intake, activity, and illness.

7. Physical Examination

Examine for cause and consequence.

Assess:

- mental state
- neurological recovery
- injury from fall or seizure
- hydration
- infection source
- abdominal signs
- liver disease signs
- kidney disease signs
- frailty
- nutrition
- injection sites where relevant
- foot infection where relevant
- alcohol-related complications where relevant
- adrenal insufficiency clues where relevant
- safeguarding or self-harm concerns where relevant

If the patient does not recover as expected after glucose correction, look for another or additional diagnosis.

Hypoglycemia may coexist with stroke, sepsis, head injury, intoxication, or seizure disorder.

8. Initial Investigations

Investigations depend on severity and context.

Common investigations may include:

- repeat glucose monitoring
- renal function and electrolytes
- liver tests
- full blood count
- infection workup where indicated
- ketones where diabetes, starvation, or metabolic illness is relevant
- ECG where severe hypoglycemia, arrhythmia concern, older age, or cardiac disease is present
- medication review and possible drug levels where available and relevant
- cortisol or adrenal assessment where adrenal insufficiency is suspected
- insulin, C-peptide, and related endocrine testing in selected unexplained recurrent hypoglycemia, usually with specialist input
- alcohol level or toxicology where clinically relevant
- imaging or further evaluation if injury, seizure, stroke mimic, malignancy, or critical illness is suspected

Testing should answer:

- Is glucose staying safe?
- Is the cause obvious?
- Is kidney or liver disease contributing?
- Is infection present?
- Is medication accumulation likely?
- Is this likely to recur?
- Is the patient safe to leave?
- Is specialist input needed?

9. Dangerous Diagnoses Not to Miss

Severe Insulin-Related Hypoglycemia

Clues:

- insulin use
- missed meals
- wrong dose
- repeated correction doses
- renal impairment
- exercise
- vomiting
- unconsciousness or seizure

Capacity failure:

Glucose regulation, **cognition**, **safety**

Wise action:

Correct glucose urgently according to local protocol, monitor for recurrence, identify the insulin-intake mismatch, and revise the plan before discharge.

Sulfonylurea-Related Hypoglycemia

Clues:

- type 2 diabetes
- sulfonylurea use
- older age
- CKD
- poor intake
- prolonged or recurrent lows
- confusion or falls

Capacity failure:

Glucose regulation, **medicine safety**, **cognition**

Wise action:

Treat and observe carefully because hypoglycemia may recur. Review whether the medicine remains appropriate.

Sepsis With Hypoglycemia

Clues:

- fever or low temperature
- confusion
- low blood pressure
- tachypnea
- poor intake
- known diabetes or frailty
- liver or kidney dysfunction

Capacity failure:

Defense, **glucose regulation**, **circulation**, **cognition**

Wise action:

Do not stop at glucose correction. Search for and treat sepsis according to local guidance.

Adrenal Insufficiency or Steroid Withdrawal

Clues:

- weakness
- weight loss
- vomiting
- abdominal pain
- hypotension
- hyponatremia or hyperkalemia in some contexts
- chronic steroid use recently stopped or reduced
- known adrenal disease

Capacity failure:

Stress hormone response, **circulation**, **glucose regulation**

Wise action:

Treat as an emergency when strongly suspected and follow local adrenal crisis guidance.

Liver Failure

Clues:

- jaundice
- confusion
- bleeding
- low glucose
- poor intake
- alcohol-related or chronic liver disease context
- severe acute hepatitis or toxin exposure

Capacity failure:

Liver transformation, **glucose production**, **clotting**, **cognition**

Wise action:

Assess liver function, clotting, glucose trend, mental state, and need for urgent specialist input.

Intentional Overdose or Self-Harm

Clues:

- unexplained severe hypoglycemia
- access to insulin or tablets
- inconsistent history
- depression
- previous self-harm

- recurrent episodes
- social crisis

Capacity failure:

Safety, **agency**, **mental health**, **glucose regulation**

Wise action:

Treat glucose danger first, then assess self-harm risk, safeguarding, and mental health support.

Hypoglycemia Unawareness

Clues:

- recurrent lows
- few warning symptoms
- sudden confusion
- long-standing diabetes
- tight control
- frequent prior hypoglycemia

Capacity failure:

Self-protection, **cognition**, **agency**, **driving/work safety**

Wise action:

Adjust treatment goals and regimen according to local diabetes guidance. Focus on preventing lows and restoring awareness where possible.

10. Wise Perturbation in Hypoglycemia

Treatment depends on consciousness, swallowing safety, cause, and recurrence risk.

Ask:

- Is the patient conscious?
- Can the patient swallow safely?
- Is this mild, moderate, or severe?
- Is long-acting insulin or sulfonylurea involved?
- Is kidney or liver disease present?
- Is there infection?
- Is intake poor?
- Is recurrence likely?
- Is the patient safe after correction?

- What must change to prevent the next episode?

Immediate Glucose Correction

If the patient is awake and can swallow safely, oral fast-acting carbohydrate may be used according to local guidance.

If the patient is unconscious, seizing, unable to swallow, or unsafe, use emergency treatment according to local protocol.

Do not put food or drink into the mouth of an unconscious patient.

Recheck and Sustain

After immediate correction, glucose can fall again.

The patient may need:

- repeat glucose checks
- longer-acting carbohydrate or meal when safe
- observation
- medication adjustment
- review of insulin or sulfonylurea
- treatment of infection or vomiting
- caregiver support
- admission if recurrence risk is high

Correction without prevention is incomplete care.

Adjust Diabetes Treatment

Review:

- insulin dose and timing
- meal pattern
- injection technique
- exercise plan
- renal function
- weight loss
- appetite changes
- sulfonylurea use
- treatment targets
- hypoglycemia awareness
- driving/work safety
- cognitive ability
- caregiver involvement

A patient with recurrent hypoglycemia may need less intensive treatment, not more effort.

Treat the Trigger

Hypoglycemia may be triggered by:

- missed meals
- vomiting
- diarrhea
- alcohol
- kidney disease
- liver disease
- sepsis
- weight loss
- medication error
- dementia
- food insecurity
- intentional overdose

Repair requires addressing the trigger.

11. Repair Trajectory

Repair is shown by:

- glucose corrected
- mental state returns to baseline
- seizure stops if present
- patient can eat safely
- repeat glucose remains stable
- cause identified
- insulin or medicine plan adjusted
- kidney and liver function considered
- infection treated if present
- alcohol or poor intake addressed
- caregiver understands plan
- patient has access to glucose monitoring and rescue carbohydrates
- self-harm or safeguarding concerns addressed
- follow-up arranged
- recurrence risk reduced

Repair is not only a normal glucose reading.

Repair means the brain is safe, recurrence is prevented, and the treatment plan now fits the patient's life.

12. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- recurrent low glucose
- confusion
- seizure
- collapse
- inability to keep food down
- vomiting or diarrhea
- fever or infection
- reduced oral intake
- missed or accidental extra insulin
- suspected tablet overdose
- low glucose without warning symptoms
- hypoglycemia while driving or working at risk
- worsening kidney or liver disease
- alcohol use with poor intake
- suicidal thoughts or intentional overdose concern
- caregiver unable to manage safely

Also explain:

- how to recognize early symptoms
- how to treat mild low glucose
- when to call emergency help
- when to recheck glucose
- what to eat after correction
- what medicine changes were made
- when to contact the diabetes team or clinician
- how illness affects glucose management
- how to avoid recurrence

Use teach-back:

“Can you tell me what you would do if your sugar went low again tonight?”

13. Worked Case 1: Insulin and Missed Meal

A 34-year-old patient with type 1 diabetes takes usual rapid-acting insulin but is called into a meeting and misses lunch. Two hours later, they become shaky, sweaty, hungry, and confused.

Danger

Hypoglycemia with cognitive impairment and risk of injury.

Syndrome

Insulin-related hypoglycemia after missed meal.

Capacity Failure

Glucose regulation, cognition, safety, agency.

Coupling Conditions

Insulin timing, unpredictable work schedule, meal delay, access to snacks, glucose monitoring, workplace support.

Wise Perturbation

Correct glucose according to local guidance. Recheck. Provide longer-acting carbohydrate or meal when safe. Review insulin-meal timing, carrying rescue carbohydrate, and workplace planning.

Repair Trajectory

Symptoms resolve, glucose remains stable, patient eats safely, plan adjusted to prevent recurrence.

14. Worked Case 2: Sulfonylurea and CKD

An 82-year-old woman with type 2 diabetes and CKD is found confused at home. Her glucose is low. She takes a sulfonylurea and has eaten poorly for several days.

Danger

Severe recurrent hypoglycemia, falls, prolonged medication effect, CKD-related medicine accumulation, frailty.

Syndrome

Sulfonylurea-associated hypoglycemia in frailty with CKD and poor intake.

Capacity Failure

Glucose regulation, cognition, medicine safety, mobility, nutrition.

Coupling Conditions

CKD, frailty, poor intake, living situation, medication regimen, caregiver support, cognitive status, food access.

Wise Perturbation

Correct glucose urgently, monitor for recurrence, assess renal function and infection or illness, review whether sulfonylurea remains safe, involve caregivers, and arrange follow-up.

Repair Trajectory

Glucose remains stable, mental state returns to baseline, medicine plan safer, meals supported, recurrence risk reduced.

15. Worked Case 3: Hypoglycemia With Alcohol

A 51-year-old man with diabetes drinks alcohol in the evening and eats very little. Overnight he becomes confused and sweaty. Morning glucose is low.

Danger

Hypoglycemia, aspiration or injury risk, recurrent lows, alcohol masking symptoms.

Syndrome

Hypoglycemia after alcohol intake and poor food intake in diabetes.

Capacity Failure

Glucose regulation, cognition, safety, liver glucose production.

Coupling Conditions

Alcohol use, meal pattern, insulin or tablet timing, social context, sleep, ability to monitor, liver health.

Wise Perturbation

Correct glucose and monitor. Review alcohol-food-medicine interaction, safe limits, meal planning, bedtime checks where appropriate, and recurrence prevention.

Repair Trajectory

Glucose remains stable, patient understands alcohol-related risk, treatment plan adjusted, future prevention strategy clear.

16. Worked Case 4: Hypoglycemia Without Diabetes

A 64-year-old patient without known diabetes is brought in confused and sweaty. Glucose is low. The patient has weight loss, poor appetite, and abnormal liver tests.

Danger

Hypoglycemia from liver disease, malignancy, sepsis, adrenal insufficiency, medication exposure, or severe malnutrition.

Syndrome

Unexplained hypoglycemia without diabetes, with weight loss and liver dysfunction.

Capacity Failure

Glucose production, liver transformation, cognition, energy, nutrition.

Coupling Conditions

Liver disease, poor intake, malignancy risk, alcohol use where relevant, infection, medicines, social support.

Wise Perturbation

Correct glucose, monitor recurrence, assess liver function, infection, nutrition, medicines, adrenal features, and malignancy clues. Escalate if recurrent, severe, or unexplained.

Repair Trajectory

Glucose stabilizes, cause identified, nutrition supported, liver/systemic illness addressed, recurrence prevented.

17. Worked Case 5: Hypoglycemia Unawareness

A 58-year-old patient with long-standing diabetes reports that they no longer feel shaky when glucose is low. Their spouse notices sudden confusion several times per week.

Danger

Hypoglycemia unawareness with risk of severe episodes, driving/work danger, injury, seizure, and loss of independence.

Syndrome

Recurrent hypoglycemia with impaired warning symptoms.

Capacity Failure

Self-protection, cognition, agency, safety.

Coupling Conditions

Long diabetes duration, intensive treatment, frequent prior lows, renal function, work/driving, technology access, caregiver involvement, fear of complications.

Wise Perturbation

Review treatment targets, insulin or medicine regimen, meal/activity pattern, glucose monitoring, driving/work safety, and specialist diabetes input. Prioritize prevention of lows.

Repair Trajectory

Frequency of lows reduces, warning symptoms improve where possible, patient and spouse understand rescue plan, safety restored.

18. Common Student Pitfalls

Pitfall 1: Forgetting to Check Glucose in Confusion

Hypoglycemia is reversible and easily missed.

Pitfall 2: Correcting Glucose Once and Walking Away

Glucose may fall again, especially with long-acting insulin or sulfonylureas.

Pitfall 3: Ignoring Kidney Function

CKD increases hypoglycemia risk and changes medicine safety.

Pitfall 4: Missing Poor Intake

Usual diabetes medicines may become unsafe when meals are missed.

Pitfall 5: Missing Alcohol Contribution

Alcohol can mask and worsen hypoglycemia, especially with poor food intake.

Pitfall 6: Over-Treating Frail Patients

Very tight glucose control may cause more harm than benefit in vulnerable patients.

Pitfall 7: Ignoring Hypoglycemia Unawareness

Lack of symptoms is dangerous, not reassuring.

Pitfall 8: Failing to Ask About Self-Harm

Unexplained severe hypoglycemia may require careful safety assessment.

19. Clinical Practice Box

When assessing hypoglycemia, complete this structure:

Glucose value and confirmation:

Symptoms:
Sweating, tremor, hunger, palpitations, confusion, seizure, collapse?

Can the patient swallow safely?

Diabetes medicines:
Insulin, sulfonylurea, recent dose changes, errors?

Food and activity:
Missed meal, vomiting, exercise, alcohol, weight loss?

Danger features:
Unconsciousness, seizure, recurrent lows, CKD, liver disease, frailty, overdose, self-harm concern?

Capacity failure:
Glucose regulation, cognition, safety, nutrition, medicine safety, agency?

Initial treatment and monitoring:

Cause and prevention plan:

Repair trajectory:
Stable glucose, normal mental state, food intake, medicine adjustment, follow-up?

20. Mini-Case for Practice

A 79-year-old man with type 2 diabetes and chronic kidney disease is brought in after a fall. He is sweaty, confused, and weak. His glucose is low. He takes a sulfonylurea and has eaten poorly because of a chest infection.

Apply the hypoglycemia approach.

Danger

Severe hypoglycemia, recurrent hypoglycemia, fall injury, infection, CKD-related medication risk, delirium.

Syndrome

Sulfonylurea-associated hypoglycemia in an older patient with CKD, poor intake, and infection.

Capacity Failure

Glucose regulation, cognition, medicine safety, nutrition, mobility safety, defense.

Coupling Conditions

CKD, sulfonylurea use, chest infection, reduced intake, age, fall risk, home support, possible cognitive vulnerability.

Wise Perturbation

Correct glucose urgently according to local protocol, assess swallowing safety, monitor for recurrence, evaluate fall injury, assess infection, renal function, electrolytes, and medicine list. Review whether sulfonylurea should be stopped or changed. Ensure food intake and caregiver support before discharge.

Repair Trajectory

Mental state returns to baseline, glucose remains stable, infection treated, fall injury addressed, diabetes medicine plan made safer, meals supported, recurrence risk reduced.

21. Student Takeaway

Hypoglycemia becomes easier when the clinician asks:

Is the brain safe now?
Can the patient swallow?
Is insulin or sulfonylurea involved?
Was food missed?
Is kidney or liver disease present?
Is infection, alcohol, vomiting, exercise, overdose, or self-harm involved?
Will the glucose fall again?
What must change to prevent the next episode?

Hypoglycemia is not only a low number.

It is a warning that energy regulation, cognition, safety, medicine fit, nutrition, agency, and dignity may be under threat.

The safe clinician corrects the glucose, protects the brain, identifies the cause, prevents recurrence, and makes the treatment plan fit the patient’s actual life.

Chapter 27. Hypertension Made Easy

Hypertension means blood pressure is persistently higher than is safe for the body over time.

Patients may say:

“My pressure is high.”
“I have a headache.”
“I feel dizzy.”
“My eyes feel funny.”
“I ran out of tablets.”
“I was told my pressure was very high at the clinic.”
“I feel fine, but the number is high.”

Hypertension is common, but it is often misunderstood.

A high blood pressure reading is not always an emergency.
A normal-feeling patient can still be at long-term risk.
A symptomatic patient with very high pressure may have acute end-organ danger.

The first task is not simply to lower the number quickly.

The first task is to ask:

Is this high blood pressure causing acute organ danger, or is it chronic vascular risk that needs careful long-term control?

Hypertension becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Hypertension Dangerous Now?

Hypertension is dangerous in two main ways.

First, it can cause **acute danger** if blood pressure is severely elevated with injury to the brain, heart, kidneys, eyes, aorta, or pregnancy-related organs where relevant.

Second, it can cause **long-term harm** by slowly damaging blood vessels, heart muscle, kidneys, brain, retina, and circulation.

The immediate danger-first question is:

Is there acute end-organ damage?

Look for danger in:

- brain
- heart
- aorta
- kidneys
- retina
- lungs
- pregnancy-related systems where relevant

A very high number without symptoms or organ injury is different from high blood pressure with chest pain, pulmonary edema, stroke symptoms, confusion, acute kidney injury, or visual loss.

2. Immediate Red Flags in Hypertension

Urgent assessment is needed when high blood pressure is associated with:

- chest pain
- severe breathlessness
- pulmonary edema
- stroke symptoms
- weakness, numbness, facial droop, speech difficulty, or visual loss
- confusion or reduced consciousness
- seizure
- severe headache with neurological signs
- acute severe back or tearing chest pain
- suspected aortic dissection
- acute kidney injury
- very low urine output
- severe visual symptoms
- papilledema where found
- pregnancy or postpartum state where relevant
- severe hypertension with abdominal pain or neurological symptoms in pregnancy context
- severe hypertension with heart failure
- hypertensive emergency after cocaine or stimulant exposure
- severe hypertension with suspected intracranial bleeding
- rapidly worsening blood pressure with systemic illness

The key distinction is:

High blood pressure alone is not the same as hypertensive emergency.

Hypertensive emergency means high blood pressure with acute organ damage.

3. Hypertension Is a Syndrome, Not Just a Number

A blood pressure reading must be interpreted in context.

Ask:

- How high is the blood pressure?
- Was it measured correctly?
- Is it repeated?
- Is the patient in pain, anxious, breathless, withdrawing, or acutely ill?
- Is this known hypertension or new?
- Are there symptoms of acute organ damage?
- Are medicines being taken?
- Were medicines missed?
- Were medicines stopped because of side effects, cost, or misunderstanding?
- Is there kidney disease?
- Is there diabetes?
- Is there heart disease?
- Is there stroke history?
- Is there sleep apnea?
- Is there pregnancy/postpartum context where relevant?
- Are NSAIDs, steroids, decongestants, stimulants, oral contraceptives, recreational drugs, or other contributors present?
- Is there alcohol excess?
- Is there high salt intake?
- Is there chronic stress, poor sleep, pain, or obesity?
- Is the patient safe for gradual outpatient management, or is urgent care needed?

The goal is to move from:

“The blood pressure is high”

to:

“This is severe hypertension with pulmonary edema and acute kidney injury.”

or:

“This is asymptomatic uncontrolled chronic hypertension after running out of medicines.”

or:

“This is resistant hypertension with CKD, NSAID use, sleep apnea symptoms, and poor adherence due to side effects.”

The syndrome determines treatment.

4. Correct Blood Pressure Measurement Matters

Before diagnosing or escalating treatment, make sure the reading is reliable.

Check:

- correct cuff size
- arm supported
- patient seated and rested where possible
- feet on floor
- no talking during measurement
- repeated readings
- both arms at first assessment where appropriate
- pain, anxiety, caffeine, nicotine, exertion, or acute illness context
- home or ambulatory readings where needed and available

A single high reading may be misleading.

But a single high reading with danger symptoms must never be ignored.

The practical approach is:

Repeat the measurement, but do not repeat away the danger.

5. Common Hypertension Syndrome Patterns

Asymptomatic High Blood Pressure

Pattern:

- high reading
- no chest pain
- no breathlessness
- no neurological symptoms
- no confusion
- no acute kidney symptoms
- no visual danger symptoms
- patient often feels well

Possible causes:

- chronic essential hypertension
- missed medicines
- pain, anxiety, recent activity
- poor measurement technique
- lifestyle contributors
- medicine effects
- underlying CKD or endocrine cause in selected cases

Threatened capacities:

Long-term vascular integrity, **kidney protection**, **brain protection**, **heart protection**.

This usually needs careful confirmation and treatment, not panic.

Hypertension With Chest Pain

Pattern:

- high blood pressure
- chest pressure or pain
- sweating
- nausea
- breathlessness
- cardiovascular risk factors
- abnormal ECG or troponin where present

Possible causes:

- acute coronary syndrome
- aortic dissection
- severe demand ischemia
- hypertensive emergency
- anxiety or pain response after danger considered

Threatened capacities:

Coronary circulation, **vascular integrity**, **circulation reserve**.

Hypertension With Breathlessness or Pulmonary Edema

Pattern:

- high blood pressure
- severe breathlessness
- orthopnea
- crackles
- hypoxia
- frothy sputum in severe cases
- edema may or may not be present

Possible causes:

- acute heart failure
- hypertensive pulmonary edema
- renal failure with fluid overload
- acute coronary syndrome

- valvular disease

Threatened capacities:

Oxygenation, **circulation**, **fluid balance**, **kidney clearance**.

This can be an emergency.

Hypertension With Neurological Symptoms

Pattern:

- high blood pressure
- weakness
- numbness
- speech difficulty
- visual loss
- severe headache
- confusion
- seizure
- reduced consciousness

Possible causes:

- stroke
- intracranial hemorrhage
- hypertensive encephalopathy
- posterior reversible encephalopathy syndrome
- severe preeclampsia/eclampsia where relevant
- brain tumor or other neurological illness with high pressure response

Threatened capacities:

Brain integrity, **vascular regulation**, **cognition**, **mobility**, **agency**.

Hypertension With Acute Kidney Injury

Pattern:

- high blood pressure
- rising creatinine
- hematuria or proteinuria in some cases
- edema
- reduced urine output
- severe headache or visual symptoms where malignant hypertension is possible

Possible causes:

- hypertensive emergency
- glomerulonephritis
- renal artery disease
- medication-related kidney injury
- CKD progression
- fluid overload
- thrombotic microangiopathy in selected contexts

Threatened capacities:

Kidney clearance, **vascular integrity**, **fluid balance**, **electrolyte regulation**.

Resistant or Difficult-to-Control Hypertension

Pattern:

- blood pressure remains high despite multiple medicines
- adherence may be uncertain
- side effects may limit therapy
- CKD, obesity, sleep apnea, alcohol, salt intake, NSAIDs, or secondary causes may contribute

Possible causes:

- true resistant hypertension
- pseudo-resistance from measurement error
- poor adherence
- white-coat effect
- high salt intake
- medication interactions
- sleep apnea
- kidney disease
- endocrine causes
- renal artery stenosis in selected contexts

Threatened capacities:

Long-term vascular integrity, **kidney protection**, **heart protection**, **brain protection**.

Hypertension With Low Potassium

Pattern:

- high blood pressure
- low potassium
- muscle weakness or cramps
- resistant hypertension
- adrenal or endocrine clue

Possible causes:

- primary aldosteronism
- diuretic effect
- vomiting or diarrhea
- other endocrine or renal potassium-wasting states

Threatened capacities:

Blood pressure regulation, **electrolyte balance**, **rhythm safety**.

Hypertension in Frailty

Pattern:

- high blood pressure readings
- dizziness on standing
- falls
- cognitive impairment
- polypharmacy
- variable intake
- CKD
- wide pulse pressure
- overtreatment risk

Possible concerns:

- undertreatment of vascular risk
- overtreatment causing falls, syncope, AKI, or delirium
- measurement variability
- goals of care and function

Threatened capacities:

Brain protection, **kidney protection**, **mobility safety**, **agency**, **dignity**.

6. Capacity Failure in Hypertension

Hypertension matters because pressure damages living systems over time and sometimes acutely.

Vascular Integrity

Blood vessels are exposed to damaging pressure.

Signals include:

- stroke
- retinal changes
- kidney injury
- aortic disease
- vascular dementia risk
- peripheral vascular disease

Brain Protection

Hypertension increases risk of stroke, bleeding, cognitive decline, and acute encephalopathy.

Signals include:

- neurological symptoms
- visual symptoms
- confusion
- headache with danger signs
- prior stroke or TIA

Heart Workload

The heart must pump against higher resistance.

Signals include:

- left ventricular hypertrophy
- heart failure
- chest pain
- breathlessness
- arrhythmias
- reduced exercise tolerance

Kidney Clearance

High pressure damages kidney vessels and glomeruli.

Kidney disease also worsens blood pressure.

Signals include:

- proteinuria
- rising creatinine
- edema
- resistant hypertension
- electrolyte disturbance

Eye and Vision

Retinal vessels may show pressure injury.

Signals include:

- blurred vision
- visual loss
- retinal hemorrhages or papilledema where found
- chronic hypertensive retinopathy

Mobility and Safety

Treatment can harm if it lowers pressure too much for the patient's reserve.

Signals include:

- dizziness
- falls
- syncope
- AKI
- confusion
- fatigue
- reduced participation

Hypertension care must protect organs without destabilizing the person.

7. Bedside Assessment of Hypertension

Look First

Observe:

- distress
- breathlessness
- chest pain behavior
- neurological deficits
- confusion
- visual distress
- edema
- frailty
- pain
- anxiety
- intoxication or withdrawal
- pregnancy/postpartum context where relevant

A calm asymptomatic patient is different from a breathless patient with crackles or a confused patient with severe headache.

Vital Signs

Check:

- repeated blood pressure
- both arms where appropriate
- pulse
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- weight where chronic management is relevant
- postural blood pressure where dizziness, falls, frailty, or overtreatment risk exists

Hypertension assessment includes more than systolic and diastolic values.

Focused History

Ask about danger symptoms:

- chest pain
- breathlessness
- severe headache
- visual loss
- weakness
- numbness
- speech difficulty
- confusion
- seizure
- reduced urine output
- severe back pain
- pregnancy symptoms where relevant

Ask about chronic risk:

- duration of hypertension
- prior readings
- home readings
- diabetes
- CKD
- stroke or TIA
- coronary disease
- heart failure
- smoking
- family history
- sleep apnea symptoms
- kidney disease
- alcohol intake

- salt intake
- activity pattern
- weight change
- stress and sleep
- pain

Ask about medicines:

- what is prescribed
- what is actually taken
- missed doses
- side effects
- cost barriers
- confusion with tablets
- over-the-counter medicines
- NSAIDs
- steroids
- decongestants
- stimulants
- oral contraceptives where relevant
- herbal products
- recreational substances

Adherence problems are often not disobedience. They may reflect side effects, cost, misunderstanding, fear, forgetfulness, or complexity.

8. Physical Examination

Examine for acute danger and chronic organ effects.

Assess:

- neurological status
- speech
- cranial nerves
- limb power
- gait where safe
- fundi where skilled and available
- heart sounds
- murmurs
- signs of heart failure
- lung crackles
- peripheral edema
- peripheral pulses
- radio-femoral delay where relevant
- abdominal bruits where relevant
- abdominal masses

- kidney disease signs
- thyroid signs where relevant
- Cushingoid features where relevant
- body habitus and sleep apnea clues
- pregnancy-related signs where relevant
- frailty, falls risk, and postural symptoms

The examination asks:

What organ is being harmed, and what treatment could harm the patient?

9. Initial Investigations

Investigations depend on severity and context.

Common investigations may include:

- renal function and electrolytes
- potassium
- urinalysis for protein and blood
- urine albumin or protein assessment where available and indicated
- glucose or HbA1c
- lipid profile for long-term risk assessment
- ECG
- chest X-ray if heart failure, breathlessness, or pulmonary edema is suspected
- troponin if acute coronary syndrome is suspected according to local pathway
- brain imaging if stroke, intracranial hemorrhage, severe neurological symptoms, or local criteria apply
- pregnancy testing where relevant
- retinal assessment where severe hypertension or visual symptoms are present
- echocardiography where heart failure, murmur, or hypertensive heart disease is suspected
- sleep apnea assessment where suggested
- secondary hypertension workup where young onset, resistant hypertension, low potassium, abrupt worsening, kidney disease pattern, endocrine features, or episodic symptoms suggest
- toxicology or substance assessment where stimulant-related hypertension is suspected

Testing should answer:

- Is this hypertensive emergency?
- Is kidney function safe?
- Is potassium safe?
- Is there proteinuria?
- Is the heart affected?
- Is the brain affected?
- Is there diabetes or vascular risk?
- Are medicines causing or worsening hypertension?
- Is secondary hypertension likely?

- Can management be outpatient, urgent, or emergency?

10. Dangerous Diagnoses Not to Miss

Hypertensive Emergency

Clues:

- severe hypertension
- acute organ damage
- neurological symptoms
- chest pain
- pulmonary edema
- acute kidney injury
- visual loss
- aortic dissection symptoms
- pregnancy-related severe features where relevant

Capacity failure:

Vascular regulation, **brain integrity**, **heart function**, **kidney clearance**, **oxygenation**

Wise action:

Urgent emergency assessment and controlled blood pressure management according to local protocols. Avoid rapid unsupervised lowering without understanding the organ context.

Stroke or Intracranial Hemorrhage

Clues:

- weakness
- numbness
- facial droop
- speech difficulty
- visual loss
- severe headache
- confusion
- seizure
- very high blood pressure

Capacity failure:

Brain integrity, **mobility**, **cognition**, **agency**

Wise action:

Follow local stroke pathway. Blood pressure management depends on stroke type, timing, and treatment plan.

Acute Coronary Syndrome

Clues:

- chest pain
- sweating
- nausea
- breathlessness
- ECG changes
- high cardiovascular risk
- diabetes or CKD

Capacity failure:

Coronary circulation

Wise action:

Follow local ACS pathway. Treat blood pressure in the context of myocardial oxygen demand, perfusion, and safety.

Acute Pulmonary Edema

Clues:

- severe breathlessness
- crackles
- hypoxia
- orthopnea
- high blood pressure
- frothy sputum in severe cases
- acute heart failure

Capacity failure:

Oxygenation, **circulation**, **fluid balance**

Wise action:

Urgent oxygenation and heart failure management according to local protocols.

Aortic Dissection

Clues:

- sudden severe tearing chest, back, or abdominal pain
- pulse or blood pressure difference
- neurological symptoms
- syncope
- known aneurysm or connective tissue disease where relevant

Capacity failure:

Vascular integrity and **circulation**

Wise action:

Emergency assessment and imaging pathway. Do not treat as simple hypertension or musculoskeletal pain.

Acute Kidney Injury With Severe Hypertension

Clues:

- rising creatinine
- hematuria or proteinuria
- severe hypertension
- edema
- low urine output
- headache or visual symptoms
- possible glomerulonephritis or malignant hypertension

Capacity failure:

Kidney clearance, **vascular integrity**, **fluid and electrolyte regulation**

Wise action:

Assess kidney danger, urine findings, electrolytes, and need for urgent renal or emergency input.

Severe Hypertension in Pregnancy or Postpartum Context

Where relevant, severe hypertension with headache, visual symptoms, abdominal pain, edema, seizure, or abnormal labs may signal preeclampsia/eclampsia or related conditions.

Capacity failure:

Maternal vascular regulation, **brain safety**, **kidney/liver function**, **pregnancy safety**

Wise action:

Urgent obstetric/emergency pathway according to local protocols.

11. Wise Perturbation in Hypertension

Treatment depends on whether the problem is acute emergency, urgent uncontrolled hypertension, or chronic risk management.

Ask:

- Is there acute organ damage?
- Is this a true blood pressure reading?
- Is the patient symptomatic?
- Is the patient in pain, anxious, withdrawing, or acutely ill?
- What is the chronic baseline?
- What medicines are being taken?
- What medicines are being missed?
- What comorbidities shape safe treatment?
- What is the risk of lowering too fast?
- What is the risk of not treating long-term?
- Can the patient follow the plan?

In Hypertensive Emergency

This requires urgent monitored care according to local protocols.

The goal is controlled reduction that protects organs.

Do not rapidly lower blood pressure in an unmonitored setting without clear indication and guidance.

In Asymptomatic Severe Hypertension

If there is no acute organ damage, immediate aggressive lowering may be harmful.

Management often involves:

- confirming the reading
- checking for symptoms
- assessing organ risk
- restarting or adjusting medicines
- arranging timely follow-up
- checking renal function and electrolytes
- addressing adherence and barriers
- safety-netting clearly

In Chronic Hypertension

Repair requires long-term vascular protection.

Treatment may include:

- appropriate medication regimen
- lifestyle support
- salt reduction where relevant
- weight management where appropriate
- physical activity within capacity
- reducing alcohol excess
- smoking cessation
- sleep apnea assessment
- pain management
- stress and sleep support
- kidney and diabetes care
- follow-up and home monitoring where possible

Avoiding Treatment Harm

Blood pressure treatment can cause:

- dizziness
- falls
- syncope
- AKI
- electrolyte disturbance
- fatigue
- sexual dysfunction
- cough or edema depending on medicine
- poor adherence due to side effects
- confusion in frailty if overtreatment occurs

Wise treatment asks:

What is the safest pressure for this patient's organs and daily life?

12. Coupling Conditions in Hypertension

Hypertension persists because many conditions couple together.

Common coupling conditions include:

- salt intake
- obesity
- insulin resistance
- sleep apnea
- chronic stress
- poor sleep

- pain
- alcohol excess
- smoking
- inactivity
- kidney disease
- diabetes
- medication cost
- side effects
- complex regimens
- low health literacy
- cultural beliefs about medicines
- work schedules
- food environment
- family history
- clinic access
- white-coat effect
- home monitoring availability
- depression or cognitive impairment
- NSAID use
- steroid use
- stimulants or decongestants

The clinician should not simply say:

“The patient is non-compliant.”

Ask instead:

What makes blood pressure control difficult in this person’s real life?

13. Repair Trajectory in Hypertension

Repair depends on whether the issue is emergency or chronic risk.

In acute danger, repair markers include:

- chest pain improves
- breathlessness improves
- neurological status stabilizes
- oxygenation improves
- kidney function stabilizes
- urine output adequate
- blood pressure lowers safely under appropriate monitoring
- acute organ injury treated

In chronic care, repair markers include:

- repeated blood pressures improve over time
- home readings become safer
- kidney function stable
- potassium safe
- proteinuria addressed where relevant
- headaches or symptoms improve if related
- side effects minimized
- adherence improves
- patient understands the plan
- vascular risk reduced
- lifestyle changes become feasible
- follow-up is reliable
- no dizziness, falls, or overtreatment harm
- patient feels supported rather than blamed

Repair is not simply one good clinic reading.

Repair is durable vascular safety without loss of function, dignity, or trust.

14. Safety-Netting in Hypertension

Safety-netting should be specific.

Advise urgent review if high blood pressure is associated with:

- chest pain
- severe breathlessness
- weakness or numbness
- facial droop
- speech difficulty
- visual loss
- confusion
- seizure
- severe headache with neurological symptoms
- fainting
- severe back or tearing chest pain
- very low urine output
- severe swelling with breathlessness
- pregnancy or postpartum symptoms where relevant
- severe dizziness after medicine changes
- allergic reaction to medicines
- collapse or falls

Also explain:

- what blood pressure range is concerning for this patient
- when to repeat readings

- how to measure correctly
- what medicines were changed
- what side effects to watch for
- when blood tests are needed
- when follow-up is scheduled
- what symptoms mean emergency

Use teach-back:

“Can you tell me what blood pressure symptoms would make you seek urgent help?”

15. Worked Case 1: Severe Asymptomatic Reading

A 55-year-old man attends clinic. His blood pressure is very high on the first reading. He feels well. He has no chest pain, breathlessness, neurological symptoms, visual loss, confusion, or reduced urine output.

Danger

Hypertensive emergency appears less likely after danger screen, but chronic vascular risk is significant.

Syndrome

Severe asymptomatic hypertension pending confirmation and organ risk assessment.

Capacity Failure

Long-term vascular integrity, heart protection, brain protection, kidney protection.

Coupling Conditions

Measurement technique, missed medicines, salt intake, stress, sleep, alcohol, NSAID use, kidney disease, diabetes, access to care.

Wise Perturbation

Repeat blood pressure correctly, assess symptoms and organ risk, check relevant labs and urine where appropriate, review medicines and adherence, start or adjust treatment according to local guidance, arrange timely follow-up, and safety-net.

Repair Trajectory

Repeated readings improve, kidney function and potassium monitored, patient takes medicines reliably, side effects minimized, follow-up occurs.

16. Worked Case 2: Hypertension With Pulmonary Edema

A 72-year-old woman presents with severe breathlessness, orthopnea, crackles, low oxygen saturation, and very high blood pressure.

Danger

Hypertensive acute pulmonary edema, acute heart failure, ACS, arrhythmia, AKI.

Syndrome

Severe hypertension with acute oxygenation failure and heart failure features.

Capacity Failure

Oxygenation, circulation, fluid balance, kidney clearance.

Coupling Conditions

Chronic hypertension, CKD, missed medicines, salt intake, ischemic heart disease, arrhythmia, frailty, access to emergency care.

Wise Perturbation

Urgent assessment and treatment according to local emergency heart failure/hypertension guidance. Monitor oxygenation, ECG, renal function, potassium, blood pressure, urine output, and response.

Repair Trajectory

Breathlessness improves, oxygenation safer, crackles reduce, blood pressure lowers safely, renal function monitored, trigger identified.

17. Worked Case 3: Hypertension With Stroke Symptoms

A 66-year-old man presents with sudden right-sided weakness and slurred speech. His blood pressure is very high.

Danger

Acute stroke or intracranial hemorrhage.

Syndrome

Severe hypertension with acute focal neurological deficit.

Capacity Failure

Brain integrity, mobility, speech, agency, vascular regulation.

Coupling Conditions

Hypertension history, diabetes, atrial fibrillation, anticoagulants, time of onset, access to stroke pathway, family support.

Wise Perturbation

Activate local stroke pathway. Do not lower blood pressure reflexively without considering stroke type and treatment pathway. Assess glucose, ECG, neurological status, imaging criteria, and eligibility for acute treatment according to local protocols.

Repair Trajectory

Brain diagnosis clarified, neurological status monitored, blood pressure managed safely, rehabilitation and secondary prevention planned.

18. Worked Case 4: Resistant Hypertension

A 61-year-old woman has persistently high blood pressure despite several medicines. She has obesity, loud snoring, daytime sleepiness, CKD, and takes ibuprofen frequently for knee pain.

Danger

Long-term vascular, kidney, heart, and brain risk. No immediate emergency symptoms are present.

Syndrome

Difficult-to-control hypertension with CKD, possible sleep apnea, NSAID use, pain, and metabolic risk.

Capacity Failure

Vascular integrity, kidney protection, sleep regulation, mobility, comfort.

Coupling Conditions

Sleep apnea, obesity, pain, NSAIDs, CKD, salt intake, adherence, side effects, physical activity limitation, access to monitoring.

Wise Perturbation

Confirm readings and adherence, review medicines and NSAID use, assess kidney function, potassium, urine protein, sleep apnea symptoms, pain plan, salt intake, and secondary causes where indicated. Adjust treatment according to local guidance.

Repair Trajectory

Blood pressure trends improve, NSAID harm reduced, sleep apnea assessed, pain managed more safely, kidney function monitored, patient can follow regimen.

19. Worked Case 5: Hypertension in Frailty

An 88-year-old woman has high clinic blood pressure but reports dizziness on standing and two recent falls. She takes several antihypertensives and has CKD.

Danger

Both undertreated hypertension and overtreatment harm are possible. Immediate concern includes falls, syncope, AKI, and functional decline.

Syndrome

Hypertension management in frailty with postural symptoms and falls.

Capacity Failure

Vascular protection, mobility safety, kidney clearance, agency, dignity.

Coupling Conditions

Frailty, CKD, polypharmacy, postural hypotension, hydration, cognition, home safety, caregiver support, measurement variability.

Wise Perturbation

Check repeated and postural blood pressure where safe, review medicines, renal function, electrolytes, falls history, hydration, and goals of care. Adjust treatment to protect organs while avoiding falls and hypotension.

Repair Trajectory

Dizziness reduces, falls risk lowers, blood pressure remains reasonably controlled for context, kidney function stable, patient feels safer and more functional.

20. Common Student Pitfalls

Pitfall 1: Treating the Number Without the Patient

Blood pressure must be interpreted with symptoms, organ damage, baseline, and context.

Pitfall 2: Missing Hypertensive Emergency

Chest pain, pulmonary edema, stroke symptoms, confusion, AKI, visual loss, or pregnancy-related severe features change everything.

Pitfall 3: Lowering Blood Pressure Too Fast Without Indication

Rapid lowering can harm perfusion, especially in chronic hypertension or acute stroke contexts.

Pitfall 4: Ignoring Measurement Technique

Poor measurement can lead to overdiagnosis, overtreatment, or missed control.

Pitfall 5: Blaming Non-Adherence

Ask why medicines are not taken: side effects, cost, fear, confusion, access, or complexity.

Pitfall 6: Forgetting Medicines That Raise Blood Pressure

NSAIDs, steroids, decongestants, stimulants, some hormones, and substances matter.

Pitfall 7: Missing Secondary Causes

Young onset, resistant hypertension, low potassium, abrupt worsening, kidney clues, or endocrine symptoms should prompt broader thinking.

Pitfall 8: Ignoring Frailty and Falls

Blood pressure treatment should protect life, not create collapse.

21. Clinical Practice Box

When assessing hypertension, complete this structure:

Blood pressure reading:
How measured? Repeated? Both arms? Home readings?

Danger symptoms:
Chest pain, dyspnea, neuro symptoms, visual loss, confusion, AKI, pregnancy context, tearing pain?

Emergency or chronic risk?

Target organs:
Brain, heart, kidneys, eyes, aorta, lungs?

Capacity failure:
Vascular integrity, brain protection, heart workload, kidney clearance, vision, mobility safety?

Medicines:
Prescribed, actually taken, missed, side effects, cost, NSAIDs, steroids, stimulants, decongestants?

Coupling conditions:
Salt, weight, sleep apnea, alcohol, pain, stress, CKD, diabetes, access, home monitoring?

Initial investigations:
Renal function, electrolytes, urine protein, ECG, glucose, lipids, imaging or emergency tests if indicated?

Wise perturbation:
Emergency pathway, restart/adjust medicines, lifestyle support, secondary cause workup, adherence support?

Repair trajectory:
Blood pressure trend, organ protection, side effects, kidney/potassium safety, follow-up?

22. Mini-Case for Practice

A 64-year-old man presents to clinic with a blood pressure of 198/108 mmHg. He says he feels “mostly fine” but has had mild headaches. He has no chest pain, breathlessness, weakness, speech difficulty, visual loss, confusion, or reduced urine output. He ran out of his blood pressure tablets two weeks ago and has been taking ibuprofen daily for back pain.

Apply the hypertension approach.

Danger

Hypertensive emergency must be screened for, but no clear acute end-organ symptoms are present from the history given. Chronic vascular, kidney, heart, and brain risk remain significant.

Syndrome

Severe uncontrolled hypertension after medication interruption, with NSAID use and chronic pain.

Capacity Failure

Long-term vascular integrity, kidney protection, heart workload, brain protection.

Coupling Conditions

Ran out of medicines, pain, NSAID use, access to refills, adherence system, possible kidney risk, salt intake, stress, follow-up reliability.

Wise Perturbation

Repeat blood pressure correctly, assess for end-organ symptoms, check renal function, electrolytes, and urine protein where appropriate, review pain management and NSAID risk, restart or adjust antihypertensive therapy according to local guidance, arrange timely follow-up, and safety-net for danger symptoms.

Repair Trajectory

Blood pressure trends downward safely over time, medicines are available and tolerated, NSAID harm reduced, kidney function and potassium monitored, pain plan safer, follow-up completed.

23. Student Takeaway

Hypertension becomes easier when the clinician asks:

Is there acute end-organ damage?
Is this emergency hypertension or chronic vascular risk?
Was the blood pressure measured correctly?
Are brain, heart, kidneys, eyes, aorta, or lungs threatened?
Are medicines being missed, causing side effects, or blocked by cost or access?
Are NSAIDs, steroids, stimulants, sleep apnea, kidney disease, pain, salt, alcohol, or stress contributing?
What treatment protects organs without causing dizziness, falls, AKI, or loss of trust?
How will the blood pressure trajectory be followed?

Hypertension is not only a number.

It is a signal that vascular integrity, brain protection, heart workload, kidney clearance, vision, mobility, and long-term life-capacity may be at risk.

The safe clinician treats danger urgently when present, manages chronic risk patiently when appropriate, and makes the treatment plan fit the person’s real life.

Chapter 28. Shock Made Easy

Shock means the body is failing to deliver enough oxygenated blood to the tissues to sustain life.

Patients in shock may say very little.

They may look:

cold
clammy
confused
breathless
weak
collapsed
restless
mottled
drowsy
near death

Shock is one of the most important emergencies in Internal Medicine.

It is not just low blood pressure.

A patient can be in shock before the blood pressure falls.
A patient can have dangerously poor tissue perfusion with a “normal” pressure if they are compensating.
A patient can have shock from infection, bleeding, dehydration, heart failure, arrhythmia, pulmonary embolism, anaphylaxis, spinal injury, adrenal crisis, medication effect, or severe metabolic illness.

The first task is not to identify the final diagnosis perfectly.

The first task is to recognize that tissue perfusion is failing and act.

Shock becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Shock?

Shock is present or strongly suspected when there is evidence of inadequate tissue perfusion.

Look for:

- low blood pressure
- tachycardia
- cold clammy skin
- mottled skin

- delayed capillary refill
- altered mental state
- reduced urine output
- severe weakness
- dizziness or collapse
- rapid breathing
- metabolic acidosis where measured
- raised lactate where measured
- severe infection
- bleeding
- dehydration
- heart failure
- severe allergic reaction
- major pulmonary embolism
- arrhythmia
- severe trauma

The danger-first question is:

Are the organs being perfused adequately right now?

If the answer is uncertain, treat the patient as high-risk until proven otherwise.

2. Immediate Red Flags in Shock

Urgent assessment and escalation are needed when any of the following are present:

- low blood pressure
- altered mental state
- reduced consciousness
- severe breathlessness
- low oxygen saturation
- cold clammy peripheries
- mottling
- weak pulse
- very fast or very slow heart rate
- chest pain
- severe abdominal pain
- major bleeding
- vomiting blood
- black stools
- severe dehydration
- persistent vomiting or diarrhea
- fever with systemic illness
- rash, swelling, wheeze, or airway symptoms suggesting anaphylaxis
- reduced urine output
- suspected sepsis

- suspected pulmonary embolism
- suspected myocardial infarction
- suspected aortic dissection
- suspected ectopic pregnancy where relevant
- adrenal insufficiency or chronic steroid interruption
- severe trauma
- sudden collapse

Shock is a time-sensitive state.

Delay allows organ failure to spread.

3. Shock Is a Syndrome, Not a Blood Pressure Number

A low blood pressure reading is important, but shock is about tissue perfusion.

Ask:

- Is the patient alert?
- Is the skin warm or cold?
- Is the pulse fast, slow, weak, or irregular?
- Is the patient breathing fast?
- Is oxygenation safe?
- Is urine output reduced?
- Is there fever?
- Is there bleeding?
- Is there dehydration?
- Is there chest pain?
- Is there heart failure?
- Is there an allergic trigger?
- Is there severe abdominal pain?
- Is there trauma?
- Is there pregnancy possibility where relevant?
- Are there medicines causing hypotension?
- Is there adrenal risk?
- Is the patient improving or deteriorating?

The goal is to move from:

“The blood pressure is low”

to:

“This is suspected septic shock from pneumonia with confusion, tachypnea, fever, hypotension, and oliguria.”

or:

“This is hemorrhagic shock from gastrointestinal bleeding with melena, pallor, tachycardia, and syncope.”

or:

“This is cardiogenic shock after myocardial infarction with pulmonary edema, chest pain, cold peripheries, and low urine output.”

The syndrome determines the treatment.

4. A Simple Classification of Shock

Shock becomes easier when grouped by the main failure.

Hypovolemic Shock

The circulating volume is too low.

Common causes:

- bleeding
- vomiting
- diarrhea
- dehydration
- burns
- severe poor intake
- third spacing
- pancreatitis
- diuretic excess
- heat illness

Typical clues:

- thirst
- dry mucosa
- tachycardia
- low blood pressure
- dizziness
- reduced urine output
- cool peripheries
- history of fluid loss or bleeding

Main capacity failure:

Circulating volume and **tissue perfusion**.

Distributive Shock

Blood vessels are abnormally dilated or leaky, so effective circulation fails.

Common causes:

- sepsis
- anaphylaxis
- severe inflammation
- neurogenic shock
- adrenal crisis
- severe liver failure in some contexts

Typical clues:

- fever or infection source in sepsis
- warm peripheries early in some septic states
- rash, swelling, wheeze, or trigger in anaphylaxis
- hypotension after spinal injury in neurogenic shock
- steroid history in adrenal crisis

Main capacity failure:

Vascular tone, **distribution of blood flow**, **defense**, and **circulation**.

Cardiogenic Shock

The heart cannot pump effectively.

Common causes:

- myocardial infarction
- severe heart failure
- arrhythmia
- myocarditis
- severe valve disease
- cardiomyopathy
- medication toxicity

Typical clues:

- chest pain
- breathlessness
- pulmonary edema
- cold clammy skin
- weak pulse
- raised venous pressure where present
- abnormal ECG

- irregular or extreme heart rate
- poor urine output

Main capacity failure:

Pump function, **oxygenation**, and **circulation**.

Obstructive Shock

Blood flow is mechanically blocked.

Common causes:

- massive pulmonary embolism
- cardiac tamponade
- tension pneumothorax
- severe pulmonary hypertension crisis
- obstructed great vessel flow in selected contexts

Typical clues:

- sudden breathlessness
- chest pain
- collapse
- hypoxia
- raised venous pressure where present
- unilateral absent breath sounds in tension pneumothorax
- muffled heart sounds or tamponade clues where present
- risk factors for venous thromboembolism

Main capacity failure:

Flow through the heart-lung circulation.

5. Common Shock Syndrome Patterns

Shock With Fever

Pattern:

- fever or low temperature
- tachycardia
- tachypnea
- hypotension
- confusion
- low urine output

- infection source

Possible causes:

- sepsis
- septic shock
- pneumonia
- urinary infection
- abdominal infection
- meningitis
- skin or soft tissue infection
- infected line or device
- tropical or travel-related infection where relevant

Threatened capacities:

Defense, **circulation**, **oxygenation**, **clearance**, **cognition**.

Shock With Bleeding

Pattern:

- collapse
- dizziness
- pallor
- tachycardia
- low blood pressure
- vomiting blood
- black stools
- rectal bleeding
- trauma
- abdominal pain
- pregnancy-related bleeding where relevant
- anticoagulant use

Possible causes:

- gastrointestinal bleeding
- ruptured aneurysm
- trauma
- ectopic pregnancy where relevant
- hemorrhagic pancreatitis or intra-abdominal bleeding
- procedure-related bleeding

Threatened capacities:

Circulating volume, **oxygen delivery**, **coagulation**, **life**.

Shock With Chest Pain

Pattern:

- chest pain
- low blood pressure
- sweating
- breathlessness
- abnormal pulse
- pulmonary edema or cold peripheries
- ECG changes where present

Possible causes:

- myocardial infarction
- cardiogenic shock
- aortic dissection
- massive pulmonary embolism
- arrhythmia
- tamponade

Threatened capacities:

Coronary circulation, **pump function**, **vascular integrity**, **oxygenation**.

Shock With Severe Breathlessness

Pattern:

- severe dyspnea
- hypoxia
- tachycardia
- hypotension
- chest pain or syncope
- pulmonary edema or clear chest depending on cause

Possible causes:

- massive pulmonary embolism
- cardiogenic shock
- severe pneumonia or sepsis
- tension pneumothorax
- severe asthma or COPD with exhaustion
- anaphylaxis

Threatened capacities:

Oxygenation, **circulation**, **ventilation**, **life**.

Shock With Rash, Swelling, or Wheeze

Pattern:

- sudden collapse or hypotension
- rash or urticaria
- facial, tongue, or airway swelling
- wheeze
- vomiting or abdominal pain
- trigger such as food, medicine, sting, contrast, or latex

Possible cause:

- anaphylaxis

Threatened capacities:

Airway, **breathing**, **vascular tone**, **circulation**.

This is immediately dangerous.

Shock With Severe Abdominal Pain

Pattern:

- severe abdominal pain
- hypotension
- tachycardia
- guarding or rigidity
- distension
- GI bleeding
- vomiting
- vascular risk
- pregnancy possibility where relevant

Possible causes:

- perforation
- pancreatitis
- mesenteric ischemia
- ruptured aneurysm
- bowel obstruction with strangulation
- severe sepsis
- ectopic pregnancy where relevant
- adrenal crisis

Threatened capacities:

Bowel integrity, **circulation**, **defense**, **vascular integrity**.

Shock With Bradycardia

Pattern:

- low blood pressure
- slow heart rate
- dizziness or collapse
- chest pain or weakness
- medication exposure
- conduction disease
- high potassium
- spinal injury

Possible causes:

- heart block
- medication toxicity
- hyperkalemia
- inferior myocardial infarction
- neurogenic shock
- severe hypothermia

Threatened capacities:

Heart rhythm, **circulation**, **brain perfusion**.

Shock With Chronic Steroid Use

Pattern:

- hypotension
- weakness
- vomiting
- abdominal pain
- fever or infection trigger
- hyponatremia or hyperkalemia in some contexts
- history of adrenal insufficiency or long-term steroid use
- recent steroid withdrawal

Possible cause:

- adrenal crisis

Threatened capacities:

Stress response, **vascular tone**, **glucose regulation**, **circulation**.

6. Capacity Failure in Shock

Shock is the collapse of several capacities at once.

Circulation

Blood is not moving effectively enough to tissues.

Signals include:

- low blood pressure
- weak pulse
- cold peripheries
- mottling
- delayed capillary refill
- dizziness
- syncope

Oxygen Delivery

Tissues are not receiving enough oxygen.

Signals include:

- confusion
- breathlessness
- metabolic acidosis
- high lactate where measured
- chest pain
- organ dysfunction

Brain Perfusion

The brain is highly sensitive to low flow.

Signals include:

- confusion
- agitation
- drowsiness
- collapse
- seizure in some contexts
- coma

Kidney Perfusion

The kidneys reduce urine output when perfusion falls.

Signals include:

- oliguria
- rising creatinine
- worsening potassium
- acidosis

Defense

In septic shock, the body's defense response becomes dysregulated.

Signals include:

- fever or low temperature
- infection source
- high respiratory rate
- hypotension
- altered mental state
- worsening organ function

Coagulation

Bleeding and severe infection can disturb clotting.

Signals include:

- bruising
- bleeding
- oozing from lines
- abnormal clotting tests where measured

Agency and Dignity

Shock removes control.

The patient may be frightened, confused, exposed, rushed, and unable to speak.

Life-coherent care protects dignity even during emergency care.

7. Bedside Assessment: Recognize Shock Quickly

Look First

A patient in shock may appear:

- pale
- sweaty
- mottled
- cold
- restless
- confused
- drowsy
- breathless
- collapsed
- weak
- unable to sit up
- frightened

Ask immediately:

Does this patient look critically unwell?

Vital Signs

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- glucose
- urine output
- pain score if possible

Respiratory rate and mental state are often early warning signs.

Do not wait for profound hypotension before acting.

Rapid ABCDE Thinking

Use a structured emergency approach.

Airway

Is the airway open?
Is there swelling, vomit, blood, reduced consciousness, or aspiration risk?

Breathing

Is oxygenation adequate?
Is the respiratory rate high or low?
Are there crackles, wheeze, absent breath sounds, or signs of exhaustion?

Circulation

Is the pulse fast, slow, weak, irregular?
Is the skin cold or warm?
Is there bleeding?
Is blood pressure low?
Is capillary refill delayed?
Is urine output reduced?

Disability

Is the patient confused, drowsy, seizing, or hypoglycemic?
Check glucose.

Exposure

Look for rash, bleeding, infection, wounds, abdominal signs, trauma, edema, catheter, and medication clues.

The purpose of ABCDE is not to complete a form.

The purpose is to prevent death while diagnosis is still unfolding.

8. Focused History in Shock

History must be brief and targeted.

Ask the patient, family, ambulance team, nurse, or caregiver:

- What happened?
- When was the patient last well?
- Was there fever?
- Was there bleeding?
- Was there vomiting or diarrhea?
- Was there chest pain?
- Was there breathlessness?
- Was there collapse or syncope?
- Was there abdominal pain?
- Was there rash, swelling, sting, food, or new medicine?
- Was there trauma?
- Is pregnancy possible where relevant?

- Are there known heart, kidney, liver, adrenal, or diabetic conditions?
- What medicines are taken?
- Any anticoagulants?
- Any insulin or diabetes tablets?
- Any steroids?
- Any overdose or toxin concern?
- Any recent surgery, travel, immobility, cancer, or clot risk?
- What is baseline function?

In shock, collateral history is often essential.

9. Physical Examination in Shock

Examination should be rapid and repeated.

Assess:

- airway patency
- work of breathing
- chest sounds
- heart rhythm
- pulse quality
- skin temperature and perfusion
- capillary refill
- jugular venous pressure where feasible
- edema
- abdominal tenderness or distension
- bleeding sites
- stool or vomit blood where present
- rash or urticaria
- facial/tongue swelling
- wounds or cellulitis
- catheter or line infection
- flank tenderness
- neurological status
- signs of trauma
- calf swelling or clot risk where relevant
- signs of chronic liver disease or adrenal risk where relevant

One examination is not enough.

Shock evolves.

Reassess often.

10. Initial Investigations

Investigations should support treatment, not delay it.

Common investigations may include:

- glucose
- ECG
- full blood count
- renal function and electrolytes
- potassium
- liver tests where relevant
- lactate where available
- blood gas where shock, acidosis, or respiratory failure is possible
- blood cultures where sepsis is suspected and feasible without delaying treatment
- urine testing and culture where urinary infection is possible
- chest X-ray where respiratory or cardiac cause is possible
- troponin where ACS is suspected
- coagulation profile where bleeding, liver disease, sepsis, or anticoagulation is relevant
- type and screen or crossmatch where bleeding is possible
- pregnancy test where relevant
- bedside ultrasound where available and skilled use can guide fluid, heart, lung, abdomen, or obstruction assessment
- CT imaging when stable enough and diagnosis requires it
- targeted tests for suspected PE, aortic dissection, pancreatitis, adrenal crisis, toxicology, or other causes according to local pathway

Testing should answer:

- Is oxygenation failing?
- Is circulation failing?
- Is there infection?
- Is there bleeding?
- Is the heart failing?
- Is there obstruction to flow?
- Is there severe dehydration?
- Are potassium, glucose, acid-base status, and renal function dangerous?
- What definitive treatment is needed?

11. Dangerous Diagnoses Not to Miss

Septic Shock

Clues:

- suspected infection

- fever or low temperature
- tachypnea
- hypotension
- confusion
- reduced urine output
- mottled or poorly perfused skin
- raised lactate where measured

Capacity failure:

Defense, **circulation**, **oxygen delivery**, **clearance**, **cognition**

Wise action:

Treat according to local sepsis pathway. Search for source. Give appropriate antimicrobials, fluids or circulatory support as indicated, and escalate early.

Hemorrhagic Shock

Clues:

- bleeding
- melena
- hematemesis
- trauma
- pallor
- tachycardia
- hypotension
- syncope
- abdominal pain
- anticoagulant use

Capacity failure:

Circulating volume, **oxygen delivery**, **coagulation**

Wise action:

Control bleeding source, restore circulation according to local emergency guidance, review anticoagulants, and obtain urgent procedural or surgical input when needed.

Cardiogenic Shock

Clues:

- chest pain
- severe breathlessness
- pulmonary edema

- cold peripheries
- weak pulse
- low urine output
- abnormal ECG
- arrhythmia
- known heart failure

Capacity failure:

Pump function, **oxygenation**, **circulation**, **kidney perfusion**

Wise action:

Do not assume fluids are helpful. Assess heart failure, rhythm, ischemia, oxygenation, and need for urgent cardiac/emergency input.

Massive Pulmonary Embolism

Clues:

- sudden breathlessness
- chest pain
- syncope
- hypoxia
- tachycardia
- hypotension
- risk factors such as immobility, surgery, cancer, pregnancy/postpartum context where relevant, prior clot

Capacity failure:

Pulmonary circulation, **oxygenation**, **right heart function**

Wise action:

Urgent assessment and local PE pathway. Escalate early if unstable.

Anaphylactic Shock

Clues:

- sudden onset after exposure
- rash or hives
- swelling
- wheeze
- airway symptoms
- vomiting or abdominal pain
- hypotension

- collapse

Capacity failure:

Airway, **breathing**, **vascular tone**, **circulation**

Wise action:

Immediate emergency treatment according to local anaphylaxis protocol. Remove trigger where possible and monitor for recurrence.

Obstructive Shock From Tension Pneumothorax

Clues:

- sudden severe breathlessness
- chest pain
- hypoxia
- hypotension
- absent or reduced breath sounds on one side
- distended neck veins where present
- trauma or ventilation context

Capacity failure:

Breathing, **venous return**, **circulation**

Wise action:

Emergency decompression according to local protocol. Do not wait for imaging if classic life-threatening features are present and the patient is crashing.

Cardiac Tamponade

Clues:

- hypotension
- tachycardia
- raised venous pressure where present
- muffled heart sounds where present
- recent procedure, malignancy, infection, trauma, or pericarditis context
- pulsus paradoxus where assessed
- shock with unclear cause

Capacity failure:

Cardiac filling, **circulation**, **organ perfusion**

Wise action:

Urgent bedside imaging where available and emergency specialist input.

Adrenal Crisis

Clues:

- shock
- vomiting
- abdominal pain
- weakness
- chronic steroid use
- known adrenal insufficiency
- recent steroid interruption
- infection trigger
- hyponatremia or hyperkalemia in some contexts
- hypoglycemia in some cases

Capacity failure:

Stress response, **vascular tone**, **glucose regulation**, **circulation**

Wise action:

Treat urgently according to local adrenal crisis protocol when strongly suspected.

12. Wise Perturbation in Shock

Shock treatment must be fast, but not mindless.

Ask:

- What type of shock is most likely?
- Is airway safe?
- Is oxygenation safe?
- Is circulation failing?
- Is there bleeding?
- Is there infection?
- Is the heart failing?
- Is there obstruction to blood flow?
- Is there anaphylaxis?
- What treatment will restore perfusion?
- What treatment could worsen this shock type?
- Who needs to be called now?

Oxygen and Airway Support

If oxygenation is unsafe, support breathing according to local protocols.

Consider airway protection if consciousness is impaired or aspiration risk is high.

Fluids

Fluids may help hypovolemic and some distributive shock.

But fluids may harm cardiogenic shock, pulmonary edema, and some kidney or liver states.

Fluid therapy should be guided by reassessment:

- blood pressure
- pulse
- mental state
- urine output
- skin perfusion
- lungs
- oxygenation
- edema
- lactate where available
- bedside ultrasound where available and skilled

The question is:

Did the fluid improve perfusion, or did it worsen congestion?

Antibiotics and Source Control

In septic shock, antibiotics and source control are central.

Source control may mean:

- draining an abscess
- relieving biliary obstruction
- relieving urinary obstruction
- removing infected lines
- debriding infected tissue
- treating perforation or intra-abdominal infection

Antibiotics without source control may fail.

Blood and Bleeding Control

In hemorrhagic shock, restore circulating oxygen-carrying capacity and stop the bleeding source.

Consider:

- GI bleeding pathway
- trauma pathway
- anticoagulant reversal where indicated
- surgical or procedural control
- obstetric/gynecological input where relevant

Cardiac Treatment

In cardiogenic shock, treatment must address:

- myocardial infarction
- arrhythmia
- severe heart failure
- valve disease
- myocarditis
- medicine toxicity

Blind fluids may worsen pulmonary edema.

Relieving Obstruction

Obstructive shock requires relieving the obstruction when possible:

- pulmonary embolism pathway
- tension pneumothorax decompression
- tamponade drainage
- other mechanical causes

Vasopressors and Advanced Support

Some shock states need vasoactive support, intensive monitoring, or critical care.

The decision depends on local resources and protocols.

Escalate early.

Stop Harmful Contributors

Review:

- antihypertensives
- diuretics
- sedatives
- opioids
- beta blockers

- calcium channel blockers
- anticoagulants
- insulin or diabetes medicines
- nephrotoxins
- recent toxins or overdose

In shock, usual medicines may become dangerous.

13. Repair Trajectory in Shock

Shock repair is shown by restored perfusion.

Markers include:

- mental state improves
- blood pressure stabilizes
- pulse improves
- breathing improves
- oxygenation improves
- skin perfusion improves
- capillary refill improves
- urine output returns
- lactate falls where measured
- acidosis improves where measured
- chest pain improves if cardiac cause treated
- bleeding controlled
- infection source treated
- allergic symptoms resolve
- obstruction relieved
- kidney function stabilizes
- potassium and glucose safe
- patient becomes warmer, clearer, and more interactive

Repair is not simply “the blood pressure looks better.”

Repair means organs are receiving enough flow again.

14. Reassessment in Shock

Reassessment is central.

After each intervention, ask:

- Is the patient more awake?

- Is breathing easier?
- Is oxygenation better?
- Is blood pressure better?
- Is pulse improving?
- Are peripheries warmer?
- Is urine output improving?
- Is pain improving?
- Is lactate or acidosis improving where measured?
- Did treatment cause harm?
- Is the diagnosis still correct?
- Is escalation needed?

Shock care is dynamic.

The first plan may be wrong.

The patient's response teaches the clinician.

15. Safety-Netting After Shock

After stabilization, safety-netting depends on cause.

Before discharge or step-down, clarify:

- what caused shock
- what treatment was given
- what organ injury occurred
- whether kidney function recovered
- whether medicines changed
- whether infection source is controlled
- whether bleeding has stopped
- whether recurrence risk remains
- what follow-up is needed
- what warning signs require urgent return
- whether the patient can manage at home
- whether caregiver support is adequate
- whether rehabilitation is needed

Shock survivors may be weak, frightened, confused, or functionally worse.

Repair includes recovery after survival.

16. Worked Case 1: Septic Shock From Pneumonia

A 76-year-old man presents with fever, cough, confusion, fast breathing, low blood pressure, and reduced urine output.

Danger

Septic shock, respiratory failure, AKI, delirium.

Syndrome

Suspected pneumonia with systemic infection, hypotension, altered mental state, tachypnea, and oliguria.

Capacity Failure

Defense, oxygenation, circulation, clearance, cognition.

Coupling Conditions

Age, chronic lung disease if present, diabetes, frailty, delayed presentation, hydration, home support, baseline kidney function.

Wise Perturbation

ABCDE assessment, oxygenation support as needed, glucose, cultures where appropriate and safe, antibiotics according to local sepsis guidance, careful fluid/circulatory support with reassessment, chest assessment and imaging, urine output monitoring, early escalation.

Repair Trajectory

Mental state improves, blood pressure stabilizes, respiratory rate decreases, oxygenation improves, urine output returns, fever settles, infection source controlled.

17. Worked Case 2: Hemorrhagic Shock From GI Bleeding

A 68-year-old woman presents after collapsing. She is pale, clammy, tachycardic, and hypotensive. She has black stools and takes an anticoagulant.

Danger

Hemorrhagic shock, severe anemia, ongoing GI bleeding, anticoagulant-related bleeding, AKI.

Syndrome

Shock with melena, pallor, collapse, and anticoagulant exposure.

Capacity Failure

Circulating volume, oxygen delivery, coagulation, kidney perfusion.

Coupling Conditions

Anticoagulant use, age, NSAID use if present, ulcer disease, liver disease where relevant, renal function, access to endoscopy or procedural care.

Wise Perturbation

ABCDE assessment, IV access, blood tests including hemoglobin and coagulation context, type and crossmatch, resuscitation according to local bleeding pathway, medication review, urgent GI/emergency input, and monitoring.

Repair Trajectory

Bleeding controlled, blood pressure stabilizes, mental state improves, hemoglobin stabilizes, urine output improves, anticoagulant plan clarified.

18. Worked Case 3: Cardiogenic Shock

A 72-year-old man presents with crushing chest pain, sweating, severe breathlessness, crackles, cold peripheries, low blood pressure, and reduced urine output.

Danger

Myocardial infarction with cardiogenic shock and pulmonary edema.

Syndrome

Shock with chest pain, pulmonary edema, cold peripheries, and oliguria.

Capacity Failure

Coronary circulation, pump function, oxygenation, kidney perfusion.

Coupling Conditions

Coronary disease, hypertension, diabetes, CKD, medication history, time from symptom onset, access to cardiac care.

Wise Perturbation

ABCDE assessment, oxygenation support where needed, ECG, cardiac pathway according to local protocol, cautious approach to fluids, treat pulmonary edema and shock with urgent senior/cardiology input.

Repair Trajectory

Chest pain improves, oxygenation improves, perfusion improves, urine output returns, rhythm stable, kidney function monitored, definitive cardiac care arranged.

19. Worked Case 4: Anaphylactic Shock

A 24-year-old patient develops sudden hives, facial swelling, wheeze, vomiting, dizziness, and hypotension after eating seafood.

Danger

Anaphylaxis with airway, breathing, and circulation threat.

Syndrome

Acute allergic reaction with rash, swelling, wheeze, gastrointestinal symptoms, and shock.

Capacity Failure

Airway, breathing, vascular tone, circulation.

Coupling Conditions

Food trigger, asthma history, previous allergy, access to emergency care, future avoidance, epinephrine access where locally appropriate.

Wise Perturbation

Immediate emergency treatment according to local anaphylaxis protocol, airway and breathing assessment, circulatory support, trigger avoidance, observation for recurrence, and discharge education.

Repair Trajectory

Swelling reduces, wheeze improves, blood pressure stabilizes, rash settles, patient understands trigger and emergency plan.

20. Worked Case 5: Obstructive Shock From Pulmonary Embolism

A 59-year-old woman develops sudden breathlessness, chest pain, syncope, low oxygen saturation, tachycardia, and hypotension after recent surgery.

Danger

Massive pulmonary embolism with obstructive shock.

Syndrome

Shock with sudden dyspnea, chest pain, syncope, hypoxia, and recent surgery.

Capacity Failure

Pulmonary circulation, oxygenation, right heart function, systemic perfusion.

Coupling Conditions

Recent surgery, immobility, clot risk, anticoagulation status, cancer history if present, access to imaging and emergency care.

Wise Perturbation

ABCDE assessment, oxygenation support, ECG and relevant labs, urgent PE pathway according to local guidance, early escalation because the patient is unstable.

Repair Trajectory

Oxygenation improves, blood pressure stabilizes, chest pain and dyspnea improve, right heart strain addressed, anticoagulation or definitive pathway clarified.

21. Worked Case 6: Adrenal Crisis

A 63-year-old woman on long-term steroids for inflammatory disease presents with vomiting, abdominal pain, profound weakness, fever, and hypotension after stopping steroids abruptly.

Danger

Adrenal crisis, sepsis trigger, shock, hypoglycemia, electrolyte disturbance.

Syndrome

Shock with vomiting, abdominal pain, chronic steroid exposure, and recent steroid interruption.

Capacity Failure

Stress response, vascular tone, glucose regulation, circulation.

Coupling Conditions

Steroid dependence, infection, medication access, misunderstanding of steroid tapering, chronic inflammatory disease, frailty.

Wise Perturbation

ABCDE assessment, glucose and electrolytes, infection search, circulatory support, and emergency steroid pathway according to local protocol when strongly suspected.

Repair Trajectory

Blood pressure improves, vomiting settles, glucose and electrolytes stabilize, infection treated if present, steroid plan clarified, patient understands future sick-day rules.

22. Common Student Pitfalls

Pitfall 1: Waiting for Very Low Blood Pressure

Shock can begin before blood pressure collapses.

Pitfall 2: Treating All Shock With Fluids

Fluids may help hypovolemia and some sepsis but can worsen cardiogenic shock or pulmonary edema.

Pitfall 3: Missing Sepsis

Confusion, tachypnea, fever, hypotension, and oliguria may be sepsis until proven otherwise.

Pitfall 4: Missing Bleeding

Look for melena, hematemesis, trauma, anticoagulants, abdominal pain, and pregnancy-related bleeding where relevant.

Pitfall 5: Missing Cardiogenic Shock

Chest pain, pulmonary edema, cold peripheries, and low urine output require cardiac thinking.

Pitfall 6: Missing Anaphylaxis

Rash, swelling, wheeze, vomiting, and hypotension after exposure require immediate action.

Pitfall 7: Forgetting Obstructive Shock

Pulmonary embolism, tamponade, and tension pneumothorax can kill quickly.

Pitfall 8: Not Reassessing

Shock care is never one-and-done. Response determines the next step.

23. Clinical Practice Box

When assessing shock, complete this structure:

Does the patient look critically ill?
Cold, clammy, mottled, confused, breathless, collapsed?

Perfusion signs:
Blood pressure, pulse, capillary refill, skin, mental state, urine output?

Shock type most likely:
Hypovolemic, distributive, cardiogenic, obstructive, mixed?

Danger source:
Sepsis, bleeding, dehydration, heart failure, MI, PE, anaphylaxis, adrenal crisis, obstruction?

Capacity failure:
Circulation, oxygen delivery, brain perfusion, kidney perfusion, defense, coagulation?

Immediate ABCDE actions:
Airway, breathing, circulation, disability/glucose, exposure?

Initial investigations:
Glucose, ECG, bloods, lactate/blood gas, cultures, CXR, imaging, crossmatch, pregnancy test where relevant?

Wise perturbation:
Oxygen, fluids, blood, antibiotics, source control, cardiac care, anaphylaxis protocol, PE pathway, escalation?

Repair trajectory:
Mental state, blood pressure, pulse, oxygenation, urine output, lactate/acidosis, source control?

24. Mini-Case for Practice

A 79-year-old man is brought to hospital with fever, confusion, fast breathing, low blood pressure, and reduced urine output. His family says he has had a cough for four days and became drowsy today.

Apply the shock approach.

Danger

Septic shock, pneumonia, respiratory failure, AKI, delirium, death if untreated.

Syndrome

Shock with fever, cough, tachypnea, hypotension, confusion, and oliguria.

Capacity Failure

Defense, oxygenation, circulation, kidney perfusion, cognition.

Coupling Conditions

Age, possible chronic lung disease, dehydration, delayed presentation, diabetes or CKD if present, frailty, home support, baseline function.

Wise Perturbation

ABCDE assessment, oxygenation support as needed, glucose check, blood tests including renal function and electrolytes, lactate or blood gas where available, cultures where appropriate and safe, chest assessment and imaging, antibiotics according to local sepsis guidance, cautious fluid/circulatory support with reassessment, urine output monitoring, and early escalation.

Repair Trajectory

Mental state improves, blood pressure stabilizes, respiratory rate decreases, oxygenation improves, urine output returns, fever settles, renal function stabilizes, infection source controlled.

25. Student Takeaway

Shock becomes easier when the clinician asks:

Is tissue perfusion failing?
Is the patient cold, confused, breathless, hypotensive, mottled, or oliguric?
Is this hypovolemic, distributive, cardiogenic, obstructive, or mixed shock?
Is the cause sepsis, bleeding, dehydration, heart failure, myocardial infarction, pulmonary embolism, anaphylaxis, tamponade, tension pneumothorax, adrenal crisis, or medication effect?
What treatment restores perfusion without worsening the cause?
How will we know organs are being perfused again?

Shock is not only low blood pressure.

It is a collapse of circulation, oxygen delivery, brain perfusion, kidney perfusion, defense, and life-capacity.

The safe clinician recognizes shock early, acts before certainty is complete, reassesses constantly, escalates early, and follows the repair trajectory until tissue perfusion is restored.

Chapter 29. Palpitations Made Easy

Palpitations mean the patient is aware of the heartbeat in an unusual or uncomfortable way.

Patients may say:

“My heart is racing.”
“My heart is skipping.”
“It feels like fluttering.”
“It pounds in my chest.”
“It comes suddenly and stops suddenly.”
“I feel dizzy when it happens.”
“I nearly fainted.”
“I get short of breath.”
“I feel chest tightness with it.”

Palpitations are common.

Many are benign.
Some are caused by anxiety, caffeine, fever, anemia, hyperthyroidism, dehydration, pain, alcohol, stimulants, or ectopic beats.
Some are caused by dangerous arrhythmias.

The first task is not to reassure too quickly.

The first task is to ask:

Are these palpitations a sign of rhythm danger, circulation failure, structural heart disease, metabolic disturbance, or systemic illness?

Palpitations become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Are These Palpitations Dangerous?

Palpitations become dangerous when the rhythm threatens cardiac output, brain perfusion, coronary circulation, breathing, or sudden death risk.

Dangerous causes and contexts include:

- ventricular tachycardia
- supraventricular tachycardia with instability
- atrial fibrillation with rapid ventricular response
- atrial flutter
- complete heart block or severe bradyarrhythmia

- long QT or inherited arrhythmia syndromes
- Wolff-Parkinson-White pattern with atrial fibrillation
- myocardial infarction
- myocarditis
- pulmonary embolism
- severe electrolyte disturbance
- thyrotoxicosis
- severe anemia
- sepsis
- stimulant or cocaine use
- medication toxicity
- structural heart disease
- heart failure
- syncope with palpitations
- family history of sudden cardiac death

The danger-first question is:

Is the heartbeat fast, slow, irregular, unstable, or connected to syncope, chest pain, breathlessness, or structural heart disease?

2. Immediate Red Flags in Palpitations

Urgent assessment is needed when palpitations are associated with:

- syncope
- near-syncope
- chest pain
- severe breathlessness
- low blood pressure
- confusion
- collapse
- new neurological symptoms
- sustained very fast heart rate
- very slow heart rate with symptoms
- irregular rhythm with instability
- known structural heart disease
- heart failure symptoms
- recent myocardial infarction
- family history of sudden unexplained death
- palpitations during exertion
- palpitations with severe dizziness
- palpitations with seizure-like collapse
- pregnancy or postpartum context where relevant
- stimulant, cocaine, or toxic exposure
- severe electrolyte abnormality
- severe anemia

- hyperthyroid symptoms
- fever or sepsis
- anticoagulation issues in atrial fibrillation

Palpitations with syncope, chest pain, breathlessness, hypotension, or known heart disease are high-risk until proven otherwise.

3. Palpitations Are a Syndrome, Not a Diagnosis

“Palpitations” is a symptom.

The clinician must form a rhythm syndrome.

Ask:

- What does the heartbeat feel like?
- Fast, irregular, pounding, skipped, fluttering, or slow?
- Did it start suddenly or gradually?
- Did it stop suddenly or gradually?
- How long does it last?
- How often does it happen?
- What was the heart rate if measured?
- Is the rhythm regular or irregular?
- Does it occur at rest or exertion?
- Does it wake the patient from sleep?
- Is there chest pain?
- Is there breathlessness?
- Is there dizziness?
- Is there syncope?
- Is there anxiety or panic?
- Is there fever, dehydration, vomiting, diarrhea, bleeding, or pain?
- Is there weight loss, tremor, heat intolerance, or diarrhea?
- Are caffeine, alcohol, nicotine, stimulants, energy drinks, or drugs involved?
- What medicines are being taken?
- Is there known heart disease?
- Is there family history of sudden death?
- Has an ECG ever captured it?

The goal is to move from:

“The patient has palpitations”

to:

“This is sudden-onset regular rapid palpitations lasting 20 minutes with dizziness but no syncope.”

or:

“This is irregular palpitations with breathlessness in an older patient with hypertension.”

or:

“This is palpitations with syncope during exercise in a young person with family history of sudden death.”

The syndrome determines urgency.

4. Common Palpitation Syndrome Patterns

Sudden-Onset Regular Rapid Palpitations

Pattern:

- sudden start
- sudden stop
- regular rapid heartbeat
- neck pounding in some cases
- dizziness or anxiety may occur
- may last minutes to hours

Possible causes:

- supraventricular tachycardia
- atrial flutter with fixed conduction
- ventricular tachycardia in higher-risk patients
- pre-excitation-related tachycardia

Threatened capacities:

Rhythm stability, **circulation**, **brain perfusion**, **comfort**.

Important question:

Is the patient stable, and is the rhythm narrow or wide on ECG?

Irregular Palpitations

Pattern:

- irregular heartbeat
- variable pulse
- fatigue

- breathlessness
- dizziness
- chest discomfort in some cases
- may be persistent or intermittent

Possible causes:

- atrial fibrillation
- frequent ectopic beats
- atrial flutter with variable conduction
- multifocal atrial tachycardia in lung disease
- electrolyte disturbance

Threatened capacities:

Rhythm coordination, **cardiac output**, **stroke prevention**, **exercise tolerance**.

Important question:

Is this atrial fibrillation or another irregular rhythm, and does the patient need rate control, rhythm assessment, or anticoagulation consideration?

Skipped Beats or Extra Beats

Pattern:

- “missed beat”
- “flip-flop”
- brief pause followed by stronger beat
- often intermittent
- worse with caffeine, stress, poor sleep, alcohol, or anxiety
- usually no syncope

Possible causes:

- premature atrial contractions
- premature ventricular contractions
- anxiety or heightened awareness
- stimulants
- sleep deprivation
- electrolyte disturbance
- structural heart disease in some cases

Threatened capacities:

Usually **comfort** and **reassurance**, but sometimes **rhythm stability** if frequent or associated with heart disease.

Important question:

Are the ectopics isolated and benign, or frequent, symptomatic, exertional, or occurring in structural heart disease?

Palpitations With Syncope

Pattern:

- palpitations before collapse
- sudden loss of consciousness
- injury may occur
- little warning
- exertional episode is especially concerning
- family history may be relevant

Possible causes:

- ventricular tachycardia
- severe bradyarrhythmia
- inherited arrhythmia syndrome
- structural heart disease
- aortic stenosis or cardiomyopathy
- pulmonary embolism
- supraventricular tachycardia causing instability in some contexts

Threatened capacities:

Brain perfusion, **rhythm stability**, **life**.

This is a danger pattern.

Palpitations With Chest Pain

Pattern:

- palpitations
- chest pressure, tightness, or pain
- sweating
- nausea
- breathlessness
- cardiovascular risk factors

Possible causes:

- acute coronary syndrome
- tachyarrhythmia causing demand ischemia
- myocarditis
- aortic disease in selected contexts
- stimulant-related ischemia

Threatened capacities:

Coronary circulation, **rhythm stability**, **oxygen delivery**.

Palpitations With Breathlessness

Pattern:

- awareness of heartbeat
- shortness of breath
- fatigue
- reduced exercise tolerance
- edema or orthopnea if heart failure
- pleuritic pain or syncope if pulmonary embolism

Possible causes:

- atrial fibrillation
- heart failure
- pulmonary embolism
- anemia
- thyrotoxicosis
- sepsis
- lung disease
- panic after danger is excluded

Threatened capacities:

Circulation, **oxygenation**, **rhythm coordination**, **exercise capacity**.

Palpitations With Tremor, Weight Loss, and Heat Intolerance

Pattern:

- palpitations
- tremor
- sweating
- heat intolerance
- weight loss
- diarrhea
- anxiety
- goiter or eye signs where present

Possible cause:

- hyperthyroidism

Threatened capacities:

Regulation, **energy transformation**, **rhythm stability**, **circulation**.

Palpitations With Fever or Sepsis

Pattern:

- rapid heart rate
- fever
- infection symptoms
- weakness
- low blood pressure or confusion if severe
- palpitations may be sinus tachycardia or arrhythmia triggered by illness

Possible causes:

- sepsis
- fever-related sinus tachycardia
- atrial fibrillation triggered by infection
- dehydration

Threatened capacities:

Defense, **circulation**, **hydration**, **rhythm stability**.

Palpitations With Anxiety or Panic Symptoms

Pattern:

- racing heart
- fear
- sweating
- trembling
- shortness of breath
- chest tightness
- tingling
- sense of doom
- often episodic

Possible causes:

- panic attack
- anxiety disorder
- trauma response
- stimulant/caffeine use
- hyperthyroidism, arrhythmia, hypoglycemia, or cardiopulmonary disease must be considered when features suggest

Threatened capacities:

Agency, **comfort**, **breathing regulation**, **participation**.

Important caution:

Do not diagnose anxiety until rhythm danger and medical mimics have been considered.

5. Capacity Failure in Palpitations

Palpitations matter because rhythm supports circulation.

Rhythm Coordination

The heart may be beating too fast, too slow, or irregularly.

Signals include:

- rapid pulse
- irregular pulse
- pauses
- dizziness
- fatigue
- chest discomfort
- shortness of breath

Cardiac Output

If rhythm is too fast, too slow, or poorly coordinated, the heart may not fill or pump well.

Signals include:

- low blood pressure
- weakness
- near-syncope
- syncope
- breathlessness
- pulmonary edema
- confusion

Brain Perfusion

The brain is sensitive to sudden rhythm failure.

Signals include:

- dizziness

- blurred vision
- collapse
- seizure-like episode
- confusion

Coronary Circulation

Fast rhythms increase oxygen demand.

Signals include:

- chest pain
- sweating
- nausea
- breathlessness
- ECG changes where present

Stroke Prevention

Atrial fibrillation can increase embolic stroke risk.

Signals include:

- irregular pulse
- known AF
- risk factors such as age, hypertension, diabetes, heart failure, prior stroke, vascular disease

Emotional Safety

Palpitations are frightening.

Even benign palpitations can restrict life.

Patients may avoid exercise, sleep poorly, fear sudden death, or repeatedly attend emergency care.

The clinician should explain clearly and respectfully.

6. Bedside Assessment of Palpitations

Look First

Observe:

- distress
- breathlessness

- sweating
- pallor
- syncope or collapse
- confusion
- chest pain behavior
- tremor
- agitation
- signs of heart failure
- signs of infection
- frailty

A patient sitting calmly with intermittent skipped beats is different from a pale, hypotensive patient with a sustained tachyarrhythmia.

Vital Signs

Check:

- pulse rate
- pulse regularity
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- level of consciousness
- glucose where altered, diabetic, weak, or sweaty
- postural blood pressure where relevant

Always feel the pulse.

The monitor number is not enough.

Capture the Rhythm

The most important test during palpitations is an ECG.

If symptoms are present now, obtain an ECG promptly.

If symptoms are intermittent, consider:

- rhythm strip
- ambulatory monitoring
- event monitor
- patient-recorded pulse or wearable tracing where available and reliable
- clear instructions to seek ECG during symptoms

A normal ECG after symptoms resolve does not exclude intermittent arrhythmia.

Focused History

Ask about:

- onset and offset
- regularity
- duration
- frequency
- triggers
- exertion
- rest or sleep onset
- associated syncope
- chest pain
- breathlessness
- dizziness
- family history
- known heart disease
- thyroid symptoms
- anemia symptoms
- bleeding
- fever
- dehydration
- stimulant exposure
- medicines
- alcohol
- caffeine
- energy drinks
- recreational drugs
- pregnancy where relevant
- anxiety or panic context
- impact on life

Medicine and Substance Review

Important contributors include:

- beta agonist inhalers
- decongestants
- stimulants
- caffeine
- energy drinks
- nicotine
- cocaine or amphetamines
- thyroid hormone excess
- some antidepressants
- antipsychotics or QT-prolonging medicines
- diuretics causing electrolyte disturbance
- digoxin or other cardiac medicines
- alcohol

- withdrawal states
- herbal stimulants or supplements

Ask directly and nonjudgmentally.

7. Physical Examination

Examine for cause and consequence.

Assess:

- pulse rate and regularity
- blood pressure
- signs of shock
- heart sounds
- murmurs
- heart failure signs
- lung crackles or wheeze
- thyroid enlargement or tremor
- signs of anemia
- fever source
- dehydration
- edema
- calf swelling or PE clues where relevant
- neurological signs if syncope or embolic event is possible
- signs of stimulant use or withdrawal
- frailty and falls risk

A murmur, heart failure signs, or abnormal pulse changes the risk level.

8. Initial Investigations

Investigations depend on the syndrome.

Common investigations may include:

- ECG
- rhythm strip or continuous monitoring if unstable or ongoing symptoms
- electrolytes, especially potassium and magnesium where available
- renal function
- glucose
- full blood count for anemia or infection
- thyroid function where symptoms or atrial fibrillation suggest
- troponin where acute coronary syndrome, chest pain, or high-risk features are present

- inflammatory markers or cultures where infection is suspected
- pregnancy test where relevant
- chest X-ray where heart failure, pneumonia, or cardiopulmonary disease is suspected
- echocardiography where structural heart disease, heart failure, murmur, or significant arrhythmia is suspected
- ambulatory ECG monitoring for intermittent symptoms
- drug levels where relevant
- toxicology where stimulant or overdose concern exists
- PE workup where breathlessness, syncope, chest pain, hypoxia, or risk factors suggest

Testing should answer:

- What is the rhythm?
- Is the patient stable?
- Is there structural heart disease?
- Are electrolytes safe?
- Is thyroid disease present?
- Is there anemia, infection, myocardial injury, or PE?
- Is stroke prevention needed if atrial fibrillation is present?
- Is urgent specialist input needed?

9. Dangerous Diagnoses Not to Miss

Ventricular Tachycardia

Clues:

- wide complex tachycardia on ECG
- syncope or near-syncope
- low blood pressure
- chest pain
- structural heart disease
- previous myocardial infarction
- heart failure
- severe electrolyte disturbance

Capacity failure:

Rhythm stability, **cardiac output**, **brain perfusion**, **life**

Wise action:

Treat as dangerous and follow local emergency arrhythmia protocols. Escalate urgently.

Atrial Fibrillation With Instability

Clues:

- irregularly irregular pulse
- rapid rate
- low blood pressure
- chest pain
- heart failure
- breathlessness
- confusion
- acute illness trigger

Capacity failure:

Rhythm coordination, **cardiac output**, **stroke prevention**, **circulation**

Wise action:

Assess stability, triggers, rate/rhythm strategy, anticoagulation context, and acute illness according to local AF guidance.

Supraventricular Tachycardia

Clues:

- sudden-onset regular rapid palpitations
- sudden offset
- narrow complex tachycardia if captured
- dizziness or chest discomfort may occur
- often recurrent

Capacity failure:

Usually **comfort** and **rhythm stability**, but can threaten **circulation** if prolonged or in heart disease.

Wise action:

Assess stability. Manage according to local SVT pathway. Capture ECG before and after treatment if possible.

Complete Heart Block or Severe Bradyarrhythmia

Clues:

- slow pulse
- dizziness
- syncope
- fatigue
- confusion

- chest pain
- heart failure
- medication exposure
- hyperkalemia
- ECG conduction abnormality

Capacity failure:

Heart rate support, **brain perfusion**, **circulation**

Wise action:

Urgent assessment and escalation if symptomatic. Review medicines and potassium.

Long QT or Inherited Arrhythmia Syndrome

Clues:

- syncope with palpitations
- exertional or emotional trigger
- family history of sudden death
- seizure-like episodes
- QT-prolonging medicines
- electrolyte disturbance

Capacity failure:

Electrical stability and **life protection**

Wise action:

ECG, medicine review, electrolyte correction, family history, and specialist input where suspected.

Myocardial Infarction

Clues:

- palpitations with chest pain
- sweating
- nausea
- breathlessness
- ECG changes
- cardiovascular risk
- arrhythmia may be presenting sign

Capacity failure:

Coronary circulation, **rhythm stability**, **pump function**

Wise action:

Follow local ACS pathway.

Pulmonary Embolism

Clues:

- sudden palpitations
- tachycardia
- breathlessness
- pleuritic chest pain
- syncope
- hypoxia
- recent surgery, immobility, cancer, pregnancy/postpartum context where relevant, previous clot

Capacity failure:

Pulmonary circulation, **oxygenation**, **right heart function**

Wise action:

Assess PE probability and follow local pathway. Escalate if unstable.

Thyrotoxicosis

Clues:

- palpitations
- weight loss
- tremor
- heat intolerance
- diarrhea
- anxiety
- atrial fibrillation
- goiter or eye signs where present

Capacity failure:

Regulation, **energy transformation**, **rhythm stability**, **circulation**

Wise action:

Check thyroid function and treat according to severity and local guidance. Escalate if severe systemic instability is present.

10. Wise Perturbation in Palpitations

Treatment depends on rhythm, stability, cause, and recurrence risk.

Do not treat palpitations blindly.

Ask:

- Is the patient stable?
- What is the rhythm?
- Is the rhythm fast, slow, regular, or irregular?
- Is the QRS narrow or wide?
- Are there red flags?
- Is there structural heart disease?
- Is there electrolyte, thyroid, anemia, infection, or medicine cause?
- Is stroke prevention needed?
- Is reassurance appropriate after danger is excluded?
- What follow-up will capture intermittent rhythm?

If Unstable

Instability includes:

- hypotension
- chest pain
- shock
- severe breathlessness
- pulmonary edema
- confusion
- syncope
- ongoing severe symptoms

Use local emergency arrhythmia pathways and escalate early.

If Stable but Symptomatic

Obtain ECG and determine rhythm.

Treatment may involve:

- vagal maneuvers or acute SVT pathway where appropriate
- rate control for atrial fibrillation according to local guidance
- rhythm strategy in selected cases
- correction of electrolytes
- treating infection, anemia, dehydration, or thyroid disease
- stopping stimulants or culprit medicines
- cardiology referral where indicated

If Intermittent and Not Captured

Plan rhythm capture.

Options include:

- ECG during symptoms
- ambulatory monitoring
- event recorder
- wearable tracing if reliable
- symptom diary
- documenting pulse rate and regularity during episodes

The diagnosis cannot be certain unless the rhythm is captured.

If Benign Ectopics Are Likely

After danger is excluded, treatment may include:

- explanation
- reducing caffeine or stimulants
- improving sleep
- managing stress
- correcting electrolytes where abnormal
- addressing alcohol
- reassurance
- follow-up if frequency or symptoms change

Reassurance should be specific, not dismissive.

Say:

“Your symptoms are real. The tests so far suggest they are not dangerous, and here is what would make us reassess urgently.”

11. Repair Trajectory

Repair is shown by:

- rhythm identified
- dangerous rhythm excluded or treated
- heart rate controlled where needed
- blood pressure stable
- dizziness resolves
- syncope does not recur
- chest pain absent

- breathlessness improves
- electrolytes corrected
- thyroid, anemia, infection, dehydration, or medication triggers addressed
- stroke prevention considered where atrial fibrillation is present
- patient understands triggers and warning signs
- monitoring arranged if episodes are intermittent
- anxiety decreases because explanation improves
- daily function returns

Repair is not only “the palpitations stopped.”

Repair means rhythm safety, circulation, brain perfusion, trigger control, and patient confidence are restored.

12. Safety-Netting

Safety-netting should be specific.

Advise urgent review if palpitations are associated with:

- fainting
- near-fainting
- chest pain
- severe breathlessness
- weakness or numbness
- speech difficulty
- confusion
- sustained very fast heartbeat
- very slow heartbeat with symptoms
- palpitations during exertion
- new irregular pulse
- severe dizziness
- blackouts or injury
- family history of sudden death and new symptoms
- pregnancy/postpartum concerns where relevant
- stimulant or drug exposure with severe symptoms
- symptoms not settling as expected

Also explain:

- what rhythm is suspected
- whether it was captured
- what triggers to avoid
- what medicines were changed
- what tests are pending
- when monitoring is needed
- when to call emergency help

- what to record during an episode

Use teach-back:

“Can you tell me what palpitation symptoms would make you seek urgent help?”

13. Worked Case 1: Sudden Regular Palpitations

A 29-year-old woman has sudden episodes of very fast regular palpitations that start and stop abruptly. They last 15 to 30 minutes. She feels anxious and lightheaded but has not fainted.

Danger

SVT is possible. Danger is higher if syncope, chest pain, structural heart disease, or instability is present.

Syndrome

Intermittent sudden-onset regular rapid palpitations with abrupt termination and lightheadedness.

Capacity Failure

Rhythm stability, comfort, brain perfusion during episodes.

Coupling Conditions

Caffeine, sleep deprivation, stress, access to ECG during symptoms, anxiety after episodes, work disruption.

Wise Perturbation

Capture rhythm with ECG during symptoms or ambulatory monitoring. Assess stability, family history, structural heart disease signs, electrolytes, and thyroid symptoms if relevant. Provide safety-netting and local SVT management advice.

Repair Trajectory

Rhythm documented, dangerous causes excluded, episodes managed, patient knows when to seek help, fear reduces.

14. Worked Case 2: Irregular Palpitations in an Older Patient

A 74-year-old man with hypertension presents with irregular palpitations and breathlessness. Pulse is irregularly irregular.

Danger

Atrial fibrillation with rapid rate, heart failure, stroke risk, underlying infection or thyroid disease, ACS if symptoms suggest.

Syndrome

Irregular palpitations with breathlessness in an older patient with vascular risk.

Capacity Failure

Rhythm coordination, cardiac output, oxygenation, stroke prevention.

Coupling Conditions

Hypertension, age, possible heart failure, thyroid disease, infection, alcohol, sleep apnea, anticoagulation risk, fall risk, kidney function.

Wise Perturbation

Obtain ECG, assess stability, rate, heart failure, oxygenation, renal function, electrolytes, thyroid where indicated, and stroke/bleeding risk according to local guidance. Treat rate or rhythm issue and triggers.

Repair Trajectory

Heart rate safer, breathlessness improves, anticoagulation decision made where appropriate, trigger addressed, follow-up arranged.

15. Worked Case 3: Palpitations With Syncope

A 42-year-old man collapses while exercising. He remembers sudden palpitations just before fainting. His brother died suddenly at age 35.

Danger

Inherited arrhythmia syndrome, ventricular arrhythmia, structural heart disease, cardiomyopathy.

Syndrome

Exertional palpitations with syncope and family history of sudden death.

Capacity Failure

Rhythm stability, brain perfusion, life protection.

Coupling Conditions

Family history, exertion trigger, structural heart disease possibility, access to ECG, echocardiography, cardiology, driving/work safety.

Wise Perturbation

Urgent ECG and cardiac evaluation. Avoid reassurance. Assess electrolytes, structural heart disease, inherited risk, and specialist referral according to local pathway. Advise activity and driving safety according to local rules.

Repair Trajectory

Dangerous rhythm or structural disease excluded or treated, family risk considered, safety restrictions clarified, recurrence prevention plan made.

16. Worked Case 4: Palpitations With Tremor and Weight Loss

A 45-year-old woman reports palpitations, tremor, heat intolerance, sweating, weight loss, and loose stools.

Danger

Thyrotoxicosis, atrial fibrillation, cardiac strain.

Syndrome

Palpitations with hypermetabolic symptoms.

Capacity Failure

Regulation, energy transformation, rhythm stability, circulation.

Coupling Conditions

Thyroid disease, stress, medication exposure, iodine exposure, cardiac risk, access to endocrine follow-up.

Wise Perturbation

Check pulse, ECG if ongoing palpitations, thyroid function, weight, blood pressure, and severity. Treat according to local thyroid guidance and escalate if severe systemic instability is present.

Repair Trajectory

Palpitations reduce, tremor improves, weight stabilizes, rhythm remains safe, thyroid condition treated.

17. Worked Case 5: Palpitations and Panic

A 31-year-old patient has episodes of racing heart, trembling, shortness of breath, tingling, and fear of dying. Episodes peak within minutes. ECG between episodes is normal. There is no syncope, exertional trigger, family history, or structural heart disease.

Danger

Panic attacks are possible, but arrhythmia, thyroid disease, hypoglycemia, stimulant use, and cardiopulmonary causes should be considered based on features.

Syndrome

Episodic palpitations with panic symptoms and no immediate red flags identified.

Capacity Failure

Comfort, breathing regulation, agency, participation.

Coupling Conditions

Stress, trauma, sleep, caffeine, stimulants, health anxiety, prior frightening episode, access to support.

Wise Perturbation

Assess red flags, ECG, pulse pattern, thyroid or glucose testing where indicated, stimulant exposure, and mental health context. Explain findings respectfully. Offer a plan for both symptom control and urgent reassessment if danger signs occur.

Repair Trajectory

Episodes become less frightening, dangerous causes excluded or monitored, patient regains confidence, anxiety and avoidance reduce.

18. Common Student Pitfalls

Pitfall 1: Calling Palpitations Anxiety Too Early

Anxiety can cause palpitations, but arrhythmia, thyroid disease, anemia, hypoglycemia, PE, infection, and medicines may mimic it.

Pitfall 2: Failing to Capture the Rhythm

A normal ECG after symptoms stop does not exclude intermittent arrhythmia.

Pitfall 3: Ignoring Syncope

Palpitations with syncope are dangerous until proven otherwise.

Pitfall 4: Missing Atrial Fibrillation

Feel the pulse. Irregularly irregular rhythm matters because stroke prevention may be needed.

Pitfall 5: Missing Wide Complex Tachycardia

A wide complex tachycardia in an unwell patient is dangerous.

Pitfall 6: Forgetting Electrolytes and Thyroid

Potassium, magnesium, renal function, and thyroid disease can drive rhythm problems.

Pitfall 7: Ignoring Stimulants and Medicines

Caffeine, energy drinks, decongestants, inhalers, stimulants, thyroid hormone, cocaine, and some medicines can trigger palpitations.

Pitfall 8: Reassuring Without Safety-Netting

Benign palpitations still need clear advice about what symptoms would change the risk.

19. Clinical Practice Box

When assessing palpitations, complete this structure:

Description:
Fast, irregular, skipped, pounding, fluttering, slow?

Onset and offset:
Sudden or gradual? Duration? Frequency?

Danger features:
Syncope, chest pain, breathlessness, hypotension, exertional episodes, family history, structural heart disease?

Pulse:
Rate and regularity?

ECG captured?
During symptoms or after symptoms?

Capacity failure:
Rhythm stability, cardiac output, brain perfusion, coronary circulation, stroke prevention, comfort?

Triggers:
Caffeine, alcohol, stimulants, medicines, fever, dehydration, anemia, thyroid, anxiety, exercise?

Initial investigations:
ECG, electrolytes, renal function, glucose, FBC, thyroid, troponin if indicated, ambulatory monitoring?

Wise perturbation:
Emergency pathway, rhythm management, trigger correction, monitoring, reassurance, referral?

Repair trajectory:
Rhythm known, danger excluded, symptoms controlled, triggers managed, follow-up arranged?

20. Mini-Case for Practice

A 67-year-old woman presents with three days of irregular palpitations, breathlessness on exertion, and fatigue. She has hypertension and diabetes. Her pulse is irregularly irregular at 132 beats per minute. She is not hypotensive, but she feels weak.

Apply the palpitations approach.

Danger

Atrial fibrillation with rapid ventricular response, heart failure risk, stroke risk, electrolyte or thyroid trigger, infection or ischemia trigger.

Syndrome

Irregular rapid palpitations with exertional breathlessness and fatigue in a patient with vascular risk.

Capacity Failure

Rhythm coordination, cardiac output, exercise capacity, stroke prevention, circulation reserve.

Coupling Conditions

Hypertension, diabetes, age, possible sleep apnea, thyroid disease, infection, renal function, anticoagulation suitability, adherence, fall risk, access to follow-up.

Wise Perturbation

Obtain ECG to confirm rhythm. Assess stability, blood pressure, oxygenation, heart failure signs, renal function, electrolytes, thyroid where indicated, infection or ischemia triggers, and stroke/bleeding risk according to local guidance. Manage rate/rhythm and anticoagulation decision according to local pathway.

Repair Trajectory

Heart rate becomes safer, breathlessness improves, fatigue improves, trigger addressed, stroke prevention plan clarified, follow-up arranged.

21. Student Takeaway

Palpitations become easier when the clinician asks:

Is the patient stable?
Is there syncope, chest pain, breathlessness, hypotension, exertional onset, structural heart disease, or family history of sudden death?
Is the rhythm fast, slow, regular, or irregular?
Has the rhythm been captured on ECG?
Could this be SVT, atrial fibrillation, ventricular tachycardia, bradyarrhythmia, ectopic beats, thyroid disease, anemia, infection, PE, stimulant effect, hypoglycemia, or anxiety?
What capacity is failing: rhythm stability, cardiac output, brain perfusion, coronary circulation, stroke prevention, or comfort?
What plan restores rhythm safety and patient confidence?

Palpitations are not merely “feeling the heart.”

They are a signal that rhythm coordination, circulation, brain perfusion, coronary oxygen balance, stroke prevention, emotional safety, and daily participation may need protection.

The safe clinician captures the rhythm, screens for danger, treats the cause, reassures honestly when appropriate, and gives clear safety-netting.

Chapter 30. Weakness Made Easy

Weakness is one of the most important and confusing presentations in Internal Medicine.

Patients may say:

“I feel weak.”
“My legs feel heavy.”
“I cannot get out of the chair.”
“I keep dropping things.”
“I cannot walk properly.”
“One side feels weak.”
“I am tired all the time.”
“My whole body feels drained.”

Weakness can mean many different things.

It may mean true loss of muscle power.
It may mean fatigue.
It may mean breathlessness.
It may mean dizziness.
It may mean pain-limited movement.
It may mean deconditioning, frailty, depression, anemia, infection, electrolyte disturbance, stroke, spinal cord disease, neuropathy, myopathy, neuromuscular junction disease, endocrine disease, medication harm, or functional decline.

The first task is not to accept the word “weakness” at face value.

The first task is to ask:

Is this true weakness, and is the nervous system, muscle, circulation, oxygen delivery, metabolism, or whole-person reserve failing?

Weakness becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Weakness Dangerous?

Weakness becomes dangerous when it suggests acute brain, spinal cord, nerve, muscle, respiratory, metabolic, circulatory, or systemic failure.

Dangerous causes and contexts include:

- stroke or transient ischemic attack
- intracranial hemorrhage

- spinal cord compression
- cauda equina syndrome
- Guillain-Barré syndrome
- myasthenic crisis
- severe electrolyte disturbance
- hypoglycemia
- hyperglycemic crisis
- sepsis
- shock
- acute coronary syndrome presenting as weakness
- severe anemia
- respiratory failure
- rhabdomyolysis
- severe hypothyroidism or thyrotoxic periodic paralysis in relevant contexts
- adrenal crisis
- medication toxicity
- poisoning
- neuromuscular respiratory weakness
- rapidly progressive paralysis
- severe frailty collapse
- falls with injury
- unsafe home situation

The danger-first question is:

Is this weakness threatening brain function, spinal cord integrity, breathing, circulation, mobility, or safety now?

2. Immediate Red Flags in Weakness

Urgent assessment is needed when weakness is associated with:

- sudden one-sided weakness
- facial droop
- speech difficulty
- visual loss
- severe headache
- confusion
- seizure
- loss of consciousness
- new difficulty walking
- new urinary retention or incontinence
- saddle anesthesia
- severe back pain with neurological deficit
- rapidly ascending weakness
- difficulty breathing
- weak cough

- difficulty swallowing
- choking
- double vision or drooping eyelids
- severe neck weakness
- fever with systemic illness
- hypotension
- chest pain
- severe breathlessness
- black stools or bleeding
- severe electrolyte abnormality
- very low or high glucose symptoms
- dark urine with muscle pain
- recent infection followed by progressive weakness
- new weakness after medication change
- fall with injury
- inability to stand or walk safely
- frailty with acute decline

Weakness with neurological deficit, breathing difficulty, swallowing difficulty, shock, sepsis, or inability to mobilize safely is high-risk.

3. Weakness Is a Syndrome, Not a Diagnosis

“Weakness” must be translated into a clinical pattern.

Ask:

- Is this true loss of power?
- Is it fatigue rather than weakness?
- Is it one-sided or generalized?
- Is it proximal or distal?
- Is it sudden or gradual?
- Is it worsening?
- Is it intermittent?
- Does it fluctuate during the day?
- Is it worse after exertion?
- Is there pain?
- Is there numbness or tingling?
- Is there back or neck pain?
- Is there bladder or bowel dysfunction?
- Is there difficulty swallowing?
- Is there double vision?
- Is there breathlessness?
- Is there fever?
- Is there weight loss?
- Is there dark urine?
- Is there a medication trigger?

- Is there alcohol or toxin exposure?
- Is there diabetes, thyroid disease, kidney disease, cancer, autoimmune disease, or infection?
- Can the patient stand, walk, toilet, eat, and breathe safely?

The goal is to move from:

“The patient feels weak”

to:

“This is sudden right-sided weakness with facial droop and slurred speech.”

or:

“This is progressive ascending leg weakness after a viral illness with reduced reflexes.”

or:

“This is proximal muscle weakness with difficulty rising from a chair and elevated muscle enzymes.”

or:

“This is generalized weakness from anemia, infection, dehydration, and frailty.”

The syndrome determines urgency.

4. First Distinction: Weakness or Fatigue?

Patients often use “weakness” to describe fatigue.

True Weakness

True weakness means reduced power.

Examples:

- cannot lift the arm
- foot drops while walking
- cannot rise from a chair
- cannot climb stairs
- grip is reduced
- one side is weaker
- cannot hold head up
- speech or swallowing muscles are weak

True weakness suggests a problem in the brain, spinal cord, nerve, neuromuscular junction, muscle, or severe metabolic system.

Fatigue

Fatigue means reduced energy, stamina, or endurance.

Examples:

- feels drained
- tires easily
- can move normally at first but cannot sustain activity
- no clear focal power loss
- worse with anemia, infection, depression, sleep loss, heart failure, kidney disease, endocrine disease, inflammatory disease, or deconditioning

Fatigue is important, but it follows a different pathway.

The practical question is:

“Can you do the movement at all, or can you do it but not sustain it?”

5. Common Weakness Syndrome Patterns

Sudden One-Sided Weakness

Pattern:

- sudden arm, leg, or face weakness
- speech difficulty
- visual symptoms
- numbness
- imbalance
- confusion in some cases

Possible causes:

- stroke
- transient ischemic attack
- intracranial hemorrhage
- seizure with postictal weakness
- migraine mimic
- hypoglycemia mimic
- brain tumor or abscess in selected contexts

Threatened capacities:

Brain integrity, **mobility**, **speech**, **agency**, **life**.

This is a danger pattern.

Rapidly Ascending Weakness

Pattern:

- leg weakness progressing upward
- difficulty walking
- reduced reflexes
- tingling
- recent infection
- possible facial weakness
- possible breathing or swallowing involvement

Possible cause:

- Guillain-Barré syndrome

Threatened capacities:

Peripheral nerve conduction, **mobility**, **breathing**, **swallowing**, **autonomic regulation**.

This can become life-threatening.

Weakness With Back Pain and Bladder Symptoms

Pattern:

- back pain
- leg weakness
- numbness
- saddle anesthesia
- urinary retention or incontinence
- bowel dysfunction
- cancer, infection, trauma, or anticoagulation context may be present

Possible causes:

- spinal cord compression
- cauda equina syndrome
- epidural abscess
- epidural hematoma
- vertebral fracture
- malignancy

Threatened capacities:

Spinal cord integrity, **mobility**, **bladder/bowel control**, **dignity**.

This is urgent.

Fluctuating Weakness With Eye or Swallowing Symptoms

Pattern:

- weakness worsens with use
- improves with rest
- drooping eyelids
- double vision
- slurred speech
- swallowing difficulty
- weak neck
- breathlessness in severe cases

Possible cause:

- myasthenia gravis
- myasthenic crisis if respiratory or bulbar weakness occurs

Threatened capacities:

Neuromuscular transmission, **breathing**, **swallowing**, **speech**, **safety**.

Proximal Muscle Weakness

Pattern:

- difficulty rising from chair
- difficulty climbing stairs
- difficulty lifting arms overhead
- muscle pain may or may not be present
- normal sensation often
- reflexes may be preserved early

Possible causes:

- inflammatory myopathy
- steroid myopathy
- thyroid disease
- vitamin D deficiency or osteomalacia in some contexts
- polymyalgia may mimic weakness because of pain
- muscular dystrophy or genetic disease in selected contexts
- medication-related myopathy, including statin-associated syndromes in some contexts

Threatened capacities:

Muscle power, **mobility**, **participation**, **falls safety**.

Distal Weakness

Pattern:

- foot drop
- hand weakness
- difficulty gripping
- tripping
- numbness or tingling may coexist
- reduced reflexes

Possible causes:

- peripheral neuropathy
- radiculopathy
- motor neuron disease
- entrapment neuropathy
- diabetic neuropathy
- toxic or nutritional neuropathy

Threatened capacities:

Peripheral nerve function, **mobility**, **hand function**, **safety**.

Generalized Weakness With Systemic Illness

Pattern:

- whole-body weakness
- fever
- dehydration
- poor intake
- dizziness
- confusion
- tachycardia or hypotension
- reduced urine output
- infection or metabolic disturbance

Possible causes:

- sepsis
- dehydration
- anemia
- electrolyte disturbance
- AKI
- heart failure

- endocrine disease
- medication toxicity
- frailty decompensation

Threatened capacities:

Circulation, **energy**, **clearance**, **defense**, **mobility**, **cognition**.

Weakness With Muscle Pain and Dark Urine

Pattern:

- muscle pain
- weakness
- dark urine
- recent immobilization, seizure, trauma, heat illness, exertion, toxin, or medication exposure
- kidney injury risk

Possible cause:

- rhabdomyolysis

Threatened capacities:

Muscle integrity, **kidney clearance**, **potassium regulation**, **fluid balance**.

Weakness With Low Mood or Demoralization

Pattern:

- patient says “I feel weak”
- low energy
- poor sleep
- reduced appetite
- low mood
- loss of interest
- reduced activity
- normal power on examination or effort limited by mood
- may coexist with medical disease

Possible causes:

- depression
- grief
- demoralization
- chronic illness burden
- sleep disorder
- social isolation

Threatened capacities:

Agency, **energy**, **participation**, **hope**, **safety**.

Do not dismiss this as “not medical.” It is clinically important.

6. Capacity Failure in Weakness

Weakness matters because movement is a life-capacity.

Brain Command

The brain may not generate or coordinate movement.

Signals include:

- one-sided weakness
- facial droop
- speech difficulty
- neglect
- visual field loss
- acute confusion
- seizure

Spinal Cord Transmission

The spinal cord may not transmit signals safely.

Signals include:

- bilateral weakness
- sensory level
- bladder or bowel dysfunction
- back pain
- spasticity
- hyperreflexia
- saddle anesthesia

Peripheral Nerve Conduction

The nerves may not carry signals to muscles.

Signals include:

- distal weakness

- numbness
- tingling
- reduced reflexes
- foot drop
- ascending weakness

Neuromuscular Junction

Nerve signals may not activate muscles reliably.

Signals include:

- fluctuating weakness
- fatigability
- ptosis
- diplopia
- swallowing difficulty
- respiratory weakness

Muscle Power

The muscle itself may be injured or inflamed.

Signals include:

- proximal weakness
- muscle pain
- elevated muscle enzymes where measured
- dark urine in rhabdomyolysis
- difficulty rising or lifting arms

Oxygen Delivery and Energy

The body may not supply enough oxygen or energy for movement.

Signals include:

- anemia
- heart failure
- lung disease
- hypoglycemia
- hyperglycemia
- hypothyroidism
- adrenal insufficiency
- malnutrition

Mobility and Safety

Weakness threatens daily function.

Signals include:

- falls
- inability to stand
- inability to toilet
- unsafe stairs
- inability to cook
- inability to leave home
- caregiver strain

The clinician should ask:

What movement has the patient lost, and what danger follows from that loss?

7. Bedside Assessment of Weakness

Look First

Observe:

- facial symmetry
- speech
- alertness
- posture
- ability to sit up
- ability to stand
- gait
- breathing effort
- neck control
- swallowing safety
- tremor
- muscle wasting
- fasciculations
- pain behavior
- frailty
- distress
- signs of infection
- dehydration
- pallor
- jaundice

The first look often separates focal neurological danger from generalized systemic weakness.

Vital Signs

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- glucose
- level of consciousness
- urine output if unwell
- weight trend where relevant

Glucose must be checked in acute weakness, confusion, collapse, or neurological mimic presentations.

Functional Questions

Ask:

- Can you stand from a chair?
- Can you climb stairs?
- Can you lift your arms above your head?
- Can you grip objects?
- Can you walk normally?
- Are you tripping?
- Can you swallow safely?
- Has your speech changed?
- Are you short of breath lying flat?
- Have you fallen?
- Can you get to the toilet?
- Can you manage at home?

Function translates weakness into real-life risk.

8. Neurological Localization Made Easy

Weakness becomes easier when localized.

Brain

Think brain when there is:

- one-sided weakness
- face, arm, and leg involvement
- speech change
- visual field loss
- neglect

- acute onset
- seizure or headache

Spinal Cord

Think spinal cord when there is:

- bilateral weakness
- sensory level
- bladder or bowel dysfunction
- back or neck pain
- increased tone or brisk reflexes
- saddle anesthesia
- cancer or infection risk

Nerve Root

Think nerve root when there is:

- radiating pain
- weakness in a root pattern
- sensory symptoms
- reduced reflex in a specific distribution
- neck or back pain

Peripheral Nerve

Think peripheral nerve when there is:

- distal weakness
- stocking-glove numbness
- foot drop
- reduced reflexes
- diabetes, alcohol, toxins, B12 deficiency, or chemotherapy context

Neuromuscular Junction

Think neuromuscular junction when there is:

- fluctuating weakness
- fatigability
- ptosis
- diplopia
- bulbar symptoms
- normal sensation

Muscle

Think muscle when there is:

- proximal weakness
- difficulty rising or climbing stairs
- normal sensation
- muscle pain or tenderness
- dark urine
- medication or endocrine context

Localization prevents random testing.

9. Physical Examination

Examine systematically.

General Examination

Assess:

- pallor
- dehydration
- fever
- weight loss
- edema
- rash
- thyroid signs
- signs of chronic liver disease
- signs of infection
- muscle wasting
- joint inflammation
- medication effects
- frailty

Neurological Examination

Assess:

- mental state
- speech
- cranial nerves
- visual fields where relevant
- facial power
- limb tone
- power by muscle groups
- proximal versus distal pattern
- reflexes

- plantar responses
- sensation
- coordination
- gait
- Romberg where safe
- fasciculations
- fatigability
- neck flexion strength where relevant
- respiratory effort and cough strength

Musculoskeletal Examination

Assess:

- pain-limited movement
- joint swelling
- shoulder and hip girdle function
- muscle tenderness
- range of motion
- ability to rise from chair
- ability to lift arms

Respiratory and Swallowing Assessment

Look for:

- breathlessness
- weak cough
- shallow breathing
- inability to count aloud normally
- choking
- nasal speech
- pooling secretions
- aspiration risk

Respiratory and bulbar weakness are danger features.

10. Initial Investigations

Investigations depend on the syndrome.

Common investigations may include:

- glucose
- full blood count
- renal function and electrolytes

- sodium, potassium, calcium, magnesium where relevant
- liver tests
- thyroid function
- creatine kinase where myopathy or rhabdomyolysis is possible
- inflammatory markers where infection, inflammation, or malignancy is possible
- B12 and folate where neuropathy, macrocytosis, malnutrition, or cognitive features suggest
- HbA1c where diabetic neuropathy or diabetes is relevant
- urinalysis for blood, protein, ketones, or infection
- ECG where weakness may reflect cardiac disease, arrhythmia, potassium disturbance, or ACS
- troponin where acute coronary syndrome is suspected
- chest X-ray where infection, heart failure, or malignancy is possible
- brain imaging where stroke, hemorrhage, mass, or focal neurological deficit is suspected
- spinal imaging where cord compression, cauda equina, epidural abscess, malignancy, or severe neurological back pain is suspected
- lumbar puncture in selected neurological or infectious contexts according to local pathway
- nerve conduction, electromyography, autoimmune, myositis, or neuromuscular tests where indicated
- toxicology or drug levels where exposure is possible

Testing should answer:

- Is glucose safe?
- Are electrolytes safe?
- Is there anemia?
- Is there infection?
- Is there kidney or liver failure?
- Is there stroke?
- Is there spinal cord danger?
- Is there muscle breakdown?
- Is there thyroid or endocrine disease?
- Is the patient safe to mobilize?

11. Dangerous Diagnoses Not to Miss

Stroke

Clues:

- sudden focal weakness
- facial droop
- speech difficulty
- visual symptoms
- imbalance
- acute onset
- vascular risk factors

Capacity failure:

Brain integrity, **mobility**, **speech**, **agency**

Wise action:

Activate local stroke pathway. Check glucose because hypoglycemia can mimic stroke.

Spinal Cord Compression

Clues:

- back or neck pain
- bilateral weakness
- sensory level
- bladder or bowel dysfunction
- cancer, infection, trauma, or anticoagulation risk
- progressive neurological deficit

Capacity failure:

Spinal cord integrity, **mobility**, **bladder/bowel control**, **dignity**

Wise action:

Urgent imaging and specialist assessment according to local pathway. Do not delay when cord signs are present.

Guillain-Barré Syndrome

Clues:

- progressive ascending weakness
- reduced reflexes
- recent infection
- sensory symptoms
- facial weakness in some cases
- autonomic symptoms
- respiratory weakness

Capacity failure:

Peripheral nerve conduction, **breathing**, **swallowing**, **autonomic regulation**

Wise action:

Urgent assessment and monitoring of respiratory and bulbar function. Escalate early.

Myasthenic Crisis

Clues:

- fluctuating weakness
- ptosis
- diplopia
- swallowing difficulty
- nasal speech
- weak cough
- shortness of breath
- known myasthenia or trigger such as infection or medication

Capacity failure:

Neuromuscular transmission, **breathing**, **swallowing**, **speech**

Wise action:

Urgent respiratory and neurological assessment. Avoid medications that worsen myasthenia where relevant and follow local pathway.

Severe Electrolyte Disturbance

Clues:

- generalized weakness
- paralysis
- cramps
- arrhythmia
- vomiting, diarrhea, diuretics, renal failure, endocrine disease
- abnormal potassium, calcium, sodium, or magnesium

Capacity failure:

Electrical stability, **muscle function**, **rhythm safety**, **cognition**

Wise action:

Check electrolytes and ECG where indicated. Correct according to local protocols.

Rhabdomyolysis

Clues:

- muscle pain
- weakness
- dark urine

- immobilization
- seizure
- trauma
- heat illness
- intense exertion
- statin or toxin exposure
- AKI risk

Capacity failure:

Muscle integrity, **kidney clearance**, **potassium regulation**

Wise action:

Check creatine kinase, renal function, potassium, urine, and treat according to local pathway.

Severe Anemia

Clues:

- generalized weakness
- pallor
- breathlessness
- dizziness
- chest pain in vulnerable patients
- bleeding symptoms
- black stools
- heavy bleeding where relevant

Capacity failure:

Oxygen delivery, **energy**, **circulation reserve**

Wise action:

Assess hemoglobin, bleeding, hemodynamic stability, and source.

Sepsis

Clues:

- weakness
- fever or low temperature
- tachypnea
- confusion
- hypotension
- reduced urine output
- infection source

Capacity failure:

Defense, **circulation**, **energy**, **cognition**, **clearance**

Wise action:

Treat according to local sepsis guidance and monitor response.

Medication Toxicity

Clues:

- weakness after new medicine or dose change
- sedatives
- opioids
- antihypertensives
- statins
- steroids
- diuretics
- beta blockers
- calcium channel blockers
- antipsychotics
- chemotherapy
- alcohol or substances
- renal or liver impairment increasing drug accumulation

Capacity failure:

Medicine safety, **muscle power**, **cognition**, **circulation**

Wise action:

Review medicines carefully. Stop, reduce, reverse, or monitor harmful agents according to context.

12. Wise Perturbation in Weakness

Treatment depends on syndrome and capacity failure.

Do not simply prescribe vitamins or physiotherapy without identifying danger.

Ask:

- Is this true weakness?
- Is it focal or generalized?
- Is onset sudden or gradual?
- Is breathing or swallowing threatened?

- Is the brain, spinal cord, nerve, junction, muscle, circulation, or metabolism involved?
- Is glucose safe?
- Are electrolytes safe?
- Is infection present?
- Are medicines contributing?
- Can the patient walk safely?
- Can the patient go home safely?
- What treatment restores function with least harm?

If Acute Focal Weakness

Use stroke or neurological emergency pathway.

Do not delay.

Check glucose early.

If Spinal Cord Features

Urgent imaging and specialist pathway are needed.

Protect mobility, bladder, bowel, and dignity.

If Respiratory or Swallowing Weakness

Escalate urgently.

Monitor breathing, aspiration risk, and airway safety.

If Metabolic or Electrolyte Cause

Correct the abnormality according to local protocols and monitor rhythm, renal function, and response.

If Medication-Related

Adjust the medicine plan.

Ask:

- Did the weakness begin after the medicine?
- Is renal or liver function causing accumulation?
- Is there a safer alternative?
- Is the medicine still needed?
- What monitoring is required?

If Frailty or Deconditioning

Do not dismiss.

Assess:

- acute illness
- nutrition
- falls risk
- polypharmacy
- depression
- cognition
- mobility
- home support
- rehabilitation potential

Frailty weakness often needs coordinated repair, not one prescription.

13. Repair Trajectory

Repair is shown by:

- cause identified
- danger excluded or treated
- power improves
- walking improves
- falls reduce
- swallowing safe
- breathing safe
- glucose safe
- electrolytes corrected
- infection controlled
- anemia treated
- medicines adjusted
- pain controlled
- nutrition supported
- physiotherapy or rehabilitation started where appropriate
- patient can toilet, transfer, and mobilize safely
- caregiver support arranged
- follow-up clear
- patient understands warning signs

Repair is not only “the blood tests look better.”

Repair means the patient can move, breathe, swallow, function, and participate more safely.

14. Discharge Safety in Weakness

Before discharge, ask:

- Can the patient stand safely?
- Can the patient walk safely?
- Can the patient toilet safely?
- Can the patient eat and drink safely?
- Can the patient manage stairs?
- Has the cause of weakness been addressed?
- Are medicines safe?
- Is there fall risk?
- Is home support adequate?
- Are mobility aids needed?
- Is rehabilitation needed?
- Are neurological red flags excluded?
- Is follow-up arranged?

A patient who is medically “stable” but cannot stand, toilet, or access food is not safely discharged.

15. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- new one-sided weakness
- facial droop
- speech difficulty
- new visual loss
- severe headache
- confusion
- seizure
- worsening weakness
- difficulty breathing
- difficulty swallowing
- choking
- new bladder or bowel dysfunction
- numbness in the saddle area
- severe back pain with weakness
- repeated falls
- inability to walk
- fever with worsening weakness
- dark urine with muscle pain
- chest pain or severe breathlessness
- low glucose symptoms

- worsening after new medicine

Also explain:

- what cause is suspected
- what danger has been excluded
- what tests are pending
- what activities are safe
- what medicines changed
- what therapy or rehabilitation is needed
- when follow-up will occur

Use teach-back:

“Can you tell me what weakness symptoms would make you seek urgent help?”

16. Worked Case 1: Sudden One-Sided Weakness

A 71-year-old man develops sudden right arm and leg weakness with slurred speech. He has hypertension and diabetes.

Danger

Stroke or intracranial hemorrhage. Hypoglycemia mimic must also be excluded.

Syndrome

Acute focal neurological deficit with vascular risk.

Capacity Failure

Brain integrity, mobility, speech, agency.

Coupling Conditions

Hypertension, diabetes, time from onset, anticoagulant use, prior stroke, access to stroke pathway, family support.

Wise Perturbation

Activate local stroke pathway. Check glucose. Assess airway, breathing, circulation, neurological status, time of onset, medications, and imaging eligibility according to local protocol.

Repair Trajectory

Brain diagnosis clarified, acute treatment pathway completed, neurological status monitored, rehabilitation and secondary prevention planned.

17. Worked Case 2: Ascending Weakness

A 42-year-old patient develops tingling in the feet followed by leg weakness that progresses over three days. They had diarrhea two weeks earlier. Reflexes are reduced.

Danger

Guillain-Barré syndrome with risk of respiratory failure and autonomic instability.

Syndrome

Progressive ascending weakness after infection with reduced reflexes.

Capacity Failure

Peripheral nerve conduction, mobility, breathing, autonomic regulation.

Coupling Conditions

Recent infection, progression speed, respiratory reserve, swallowing safety, access to monitoring, home distance from care.

Wise Perturbation

Urgent neurological assessment, respiratory and swallowing monitoring, autonomic monitoring, and specialist pathway. Do not reassure because the patient is still breathing comfortably now.

Repair Trajectory

Weakness stabilizes, breathing remains safe, swallowing safe, autonomic instability monitored, rehabilitation begins.

18. Worked Case 3: Back Pain and Bladder Symptoms

A 66-year-old woman with known breast cancer presents with severe back pain, worsening leg weakness, numbness, and difficulty passing urine.

Danger

Spinal cord compression or cauda equina syndrome.

Syndrome

Back pain with progressive neurological deficit and bladder dysfunction in a patient with cancer.

Capacity Failure

Spinal cord integrity, mobility, bladder function, dignity.

Coupling Conditions

Known malignancy, pain, delayed presentation, mobility loss, bladder retention, family support, access to urgent imaging and oncology/spine care.

Wise Perturbation

Urgent spinal imaging and specialist pathway according to local practice. Protect bladder, pain control, mobility, and dignity. Do not delay.

Repair Trajectory

Cord compression confirmed or excluded, neurological function stabilized, pain controlled, bladder managed, treatment pathway initiated.

19. Worked Case 4: Proximal Weakness

A 57-year-old woman reports difficulty rising from chairs and climbing stairs over two months. She has no numbness. She recently increased long-term steroid therapy.

Danger

Steroid myopathy, inflammatory myopathy, endocrine disease, deconditioning, malignancy-associated myopathy in selected contexts.

Syndrome

Gradual proximal muscle weakness without sensory symptoms.

Capacity Failure

Muscle power, mobility, falls safety, participation.

Coupling Conditions

Steroid exposure, inflammatory disease, physical activity loss, nutrition, vitamin D status, pain, medication necessity, comorbidities.

Wise Perturbation

Assess proximal power, muscle tenderness, medication history, thyroid and muscle enzymes where indicated, nutrition, falls risk, and need for therapy. Review steroid dose and alternatives with the treating team.

Repair Trajectory

Strength stabilizes or improves, falls risk reduces, steroid burden reviewed, rehabilitation begins, underlying disease remains controlled.

20. Worked Case 5: Generalized Weakness With Infection

An 83-year-old woman becomes weak and unable to get out of bed. She is mildly confused, febrile, and has urinary symptoms. She has fallen twice.

Danger

Sepsis, delirium, dehydration, AKI, falls injury, frailty decompensation.

Syndrome

Acute generalized weakness with fever, urinary symptoms, confusion, and falls in frailty.

Capacity Failure

Defense, cognition, hydration, mobility, clearance, safety.

Coupling Conditions

Age, frailty, urinary infection, poor intake, polypharmacy, home support, baseline mobility, fall risk, kidney function.

Wise Perturbation

Assess vitals, glucose, hydration, infection, renal function, electrolytes, fall injury, medicines, delirium triggers, and mobility safety. Treat infection according to local guidance and plan rehabilitation/support.

Repair Trajectory

Fever settles, confusion clears, hydration improves, strength returns toward baseline, falls risk addressed, home support secured.

21. Worked Case 6: Muscle Pain and Dark Urine

A 39-year-old man is found after lying on the floor overnight following heavy alcohol use. He has muscle pain, weakness, and dark urine.

Danger

Rhabdomyolysis, AKI, hyperkalemia, compartment injury, dehydration.

Syndrome

Muscle pain and weakness with dark urine after prolonged immobilization.

Capacity Failure

Muscle integrity, kidney clearance, potassium regulation, fluid balance.

Coupling Conditions

Alcohol use, immobilization, dehydration, delayed presentation, kidney function, social support, possible injury.

Wise Perturbation

Check creatine kinase, renal function, potassium, urine, hydration, compartment signs, and ECG if potassium concern. Treat according to local rhabdomyolysis pathway and monitor urine output.

Repair Trajectory

Muscle pain improves, urine clears, kidney function remains safe, potassium safe, mobility returns, alcohol-related risk addressed.

22. Common Student Pitfalls

Pitfall 1: Not Defining Weakness

Ask whether it is true power loss, fatigue, breathlessness, dizziness, or pain-limited movement.

Pitfall 2: Missing Stroke

Sudden focal weakness is stroke until proven otherwise. Check glucose.

Pitfall 3: Missing Spinal Cord Compression

Back pain with weakness and bladder symptoms is urgent.

Pitfall 4: Missing Respiratory Weakness

Neuromuscular weakness can kill by breathing failure.

Pitfall 5: Forgetting Electrolytes

Potassium, calcium, sodium, magnesium, glucose, renal function, and thyroid disease can all cause weakness.

Pitfall 6: Ignoring Medicines

Steroids, statins, sedatives, antihypertensives, diuretics, opioids, chemotherapy, alcohol, and toxins may contribute.

Pitfall 7: Calling Frailty "Just Old Age"

Acute weakness in frailty often reflects infection, dehydration, delirium, medication harm, or falls.

Pitfall 8: Discharging Without Mobility Assessment

A patient who cannot stand or toilet safely may not be safe at home.

23. Clinical Practice Box

When assessing weakness, complete this structure:

Is it true weakness or fatigue?
Can the patient generate power, or only not sustain activity?

Pattern:
Focal, generalized, proximal, distal, ascending, fluctuating, painful?

Time course:
Sudden, hours, days, weeks, months?

Danger features:
Stroke signs, back pain/bladder symptoms, breathing/swallowing difficulty, fever, shock, dark urine, severe electrolyte/glucose symptoms?

Localization:
Brain, spinal cord, nerve root, peripheral nerve, neuromuscular junction, muscle, systemic?

Capacity failure:
Brain command, cord transmission, nerve conduction, junction, muscle power, oxygen/energy, mobility safety?

Initial investigations:
Glucose, FBC, renal/electrolytes, CK, thyroid, B12, ECG, imaging where indicated?

Wise perturbation:
Stroke pathway, spinal imaging, respiratory monitoring, correct electrolytes, treat infection, review medicines, rehabilitation?

Repair trajectory:
Power, gait, swallowing, breathing, labs, falls risk, function, home safety?

24. Mini-Case for Practice

A 68-year-old man presents with three days of worsening leg weakness. He now struggles to climb stairs and has tingling in both feet. Two weeks ago he had a diarrheal illness. On examination, leg reflexes are reduced. He is breathing comfortably but says his legs are getting weaker each day.

Apply the weakness approach.

Danger

Guillain-Barré syndrome with risk of progression to respiratory failure, swallowing difficulty, and autonomic instability.

Syndrome

Progressive ascending weakness with sensory symptoms and reduced reflexes after recent infection.

Capacity Failure

Peripheral nerve conduction, mobility, breathing reserve, autonomic regulation, safety.

Coupling Conditions

Recent infection, speed of progression, distance from care, respiratory reserve, swallowing safety, age, comorbidities, access to monitoring and specialist care.

Wise Perturbation

Urgent neurological assessment, respiratory monitoring, swallowing assessment, autonomic monitoring, renal/electrolyte assessment, and admission or specialist pathway according to local practice. Do not discharge simply because breathing is currently comfortable.

Repair Trajectory

Weakness stabilizes, breathing remains safe, swallowing remains safe, autonomic instability avoided or managed, rehabilitation begins, walking gradually improves.

25. Student Takeaway

Weakness becomes easier when the clinician asks:

Is this true weakness or fatigue?
Is it sudden, focal, ascending, proximal, distal, fluctuating, painful, or generalized?
Is the brain, spinal cord, nerve, neuromuscular junction, muscle, circulation, oxygen delivery, metabolism, medicine system, or frailty reserve involved?
Is breathing, swallowing, walking, toileting, or home safety threatened?
What capacity is failing?
What treatment restores movement and safety without delay or harm?

Weakness is not merely “feeling weak.”

It is a signal that brain command, spinal cord transmission, nerve conduction, muscle power, energy, oxygen delivery, mobility, agency, or dignity may be under threat.

The safe clinician defines the weakness, localizes the problem, screens for danger, protects breathing and mobility, treats reversible causes, and follows the repair trajectory back toward function.

Chapter 31. Dizziness and Vertigo Made Easy

Dizziness is one of the most common and confusing clinical complaints.

Patients may say:

“I feel dizzy.”
“The room is spinning.”
“I feel lightheaded.”
“I feel off balance.”
“I might faint.”
“My head feels strange.”
“I cannot walk straight.”
“I feel worse when I turn my head.”

The word dizziness can mean many different things.

It may mean vertigo.
It may mean presyncope.
It may mean imbalance.
It may mean anxiety.
It may mean medication effect.
It may mean hypoglycemia, anemia, dehydration, arrhythmia, stroke, vestibular disease, migraine, infection, orthostatic hypotension, or frailty.

The first task is not to ask, “Is this dizziness real?”

The first task is to ask:

What does the patient mean by dizziness, and is the brain, circulation, balance system, glucose, oxygen delivery, or mobility safety under threat?

Dizziness and vertigo become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Dizziness Dangerous?

Dizziness becomes dangerous when it signals stroke, arrhythmia, shock, severe dehydration, hypoglycemia, anemia, medication toxicity, infection, neurological disease, or high falls risk.

Dangerous causes and contexts include:

- posterior circulation stroke
- transient ischemic attack
- intracranial hemorrhage

- cerebellar lesion
- cardiac arrhythmia
- acute coronary syndrome
- pulmonary embolism
- orthostatic hypotension with falls or syncope
- hypoglycemia
- severe anemia
- dehydration
- sepsis
- medication toxicity
- vestibular neuritis with inability to walk or drink
- severe vomiting causing dehydration
- head injury
- carbon monoxide exposure
- new neurological signs
- severe headache with dizziness
- acute hearing loss with vertigo
- frailty with falls
- pregnancy-related syncope or anemia where relevant
- unsafe discharge due to imbalance

The danger-first question is:

Is this dizziness a sign of brain, circulation, rhythm, oxygen, glucose, or mobility danger?

2. Immediate Red Flags in Dizziness and Vertigo

Urgent assessment is needed when dizziness is associated with:

- new weakness
- facial droop
- speech difficulty
- double vision
- visual loss
- severe imbalance
- inability to walk unaided
- new severe headache
- neck pain
- confusion
- loss of consciousness
- syncope
- chest pain
- palpitations
- severe breathlessness
- low blood pressure
- persistent vomiting
- severe dehydration

- new hearing loss
- fever with neurological symptoms
- recent head injury
- anticoagulant use after fall or head injury
- severe anemia symptoms
- very low glucose symptoms
- older age with vascular risk and acute continuous vertigo
- dizziness during exertion
- recurrent unexplained falls
- new dizziness after medication change
- neurological symptoms that are brief but recurrent

Dizziness with neurological signs, syncope, chest pain, palpitations, severe headache, or inability to walk is high-risk.

3. Dizziness Is a Syndrome, Not a Diagnosis

The clinician must translate “dizziness” into a clearer syndrome.

Ask:

- Is the room spinning?
- Do you feel you might faint?
- Do you feel off balance?
- Do you feel weak or lightheaded?
- Is it constant or episodic?
- Did it start suddenly?
- What triggers it?
- Is it worse with head movement?
- Is it worse when standing?
- Does it happen with exertion?
- Does it happen with palpitations?
- Is there nausea or vomiting?
- Is there hearing loss or ringing?
- Is there headache?
- Is there double vision?
- Is there speech difficulty?
- Is there limb weakness or numbness?
- Is there chest pain or breathlessness?
- Is there fever?
- Is there poor intake, vomiting, diarrhea, or dehydration?
- What medicines are being taken?
- Has there been a fall or head injury?
- Can the patient walk safely?

The goal is to move from:

“The patient is dizzy”

to:

“This is brief positional spinning vertigo triggered by turning in bed, without neurological symptoms.”

or:

“This is lightheadedness on standing with low blood pressure after diarrhea and diuretic use.”

or:

“This is acute continuous vertigo with vomiting, severe gait ataxia, and new double vision.”

The syndrome determines danger.

4. Four Main Meanings of Dizziness

Dizziness becomes easier when divided into four broad meanings.

Vertigo

Vertigo means a false sense of movement, often spinning.

Patients may say:

“The room is spinning.”
“I feel like I am moving when I am not.”
“Turning my head makes it spin.”

Possible causes:

- benign paroxysmal positional vertigo
- vestibular neuritis
- labyrinthitis
- Ménière disease
- vestibular migraine
- cerebellar or brainstem stroke
- medication toxicity

Main capacity affected:

Balance and spatial orientation

Presyncope

Presyncope means feeling faint or about to pass out.

Patients may say:

“I feel like I am going to black out.”
“I feel lightheaded.”
“Everything goes dim.”
“I get dizzy when I stand.”

Possible causes:

- orthostatic hypotension
- dehydration
- bleeding
- arrhythmia
- vasovagal episode
- medication effect
- sepsis
- anemia
- adrenal insufficiency
- cardiac disease

Main capacity affected:

Brain perfusion

Imbalance

Imbalance means unsteadiness, poor gait, or difficulty coordinating movement.

Patients may say:

“I cannot walk straight.”
“I feel off balance.”
“I keep veering to one side.”
“I am falling.”

Possible causes:

- cerebellar stroke
- neuropathy
- Parkinsonism
- vestibular disease
- spinal cord disease
- medication effect
- frailty
- visual impairment
- alcohol or sedative effect

Main capacity affected:

Mobility and postural control

Nonspecific Dizziness

This may mean vague lightheadedness, fogginess, anxiety, fatigue, medication effect, sleep deprivation, depression, or systemic illness.

Possible causes:

- anxiety or panic
- hypoglycemia
- anemia
- infection
- dehydration
- medication adverse effects
- sleep deprivation
- depression
- chronic vestibular dysfunction
- post-viral illness
- frailty

Main capacity affected:

Regulation, energy, agency, or participation

The clinician should not force the patient into one category too quickly, but these categories help organize the assessment.

5. Common Dizziness and Vertigo Syndrome Patterns

Brief Positional Spinning Vertigo

Pattern:

- spinning sensation
- lasts seconds to less than a minute
- triggered by turning in bed, looking up, bending, or rolling over
- nausea may occur
- no persistent neurological deficit
- patient feels normal between episodes

Possible cause:

- benign paroxysmal positional vertigo

Threatened capacities:

Balance, **comfort**, **mobility safety**

This is often benign, but the diagnosis requires the pattern to fit.

Acute Continuous Vertigo With Nausea and Vomiting

Pattern:

- sudden onset vertigo
- lasts hours to days
- nausea and vomiting
- worse with head movement
- difficulty walking
- no hearing loss in vestibular neuritis
- may follow viral illness

Possible causes:

- vestibular neuritis
- cerebellar or brainstem stroke
- vestibular migraine
- labyrinthitis if hearing symptoms present

Threatened capacities:

Balance, **hydration**, **mobility**, **brain integrity**

Important question:

Is this peripheral vestibular disease or posterior circulation stroke?

Vertigo With Hearing Loss or Tinnitus

Pattern:

- vertigo
- hearing loss
- tinnitus
- ear fullness
- nausea

Possible causes:

- labyrinthitis
- Ménière disease
- sudden sensorineural hearing loss with vestibular symptoms

- acoustic or central causes in selected contexts

Threatened capacities:

Balance, **hearing**, **communication**, **mobility safety**

New hearing loss with vertigo needs careful assessment.

Dizziness on Standing

Pattern:

- lightheadedness
- worse when standing
- improves lying down
- may have blurred vision or near-syncope
- dehydration, medicines, autonomic dysfunction, or bleeding may contribute

Possible causes:

- orthostatic hypotension
- dehydration
- diuretic effect
- antihypertensive overtreatment
- bleeding
- autonomic neuropathy
- adrenal insufficiency
- frailty

Threatened capacities:

Brain perfusion, **circulation**, **mobility safety**

Dizziness With Palpitations

Pattern:

- dizziness or near-syncope
- racing, irregular, or slow heartbeat
- sudden onset
- may have chest discomfort or breathlessness

Possible causes:

- arrhythmia
- supraventricular tachycardia
- atrial fibrillation
- ventricular tachycardia

- bradyarrhythmia or heart block
- medication effect
- electrolyte disturbance

Threatened capacities:

Rhythm stability, **cardiac output**, **brain perfusion**

Dizziness With Neurological Symptoms

Pattern:

- dizziness or vertigo
- double vision
- slurred speech
- limb weakness
- numbness
- severe imbalance
- new headache
- visual loss
- confusion

Possible causes:

- posterior circulation stroke
- brainstem lesion
- cerebellar stroke
- intracranial hemorrhage
- demyelination or other central nervous system disease in selected contexts

Threatened capacities:

Brain integrity, **mobility**, **vision**, **speech**, **life**

This is high-risk.

Dizziness With Hypoglycemia

Pattern:

- dizziness
- sweating
- hunger
- tremor
- confusion
- diabetes medicines or poor intake
- symptoms improve with glucose

Possible cause:

- hypoglycemia

Threatened capacities:

Glucose regulation, **brain energy**, **safety**

Dizziness With Anemia or Bleeding

Pattern:

- lightheadedness
- fatigue
- breathlessness
- palpitations
- pallor
- black stools, heavy bleeding, or blood loss symptoms

Possible causes:

- anemia
- gastrointestinal bleeding
- heavy menstrual bleeding where relevant
- acute blood loss

Threatened capacities:

Oxygen delivery, **brain perfusion**, **circulation reserve**

Dizziness With Medication Effect

Pattern:

- dizziness after starting or increasing medicine
- sedation
- low blood pressure
- imbalance
- falls
- confusion
- polypharmacy

Possible contributors:

- antihypertensives
- diuretics
- sedatives
- opioids

- antidepressants
- antipsychotics
- anticholinergics
- anticonvulsants
- alcohol
- vestibulotoxic medicines
- hypoglycemic medicines

Threatened capacities:

Brain perfusion, **balance**, **cognition**, **mobility safety**

6. Capacity Failure in Dizziness and Vertigo

Dizziness matters because it may signal failure of several capacities.

Balance and Spatial Orientation

The vestibular system, vision, proprioception, cerebellum, and brainstem coordinate orientation.

Signals include:

- spinning sensation
- nausea
- nystagmus
- unsteady gait
- veering
- falls

Brain Perfusion

The brain may not receive enough blood flow.

Signals include:

- lightheadedness
- near-syncope
- dimming vision
- collapse
- dizziness on standing
- confusion

Brain Integrity

A central nervous system lesion may disturb balance or coordination.

Signals include:

- double vision
- dysarthria
- dysphagia
- limb weakness
- severe ataxia
- new headache
- direction-changing nystagmus where found
- inability to walk

Oxygen Delivery

Anemia, hypoxia, heart disease, or lung disease may reduce oxygen delivery.

Signals include:

- breathlessness
- fatigue
- pallor
- chest pain
- exertional dizziness

Glucose and Metabolic Regulation

The brain may be starved of glucose or affected by sodium, calcium, renal failure, or toxins.

Signals include:

- sweating
- tremor
- confusion
- weakness
- altered consciousness
- medication or endocrine context

Mobility and Falls Safety

Even benign vertigo can cause serious injury.

Signals include:

- falls
- inability to walk
- fear of movement
- unsafe stairs
- nighttime bathroom risk
- frailty

Agency and Confidence

Dizziness can make patients afraid to move, drive, work, bathe, shop, or leave home.

The clinician should ask:

What has dizziness made the patient stop doing?

7. Bedside Assessment

Look First

Observe:

- alertness
- speech
- eye movements
- facial symmetry
- gait
- ability to sit upright
- vomiting
- dehydration
- pallor
- breathlessness
- anxiety
- tremor
- frailty
- fall injury
- hearing difficulty

The patient who cannot sit or walk safely needs careful assessment even if vital signs look acceptable.

Vital Signs

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- glucose
- level of consciousness
- postural blood pressure where safe and relevant
- heart rhythm or ECG if palpitations or syncope are present

Glucose should be checked early in acute dizziness, weakness, confusion, or collapse.

Clarify the Symptom

Ask the patient to choose the best description:

- spinning
- faintness
- imbalance
- weakness
- fogginess
- nausea
- visual disturbance
- fear or panic

Then ask:

- onset
- duration
- triggers
- head position effect
- standing effect
- exertion effect
- associated symptoms
- previous episodes
- new medicines
- recent infection
- hearing symptoms
- neurological symptoms
- falls

The words matter less than the pattern.

8. Physical Examination

Examination should look for central danger, peripheral vestibular disease, circulation problems, and falls risk.

Assess:

- mental state
- speech
- cranial nerves
- eye movements
- nystagmus
- limb power

- sensation
- coordination
- finger-nose testing
- heel-shin testing where appropriate
- gait
- ability to stand unaided
- Romberg where safe
- hearing
- ear examination where relevant
- pulse rate and rhythm
- cardiac murmurs
- heart failure signs
- hydration
- pallor
- signs of infection
- signs of medication toxicity
- orthostatic blood pressure where safe

Do not perform unsafe gait testing without support.

A patient who falls during examination has already demonstrated a capacity failure.

9. Central Versus Peripheral Vertigo

Vertigo can arise from the inner ear or from the brainstem/cerebellum.

Peripheral Vertigo Is More Likely When

Features include:

- spinning sensation
- triggered by head movement
- nausea
- no focal neurological signs
- patient may be able to walk with support
- hearing symptoms may occur in some peripheral disorders
- brief positional episodes suggest BPPV

Examples:

- BPPV
- vestibular neuritis
- labyrinthitis
- Ménière disease

Central Vertigo Is More Concerning When

Features include:

- new neurological symptoms
- severe gait ataxia
- inability to walk
- double vision
- slurred speech
- limb weakness
- numbness
- new severe headache
- direction-changing or vertical nystagmus where identified
- older age or vascular risk
- acute continuous vertigo with high-risk features

Examples:

- cerebellar stroke
- brainstem stroke
- intracranial hemorrhage
- demyelination or tumor in selected cases

The safest rule is:

Acute vertigo with neurological signs or inability to walk is central until proven otherwise.

10. Initial Investigations

Investigations depend on syndrome and danger.

Common investigations may include:

- glucose
- ECG
- full blood count
- renal function and electrolytes
- sodium, potassium, calcium where relevant
- thyroid tests where suggested
- inflammatory markers where infection is possible
- troponin where cardiac symptoms or risk suggest
- pregnancy test where relevant
- oxygen assessment if breathless
- orthostatic blood pressure assessment
- hearing assessment where relevant
- medication review
- neuroimaging where stroke, hemorrhage, severe headache, focal neurological signs, high-risk acute continuous vertigo, head injury, or central cause is suspected
- cardiac monitoring where arrhythmia is suspected

- ambulatory rhythm monitoring for recurrent unexplained presyncope or palpitations
- vestibular testing or ENT referral in selected persistent or recurrent cases

Testing should answer:

- Is glucose safe?
- Is rhythm safe?
- Is there anemia?
- Are electrolytes safe?
- Is there dehydration or AKI?
- Is there central neurological danger?
- Is this likely vestibular?
- Is the patient safe to walk and go home?

11. Dangerous Diagnoses Not to Miss

Posterior Circulation Stroke

Clues:

- acute vertigo or dizziness
- severe imbalance
- inability to walk
- double vision
- slurred speech
- dysphagia
- limb weakness or numbness
- new headache
- older age or vascular risk
- atrial fibrillation
- neck pain in dissection context

Capacity failure:

Brain integrity, **balance**, **speech**, **swallowing**, **mobility**, **life**

Wise action:

Activate local stroke or emergency neurological pathway. Do not dismiss as labyrinthitis when neurological signs or severe gait impairment are present.

Cardiac Arrhythmia

Clues:

- dizziness with palpitations

- syncope or near-syncope
- sudden onset and offset
- exertional symptoms
- irregular or very slow pulse
- structural heart disease
- abnormal ECG

Capacity failure:

Rhythm stability, **cardiac output**, **brain perfusion**

Wise action:

Obtain ECG, monitor if ongoing or high-risk, correct electrolytes, and follow local arrhythmia pathway.

Orthostatic Hypotension With Falls

Clues:

- dizziness on standing
- falls
- antihypertensives
- diuretics
- dehydration
- autonomic neuropathy
- Parkinsonism
- frailty
- poor intake

Capacity failure:

Brain perfusion, **mobility safety**, **autonomic regulation**

Wise action:

Check postural blood pressure where safe, review medicines, hydration, anemia, infection, and mobility risk.

Hypoglycemia

Clues:

- sweating
- hunger
- tremor
- confusion
- diabetes medicines
- poor intake

- symptoms improve with glucose

Capacity failure:

Brain energy, **glucose regulation**, **safety**

Wise action:

Check and correct glucose according to local guidance. Prevent recurrence.

Severe Anemia or Bleeding

Clues:

- dizziness
- pallor
- breathlessness
- fatigue
- palpitations
- black stools
- visible bleeding
- hypotension
- anticoagulant use

Capacity failure:

Oxygen delivery, **circulation reserve**, **brain perfusion**

Wise action:

Assess hemoglobin, bleeding source, vital signs, and need for urgent care.

Sepsis

Clues:

- dizziness or weakness
- fever or low temperature
- tachypnea
- hypotension
- confusion
- infection source
- low urine output

Capacity failure:

Defense, **circulation**, **cognition**, **clearance**

Wise action:

Treat according to local sepsis guidance.

Medication Toxicity or Over-Sedation

Clues:

- dizziness after medicine change
- falls
- drowsiness
- confusion
- low blood pressure
- bradycardia
- ataxia
- polypharmacy
- kidney or liver impairment

Capacity failure:

Balance, **cognition**, **brain perfusion**, **medicine safety**

Wise action:

Review medicines and reduce harm.

Head Injury With Dizziness

Clues:

- fall or trauma
- headache
- vomiting
- confusion
- anticoagulant use
- loss of consciousness
- worsening symptoms

Capacity failure:

Brain integrity, **balance**, **safety**

Wise action:

Assess according to local head injury pathway.

12. Wise Perturbation in Dizziness and Vertigo

Treatment depends on the syndrome.

Do not treat all dizziness with vestibular suppressants.

Do not diagnose anxiety without danger screening.

Ask:

- Is this vertigo, presyncope, imbalance, or nonspecific dizziness?
- Is there stroke danger?
- Is there syncope or arrhythmia danger?
- Is glucose safe?
- Is the patient dehydrated or anemic?
- Are medicines contributing?
- Can the patient walk safely?
- Is vomiting causing dehydration?
- Is hearing affected?
- Is referral needed?
- What will show repair?

If Stroke Is Possible

Follow local stroke pathway.

Do not delay because the symptom is called “dizziness.”

Posterior circulation strokes can present with vertigo, vomiting, and imbalance.

If BPPV Is Likely

If brief positional vertigo fits and danger signs are absent, positional testing and repositioning maneuvers may help when performed by trained clinicians.

Explain that symptoms can be intense but often improve.

Safety-net for neurological symptoms or inability to walk.

If Vestibular Neuritis Is Likely

Supportive care may include hydration, nausea control, short-term symptom relief where appropriate, mobilization guidance, and vestibular rehabilitation.

But first consider stroke risk in acute continuous vertigo.

If Orthostatic Hypotension Is Present

Address:

- dehydration
- bleeding
- infection
- medicines
- autonomic dysfunction
- salt/fluid advice where appropriate
- compression or positional strategies where appropriate
- falls prevention

If Medication-Related

Review and simplify.

Common targets include:

- antihypertensives
- diuretics
- sedatives
- opioids
- anticholinergics
- antidepressants
- antipsychotics
- anticonvulsants
- alcohol
- hypoglycemic medicines

If Falls Risk Is High

Protect the patient before discharge.

Consider:

- assisted walking assessment
- mobility aid
- family or caregiver support
- home safety
- toileting safety
- physiotherapy
- medication changes
- follow-up

13. Repair Trajectory

Repair is shown by:

- dangerous central or cardiac causes excluded or treated
- vertigo intensity improves
- vomiting settles
- hydration restored
- glucose safe
- blood pressure stable lying and standing where relevant
- rhythm safe
- gait improves
- patient can stand and walk safely
- hearing symptoms assessed where present
- medicines reviewed
- falls risk reduced
- patient understands movements, triggers, and warning signs
- follow-up arranged

Repair is not only “the dizziness is less.”

Repair means brain safety, circulation safety, balance, hydration, mobility, and confidence are restored.

14. Discharge Safety in Dizziness

Before discharge, ask:

- Can the patient sit safely?
- Can the patient stand safely?
- Can the patient walk safely?
- Is vomiting controlled?
- Can the patient drink?
- Is glucose safe?
- Is blood pressure stable?
- Is rhythm concern excluded or followed up?
- Are neurological red flags absent?
- Has medication harm been addressed?
- Is there fall risk at home?
- Is the patient living alone?
- Can they use the bathroom safely at night?
- Is follow-up arranged?

A patient with improved symptoms but unsafe walking may still be unsafe for discharge.

15. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- new weakness
- facial droop
- speech difficulty
- double vision
- visual loss
- severe headache
- confusion
- fainting
- chest pain
- palpitations
- severe breathlessness
- inability to walk
- repeated vomiting
- dehydration
- new hearing loss
- fever with neck stiffness or confusion
- fall or head injury
- black stools or bleeding
- recurrent episodes with collapse
- worsening dizziness despite treatment

Also explain:

- what type of dizziness is suspected
- what danger has been considered
- what medicines were changed
- what activities to avoid temporarily
- when it is safe to drive or work according to local advice
- what exercises or maneuvers are recommended if appropriate
- when follow-up is needed

Use teach-back:

“Can you tell me what dizziness symptoms would make you seek urgent help?”

16. Worked Case 1: Brief Positional Vertigo

A 52-year-old woman reports brief spinning dizziness when turning over in bed or looking upward. Episodes last less than a minute. She has nausea but no weakness, speech difficulty, headache, hearing loss, or fainting.

Danger

Danger appears lower if the neurological examination and gait are normal, but stroke red flags must be screened.

Syndrome

Brief positional spinning vertigo without neurological symptoms.

Capacity Failure

Balance, comfort, mobility confidence.

Coupling Conditions

Sleep disruption, fear of movement, driving concerns, fall risk, access to repositioning treatment.

Wise Perturbation

Assess neurological signs and gait. If BPPV pattern fits, perform positional assessment and treatment if trained, or refer appropriately. Provide safety-netting for neurological symptoms or worsening imbalance.

Repair Trajectory

Episodes reduce, patient moves more confidently, nausea improves, no falls, warning signs understood.

17. Worked Case 2: Acute Continuous Vertigo in Vascular Risk

A 71-year-old man with hypertension and diabetes develops sudden continuous vertigo, vomiting, and severe unsteadiness. He cannot walk without support.

Danger

Posterior circulation stroke or cerebellar stroke must be considered.

Syndrome

Acute continuous vertigo with vomiting and severe gait ataxia in a patient with vascular risk.

Capacity Failure

Brain integrity, balance, mobility, hydration, safety.

Coupling Conditions

Hypertension, diabetes, age, time of onset, vomiting, dehydration, access to stroke imaging and pathway, fall risk.

Wise Perturbation

Urgent neurological assessment and local stroke pathway. Check glucose, hydration, ECG, and neurological signs. Do not assume vestibular neuritis because the main symptom is vertigo.

Repair Trajectory

Central cause excluded or treated, vomiting controlled, hydration safe, gait improves, stroke prevention or vestibular rehabilitation planned as appropriate.

18. Worked Case 3: Dizziness on Standing

A 78-year-old woman feels lightheaded when standing and has fallen twice. She recently had diarrhea and continued her diuretic and blood pressure tablets.

Danger

Orthostatic hypotension, dehydration, AKI, medication-related falls, electrolyte disturbance.

Syndrome

Presyncope on standing with recent fluid loss and medicine exposure.

Capacity Failure

Brain perfusion, circulation, hydration, mobility safety, clearance.

Coupling Conditions

Diarrhea, diuretic, antihypertensives, age, frailty, kidney function, home safety, toilet access.

Wise Perturbation

Check postural blood pressure where safe, hydration, renal function, electrolytes, medication list, falls injury, and mobility. Adjust medicines and fluids according to clinical context and local guidance.

Repair Trajectory

Standing dizziness improves, falls stop, renal function and electrolytes stabilize, medication plan safer, home safety addressed.

19. Worked Case 4: Dizziness With Palpitations

A 64-year-old man has sudden episodes of dizziness with a racing heartbeat. One episode nearly caused fainting. His pulse is irregular during assessment.

Danger

Arrhythmia, atrial fibrillation, tachyarrhythmia, cardiac output compromise, stroke risk depending on rhythm.

Syndrome

Dizziness with palpitations and irregular pulse.

Capacity Failure

Rhythm stability, cardiac output, brain perfusion, stroke prevention.

Coupling Conditions

Hypertension, diabetes, alcohol, thyroid disease, sleep apnea, electrolytes, structural heart disease, anticoagulation suitability.

Wise Perturbation

Obtain ECG, assess stability, electrolytes, renal function, thyroid where indicated, heart failure signs, and stroke/bleeding risk if atrial fibrillation is confirmed. Manage according to local arrhythmia pathway.

Repair Trajectory

Rhythm diagnosis confirmed, rate or rhythm safer, dizziness reduces, stroke prevention addressed, follow-up arranged.

20. Worked Case 5: Dizziness With Hypoglycemia

A 59-year-old woman with diabetes becomes dizzy, sweaty, shaky, and confused after taking her usual tablets but skipping lunch.

Danger

Hypoglycemia with cognitive impairment and fall risk.

Syndrome

Dizziness with adrenergic symptoms and confusion after missed meal in diabetes treatment context.

Capacity Failure

Glucose regulation, brain energy, cognition, safety.

Coupling Conditions

Diabetes medicine, missed meal, work schedule, food access, kidney function, hypoglycemia awareness.

Wise Perturbation

Check glucose immediately. Treat according to local hypoglycemia guidance. Recheck and sustain glucose. Review medication and meal plan to prevent recurrence.

Repair Trajectory

Mental state clears, glucose remains stable, patient eats safely, medicine-food mismatch corrected, warning signs understood.

21. Common Student Pitfalls

Pitfall 1: Accepting “Dizziness” Without Clarifying Meaning

Ask whether it is spinning, faintness, imbalance, or vague fogginess.

Pitfall 2: Missing Posterior Circulation Stroke

Stroke can present as vertigo, vomiting, and imbalance.

Pitfall 3: Forgetting Glucose

Hypoglycemia is a reversible cause of dizziness, confusion, and weakness.

Pitfall 4: Ignoring Orthostatic Hypotension

Standing dizziness and falls often involve medicines, dehydration, or autonomic dysfunction.

Pitfall 5: Missing Arrhythmia

Dizziness with palpitations or syncope requires rhythm assessment.

Pitfall 6: Overusing Vestibular Suppressants

They may sedate, worsen falls, or delay vestibular compensation if used inappropriately.

Pitfall 7: Reassuring Without Testing Gait

If the patient cannot walk safely, the problem is not safely resolved.

Pitfall 8: Ignoring Medicines

Antihypertensives, diuretics, sedatives, opioids, antidepressants, antipsychotics, anticonvulsants, alcohol, and diabetes medicines commonly contribute.

22. Clinical Practice Box

When assessing dizziness or vertigo, complete this structure:

What does dizziness mean?
Spinning, faintness, imbalance, fogginess, weakness?

Time course:
Seconds, minutes, hours, days? Sudden or gradual? Episodic or continuous?

Triggers:
Head movement, standing, exertion, meals, medicines, alcohol, anxiety?

Danger features:
Neurological symptoms, syncope, chest pain, palpitations, severe headache, inability to walk, hearing loss, dehydration?

Capacity failure:
Balance, brain perfusion, brain integrity, oxygen delivery, glucose regulation, mobility safety?

Focused examination:
Eye movements, nystagmus, cranial nerves, coordination, gait, orthostatic BP, pulse rhythm?

Initial investigations:
Glucose, ECG, FBC, renal/electrolytes, imaging if central danger, rhythm monitoring if needed?

Wise perturbation:
Stroke pathway, hydration, glucose correction, medicine review, vestibular care, falls prevention, rhythm treatment?

Repair trajectory:
Symptoms, walking, hydration, glucose, rhythm, blood pressure, confidence, safety-net?

23. Mini-Case for Practice

A 73-year-old man with hypertension and atrial fibrillation presents with sudden severe vertigo, vomiting, and inability to walk without falling to the left. He denies chest pain. His speech sounds slightly slurred.

Apply the dizziness and vertigo approach.

Danger

Posterior circulation stroke or cerebellar stroke. High falls risk and dehydration from vomiting are also concerns.

Syndrome

Acute continuous vertigo with vomiting, severe gait ataxia, slurred speech, and vascular risk.

Capacity Failure

Brain integrity, balance, speech, mobility safety, hydration.

Coupling Conditions

Hypertension, atrial fibrillation, anticoagulation status, time of onset, vomiting, fall risk, access to stroke pathway, baseline function.

Wise Perturbation

Urgent neurological assessment and local stroke pathway. Check glucose, vital signs, ECG, hydration, anticoagulant status, and neurological deficits. Manage vomiting and prevent falls while central danger is assessed.

Repair Trajectory

Stroke confirmed or excluded, hydration restored, vomiting controlled, gait safety assessed, neurological status monitored, secondary prevention or vestibular rehabilitation planned according to diagnosis.

24. Student Takeaway

Dizziness and vertigo become easier when the clinician asks:

Does dizziness mean spinning, faintness, imbalance, or fogginess?
Is there neurological danger?
Is there syncope, chest pain, palpitations, hypoglycemia, anemia, dehydration, medication effect, or falls risk?
Can the patient walk safely?
Is this peripheral vestibular disease, central vertigo, presyncope, imbalance, metabolic disturbance, or nonspecific dizziness?
What capacity is failing: balance, brain perfusion, brain integrity, oxygen delivery, glucose regulation, mobility, or confidence?
What treatment restores safety without causing sedation, falls, or missed diagnosis?

Dizziness is not merely a vague complaint.

It is a signal that balance, brain perfusion, brain integrity, rhythm, glucose, oxygen delivery, mobility, agency, or dignity may need protection.

The safe clinician clarifies the symptom, screens for danger, watches the patient walk when safe, treats reversible causes, and follows the repair trajectory back toward balance and confidence.

Chapter 32. Cough Made Easy

Cough is one of the most common symptoms in medicine.

Patients may say:

“I have a cough.”
“I cannot stop coughing.”
“I cough at night.”
“I am bringing up phlegm.”
“There is blood when I cough.”
“I feel short of breath.”
“My chest hurts when I cough.”
“This cough has lasted for weeks.”

Most cough is not dangerous.
Some cough is viral and self-limited.
Some cough is caused by asthma, COPD, postnasal drip, reflux, smoking, medications, environmental exposure, or chronic lung disease.

But cough can also signal pneumonia, tuberculosis, pulmonary embolism, heart failure, lung cancer, severe asthma, COPD exacerbation, aspiration, interstitial lung disease, or airway obstruction.

The first task is not simply to prescribe cough medicine.

The first task is to ask:

Is this cough threatening oxygenation, ventilation, defense, airway protection, circulation, or long-term lung integrity?

Cough becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Cough Dangerous?

Cough becomes dangerous when it is associated with oxygen failure, sepsis, bleeding, airway compromise, respiratory exhaustion, malignancy, tuberculosis, pulmonary embolism, or heart failure.

Dangerous causes and contexts include:

- pneumonia
- severe asthma exacerbation
- COPD exacerbation
- pulmonary embolism
- tuberculosis
- lung cancer
- heart failure
- pulmonary edema
- aspiration
- airway obstruction
- foreign body aspiration
- anaphylaxis
- severe viral respiratory illness

- interstitial lung disease flare
- bronchiectasis with infection or bleeding
- immunosuppression with opportunistic infection
- hemoptysis
- pneumothorax
- medication-related lung injury
- occupational or environmental lung disease
- chronic cough with weight loss or night sweats

The danger-first question is:

Is the cough a sign that the lungs, airway, oxygenation, circulation, or defense system are failing?

2. Immediate Red Flags in Cough

Urgent assessment is needed when cough is associated with:

- severe breathlessness
- low oxygen saturation
- cyanosis
- confusion
- drowsiness
- chest pain
- coughing blood
- high fever or rigors
- low blood pressure
- fast respiratory rate
- inability to speak full sentences
- exhaustion
- wheeze with poor air movement
- stridor
- choking episode
- sudden onset after eating or aspiration
- unilateral pleuritic chest pain
- syncope
- weight loss
- night sweats
- persistent fever
- recurrent pneumonia
- immunosuppression
- known cancer

- smoking history with persistent cough
- new cough in a frail older patient with functional decline
- cough with leg swelling, orthopnea, or pulmonary edema symptoms
- cough lasting several weeks without explanation
- cough in a patient with tuberculosis exposure or risk

Cough with hypoxia, respiratory distress, hemoptysis, sepsis, chest pain, weight loss, or immune vulnerability should not be dismissed.

3. Cough Is a Syndrome, Not a Diagnosis

"Cough" alone is too broad.

The clinician must form a cough syndrome.

Ask:

- How long has the cough been present?
- Is it dry or productive?
- What color is the sputum?
- Is there blood?
- Is there fever?
- Is there breathlessness?
- Is there wheeze?
- Is there chest pain?
- Is the chest pain pleuritic?
- Is there weight loss?
- Are there night sweats?
- Is there fatigue?
- Is there reflux or heartburn?
- Is there postnasal drip or sinus symptoms?
- Is there asthma or COPD?
- Is there smoking or vaping?
- Is there occupational exposure?
- Is there tuberculosis exposure?
- Is there recent travel?
- Is there aspiration risk?
- Is there heart failure history?
- Is there leg swelling or orthopnea?
- Are medicines contributing?
- Is the patient immunosuppressed?
- What are the vital signs?

- What does the chest examination show?

The goal is to move from:

“The patient has a cough”

to:

“This is acute productive cough with fever, pleuritic pain, tachypnea, and low oxygen saturation.”

or:

“This is chronic dry cough worse at night with wheeze and variable shortness of breath.”

or:

“This is chronic cough with weight loss, night sweats, hemoptysis, and tuberculosis exposure.”

The syndrome determines urgency and direction.

4. Cough Duration Matters

Cough can be grouped by duration.

Acute Cough

Usually days to less than a few weeks.

Common causes:

- viral upper respiratory infection
- acute bronchitis
- pneumonia
- asthma exacerbation
- COPD exacerbation
- pulmonary embolism
- heart failure
- aspiration
- environmental irritant exposure

Danger depends on associated features, not duration alone.

Subacute Cough

Often several weeks.

Common causes:

- post-viral cough
- postinfectious airway hyperreactivity
- pertussis-like illness where relevant
- asthma
- sinus/postnasal drip
- pneumonia recovery
- tuberculosis in some contexts

A cough that persists after an infection may be benign, but it must be reassessed if there are red flags.

Chronic Cough

Often lasting many weeks or longer.

Common causes:

- asthma
- upper airway cough syndrome/postnasal drip
- gastroesophageal reflux
- smoking-related bronchitis
- COPD
- bronchiectasis
- ACE inhibitor use
- tuberculosis
- lung cancer
- interstitial lung disease
- chronic aspiration
- occupational exposure

Chronic cough deserves structure, not repeated cough syrup.

5. Common Cough Syndrome Patterns

Acute Cough With Fever

Pattern:

- cough
- fever
- sputum
- pleuritic chest pain in some cases
- breathlessness
- tachypnea
- crackles or reduced breath sounds
- fatigue

Possible causes:

- pneumonia
- viral respiratory infection
- influenza-like illness
- COVID-like illness where relevant
- bronchitis
- aspiration pneumonia
- tuberculosis if prolonged or risk factors exist

Threatened capacities:

Defense, **oxygenation**, **ventilation**, **energy**, **circulation** if severe.

Cough With Severe Breathlessness and Wheeze

Pattern:

- cough
- wheeze
- chest tightness
- shortness of breath
- difficulty speaking
- accessory muscle use
- poor air entry in severe cases

Possible causes:

- asthma exacerbation
- COPD exacerbation
- anaphylaxis
- airway obstruction
- heart failure mimicking wheeze

Threatened capacities:

Ventilation, **oxygenation**, **airway caliber**, **circulation** if severe.

Cough With Blood

Pattern:

- cough with blood-streaked sputum or larger blood volume
- chest pain, fever, weight loss, or breathlessness may coexist

Possible causes:

- bronchitis
- pneumonia
- tuberculosis
- lung cancer
- bronchiectasis
- pulmonary embolism
- anticoagulant-related bleeding
- pulmonary edema in some contexts
- vasculitis or diffuse alveolar hemorrhage in selected contexts

Threatened capacities:

Airway protection, **oxygenation**, **vascular integrity**, **defense**.

Hemoptysis always needs careful assessment.

Chronic Dry Cough

Pattern:

- persistent dry cough
- often worse at night or with triggers
- may have wheeze, reflux, throat clearing, or medication trigger
- no fever or systemic illness in many cases

Possible causes:

- asthma
- cough-variant asthma
- reflux
- postnasal drip
- ACE inhibitor use
- interstitial lung disease
- post-viral airway sensitivity
- environmental exposure

Threatened capacities:

Sleep, **comfort**, **airway regulation**, **participation**.

Chronic Productive Cough

Pattern:

- daily sputum
- recurrent infections
- breathlessness
- smoking or chronic lung disease may be present
- large sputum volumes may occur

Possible causes:

- COPD
- chronic bronchitis
- bronchiectasis
- chronic infection
- tuberculosis
- aspiration
- cystic fibrosis or other structural lung disease in selected contexts

Threatened capacities:

Airway clearance, **defense**, **oxygenation**, **mobility**, **participation**.

Cough With Weight Loss and Night Sweats

Pattern:

- cough
- weight loss
- night sweats

- fever
- fatigue
- hemoptysis in some cases
- exposure or immune risk may be present

Possible causes:

- tuberculosis
- lung cancer
- chronic infection
- lymphoma or other malignancy
- inflammatory disease

Threatened capacities:

Defense, **repair**, **oxygenation**, **nutrition**, **participation**.

This pattern must not be ignored.

Cough Worse When Lying Down

Pattern:

- cough at night
- orthopnea
- leg swelling
- breathlessness
- wheeze or crackles
- reflux symptoms may also be present

Possible causes:

- heart failure
- reflux
- postnasal drip
- asthma
- sleep apnea-related airway irritation in some contexts

Threatened capacities:

Oxygenation, **circulation**, **sleep**, **comfort**.

Cough After Eating or Swallowing

Pattern:

- cough during meals
- choking
- wet voice
- recurrent chest infections
- neurological disease or frailty
- swallowing difficulty

Possible causes:

- aspiration
- dysphagia
- reflux aspiration
- stroke-related swallowing dysfunction
- dementia-related swallowing difficulty

Threatened capacities:

Airway protection, **defense**, **nutrition**, **dignity**.

Cough After New Medicine

Pattern:

- cough starts after medicine introduction
- dry persistent cough common with some medicines
- other lung-toxic medicines can cause cough with breathlessness and abnormal imaging

Possible causes:

- ACE inhibitor cough
- medication-related bronchospasm
- medication-related lung injury in selected drugs
- reflux or dryness from medicines

Threatened capacities:

Comfort, **sleep**, **airway regulation**, and sometimes **oxygenation**.

6. Capacity Failure in Cough

Cough matters because it reflects airway and lung function.

Airway Clearance

Cough helps clear mucus, pathogens, blood, and foreign material.

Signals include:

- sputum production
- wet cough
- recurrent infection
- weak cough
- aspiration risk
- retained secretions

Oxygenation

Lung disease may impair oxygen transfer.

Signals include:

- breathlessness
- low oxygen saturation
- cyanosis

- confusion
- tachypnea
- fatigue

Ventilation

Air movement may be reduced by bronchospasm, obstruction, weakness, or severe lung disease.

Signals include:

- wheeze
- poor air entry
- prolonged expiration
- rising carbon dioxide where measured
- drowsiness
- exhaustion

Defense

Cough may signal infection or failed respiratory defense.

Signals include:

- fever
- sputum
- pleuritic pain
- crackles
- sepsis features
- recurrent pneumonia

Circulation

Cough can reflect heart failure or pulmonary embolism.

Signals include:

- orthopnea
- edema
- sudden dyspnea
- pleuritic chest pain
- syncope
- tachycardia
- hypoxia

Sleep, Voice, and Participation

Chronic cough can cause:

- insomnia
- rib pain
- urinary leakage
- vomiting
- embarrassment

- social withdrawal
- work disruption
- anxiety about cancer or infection

The clinician should ask:

What has this cough taken from the patient's life?

7. Bedside Assessment of Cough

Look First

Observe:

- respiratory distress
- ability to speak
- cyanosis
- confusion
- fatigue
- cough strength
- sputum volume
- hemoptysis
- wheeze
- use of accessory muscles
- fever appearance
- cachexia
- smoking-related features
- frailty
- aspiration signs
- edema
- orthopnea

A coughing patient who cannot speak full sentences or has low oxygen saturation needs urgent assessment.

Vital Signs

Check:

- respiratory rate
- oxygen saturation
- pulse
- blood pressure
- temperature
- level of consciousness
- glucose where acutely unwell or confused
- peak flow where asthma/COPD context and local practice allow

- weight where chronic disease or heart failure is relevant

Respiratory rate is one of the most important signs.

Focused History

Ask about:

- duration
- dry or productive
- sputum color and volume
- blood
- fever
- breathlessness
- wheeze
- chest pain
- pleuritic pain
- weight loss
- night sweats
- TB exposure
- smoking and vaping
- occupational exposures
- asthma or COPD
- heart failure
- reflux
- sinus symptoms
- aspiration or swallowing difficulty
- immune status
- recent travel
- sick contacts
- medicines
- ACE inhibitor use
- anticoagulant use
- recurrent infections
- vaccination status where relevant
- previous imaging abnormalities

Medicine and Exposure Review

Important contributors include:

- ACE inhibitors
- beta blockers in bronchospasm-prone patients where relevant
- inhaler technique issues

- steroids and immunosuppressants
- chemotherapy or lung-toxic medicines
- anticoagulants if bleeding
- smoking
- vaping
- biomass smoke
- dusts, molds, and occupational exposures
- pets or allergens
- alcohol or sedatives increasing aspiration risk
- reflux-provoking medicines in some contexts

Ask about work, home, and environment.

8. Physical Examination

Examine for lung, heart, infection, and systemic clues.

Assess:

- respiratory effort
- speech limitation
- tracheal position where relevant
- chest expansion
- wheeze
- crackles
- bronchial breath sounds
- reduced breath sounds
- dullness to percussion where skilled and relevant
- signs of pleural effusion
- signs of pneumothorax
- heart sounds
- murmurs
- heart failure signs
- leg edema
- calf swelling or PE clues where relevant
- lymph nodes
- clubbing
- cyanosis
- oral thrush where immunosuppression or inhaled steroid issue may exist
- nasal congestion or postnasal drip clues
- abdominal reflux clues are limited but history helps

- neurological/swallowing signs if aspiration suspected

Cough assessment is not only chest auscultation.

It includes oxygenation, circulation, defense, and function.

9. Initial Investigations

Investigations depend on syndrome and severity.

Common investigations may include:

- oxygen saturation
- chest X-ray when pneumonia, heart failure, malignancy, TB, persistent cough, hemoptysis, or unexplained symptoms are possible
- full blood count
- inflammatory markers where infection or inflammation is suspected
- renal function and electrolytes if acutely ill, dehydrated, on relevant medicines, or needing antibiotics/diuretics
- sputum culture where severe, recurrent, chronic productive cough, bronchiectasis, TB concern, or treatment failure exists
- TB testing where symptoms or exposure suggest
- viral testing where clinically or public health relevant
- ECG where chest pain, arrhythmia, heart failure, or PE is possible
- cardiac markers where ACS is possible
- BNP or heart failure assessment where available and appropriate
- D-dimer or CT pulmonary angiography pathway where PE is suspected according to local protocols
- spirometry or peak flow where asthma/COPD assessment is appropriate and safe
- CT chest where malignancy, interstitial lung disease, bronchiectasis, unresolved pneumonia, or unexplained chronic cough is suspected
- swallow assessment where aspiration is suspected
- oxygen or blood gas assessment where severe respiratory disease, COPD, drowsiness, or ventilation failure is possible

Testing should answer:

- Is oxygenation safe?
- Is there pneumonia?
- Is there heart failure?
- Is there asthma or COPD exacerbation?
- Is there TB or malignancy concern?
- Is there pulmonary embolism?
- Is there aspiration?
- Is there bleeding?
- Is the patient safe outside hospital?

10. Dangerous Diagnoses Not to Miss

Pneumonia

Clues:

- cough
- fever
- sputum
- pleuritic pain
- breathlessness
- crackles
- low oxygen saturation
- confusion in older patients
- sepsis features

Capacity failure:

Defense, **oxygenation**, **energy**, **circulation** if severe.

Wise action:

Assess severity, oxygenation, sepsis, comorbidities, hydration, and treat according to local antimicrobial guidance.

Severe Asthma Exacerbation

Clues:

- cough
- wheeze
- chest tightness
- breathlessness
- inability to speak full sentences
- accessory muscle use
- poor air movement
- exhaustion
- low oxygen saturation
- previous severe attacks

Capacity failure:

Airway caliber, **ventilation**, **oxygenation**, **life**

Wise action:

Treat urgently according to local asthma emergency protocol. Escalate early if poor response or exhaustion.

COPD Exacerbation

Clues:

- increased cough
- increased sputum

- increased breathlessness
- wheeze
- known COPD
- smoking history
- infection trigger
- drowsiness if carbon dioxide retention occurs

Capacity failure:

Ventilation, **oxygenation**, **airway clearance**, **defense**

Wise action:

Assess oxygenation carefully, consider carbon dioxide retention risk where relevant, treat according to local COPD guidance, and review inhaler technique and triggers.

Tuberculosis

Clues:

- chronic cough
- weight loss
- night sweats
- fever
- hemoptysis
- exposure risk
- immune vulnerability
- abnormal chest imaging

Capacity failure:

Defense, **oxygenation**, **nutrition**, **repair**, **public health safety**

Wise action:

Assess and test according to local TB pathway. Consider infection control and contact/public health implications where relevant.

Lung Cancer

Clues:

- persistent cough
- hemoptysis
- weight loss
- smoking history
- chest pain
- recurrent pneumonia
- hoarseness
- clubbing
- abnormal imaging

Capacity failure:

Lung integrity, **oxygenation**, **nutrition**, **repair**, **dignity**

Wise action:

Prompt imaging and referral according to local cancer pathways.

Pulmonary Embolism

Clues:

- sudden cough or dyspnea
- pleuritic chest pain
- hemoptysis
- tachycardia
- syncope
- hypoxia
- leg swelling
- recent surgery, immobility, cancer, pregnancy/postpartum context where relevant, prior clot

Capacity failure:

Pulmonary circulation, **oxygenation**, **right heart function**

Wise action:

Assess probability and follow local PE pathway. Escalate if unstable.

Heart Failure

Clues:

- cough worse lying down
- breathlessness
- orthopnea
- leg swelling
- crackles
- raised venous pressure where present
- frothy sputum in acute pulmonary edema
- hypertension or ischemic heart disease

Capacity failure:

Circulation, **fluid balance**, **oxygenation**, **sleep**

Wise action:

Assess oxygenation, fluid status, ECG, renal function, and treat according to local heart failure guidance.

Aspiration

Clues:

- cough during meals
- choking
- wet voice
- recurrent pneumonia
- stroke, dementia, Parkinsonism, frailty, alcohol, sedation, or swallowing disorder

- fever after aspiration event

Capacity failure:

Airway protection, **defense**, **nutrition**, **dignity**

Wise action:

Assess swallowing safety, nutrition, aspiration precautions, and treat infection when present.

Airway Obstruction or Foreign Body

Clues:

- sudden cough
- choking
- stridor
- wheeze localized to one side
- reduced air entry
- child or vulnerable adult context, dental procedure, eating episode, altered consciousness

Capacity failure:

Airway patency, **ventilation**, **oxygenation**

Wise action:

Urgent airway assessment and local emergency pathway.

11. Wise Perturbation in Cough

Treatment depends on syndrome and danger.

Do not treat all cough with antibiotics.
Do not treat all cough with suppressants.
Do not ignore oxygenation.

Ask:

- Is oxygenation safe?
- Is there respiratory distress?
- Is there infection?
- Is there bronchospasm?
- Is there heart failure?
- Is there TB or malignancy concern?
- Is there hemoptysis?
- Is there aspiration?
- Are medicines or exposures contributing?
- What treatment restores capacity with least harm?

If Infection Is Likely

Assess severity and likely source.

Consider:

- pneumonia severity

- oxygenation
- sepsis features
- age and frailty
- comorbidities
- immune status
- local antimicrobial guidance
- need for imaging
- need for admission
- public health implications where relevant

Antibiotics should be used when bacterial infection is likely or risk is high, not reflexively for every cough.

If Bronchospasm Is Present

Assess airway severity.

Consider:

- inhaler technique
- reliever response
- steroid need according to local guidance
- trigger control
- oxygenation
- peak flow or spirometry when appropriate
- severe asthma/COPD pathway when danger features are present

If Heart Failure Is Present

Cough treatment requires treating fluid and circulation.

Consider:

- orthopnea
- edema
- crackles
- oxygenation
- renal function
- diuretics and monitoring
- blood pressure
- cardiac trigger

Cough syrup will not repair pulmonary edema.

If Reflux or Postnasal Drip Is Likely

Chronic cough may improve when upper airway or reflux drivers are addressed.

Ask about:

- throat clearing
- nasal congestion

- postnasal drip
- heartburn
- regurgitation
- cough after meals
- cough lying down
- voice symptoms

Treatment should be trialed thoughtfully with follow-up.

If Medicine-Related

ACE inhibitor cough is a classic example.

But medicine-related lung disease can be more serious.

Ask:

- When did the cough begin?
- What medicine started before it?
- Is there breathlessness or abnormal imaging?
- Is the patient immunosuppressed?
- Is urgent specialist review needed?

If Chronic Cough Is Unexplained

Do not endlessly repeat symptomatic treatment.

A structured plan may include:

- chest imaging where indicated
- spirometry where appropriate
- medication review
- smoking and exposure review
- TB/malignancy assessment where relevant
- reflux/postnasal drip assessment
- specialist referral if persistent or concerning

12. Repair Trajectory

Repair is shown by:

- cough frequency decreases
- sputum improves
- fever settles
- breathlessness improves
- oxygen saturation stable
- respiratory rate improves
- chest pain improves
- wheeze improves

- sleep improves
- oral intake improves
- hydration maintained
- pneumonia or infection responds
- heart failure congestion improves
- asthma/COPD control improves
- hemoptysis stops or is investigated
- TB or malignancy concern addressed
- aspiration risk reduced
- medicine trigger removed where relevant
- patient understands warning signs
- follow-up arranged

Repair is not simply “the cough is quieter.”

Repair means airway clearance, oxygenation, defense, sleep, comfort, and participation are improving.

13. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- worsening breathlessness
- low oxygen readings where monitored
- chest pain
- coughing blood
- confusion
- drowsiness
- blue lips
- persistent high fever
- fainting
- inability to speak full sentences
- wheeze not improving
- severe weakness
- dehydration
- worsening symptoms after initial improvement
- weight loss
- night sweats
- persistent cough beyond expected recovery
- recurrent cough with fever
- choking or aspiration episodes

- swelling of face or airway symptoms
- new leg swelling or pleuritic chest pain

Also explain:

- what diagnosis is suspected
- what symptoms suggest danger
- how to use inhalers if prescribed
- whether antibiotics are needed or not needed
- what medicine changes were made
- when follow-up is needed
- whether imaging or sputum testing must be reviewed
- what to do if symptoms worsen

Use teach-back:

“Can you tell me what cough symptoms would make you seek urgent help?”

14. Worked Case 1: Acute Cough With Fever

A 74-year-old woman presents with cough, fever, sputum, pleuritic chest pain, tachypnea, and low oxygen saturation.

Danger

Pneumonia, sepsis, respiratory failure, frailty decompensation.

Syndrome

Acute productive cough with fever, pleuritic pain, tachypnea, and hypoxia.

Capacity Failure

Defense, oxygenation, energy, circulation if sepsis develops.

Coupling Conditions

Age, frailty, chronic lung disease if present, diabetes, hydration, home support, baseline mobility, vaccination history.

Wise Perturbation

Assess severity, oxygenation, sepsis features, chest findings, renal function, hydration, and imaging. Treat according to local pneumonia guidance and monitor response.

Repair Trajectory

Fever settles, respiratory rate improves, oxygenation stabilizes, cough and sputum improve, oral intake returns, mobility recovers.

15. Worked Case 2: Chronic Cough With Weight Loss

A 59-year-old man has had cough for three months, weight loss, night sweats, fatigue, and occasional blood-streaked sputum.

Danger

Tuberculosis, lung cancer, chronic infection, malignancy.

Syndrome

Chronic cough with systemic symptoms and hemoptysis.

Capacity Failure

Defense, oxygenation, nutrition, repair, public health safety.

Coupling Conditions

Smoking history, TB exposure, immune status, housing, occupational exposure, access to imaging and sputum testing, family contacts.

Wise Perturbation

Arrange chest imaging and targeted testing according to local TB/cancer pathways. Consider infection control where TB is possible. Do not treat repeatedly as simple bronchitis without investigation.

Repair Trajectory

Diagnosis clarified, infection or malignancy pathway initiated, weight stabilizes, cough improves, hemoptysis addressed, contacts/public health issues managed where relevant.

16. Worked Case 3: Cough and Wheeze

A 32-year-old patient has cough, wheeze, chest tightness, and shortness of breath after dust exposure. They can speak only short phrases and are using accessory muscles.

Danger

Severe asthma exacerbation or severe bronchospasm.

Syndrome

Acute cough with wheeze, chest tightness, and respiratory distress after trigger exposure.

Capacity Failure

Airway caliber, ventilation, oxygenation, circulation if severe.

Coupling Conditions

Asthma history, inhaler access, inhaler technique, allergen exposure, previous severe attacks, adherence, occupational exposure.

Wise Perturbation

Assess oxygenation, respiratory effort, peak flow where appropriate, and response to treatment. Treat according to local asthma emergency guidance and escalate if poor response or exhaustion.

Repair Trajectory

Speech improves, respiratory rate decreases, wheeze and work of breathing improve, oxygenation stable, trigger plan and inhaler technique reviewed.

17. Worked Case 4: Night Cough and Orthopnea

A 68-year-old man reports cough worse when lying flat, breathlessness at night, swollen ankles, and reduced exercise tolerance.

Danger

Heart failure, pulmonary edema if acute, ischemic trigger, renal dysfunction.

Syndrome

Cough with orthopnea, edema, and exertional dyspnea.

Capacity Failure

Circulation, fluid balance, oxygenation, sleep.

Coupling Conditions

Hypertension, ischemic heart disease, kidney function, salt intake, medication adherence, diuretic use, home weighing, access to follow-up.

Wise Perturbation

Assess oxygenation, fluid status, ECG, renal function, electrolytes, chest findings, and heart failure pathway according to local practice. Treat congestion and identify trigger.

Repair Trajectory

Orthopnea improves, cough reduces, edema decreases, exercise tolerance improves, renal function stable, follow-up arranged.

18. Worked Case 5: Cough During Meals

An 86-year-old woman with previous stroke coughs during meals and has had two episodes of pneumonia in six months. Her family notices a wet voice after drinking.

Danger

Aspiration, recurrent pneumonia, malnutrition, dehydration, unsafe swallowing.

Syndrome

Cough with meals, wet voice, prior stroke, and recurrent pneumonia.

Capacity Failure

Airway protection, defense, nutrition, hydration, dignity.

Coupling Conditions

Stroke-related dysphagia, frailty, dentition, feeding position, caregiver technique, food texture, hydration access, cognition.

Wise Perturbation

Assess swallowing safety, nutrition, hydration, chest infection, and aspiration risk. Arrange swallow assessment where available and adjust feeding strategy according to local guidance.

Repair Trajectory

Coughing during meals reduces, aspiration risk lowers, nutrition and hydration improve, pneumonia recurrence decreases, caregiver plan clear.

19. Common Student Pitfalls

Pitfall 1: Treating Cough Without Checking Oxygenation

Oxygen saturation and respiratory effort matter.

Pitfall 2: Giving Antibiotics for Every Cough

Many coughs are viral, allergic, reflux-related, medicine-related, or inflammatory. Antibiotics should match likely bacterial disease and risk.

Pitfall 3: Missing Pneumonia in Older Patients

Older patients may present with confusion, falls, weakness, or poor intake rather than classic symptoms.

Pitfall 4: Missing TB or Cancer

Chronic cough with weight loss, night sweats, hemoptysis, or risk factors needs investigation.

Pitfall 5: Missing Heart Failure

Cough worse lying down with edema and orthopnea may be circulation failure, not bronchitis.

Pitfall 6: Missing Aspiration

Cough during meals, wet voice, stroke, dementia, and recurrent pneumonia are key clues.

Pitfall 7: Ignoring Medicines

ACE inhibitors and other medicines can cause cough or lung disease.

Pitfall 8: Using Cough Suppression Unsafely

Suppressing cough may worsen secretion retention, sedation, aspiration risk, or delay diagnosis in some contexts.

20. Clinical Practice Box

When assessing cough, complete this structure:

Duration:
Acute, subacute, chronic?

Character:
Dry, productive, sputum, blood, nocturnal, positional, meal-related?

Danger features:
Dyspnea, hypoxia, fever, hemoptysis, chest pain, confusion, weight loss, night sweats, immunosuppression?

Syndrome pattern:
Infection, bronchospasm, heart failure, TB/cancer concern, aspiration, reflux/postnasal drip, medication-related?

Capacity failure:
Airway clearance, oxygenation, ventilation, defense, circulation, sleep, participation?

Exposures:
Smoking, vaping, occupational dust, biomass smoke, TB exposure, allergens, medicines?

Initial investigations:
Oxygen saturation, CXR, FBC, inflammatory markers, sputum/TB testing, ECG, heart failure tests, spirometry, CT, swallow assessment?

Wise perturbation:
Antibiotics if indicated, bronchodilator/steroid pathway, heart failure treatment, aspiration care, medicine change, referral?

Repair trajectory:
Cough, sputum, fever, oxygenation, breathlessness, sleep, function, follow-up?

21. Mini-Case for Practice

A 65-year-old man presents with cough for eight weeks, weight loss, night sweats, fatigue, and two episodes of blood-streaked sputum. He has smoked for many years and recently cared for a relative who had a prolonged cough.

Apply the cough approach.

Danger
Tuberculosis, lung cancer, chronic infection, bronchiectasis, systemic illness.

Syndrome
Chronic cough with constitutional symptoms, hemoptysis, smoking history, and possible TB exposure.

Capacity Failure
Defense, oxygenation, nutrition, repair, airway integrity, public health safety.

Coupling Conditions
Smoking, TB exposure, immune status, housing, family contacts, access to imaging and sputum testing, fear of diagnosis, follow-up reliability.

Wise Perturbation
Arrange chest imaging and targeted testing according to local TB and lung cancer pathways. Consider infection control while TB is assessed. Do not treat as repeated simple bronchitis without investigation. Address smoking and support follow-up.

Repair Trajectory
Diagnosis clarified, infection or malignancy pathway started, hemoptysis addressed, cough improves, weight stabilizes, contacts assessed if TB is confirmed, patient supported through next steps.

22. Student Takeaway

Cough becomes easier when the clinician asks:

Is oxygenation safe?
Is there fever, breathlessness, hemoptysis, chest pain, weight loss, night sweats, aspiration risk, smoking history, immune vulnerability, or chronicity?
Is this infection, bronchospasm, heart failure, tuberculosis, malignancy, reflux, postnasal drip, aspiration, medication effect, or environmental exposure?
What capacity is failing: airway clearance, oxygenation, ventilation, defense, circulation, sleep, or participation?
What treatment restores airway and lung safety without unnecessary antibiotics, sedation, or missed diagnosis?

Cough is not merely an irritation.

It is a signal that airway clearance, oxygenation, ventilation, defense, circulation, sleep, dignity, and participation may need protection.

The safe clinician listens to the cough pattern, checks oxygenation, screens for danger, investigates persistent or red-flag cough, treats the cause, and follows the repair trajectory back toward breathing, sleep, and confidence.

1. The First Question: Is This Cough Dangerous?

Cough becomes dangerous when it is associated with oxygen failure, sepsis, bleeding, airway compromise, respiratory exhaustion, malignancy, tuberculosis, pulmonary embolism, or heart failure.

Dangerous causes and contexts include:

- pneumonia
- severe asthma exacerbation
- COPD exacerbation
- pulmonary embolism
- tuberculosis
- lung cancer
- heart failure
- pulmonary edema
- aspiration
- airway obstruction
- foreign body aspiration
- anaphylaxis
- severe viral respiratory illness
- interstitial lung disease flare
- bronchiectasis with infection or bleeding
- immunosuppression with opportunistic infection
- hemoptysis
- pneumothorax
- medication-related lung injury
- occupational or environmental lung disease
- chronic cough with weight loss or night sweats

The danger-first question is:

Is the cough a sign that the lungs, airway, oxygenation, circulation, or defense system are failing?

2. Immediate Red Flags in Cough

Urgent assessment is needed when cough is associated with:

- severe breathlessness
- low oxygen saturation
- cyanosis
- confusion
- drowsiness
- chest pain
- coughing blood
- high fever or rigors
- low blood pressure
- fast respiratory rate
- inability to speak full sentences

- exhaustion
- wheeze with poor air movement
- stridor
- choking episode
- sudden onset after eating or aspiration
- unilateral pleuritic chest pain
- syncope
- weight loss
- night sweats
- persistent fever
- recurrent pneumonia
- immunosuppression
- known cancer
- smoking history with persistent cough
- new cough in a frail older patient with functional decline
- cough with leg swelling, orthopnea, or pulmonary edema symptoms
- cough lasting several weeks without explanation
- cough in a patient with tuberculosis exposure or risk

Cough with hypoxia, respiratory distress, hemoptysis, sepsis, chest pain, weight loss, or immune vulnerability should not be dismissed.

3. Cough Is a Syndrome, Not a Diagnosis

"Cough" alone is too broad.

The clinician must form a cough syndrome.

Ask:

- How long has the cough been present?
- Is it dry or productive?
- What color is the sputum?
- Is there blood?
- Is there fever?
- Is there breathlessness?
- Is there wheeze?
- Is there chest pain?
- Is the chest pain pleuritic?
- Is there weight loss?
- Are there night sweats?
- Is there fatigue?

- Is there reflux or heartburn?
- Is there postnasal drip or sinus symptoms?
- Is there asthma or COPD?
- Is there smoking or vaping?
- Is there occupational exposure?
- Is there tuberculosis exposure?
- Is there recent travel?
- Is there aspiration risk?
- Is there heart failure history?
- Is there leg swelling or orthopnea?
- Are medicines contributing?
- Is the patient immunosuppressed?
- What are the vital signs?
- What does the chest examination show?

The goal is to move from:

“The patient has a cough”

to:

“This is acute productive cough with fever, pleuritic pain, tachypnea, and low oxygen saturation.”

or:

“This is chronic dry cough worse at night with wheeze and variable shortness of breath.”

or:

“This is chronic cough with weight loss, night sweats, hemoptysis, and tuberculosis exposure.”

The syndrome determines urgency and direction.

4. Cough Duration Matters

Cough can be grouped by duration.

Acute Cough

Usually days to less than a few weeks.

Common causes:

- viral upper respiratory infection
- acute bronchitis
- pneumonia
- asthma exacerbation
- COPD exacerbation
- pulmonary embolism
- heart failure
- aspiration

- environmental irritant exposure

Danger depends on associated features, not duration alone.

Subacute Cough

Often several weeks.

Common causes:

- post-viral cough
- postinfectious airway hyperreactivity
- pertussis-like illness where relevant
- asthma
- sinus/postnasal drip
- pneumonia recovery
- tuberculosis in some contexts

A cough that persists after an infection may be benign, but it must be reassessed if there are red flags.

Chronic Cough

Often lasting many weeks or longer.

Common causes:

- asthma
- upper airway cough syndrome/postnasal drip
- gastroesophageal reflux
- smoking-related bronchitis
- COPD
- bronchiectasis
- ACE inhibitor use
- tuberculosis
- lung cancer
- interstitial lung disease
- chronic aspiration
- occupational exposure

Chronic cough deserves structure, not repeated cough syrup.

5. Common Cough Syndrome Patterns

Acute Cough With Fever

Pattern:

- cough
- fever
- sputum
- pleuritic chest pain in some cases
- breathlessness

- tachypnea
- crackles or reduced breath sounds
- fatigue

Possible causes:

- pneumonia
- viral respiratory infection
- influenza-like illness
- COVID-like illness where relevant
- bronchitis
- aspiration pneumonia
- tuberculosis if prolonged or risk factors exist

Threatened capacities:

Defense, **oxygenation**, **ventilation**, **energy**, **circulation** if severe.

Cough With Severe Breathlessness and Wheeze

Pattern:

- cough
- wheeze
- chest tightness
- shortness of breath
- difficulty speaking
- accessory muscle use
- poor air entry in severe cases

Possible causes:

- asthma exacerbation
- COPD exacerbation
- anaphylaxis
- airway obstruction
- heart failure mimicking wheeze

Threatened capacities:

Ventilation, **oxygenation**, **airway caliber**, **circulation** if severe.

Cough With Blood

Pattern:

- cough with blood-streaked sputum or larger blood volume
- chest pain, fever, weight loss, or breathlessness may coexist

Possible causes:

- bronchitis
- pneumonia

- tuberculosis
- lung cancer
- bronchiectasis
- pulmonary embolism
- anticoagulant-related bleeding
- pulmonary edema in some contexts
- vasculitis or diffuse alveolar hemorrhage in selected contexts

Threatened capacities:

Airway protection, **oxygenation**, **vascular integrity**, **defense**.

Hemoptysis always needs careful assessment.

Chronic Dry Cough

Pattern:

- persistent dry cough
- often worse at night or with triggers
- may have wheeze, reflux, throat clearing, or medication trigger
- no fever or systemic illness in many cases

Possible causes:

- asthma
- cough-variant asthma
- reflux
- postnasal drip
- ACE inhibitor use
- interstitial lung disease
- post-viral airway sensitivity
- environmental exposure

Threatened capacities:

Sleep, **comfort**, **airway regulation**, **participation**.

Chronic Productive Cough

Pattern:

- daily sputum
- recurrent infections
- breathlessness
- smoking or chronic lung disease may be present
- large sputum volumes may occur

Possible causes:

- COPD
- chronic bronchitis

- bronchiectasis
- chronic infection
- tuberculosis
- aspiration
- cystic fibrosis or other structural lung disease in selected contexts

Threatened capacities:

Airway clearance, **defense**, **oxygenation**, **mobility**, **participation**.

Cough With Weight Loss and Night Sweats

Pattern:

- cough
- weight loss
- night sweats
- fever
- fatigue
- hemoptysis in some cases
- exposure or immune risk may be present

Possible causes:

- tuberculosis
- lung cancer
- chronic infection
- lymphoma or other malignancy
- inflammatory disease

Threatened capacities:

Defense, **repair**, **oxygenation**, **nutrition**, **participation**.

This pattern must not be ignored.

Cough Worse When Lying Down

Pattern:

- cough at night
- orthopnea
- leg swelling
- breathlessness
- wheeze or crackles
- reflux symptoms may also be present

Possible causes:

- heart failure
- reflux
- postnasal drip

- asthma
- sleep apnea-related airway irritation in some contexts

Threatened capacities:

Oxygenation, **circulation**, **sleep**, **comfort**.

Cough After Eating or Swallowing

Pattern:

- cough during meals
- choking
- wet voice
- recurrent chest infections
- neurological disease or frailty
- swallowing difficulty

Possible causes:

- aspiration
- dysphagia
- reflux aspiration
- stroke-related swallowing dysfunction
- dementia-related swallowing difficulty

Threatened capacities:

Airway protection, **defense**, **nutrition**, **dignity**.

Cough After New Medicine

Pattern:

- cough starts after medicine introduction
- dry persistent cough common with some medicines
- other lung-toxic medicines can cause cough with breathlessness and abnormal imaging

Possible causes:

- ACE inhibitor cough
- medication-related bronchospasm
- medication-related lung injury in selected drugs
- reflux or dryness from medicines

Threatened capacities:

Comfort, **sleep**, **airway regulation**, and sometimes **oxygenation**.

6. Capacity Failure in Cough

Cough matters because it reflects airway and lung function.

Airway Clearance

Cough helps clear mucus, pathogens, blood, and foreign material.

Signals include:

- sputum production
- wet cough
- recurrent infection
- weak cough
- aspiration risk
- retained secretions

Oxygenation

Lung disease may impair oxygen transfer.

Signals include:

- breathlessness
- low oxygen saturation
- cyanosis
- confusion
- tachypnea
- fatigue

Ventilation

Air movement may be reduced by bronchospasm, obstruction, weakness, or severe lung disease.

Signals include:

- wheeze
- poor air entry
- prolonged expiration
- rising carbon dioxide where measured
- drowsiness
- exhaustion

Defense

Cough may signal infection or failed respiratory defense.

Signals include:

- fever
- sputum
- pleuritic pain
- crackles
- sepsis features
- recurrent pneumonia

Circulation

Cough can reflect heart failure or pulmonary embolism.

Signals include:

- orthopnea

- edema
- sudden dyspnea
- pleuritic chest pain
- syncope
- tachycardia
- hypoxia

Sleep, Voice, and Participation

Chronic cough can cause:

- insomnia
- rib pain
- urinary leakage
- vomiting
- embarrassment
- social withdrawal
- work disruption
- anxiety about cancer or infection

The clinician should ask:

What has this cough taken from the patient's life?

7. Bedside Assessment of Cough

Look First

Observe:

- respiratory distress
- ability to speak
- cyanosis
- confusion
- fatigue
- cough strength
- sputum volume
- hemoptysis
- wheeze
- use of accessory muscles
- fever appearance
- cachexia
- smoking-related features
- frailty
- aspiration signs

- edema
- orthopnea

A coughing patient who cannot speak full sentences or has low oxygen saturation needs urgent assessment.

Vital Signs

Check:

- respiratory rate
- oxygen saturation
- pulse
- blood pressure
- temperature
- level of consciousness
- glucose where acutely unwell or confused
- peak flow where asthma/COPD context and local practice allow
- weight where chronic disease or heart failure is relevant

Respiratory rate is one of the most important signs.

Focused History

Ask about:

- duration
- dry or productive
- sputum color and volume
- blood
- fever
- breathlessness
- wheeze
- chest pain
- pleuritic pain
- weight loss
- night sweats
- TB exposure
- smoking and vaping
- occupational exposures
- asthma or COPD
- heart failure
- reflux
- sinus symptoms
- aspiration or swallowing difficulty
- immune status

- recent travel
- sick contacts
- medicines
- ACE inhibitor use
- anticoagulant use
- recurrent infections
- vaccination status where relevant
- previous imaging abnormalities

Medicine and Exposure Review

Important contributors include:

- ACE inhibitors
- beta blockers in bronchospasm-prone patients where relevant
- inhaler technique issues
- steroids and immunosuppressants
- chemotherapy or lung-toxic medicines
- anticoagulants if bleeding
- smoking
- vaping
- biomass smoke
- dusts, molds, and occupational exposures
- pets or allergens
- alcohol or sedatives increasing aspiration risk
- reflux-provoking medicines in some contexts

Ask about work, home, and environment.

8. Physical Examination

Examine for lung, heart, infection, and systemic clues.

Assess:

- respiratory effort
- speech limitation
- tracheal position where relevant
- chest expansion
- wheeze
- crackles
- bronchial breath sounds
- reduced breath sounds
- dullness to percussion where skilled and relevant

- signs of pleural effusion
- signs of pneumothorax
- heart sounds
- murmurs
- heart failure signs
- leg edema
- calf swelling or PE clues where relevant
- lymph nodes
- clubbing
- cyanosis
- oral thrush where immunosuppression or inhaled steroid issue may exist
- nasal congestion or postnasal drip clues
- abdominal reflux clues are limited but history helps
- neurological/swallowing signs if aspiration suspected

Cough assessment is not only chest auscultation.

It includes oxygenation, circulation, defense, and function.

9. Initial Investigations

Investigations depend on syndrome and severity.

Common investigations may include:

- oxygen saturation
- chest X-ray when pneumonia, heart failure, malignancy, TB, persistent cough, hemoptysis, or unexplained symptoms are possible
- full blood count
- inflammatory markers where infection or inflammation is suspected
- renal function and electrolytes if acutely ill, dehydrated, on relevant medicines, or needing antibiotics/diuretics
- sputum culture where severe, recurrent, chronic productive cough, bronchiectasis, TB concern, or treatment failure exists
- TB testing where symptoms or exposure suggest
- viral testing where clinically or public health relevant
- ECG where chest pain, arrhythmia, heart failure, or PE is possible
- cardiac markers where ACS is possible
- BNP or heart failure assessment where available and appropriate
- D-dimer or CT pulmonary angiography pathway where PE is suspected according to local protocols
- spirometry or peak flow where asthma/COPD assessment is appropriate and safe
- CT chest where malignancy, interstitial lung disease, bronchiectasis, unresolved pneumonia, or unexplained chronic cough is suspected

- swallow assessment where aspiration is suspected
- oxygen or blood gas assessment where severe respiratory disease, COPD, drowsiness, or ventilation failure is possible

Testing should answer:

- Is oxygenation safe?
- Is there pneumonia?
- Is there heart failure?
- Is there asthma or COPD exacerbation?
- Is there TB or malignancy concern?
- Is there pulmonary embolism?
- Is there aspiration?
- Is there bleeding?
- Is the patient safe outside hospital?

10. Dangerous Diagnoses Not to Miss

Pneumonia

Clues:

- cough
- fever
- sputum
- pleuritic pain
- breathlessness
- crackles
- low oxygen saturation
- confusion in older patients
- sepsis features

Capacity failure:

Defense, **oxygenation**, **energy**, **circulation** if severe.

Wise action:

Assess severity, oxygenation, sepsis, comorbidities, hydration, and treat according to local antimicrobial guidance.

Severe Asthma Exacerbation

Clues:

- cough
- wheeze
- chest tightness
- breathlessness
- inability to speak full sentences

- accessory muscle use
- poor air movement
- exhaustion
- low oxygen saturation
- previous severe attacks

Capacity failure:

Airway caliber, **ventilation**, **oxygenation**, **life**

Wise action:

Treat urgently according to local asthma emergency protocol. Escalate early if poor response or exhaustion.

COPD Exacerbation

Clues:

- increased cough
- increased sputum
- increased breathlessness
- wheeze
- known COPD
- smoking history
- infection trigger
- drowsiness if carbon dioxide retention occurs

Capacity failure:

Ventilation, **oxygenation**, **airway clearance**, **defense**

Wise action:

Assess oxygenation carefully, consider carbon dioxide retention risk where relevant, treat according to local COPD guidance, and review inhaler technique and triggers.

Tuberculosis

Clues:

- chronic cough
- weight loss
- night sweats
- fever
- hemoptysis
- exposure risk
- immune vulnerability
- abnormal chest imaging

Capacity failure:

Defense, **oxygenation**, **nutrition**, **repair**, **public health safety**

Wise action:

Assess and test according to local TB pathway. Consider infection control and contact/public health implications where relevant.

Lung Cancer

Clues:

- persistent cough
- hemoptysis
- weight loss
- smoking history
- chest pain
- recurrent pneumonia
- hoarseness
- clubbing
- abnormal imaging

Capacity failure:

Lung integrity, **oxygenation**, **nutrition**, **repair**, **dignity**

Wise action:

Prompt imaging and referral according to local cancer pathways.

Pulmonary Embolism

Clues:

- sudden cough or dyspnea
- pleuritic chest pain
- hemoptysis
- tachycardia
- syncope
- hypoxia
- leg swelling
- recent surgery, immobility, cancer, pregnancy/postpartum context where relevant, prior clot

Capacity failure:

Pulmonary circulation, **oxygenation**, **right heart function**

Wise action:

Assess probability and follow local PE pathway. Escalate if unstable.

Heart Failure

Clues:

- cough worse lying down
- breathlessness
- orthopnea
- leg swelling
- crackles

- raised venous pressure where present
- frothy sputum in acute pulmonary edema
- hypertension or ischemic heart disease

Capacity failure:

Circulation, **fluid balance**, **oxygenation**, **sleep**

Wise action:

Assess oxygenation, fluid status, ECG, renal function, and treat according to local heart failure guidance.

Aspiration

Clues:

- cough during meals
- choking
- wet voice
- recurrent pneumonia
- stroke, dementia, Parkinsonism, frailty, alcohol, sedation, or swallowing disorder
- fever after aspiration event

Capacity failure:

Airway protection, **defense**, **nutrition**, **dignity**

Wise action:

Assess swallowing safety, nutrition, aspiration precautions, and treat infection when present.

Airway Obstruction or Foreign Body

Clues:

- sudden cough
- choking
- stridor
- wheeze localized to one side
- reduced air entry
- child or vulnerable adult context, dental procedure, eating episode, altered consciousness

Capacity failure:

Airway patency, **ventilation**, **oxygenation**

Wise action:

Urgent airway assessment and local emergency pathway.

11. Wise Perturbation in Cough

Treatment depends on syndrome and danger.

Do not treat all cough with antibiotics.
Do not treat all cough with suppressants.
Do not ignore oxygenation.

Ask:

- Is oxygenation safe?
- Is there respiratory distress?
- Is there infection?
- Is there bronchospasm?
- Is there heart failure?
- Is there TB or malignancy concern?
- Is there hemoptysis?
- Is there aspiration?
- Are medicines or exposures contributing?
- What treatment restores capacity with least harm?

If Infection Is Likely

Assess severity and likely source.

Consider:

- pneumonia severity
- oxygenation
- sepsis features
- age and frailty
- comorbidities
- immune status
- local antimicrobial guidance
- need for imaging
- need for admission
- public health implications where relevant

Antibiotics should be used when bacterial infection is likely or risk is high, not reflexively for every cough.

If Bronchospasm Is Present

Assess airway severity.

Consider:

- inhaler technique
- reliever response
- steroid need according to local guidance
- trigger control
- oxygenation
- peak flow or spirometry when appropriate
- severe asthma/COPD pathway when danger features are present

If Heart Failure Is Present

Cough treatment requires treating fluid and circulation.

Consider:

- orthopnea
- edema
- crackles
- oxygenation
- renal function
- diuretics and monitoring
- blood pressure
- cardiac trigger

Cough syrup will not repair pulmonary edema.

If Reflux or Postnasal Drip Is Likely

Chronic cough may improve when upper airway or reflux drivers are addressed.

Ask about:

- throat clearing
- nasal congestion
- postnasal drip
- heartburn
- regurgitation
- cough after meals
- cough lying down
- voice symptoms

Treatment should be trialed thoughtfully with follow-up.

If Medicine-Related

ACE inhibitor cough is a classic example.

But medicine-related lung disease can be more serious.

Ask:

- When did the cough begin?
- What medicine started before it?
- Is there breathlessness or abnormal imaging?
- Is the patient immunosuppressed?
- Is urgent specialist review needed?

If Chronic Cough Is Unexplained

Do not endlessly repeat symptomatic treatment.

A structured plan may include:

- chest imaging where indicated
- spirometry where appropriate
- medication review
- smoking and exposure review

- TB/malignancy assessment where relevant
- reflux/postnasal drip assessment
- specialist referral if persistent or concerning

12. Repair Trajectory

Repair is shown by:

- cough frequency decreases
- sputum improves
- fever settles
- breathlessness improves
- oxygen saturation stable
- respiratory rate improves
- chest pain improves
- wheeze improves
- sleep improves
- oral intake improves
- hydration maintained
- pneumonia or infection responds
- heart failure congestion improves
- asthma/COPD control improves
- hemoptysis stops or is investigated
- TB or malignancy concern addressed
- aspiration risk reduced
- medicine trigger removed where relevant
- patient understands warning signs
- follow-up arranged

Repair is not simply “the cough is quieter.”

Repair means airway clearance, oxygenation, defense, sleep, comfort, and participation are improving.

13. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- worsening breathlessness
- low oxygen readings where monitored
- chest pain
- coughing blood
- confusion

- drowsiness
- blue lips
- persistent high fever
- fainting
- inability to speak full sentences
- wheeze not improving
- severe weakness
- dehydration
- worsening symptoms after initial improvement
- weight loss
- night sweats
- persistent cough beyond expected recovery
- recurrent cough with fever
- choking or aspiration episodes
- swelling of face or airway symptoms
- new leg swelling or pleuritic chest pain

Also explain:

- what diagnosis is suspected
- what symptoms suggest danger
- how to use inhalers if prescribed
- whether antibiotics are needed or not needed
- what medicine changes were made
- when follow-up is needed
- whether imaging or sputum testing must be reviewed
- what to do if symptoms worsen

Use teach-back:

“Can you tell me what cough symptoms would make you seek urgent help?”

14. Worked Case 1: Acute Cough With Fever

A 74-year-old woman presents with cough, fever, sputum, pleuritic chest pain, tachypnea, and low oxygen saturation.

Danger

Pneumonia, sepsis, respiratory failure, frailty decompensation.

Syndrome

Acute productive cough with fever, pleuritic pain, tachypnea, and hypoxia.

Capacity Failure

Defense, oxygenation, energy, circulation if sepsis develops.

Coupling Conditions

Age, frailty, chronic lung disease if present, diabetes, hydration, home support, baseline mobility, vaccination history.

Wise Perturbation

Assess severity, oxygenation, sepsis features, chest findings, renal function, hydration, and imaging. Treat according to local pneumonia guidance and monitor response.

Repair Trajectory

Fever settles, respiratory rate improves, oxygenation stabilizes, cough and sputum improve, oral intake returns, mobility recovers.

15. Worked Case 2: Chronic Cough With Weight Loss

A 59-year-old man has had cough for three months, weight loss, night sweats, fatigue, and occasional blood-streaked sputum.

Danger

Tuberculosis, lung cancer, chronic infection, malignancy.

Syndrome

Chronic cough with systemic symptoms and hemoptysis.

Capacity Failure

Defense, oxygenation, nutrition, repair, public health safety.

Coupling Conditions

Smoking history, TB exposure, immune status, housing, occupational exposure, access to imaging and sputum testing, family contacts.

Wise Perturbation

Arrange chest imaging and targeted testing according to local TB/cancer pathways. Consider infection control where TB is possible. Do not treat repeatedly as simple bronchitis without investigation.

Repair Trajectory

Diagnosis clarified, infection or malignancy pathway initiated, weight stabilizes, cough improves, hemoptysis addressed, contacts/public health issues managed where relevant.

16. Worked Case 3: Cough and Wheeze

A 32-year-old patient has cough, wheeze, chest tightness, and shortness of breath after dust exposure. They can speak only short phrases and are using accessory muscles.

Danger

Severe asthma exacerbation or severe bronchospasm.

Syndrome

Acute cough with wheeze, chest tightness, and respiratory distress after trigger exposure.

Capacity Failure

Airway caliber, ventilation, oxygenation, circulation if severe.

Coupling Conditions

Asthma history, inhaler access, inhaler technique, allergen exposure, previous severe attacks, adherence, occupational exposure.

Wise Perturbation

Assess oxygenation, respiratory effort, peak flow where appropriate, and response to treatment. Treat according to local asthma emergency guidance and escalate if poor response or exhaustion.

Repair Trajectory

Speech improves, respiratory rate decreases, wheeze and work of breathing improve, oxygenation stable, trigger plan and inhaler technique reviewed.

17. Worked Case 4: Night Cough and Orthopnea

A 68-year-old man reports cough worse when lying flat, breathlessness at night, swollen ankles, and reduced exercise tolerance.

Danger

Heart failure, pulmonary edema if acute, ischemic trigger, renal dysfunction.

Syndrome

Cough with orthopnea, edema, and exertional dyspnea.

Capacity Failure

Circulation, fluid balance, oxygenation, sleep.

Coupling Conditions

Hypertension, ischemic heart disease, kidney function, salt intake, medication adherence, diuretic use, home weighing, access to follow-up.

Wise Perturbation

Assess oxygenation, fluid status, ECG, renal function, electrolytes, chest findings, and heart failure pathway according to local practice. Treat congestion and identify trigger.

Repair Trajectory

Orthopnea improves, cough reduces, edema decreases, exercise tolerance improves, renal function stable, follow-up arranged.

18. Worked Case 5: Cough During Meals

An 86-year-old woman with previous stroke coughs during meals and has had two episodes of pneumonia in six months. Her family notices a wet voice after drinking.

Danger

Aspiration, recurrent pneumonia, malnutrition, dehydration, unsafe swallowing.

Syndrome

Cough with meals, wet voice, prior stroke, and recurrent pneumonia.

Capacity Failure

Airway protection, defense, nutrition, hydration, dignity.

Coupling Conditions

Stroke-related dysphagia, frailty, dentition, feeding position, caregiver technique, food texture, hydration access, cognition.

Wise Perturbation

Assess swallowing safety, nutrition, hydration, chest infection, and aspiration risk. Arrange swallow assessment where available and adjust feeding strategy according to local guidance.

Repair Trajectory

Coughing during meals reduces, aspiration risk lowers, nutrition and hydration improve, pneumonia recurrence decreases, caregiver plan clear.

19. Common Student Pitfalls

Pitfall 1: Treating Cough Without Checking Oxygenation

Oxygen saturation and respiratory effort matter.

Pitfall 2: Giving Antibiotics for Every Cough

Many coughs are viral, allergic, reflux-related, medicine-related, or inflammatory. Antibiotics should match likely bacterial disease and risk.

Pitfall 3: Missing Pneumonia in Older Patients

Older patients may present with confusion, falls, weakness, or poor intake rather than classic symptoms.

Pitfall 4: Missing TB or Cancer

Chronic cough with weight loss, night sweats, hemoptysis, or risk factors needs investigation.

Pitfall 5: Missing Heart Failure

Cough worse lying down with edema and orthopnea may be circulation failure, not bronchitis.

Pitfall 6: Missing Aspiration

Cough during meals, wet voice, stroke, dementia, and recurrent pneumonia are key clues.

Pitfall 7: Ignoring Medicines

ACE inhibitors and other medicines can cause cough or lung disease.

Pitfall 8: Using Cough Suppression Unsafely

Suppressing cough may worsen secretion retention, sedation, aspiration risk, or delay diagnosis in some contexts.

20. Clinical Practice Box

When assessing cough, complete this structure:

Duration:
Acute, subacute, chronic?

Character:
Dry, productive, sputum, blood, nocturnal, positional, meal-related?

Danger features:
Dyspnea, hypoxia, fever, hemoptysis, chest pain, confusion, weight loss, night sweats, immunosuppression?

Syndrome pattern:
Infection, bronchospasm, heart failure, TB/cancer concern, aspiration, reflux/postnasal drip, medication-related?

Capacity failure:
Airway clearance, oxygenation, ventilation, defense, circulation, sleep, participation?

Exposures:
Smoking, vaping, occupational dust, biomass smoke, TB exposure, allergens, medicines?

Initial investigations:
Oxygen saturation, CXR, FBC, inflammatory markers, sputum/TB testing, ECG, heart failure tests, spirometry, CT, swallow assessment?

Wise perturbation:
Antibiotics if indicated, bronchodilator/steroid pathway, heart failure treatment, aspiration care, medicine change, referral?

Repair trajectory:
Cough, sputum, fever, oxygenation, breathlessness, sleep, function, follow-up?

21. Mini-Case for Practice

A 65-year-old man presents with cough for eight weeks, weight loss, night sweats, fatigue, and two episodes of blood-streaked sputum. He has smoked for many years and recently cared for a relative who had a prolonged cough.

Apply the cough approach.

Danger

Tuberculosis, lung cancer, chronic infection, bronchiectasis, systemic illness.

Syndrome

Chronic cough with constitutional symptoms, hemoptysis, smoking history, and possible TB exposure.

Capacity Failure

Defense, oxygenation, nutrition, repair, airway integrity, public health safety.

Coupling Conditions

Smoking, TB exposure, immune status, housing, family contacts, access to imaging and sputum testing, fear of diagnosis, follow-up reliability.

Wise Perturbation

Arrange chest imaging and targeted testing according to local TB and lung cancer pathways. Consider infection control while TB is assessed. Do not treat as repeated simple bronchitis without investigation. Address smoking and support follow-up.

Repair Trajectory

Diagnosis clarified, infection or malignancy pathway started, hemoptysis addressed, cough improves, weight stabilizes, contacts assessed if TB is confirmed, patient supported through next steps.

22. Student Takeaway

Cough becomes easier when the clinician asks:

Is oxygenation safe?
Is there fever, breathlessness, hemoptysis, chest pain, weight loss, night sweats, aspiration risk, smoking history, immune vulnerability, or chronicity?
Is this infection, bronchospasm, heart failure, tuberculosis, malignancy, reflux, postnasal drip, aspiration, medication effect, or environmental exposure?
What capacity is failing: airway clearance, oxygenation, ventilation, defense, circulation, sleep, or participation?

What treatment restores airway and lung safety without unnecessary antibiotics, sedation, or missed diagnosis?

Cough is not merely an irritation.

It is a signal that airway clearance, oxygenation, ventilation, defense, circulation, sleep, dignity, and participation may need protection.

The safe clinician listens to the cough pattern, checks oxygenation, screens for danger, investigates persistent or red-flag cough, treats the cause, and follows the repair trajectory back toward breathing, sleep, and confidence.

Chapter 33. Hemoptysis Made Easy

Hemoptysis means coughing up blood from the respiratory tract.

Patients may say:

“There is blood in my sputum.”
“I coughed up blood.”
“My phlegm is streaked with blood.”
“I filled a tissue with blood.”
“I am coughing blood clots.”
“I have chest pain and blood when I cough.”
“I have been coughing for weeks and now there is blood.”

Hemoptysis is frightening for patients and clinicians.

Sometimes it is mild, such as blood-streaked sputum after bronchitis.
Sometimes it is a warning sign of pneumonia, tuberculosis, bronchiectasis, pulmonary embolism, lung cancer, vasculitis, pulmonary edema, anticoagulant-related bleeding, or airway injury.
Sometimes it is immediately life-threatening.

The first task is not to decide the final diagnosis.

The first task is to ask:

Is the airway, oxygenation, circulation, vascular integrity, or lung defense system in danger now?

Hemoptysis becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Question: Is This Hemoptysis Dangerous?

Hemoptysis becomes dangerous when bleeding threatens the airway, oxygenation, circulation, or indicates serious underlying disease.

Dangerous causes and contexts include:

- massive or ongoing hemoptysis
- airway obstruction by blood or clot
- low oxygen saturation
- respiratory distress
- pneumonia
- tuberculosis
- lung cancer
- bronchiectasis
- pulmonary embolism
- pulmonary edema
- diffuse alveolar hemorrhage
- vasculitis
- anticoagulant-related bleeding
- bleeding disorder
- recent procedure or airway trauma

- foreign body or aspiration injury
- immunosuppression
- recurrent hemoptysis
- hemoptysis with weight loss or night sweats

The danger-first question is:

Is this bleeding compromising breathing, or is it signaling a serious disease that must not be missed?

2. Immediate Red Flags in Hemoptysis

Urgent assessment is needed when hemoptysis is associated with:

- large volume of blood
- repeated coughing of blood
- clots
- breathlessness
- low oxygen saturation
- inability to clear the airway
- choking sensation
- chest pain
- pleuritic pain
- syncope or collapse
- low blood pressure
- fast heart rate
- fever or sepsis features
- confusion or drowsiness
- known lung cancer
- suspected tuberculosis
- known bronchiectasis with heavy bleeding
- anticoagulant use
- bleeding tendency
- recent lung procedure
- recent chest trauma
- immune suppression
- severe anemia symptoms
- weight loss
- night sweats
- persistent cough
- recurrent episodes
- kidney disease with blood in urine or systemic features suggesting vasculitis

Hemoptysis with respiratory distress, hypoxia, shock, anticoagulation, systemic illness, or cancer/TB features is high-risk.

3. Confirm That It Is True Hemoptysis

Not all blood from the mouth is hemoptysis.

The blood may come from:

- nose
- mouth
- throat
- gums
- stomach
- esophagus
- lungs or airways

Ask:

- Was the blood coughed up or vomited?
- Was there nausea or retching first?
- Was the blood mixed with sputum?
- Was it frothy?
- Was it bright red or dark?
- Was there coffee-ground material?
- Is there epistaxis?
- Are gums bleeding?
- Is there sore throat or oral lesion?
- Is there black stool?
- Is there abdominal pain?
- Is the patient on anticoagulants?
- Is there known liver disease?

Hemoptysis usually comes with coughing and sputum.

Vomited blood suggests gastrointestinal bleeding.

Nasal bleeding may drip backward and be coughed out.

The first clarification is:

Is the blood truly from the lower respiratory tract?

4. Hemoptysis Is a Syndrome, Not a Diagnosis

The clinician must form a hemoptysis syndrome.

Ask:

- How much blood?

- How often?
- Is it streaks, teaspoons, cups, or clots?
- Is it ongoing?
- Is there shortness of breath?
- Is there chest pain?
- Is there fever?
- Is there sputum?
- Is there weight loss?
- Is there night sweats?
- Is there TB exposure?
- Is there smoking history?
- Is there known cancer?
- Is there known bronchiectasis?
- Is there known heart failure?
- Is there leg swelling or clot risk?
- Is there anticoagulant use?
- Is there kidney disease?
- Is there blood in urine?
- Is there rash, sinus disease, joint pain, or systemic inflammation?
- Is there recent procedure or trauma?
- Is oxygenation safe?
- Is the patient stable?

The goal is to move from:

“The patient coughed blood”

to:

“This is mild blood-streaked sputum with acute fever and productive cough.”

or:

“This is recurrent hemoptysis with weight loss, night sweats, and TB exposure.”

or:

“This is sudden pleuritic chest pain, dyspnea, tachycardia, and hemoptysis after recent surgery.”

or:

“This is large-volume hemoptysis in known bronchiectasis with hypoxia.”

The syndrome determines urgency.

5. Common Hemoptysis Syndrome Patterns

Blood-Streaked Sputum With Acute Infection

Pattern:

- cough
- sputum
- fever
- sore chest from coughing
- small streaks of blood
- no major breathlessness
- oxygenation usually safe

Possible causes:

- acute bronchitis
- pneumonia
- airway irritation
- viral respiratory infection
- bronchiectasis flare

Threatened capacities:

Defense, **airway irritation**, **oxygenation if severe**, **comfort**.

Mild blood-streaking can occur with inflamed airways, but pneumonia and risk factors must still be considered.

Hemoptysis With Fever and Pleuritic Chest Pain

Pattern:

- cough with blood
- fever
- pleuritic chest pain
- sputum
- breathlessness
- crackles or focal chest signs may be present

Possible causes:

- pneumonia
- lung abscess
- pulmonary embolism with infarction
- tuberculosis if prolonged
- malignancy with post-obstructive infection

Threatened capacities:

Defense, **oxygenation**, **vascular integrity**, **circulation if severe**.

Hemoptysis With Weight Loss and Night Sweats

Pattern:

- chronic cough
- blood-streaked sputum or recurrent hemoptysis
- weight loss

- night sweats
- fever
- fatigue
- TB exposure or immune risk may be present

Possible causes:

- tuberculosis
- lung cancer
- chronic infection
- lymphoma or systemic disease in selected contexts

Threatened capacities:

Defense, **nutrition**, **oxygenation**, **public health safety**, **repair**.

This pattern requires investigation.

Hemoptysis in a Smoker or Former Smoker

Pattern:

- persistent cough
- hemoptysis
- weight loss or hoarseness may be present
- recurrent pneumonia may occur
- chest pain or breathlessness may occur

Possible causes:

- lung cancer
- chronic bronchitis
- bronchiectasis
- pneumonia
- tuberculosis
- pulmonary embolism

Threatened capacities:

Lung integrity, **airway protection**, **oxygenation**, **repair**, **dignity**.

Smoking history increases concern, but never assume cancer without investigation.

Hemoptysis With Sudden Pleuritic Pain and Breathlessness

Pattern:

- sudden onset
- pleuritic chest pain
- breathlessness
- tachycardia
- hemoptysis
- syncope in severe cases

- clot risk may be present

Possible cause:

- pulmonary embolism

Threatened capacities:

Pulmonary circulation, **oxygenation**, **right heart function**, **life**.

Hemoptysis in Bronchiectasis

Pattern:

- chronic productive cough
- recurrent infections
- large sputum volume
- previous imaging diagnosis
- recurrent blood-streaking or larger bleeds
- fever may indicate infective exacerbation

Possible causes:

- inflamed dilated airways
- bacterial infection
- fragile bronchial vessels
- severe bleeding in some cases

Threatened capacities:

Airway clearance, **defense**, **oxygenation**, **vascular integrity**.

Large-volume bleeding in bronchiectasis can be dangerous.

Hemoptysis With Heart Failure Features

Pattern:

- cough
- breathlessness
- orthopnea
- frothy sputum
- pink sputum in pulmonary edema
- leg swelling
- crackles
- high blood pressure or known heart disease

Possible cause:

- pulmonary edema

Threatened capacities:

Circulation, **fluid balance**, **oxygenation**, **sleep**.

Hemoptysis With Kidney Disease or Systemic Features

Pattern:

- hemoptysis
- breathlessness
- anemia
- blood in urine
- proteinuria
- kidney injury
- rash
- joint pains
- sinus symptoms
- fever or inflammatory symptoms

Possible causes:

- vasculitis
- diffuse alveolar hemorrhage
- anti-glomerular basement membrane disease
- autoimmune disease
- severe infection or coagulopathy in selected contexts

Threatened capacities:

Vascular integrity, **oxygenation**, **kidney clearance**, **immune regulation**.

This is high-risk.

Hemoptysis on Anticoagulants

Pattern:

- cough with blood
- anticoagulant use
- may have infection, cancer, PE, heart failure, or airway disease as the trigger
- bleeding may be more severe than expected

Possible causes:

- anticoagulant-amplified bleeding from airway disease
- over-anticoagulation
- pulmonary embolism despite or during anticoagulation in selected contexts
- malignancy or infection uncovered by bleeding

Threatened capacities:

Vascular integrity, **airway protection**, **oxygenation**, **coagulation safety**.

Anticoagulants may worsen bleeding but should not be assumed to be the only cause.

6. Capacity Failure in Hemoptysis

Hemoptysis matters because blood in the airways can threaten life in several ways.

Airway Protection

Blood can obstruct airways.

Signals include:

- large-volume bleeding
- clots
- choking
- inability to clear secretions
- gurgling
- falling oxygen saturation
- respiratory distress

Oxygenation

Blood, infection, edema, or embolism can impair gas exchange.

Signals include:

- breathlessness
- low oxygen saturation
- cyanosis
- confusion
- tachypnea
- chest pain

Vascular Integrity

Bleeding means vessels in or near the airway are disrupted.

Signals include:

- recurrent hemoptysis
- large-volume bleeding
- anticoagulant use
- bronchiectasis
- tumor
- vasculitis
- pulmonary infarction

Defense

Infection is a common cause of hemoptysis.

Signals include:

- fever
- sputum
- pleuritic pain
- night sweats
- weight loss
- recurrent infection
- immunosuppression

Circulation

Severe bleeding or pulmonary embolism can destabilize circulation.

Signals include:

- tachycardia
- hypotension
- syncope
- pallor
- chest pain
- shock

Dignity and Fear

Coughing blood is frightening.

Even small amounts can make patients fear death, cancer, TB, or suffocation.

The clinician should respond calmly:

“Blood in sputum can have several causes. Our first job is to make sure your breathing is safe and then find where it is coming from.”

7. Bedside Assessment

Look First

Observe:

- amount of blood
- ongoing bleeding
- clots
- respiratory distress
- ability to speak
- oxygen saturation
- pallor
- fever appearance
- cachexia
- sweating
- confusion
- anxiety
- anticoagulant use clues
- infection control risk where TB is possible

A patient actively coughing blood needs immediate airway and oxygenation assessment.

Vital Signs

Check:

- respiratory rate
- oxygen saturation

- pulse
- blood pressure
- temperature
- level of consciousness
- weight where chronic illness is relevant
- urine output if shocked or severely unwell

The first question is:

Is the patient stable enough for diagnostic workup, or do they need immediate emergency management?

Estimate the Volume

Ask and observe:

- streaks in sputum
- teaspoon amounts
- repeated small amounts
- clots
- cupfuls
- ongoing bleeding
- blood soaking tissues or containers
- rapid recurrence

Exact volume is often difficult to estimate.

The practical question is:

Is this minor, recurrent, or life-threatening bleeding?

8. Focused History

Ask about respiratory features:

- cough duration
- sputum amount and color
- fever
- chest pain
- pleuritic pain
- breathlessness
- wheeze
- recurrent infections
- known bronchiectasis
- known TB or TB exposure
- smoking or vaping
- occupational exposure
- previous abnormal chest imaging

- weight loss
- night sweats

Ask about vascular and clot features:

- sudden dyspnea
- leg swelling
- recent surgery
- immobility
- cancer
- prior clot
- pregnancy/postpartum context where relevant
- anticoagulants

Ask about bleeding risk:

- anticoagulant or antiplatelet use
- liver disease
- bleeding disorders
- easy bruising
- nosebleeds or gum bleeding
- recent procedures

Ask about systemic inflammatory features:

- blood in urine
- frothy urine
- kidney disease
- rash
- joint pain
- sinus disease
- eye inflammation
- neuropathy
- fever
- weight loss

Ask about source confusion:

- nosebleeds
- vomiting blood
- black stools
- oral bleeding
- throat bleeding

A good history often separates airway bleeding, gastrointestinal bleeding, and upper airway bleeding.

9. Physical Examination

Examine for airway, lung, heart, vascular, infection, and systemic clues.

Assess:

- airway patency
- work of breathing
- oxygen saturation
- chest expansion
- crackles
- wheeze
- focal reduced breath sounds
- bronchial breathing
- signs of pleural effusion
- signs of pneumothorax
- heart failure signs
- leg swelling or DVT signs
- fever source
- lymph nodes
- clubbing
- weight loss/cachexia
- oral cavity and gums
- nose for epistaxis
- skin bruising or petechiae
- rash or vasculitic lesions
- joint swelling
- signs of chronic liver disease
- signs of anemia
- neurological status if hypoxic or unstable

Examination should not delay emergency care if bleeding is significant.

10. Initial Investigations

Investigations depend on severity and suspected cause.

Common investigations may include:

- oxygen saturation
- chest X-ray
- full blood count
- renal function and electrolytes
- coagulation profile where bleeding risk, anticoagulation, liver disease, or significant bleeding is possible

- type and screen or crossmatch if bleeding is significant
- inflammatory markers where infection or inflammation is suspected
- sputum testing where infection, TB, or chronic productive cough is present
- TB testing according to local pathway where suspected
- ECG where PE, ACS, arrhythmia, or heart failure is possible
- cardiac markers where ACS is suspected
- D-dimer or CT pulmonary angiography pathway where PE is suspected according to local protocols
- CT chest where malignancy, bronchiectasis, PE, unresolved pneumonia, or unexplained hemoptysis is possible
- bronchoscopy in selected cases, especially ongoing, significant, recurrent, unexplained, or localized bleeding according to local specialist pathway
- urinalysis for blood and protein where vasculitis or pulmonary-renal syndrome is possible
- autoimmune testing where diffuse alveolar hemorrhage or vasculitis is suspected
- arterial or venous blood gas where severe respiratory illness or hypoxia exists

Testing should answer:

- Is oxygenation safe?
- Is bleeding significant?
- Is there pneumonia?
- Is there TB?
- Is there cancer concern?
- Is there bronchiectasis?
- Is there pulmonary embolism?
- Is there heart failure?
- Is anticoagulation contributing?
- Is there pulmonary-renal syndrome?
- Is urgent specialist intervention needed?

11. Dangerous Diagnoses Not to Miss

Massive or Life-Threatening Hemoptysis

Clues:

- large blood volume
- clots
- ongoing bleeding
- choking
- respiratory distress
- low oxygen saturation
- inability to clear airway
- hemodynamic instability

Capacity failure:

Airway protection, **oxygenation**, **vascular integrity**, **circulation**

Wise action:

Emergency airway and specialist management according to local pathway. Positioning, oxygenation, resuscitation, and urgent respiratory/interventional/surgical input may be needed.

Tuberculosis

Clues:

- chronic cough
- hemoptysis
- weight loss
- night sweats
- fever
- exposure risk
- immune vulnerability
- abnormal chest imaging

Capacity failure:

Defense, **oxygenation**, **nutrition**, **public health safety**

Wise action:

Follow local TB testing and infection control pathway. Consider contact and public health implications.

Lung Cancer

Clues:

- persistent cough
- hemoptysis
- smoking history
- weight loss
- hoarseness
- recurrent pneumonia
- chest pain
- abnormal imaging

Capacity failure:

Lung integrity, **airway safety**, **oxygenation**, **repair**

Wise action:

Prompt imaging and referral according to local cancer pathway.

Pulmonary Embolism

Clues:

- hemoptysis
- sudden dyspnea
- pleuritic chest pain

- tachycardia
- syncope
- hypoxia
- clot risk factors

Capacity failure:

Pulmonary circulation, **oxygenation**, **right heart function**

Wise action:

Assess probability and follow local PE pathway. Escalate if unstable.

Pneumonia or Lung Abscess

Clues:

- fever
- cough
- sputum
- pleuritic pain
- foul sputum in some abscess contexts
- weight loss or poor dentition/aspiration risk
- focal chest signs

Capacity failure:

Defense, **oxygenation**, **airway clearance**

Wise action:

Assess severity and treat according to local infection guidance. Investigate non-resolving disease.

Bronchiectasis With Significant Bleeding

Clues:

- chronic productive cough
- recurrent infections
- known bronchiectasis
- repeated hemoptysis
- large sputum volume
- acute infectious flare

Capacity failure:

Airway clearance, **defense**, **vascular integrity**, **oxygenation**

Wise action:

Assess bleeding severity, infection, oxygenation, and need for urgent respiratory input.

Diffuse Alveolar Hemorrhage or Vasculitis

Clues:

- hemoptysis
- breathlessness

- falling hemoglobin
- diffuse lung infiltrates
- blood in urine or proteinuria
- kidney injury
- rash
- sinus disease
- joint pain
- systemic inflammatory symptoms

Capacity failure:

Vascular integrity, **oxygenation**, **kidney clearance**, **immune regulation**

Wise action:

Urgent specialist evaluation. Check renal function, urine, oxygenation, blood count, and inflammatory/autoimmune pathway where suspected.

Anticoagulant-Associated Hemoptysis

Clues:

- anticoagulant use
- bleeding from other sites
- high bleeding risk
- renal or liver disease
- infection, cancer, bronchiectasis, PE, or heart failure may coexist

Capacity failure:

Coagulation safety, **airway protection**, **oxygenation**

Wise action:

Assess severity, indication for anticoagulation, coagulation status where relevant, and underlying cause. Do not assume the anticoagulant is the only diagnosis.

12. Wise Perturbation in Hemoptysis

Treatment depends on amount, stability, oxygenation, and cause.

Do not simply prescribe antibiotics and send the patient away if red flags are present.

Ask:

- Is the airway safe?
- Is oxygenation safe?
- Is bleeding ongoing?
- Is the patient stable?
- Is this true hemoptysis?
- Is there infection, TB, cancer, PE, heart failure, bronchiectasis, vasculitis, or anticoagulant effect?
- Does the patient need urgent imaging or specialist input?
- What will show that bleeding and its cause are controlled?

If Bleeding Is Significant

Priorities include:

- airway protection
- oxygenation
- positioning and monitoring according to local practice
- IV access and blood tests
- reversal or adjustment of anticoagulation where appropriate and guided
- urgent imaging or bronchoscopy pathway
- respiratory, emergency, interventional radiology, or surgical input where available

The immediate threat is often asphyxiation, not blood loss alone.

If Infection Is Likely

Treat according to severity and local antimicrobial guidance.

Assess for:

- pneumonia
- bronchiectasis flare
- lung abscess
- TB
- aspiration

If TB is possible, follow local testing and infection control guidance.

If Pulmonary Embolism Is Possible

Follow local PE pathway.

This requires careful balance when there is bleeding because anticoagulation may be needed for PE but may worsen hemoptysis.

Senior input is often needed.

If Malignancy Is Possible

Do not delay investigation.

Persistent hemoptysis, smoking history, weight loss, recurrent pneumonia, or abnormal imaging requires prompt follow-up.

If Anticoagulants Are Involved

Clarify:

- indication
- dose
- timing of last dose
- renal function
- bleeding severity
- other bleeding sites
- thrombotic risk
- reversal options according to local protocol

Stopping anticoagulation without a plan may cause harm, but continuing during dangerous bleeding may also cause harm.

If Vasculitis Is Possible

Look for pulmonary-renal syndrome.

Check:

- oxygenation
- hemoglobin trend
- renal function
- urine blood/protein
- systemic features
- chest imaging

Escalate early.

13. Repair Trajectory

Repair is shown by:

- bleeding stops or clearly reduces
- airway remains clear
- oxygen saturation stable
- respiratory rate improves
- breathlessness improves
- hemoglobin stable
- fever settles if infection present
- chest imaging reviewed
- TB or cancer concern addressed
- PE assessed where relevant
- anticoagulation plan clarified
- vasculitis or pulmonary-renal disease excluded or treated where suspected
- patient understands warning signs
- follow-up arranged
- recurrence plan documented

Repair is not simply “less blood today.”

Repair means bleeding source, airway safety, oxygenation, underlying diagnosis, and follow-up are secure.

14. Discharge Safety in Hemoptysis

Before discharge, ask:

- Was this truly hemoptysis?
- Is bleeding minor and stopped?

- Is oxygenation safe?
- Is respiratory rate safe?
- Is there no ongoing distress?
- Is chest imaging reviewed or arranged?
- Are TB, cancer, PE, pneumonia, bronchiectasis, and anticoagulant risks considered?
- Is hemoglobin stable where relevant?
- Is anticoagulation plan clear?
- Is follow-up reliable?
- Does the patient know when to return urgently?
- Is there infection control advice where relevant?
- Is the patient safe at home?

A patient with hemoptysis and uncertain follow-up should not be reassured casually.

15. Safety-Netting

Safety-netting should be specific.

Advise urgent review if there is:

- more blood
- clots
- repeated hemoptysis
- breathlessness
- chest pain
- fainting
- dizziness
- fever or rigors
- confusion
- low oxygen readings where monitored
- worsening cough
- weight loss
- night sweats
- black stools or vomiting blood
- nosebleeds that do not stop
- new leg swelling or pleuritic pain
- bleeding from other sites
- worsening symptoms while on anticoagulants
- inability to attend follow-up

Also explain:

- what causes are being considered

- whether imaging or sputum tests are needed
- whether TB precautions are needed
- what medicine changes were made
- what to do if bleeding recurs
- who will review results
- when follow-up is scheduled

Use teach-back:

“Can you tell me what bleeding symptoms would make you seek urgent help?”

16. Worked Case 1: Blood-Streaked Sputum With Fever

A 46-year-old patient presents with three days of cough, fever, yellow sputum, pleuritic chest pain, and small streaks of blood in the sputum.

Danger

Pneumonia, worsening infection, hypoxia, sepsis if severe.

Syndrome

Acute productive cough with fever, pleuritic pain, and mild hemoptysis.

Capacity Failure

Defense, airway irritation, oxygenation if severe, comfort.

Coupling Conditions

Smoking, asthma or COPD if present, immune status, hydration, access to care, prior pneumonia.

Wise Perturbation

Assess vital signs, oxygenation, chest signs, severity, and need for chest imaging. Treat according to local pneumonia or respiratory infection guidance. Safety-net for worsening blood, breathlessness, persistent fever, or chest pain.

Repair Trajectory

Fever settles, cough improves, blood disappears, oxygenation safe, energy returns.

17. Worked Case 2: Chronic Cough With Weight Loss

A 58-year-old man has chronic cough, weight loss, night sweats, and recurrent blood-streaked sputum. He has a smoking history.

Danger

Lung cancer, tuberculosis, chronic infection.

Syndrome

Chronic cough with constitutional symptoms and hemoptysis in a smoker.

Capacity Failure

Lung integrity, defense, nutrition, oxygenation, repair.

Coupling Conditions

Smoking, TB exposure, immune status, occupational exposures, fear of diagnosis, access to imaging and follow-up.

Wise Perturbation

Arrange chest imaging and targeted testing according to local TB and cancer pathways. Do not repeatedly treat as bronchitis without investigation.

Repair Trajectory

Diagnosis clarified, treatment pathway initiated, bleeding monitored, weight and symptoms addressed, follow-up secured.

18. Worked Case 3: Sudden Dyspnea and Hemoptysis

A 63-year-old woman develops sudden pleuritic chest pain, breathlessness, tachycardia, and blood-streaked sputum two weeks after hip surgery.

Danger

Pulmonary embolism, hypoxia, right heart strain, collapse.

Syndrome

Hemoptysis with sudden dyspnea, pleuritic pain, tachycardia, and recent surgery.

Capacity Failure

Pulmonary circulation, oxygenation, right heart function.

Coupling Conditions

Recent surgery, immobility, clot risk, bleeding risk, anticoagulation status, access to imaging.

Wise Perturbation

Assess oxygenation and stability, obtain ECG and appropriate tests, and follow local PE pathway. Escalate if unstable.

Repair Trajectory

Oxygenation improves, chest pain settles, PE confirmed or excluded, anticoagulation or alternative plan clarified, recurrence prevention addressed.

19. Worked Case 4: Bronchiectasis With Recurrent Hemoptysis

A 70-year-old patient with known bronchiectasis reports increased sputum, fever, and recurrent episodes of coughing blood, including several clots.

Danger

Bronchiectasis exacerbation with significant bleeding, pneumonia, hypoxia, airway compromise.

Syndrome

Known bronchiectasis with infective symptoms and recurrent hemoptysis with clots.

Capacity Failure

Airway clearance, defense, vascular integrity, oxygenation.

Coupling Conditions

Chronic airway disease, bacterial colonization, previous hemoptysis, inhaled therapy, airway clearance routine, access to respiratory care.

Wise Perturbation

Assess oxygenation, bleeding volume, infection severity, hemoglobin, imaging, and need for urgent respiratory input. Treat infection according to local guidance and plan bleeding management.

Repair Trajectory

Bleeding stops, sputum reduces, fever settles, oxygenation stable, airway clearance plan reviewed, respiratory follow-up arranged.

20. Worked Case 5: Hemoptysis With Kidney Injury

A 41-year-old patient presents with hemoptysis, breathlessness, fatigue, blood in the urine, rising creatinine, and a purpuric rash.

Danger

Pulmonary-renal syndrome, vasculitis, diffuse alveolar hemorrhage, rapidly progressive kidney injury.

Syndrome

Hemoptysis with kidney injury, hematuria, breathlessness, and systemic inflammatory features.

Capacity Failure

Vascular integrity, oxygenation, kidney clearance, immune regulation.

Coupling Conditions

Autoimmune disease risk, infection mimics, renal function, oxygenation, access to specialist care, severity of anemia.

Wise Perturbation

Urgent assessment of oxygenation, hemoglobin, renal function, urine findings, chest imaging, and inflammatory/autoimmune pathway according to local practice. Escalate early to renal/respiratory/specialist care.

Repair Trajectory

Bleeding controlled, oxygenation improves, kidney injury stabilized, diagnosis clarified, immunologic or infectious cause treated, follow-up secured.

21. Common Student Pitfalls

Pitfall 1: Not Confirming the Source

Blood may come from nose, mouth, throat, stomach, or lungs.

Pitfall 2: Underestimating Airway Danger

Large hemoptysis can kill by airway obstruction and asphyxiation.

Pitfall 3: Calling It Bronchitis Repeatedly

Persistent or recurrent hemoptysis requires investigation.

Pitfall 4: Missing TB

Chronic cough, night sweats, weight loss, exposure risk, and hemoptysis require TB thinking.

Pitfall 5: Missing Cancer

Hemoptysis in a smoker or persistent cough with weight loss needs imaging and follow-up.

Pitfall 6: Missing Pulmonary Embolism

Sudden pleuritic pain, dyspnea, tachycardia, and hemoptysis suggest PE.

Pitfall 7: Blaming Anticoagulants Alone

Anticoagulants may amplify bleeding but often uncover another cause.

Pitfall 8: Missing Pulmonary-Renal Syndrome

Hemoptysis with kidney injury or blood in urine is high-risk.

22. Clinical Practice Box

When assessing hemoptysis, complete this structure:

Is it true hemoptysis?
Coughing blood, vomiting blood, nosebleed, oral bleeding?

Bleeding amount:
Streaks, small amounts, repeated episodes, clots, large volume, ongoing?

Danger features:
Dyspnea, hypoxia, clots, instability, chest pain, fever, weight loss, TB risk, anticoagulants, kidney injury?

Syndrome pattern:
Infection, TB, cancer, PE, bronchiectasis, heart failure, anticoagulation, vasculitis, trauma/procedure?

Capacity failure:
Airway protection, oxygenation, vascular integrity, defense, circulation, dignity/fear?

Initial investigations:
Oxygen saturation, CXR, FBC, renal function, coagulation, sputum/TB testing, CT, PE pathway, urinalysis, autoimmune tests where indicated?

Wise perturbation:
Airway support, oxygen, infection treatment, TB precautions, PE pathway, anticoagulant plan, respiratory referral, bronchoscopy/CT pathway?

Repair trajectory:
Bleeding stopped, oxygenation safe, hemoglobin stable, cause identified, follow-up secured?

23. Mini-Case for Practice

A 60-year-old man presents with cough for ten weeks, weight loss, night sweats, and two episodes of blood-streaked sputum. He has smoked for many years and has a family member who was recently treated for tuberculosis.

Apply the hemoptysis approach.

Danger

Tuberculosis, lung cancer, chronic infection, progressive lung disease, public health risk.

Syndrome

Chronic cough with systemic symptoms, smoking history, TB exposure, and recurrent mild hemoptysis.

Capacity Failure

Defense, lung integrity, nutrition, oxygenation, repair, public health safety.

Coupling Conditions

Smoking, TB exposure, family contact risk, immune status, fear of diagnosis, access to imaging, sputum testing, and reliable follow-up.

Wise Perturbation

Confirm true hemoptysis. Assess oxygenation and stability. Arrange chest imaging and targeted TB/cancer evaluation according to local pathways. Consider infection control advice while TB is assessed. Do not reassure or repeat symptomatic treatment without investigation.

Repair Trajectory

Diagnosis clarified, bleeding monitored, TB or cancer pathway activated if indicated, cough and systemic symptoms addressed, family/public health issues managed where relevant, follow-up secured.

24. Student Takeaway

Hemoptysis becomes easier when the clinician asks:

Is the blood truly from the lungs or airways?
How much blood is there, and is it ongoing?
Is the airway or oxygenation threatened?
Is there fever, pneumonia, TB risk, weight loss, smoking history, PE features, bronchiectasis, heart failure, anticoagulant use, or kidney disease?
What capacity is failing: airway protection, oxygenation, vascular integrity, defense, circulation, or public health safety?
What plan stops the bleeding, finds the cause, and prevents recurrence?

Hemoptysis is not merely blood in sputum.

It is a signal that airway protection, oxygenation, vascular integrity, lung defense, circulation, and patient safety may be under threat.

The safe clinician stays calm, confirms the source, estimates severity, protects the airway, investigates red flags, treats the cause, and follows the repair trajectory until bleeding and diagnosis are secure.

Part III. Turning Presentations Into Clinical Reasoning

This part turns bedside presentations into disciplined reasoning. It teaches students how to represent problems, build differentials, map capacity, understand context, choose interventions, and integrate the case.

Chapter 34. Illness Scripts Made Easy

Illness scripts are the mental patterns clinicians use to recognize diseases, syndromes, and clinical situations.

They help the clinician move from:

“This patient has many symptoms.”

to:

“This pattern fits pneumonia, heart failure, pulmonary embolism, asthma, or anxiety — and this is what would make each more or less likely.”

Illness scripts are not memorized lists.

They are organized clinical stories.

A good illness script helps the clinician answer:

Who usually gets this condition?
What causes it?
How does it usually present?
What danger does it create?
What findings support it?
What findings argue against it?
What else can mimic it?
What must not be missed?
What treatment restores capacity?
What repair trajectory should follow?

Illness scripts make Internal Medicine easier because they reduce chaos.

But illness scripts can also mislead if they become too rigid.

The safe clinician uses illness scripts as guides, not cages.

Illness scripts become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is an Illness Script?

An illness script is a structured mental model of a disease or syndrome.

It includes:

- typical patient context
- risk factors
- triggers
- time course
- symptoms
- examination findings
- key investigations
- dangerous complications
- mimics
- treatment principles
- expected recovery pattern

For example, a basic illness script for pneumonia might include:

- cough
- fever
- sputum
- pleuritic chest pain
- crackles
- breathlessness
- abnormal chest imaging
- higher risk in older age, chronic lung disease, frailty, smoking, diabetes, immune suppression, or aspiration
- danger if hypoxia, sepsis, delirium, or respiratory failure develops
- repair shown by improving fever, respiratory rate, oxygenation, appetite, and mobility

This script helps the clinician recognize pneumonia faster.

But it also helps the clinician ask:

Could this be something else?

A cough and fever may be pneumonia.
But cough and fever may also be viral infection, tuberculosis, pulmonary embolism with fever, heart failure with infection, aspiration, bronchiectasis, or malignancy with post-obstructive pneumonia.

A good illness script contains both recognition and humility.

2. Why Illness Scripts Matter

Students often feel overwhelmed because every symptom seems connected to every disease.

Illness scripts create order.

They help with:

- recognizing common patterns
- organizing differential diagnoses
- identifying danger
- choosing useful investigations
- explaining illness to patients
- anticipating complications
- avoiding random testing
- communicating with colleagues
- planning treatment
- monitoring repair

Without illness scripts, the student may think in scattered fragments:

“Cough, fever, tachycardia, white cell count, oxygen, sputum, antibiotic, X-ray…”

With an illness script, the student thinks:

“This is an acute lower respiratory infection syndrome. I must decide whether this is pneumonia, whether oxygenation is safe, whether sepsis is present, whether aspiration or chronic lung disease is contributing, and what recovery should look like.”

Illness scripts turn fragments into clinical meaning.

3. Illness Scripts Are Built From Repeated Patterns

Clinicians build illness scripts through:

- studying physiology
- seeing patients
- comparing similar cases
- noticing exceptions
- receiving feedback
- making mistakes and correcting them
- reviewing outcomes
- reflecting on missed diagnoses

At first, scripts are simple.

For example:

Heart failure causes breathlessness and leg swelling.

Later, scripts become richer:

Heart failure is a circulation-fluid balance syndrome in which impaired cardiac function and neurohormonal activation cause congestion, reduced exercise tolerance, orthopnea, edema, renal vulnerability, and recurrent decompensation. It may be triggered by ischemia, arrhythmia, infection, medication non-adherence, renal dysfunction, salt load, anemia, thyroid disease, or uncontrolled hypertension. Repair is shown by improved breathing, reduced congestion, stable renal function, safer weight trajectory, and a feasible self-care plan.

That is a more useful script.

It includes cause, syndrome, coupling conditions, danger, and repair.

4. The Core Parts of an Illness Script

A practical illness script has eight parts.

1. Predisposing Context

Who commonly gets this condition?

Examples:

- older patient with vascular risk
- young person with type 1 diabetes
- smoker with chronic cough
- frail patient with infection
- patient with cancer and back pain
- patient on anticoagulants with bleeding

- patient with CKD taking NSAIDs
- patient with asthma exposed to dust

Predisposing context does not prove the diagnosis.

It changes probability.

2. Trigger

What sets the illness in motion?

Examples:

- infection
- dehydration
- missed insulin
- new medication
- immobility
- trauma
- aspiration
- allergen exposure
- steroid withdrawal
- salt load
- arrhythmia
- bleeding

Triggers help explain timing.

3. Time Course

How did the illness unfold?

Examples:

- sudden seconds to minutes
- acute hours
- subacute days to weeks
- chronic months
- recurrent episodes
- fluctuating pattern
- progressive decline

Time course is one of the most powerful diagnostic tools.

Stroke is usually sudden.
Cancer is often progressive.
BPPV is brief and positional.
Sepsis may evolve over hours to days.
Guillain-Barré syndrome often progresses over days.
Chronic heart failure may worsen slowly and then decompensate abruptly.

4. Core Syndrome

What pattern does the patient present with?

Examples:

- chest pain syndrome
- dyspnea syndrome
- fever syndrome
- edema syndrome
- jaundice syndrome
- AKI syndrome
- weakness syndrome
- dizziness syndrome

The syndrome is what the patient brings before the diagnosis is known.

5. Capacity Failure

What function is failing?

Examples:

- oxygenation
- circulation
- clearance
- defense
- glucose regulation
- brain integrity
- mobility
- fluid balance
- airway protection
- coagulation
- cognition

Capacity failure connects the disease label to the patient's danger.

6. Key Supporting Findings

What findings make this diagnosis more likely?

Examples:

- fever and focal crackles in pneumonia
- orthopnea and edema in heart failure
- pleuritic pain and clot risk in pulmonary embolism
- ketones and vomiting in DKA
- hematuria and proteinuria in glomerulonephritis
- ptosis and fatigability in myasthenia gravis

Supporting findings strengthen the script.

7. Key Contradicting Findings

What findings make this diagnosis less likely or suggest another diagnosis?

Examples:

- chest pain that is reproducible may suggest chest wall pain, though it does not fully exclude cardiac disease
- cough without fever or hypoxia may make severe pneumonia less likely
- focal neurological signs make simple vertigo less likely
- normal urine output does not exclude early AKI, but anuria changes the script
- absence of wheeze does not exclude asthma if air entry is poor

Contradicting findings prevent premature closure.

8. Repair Trajectory

What should improve if the diagnosis and treatment are correct?

Examples:

- fever settles
- oxygenation improves
- urine output returns
- glucose stabilizes
- pain decreases
- confusion clears
- edema reduces
- strength improves
- appetite returns
- function recovers

Repair trajectory tests the accuracy of the script over time.

5. The Life-Coherent Illness Script Template

A life-coherent illness script can be written as:

This condition usually occurs in:

It is often triggered by:

It usually unfolds over:

The core syndrome is:

The main capacity failure is:

Danger signs include:

Supporting findings include:

Mimics include:

Initial investigations should answer:

Wise perturbation includes:

Repair should look like:

This template trains students to think beyond diagnosis.

It asks:

What living capacity is failing, and how will we know repair is happening?

6. Example Illness Script: Pneumonia

Predisposing Context

Pneumonia is more likely in:

- older patients
- smokers
- patients with chronic lung disease
- patients with diabetes
- frail patients
- immunosuppressed patients
- patients with aspiration risk
- patients with recent viral infection

Trigger

Usually infection of the lower respiratory tract.

Aspiration may trigger pneumonia in patients with swallowing difficulty, stroke, dementia, sedation, alcohol use, or reflux aspiration.

Time Course

Often develops over days.

May be rapid in severe bacterial infection, aspiration, or frailty.

Core Syndrome

- cough
- fever
- sputum
- pleuritic chest pain

- breathlessness
- fatigue
- crackles or focal chest signs
- low oxygen saturation if severe

Older adults may present with confusion, falls, poor intake, or weakness.

Capacity Failure

- defense
- oxygenation
- airway clearance
- energy
- circulation if sepsis develops

Danger Signs

- hypoxia
- tachypnea
- confusion
- hypotension
- sepsis
- inability to drink
- frailty collapse
- immunosuppression

Mimics

- viral infection
- heart failure
- pulmonary embolism
- tuberculosis
- lung cancer
- COPD exacerbation
- bronchiectasis flare
- aspiration pneumonitis

Wise Perturbation

Assess oxygenation, severity, sepsis, hydration, comorbidities, and likely organism according to local pathway.

Treat with appropriate antimicrobial therapy when bacterial pneumonia is likely, support oxygenation and hydration, and reassess.

Repair Trajectory

- fever settles
- respiratory rate improves
- oxygenation improves
- cough and sputum reduce

- appetite returns
- confusion clears
- mobility improves
- follow-up arranged where needed

This script helps the clinician recognize pneumonia while still protecting against missed heart failure, PE, TB, or malignancy.

7. Example Illness Script: Heart Failure Exacerbation

Predisposing Context

More likely in patients with:

- known heart failure
- hypertension
- coronary disease
- valve disease
- atrial fibrillation
- CKD
- diabetes
- older age
- prior myocardial infarction

Trigger

Common triggers include:

- arrhythmia
- myocardial ischemia
- infection
- salt load
- missed medicines
- renal dysfunction
- anemia
- uncontrolled hypertension
- excess fluids
- medication effects

Time Course

May develop gradually over days to weeks, or acutely over hours in pulmonary edema.

Core Syndrome

- breathlessness
- orthopnea
- paroxysmal nocturnal dyspnea
- edema

- weight gain
- fatigue
- crackles
- raised venous pressure where present
- reduced exercise tolerance

Capacity Failure

- circulation
- fluid balance
- oxygenation
- kidney perfusion
- exercise capacity

Danger Signs

- severe breathlessness
- hypoxia
- pulmonary edema
- chest pain
- hypotension
- confusion
- AKI
- dangerous arrhythmia

Mimics

- pneumonia
- COPD exacerbation
- pulmonary embolism
- anemia
- renal failure
- obesity or deconditioning
- anxiety after danger considered

Wise Perturbation

Assess oxygenation, congestion, perfusion, rhythm, renal function, electrolytes, blood pressure, and trigger.

Treat congestion and trigger according to local heart failure pathway while avoiding kidney and electrolyte harm.

Repair Trajectory

- breathing improves
- orthopnea improves
- edema reduces
- weight trends down if overloaded
- oxygenation stabilizes
- renal function remains safe

- trigger addressed
- discharge plan includes medicines, monitoring, and follow-up

This script prevents the clinician from treating heart failure as “just fluid” and ignoring rhythm, ischemia, renal function, and the patient’s self-care conditions.

8. Example Illness Script: Diabetic Ketoacidosis

Predisposing Context

More likely in:

- type 1 diabetes
- insulin omission
- new diabetes
- infection
- insulin pump failure where relevant
- poor access to insulin
- vomiting illness
- social crisis or eating disorder context where relevant

Trigger

Common triggers include:

- missed insulin
- infection
- myocardial infarction
- pancreatitis
- vomiting illness
- new diabetes
- medication or access problem

Time Course

Usually develops over hours to days.

Core Syndrome

- hyperglycemia
- thirst
- polyuria
- dehydration
- vomiting
- abdominal pain
- ketones
- rapid deep breathing
- drowsiness in severe cases

Capacity Failure

- glucose regulation
- energy utilization
- acid-base balance
- hydration
- circulation
- cognition

Danger Signs

- vomiting
- abdominal pain
- rapid deep breathing
- confusion
- hypotension
- severe dehydration
- potassium disturbance
- severe acidosis

Mimics

- gastroenteritis
- sepsis
- surgical abdomen
- pancreatitis
- starvation ketosis
- hyperosmolar state

Wise Perturbation

Treat according to local DKA protocol with careful attention to fluids, insulin, potassium, acid-base status, trigger, and monitoring.

Repair Trajectory

- ketones clear
- acidosis resolves
- hydration improves
- vomiting stops
- glucose becomes safer
- potassium remains safe
- trigger treated
- insulin access and sick-day plan restored

This script prevents the clinician from treating vomiting alone while missing metabolic danger.

9. Illness Scripts Help Build Differential Diagnosis

A differential diagnosis is not a random list.

It is a comparison of competing illness scripts.

For chest pain, compare:

- acute coronary syndrome
- pulmonary embolism
- aortic dissection
- pneumothorax
- pneumonia
- pericarditis
- reflux
- chest wall pain
- anxiety after danger considered

Each script has a different pattern.

Acute coronary syndrome often involves pressure, exertion, radiation, sweating, nausea, risk factors, and ECG/troponin changes.

Pulmonary embolism often involves pleuritic pain, sudden dyspnea, tachycardia, hypoxia, hemoptysis, syncope, and clot risk.

Aortic dissection often involves sudden severe tearing pain, pulse differences, neurological symptoms, and vascular risk.

Chest wall pain often involves localized reproducible tenderness and movement-related pain, but this must be interpreted carefully.

The clinician asks:

Which script best fits?
Which dangerous script must be excluded even if less likely?
What finding would change the ranking?

10. Illness Scripts Prevent Random Testing

Investigations should test scripts.

For example, in dyspnea:

If the script suggests pneumonia, useful tests may include oxygen saturation, chest imaging, blood tests, and infection assessment.

If the script suggests heart failure, useful tests may include ECG, chest imaging, renal function, electrolytes, and heart failure assessment.

If the script suggests pulmonary embolism, useful tests follow a clot probability pathway.

If the script suggests asthma, useful assessment includes wheeze, airflow, response to bronchodilator, triggers, and severity.

Without illness scripts, students may order many tests without knowing what question each test answers.

A good rule is:

Never order a test without knowing which script it will support, weaken, or redirect.

11. Illness Scripts Must Include Mimics

Every illness script should include mimics.

This is crucial.

For example:

Pneumonia Mimics

- heart failure
- pulmonary embolism
- tuberculosis
- lung cancer
- aspiration
- COPD exacerbation
- viral infection

Stroke Mimics

- hypoglycemia
- seizure with postictal weakness
- migraine
- functional neurological disorder
- brain tumor
- infection or delirium in some cases

Anxiety Mimics

- arrhythmia
- hyperthyroidism
- hypoglycemia
- pulmonary embolism
- asthma
- anemia
- medication effects

Gastroenteritis Mimics

- DKA
- sepsis
- bowel obstruction
- pancreatitis
- appendicitis
- mesenteric ischemia
- adrenal crisis

Mimics keep the clinician humble.

They protect against premature closure.

12. Illness Scripts Must Include Danger

A common student error is to learn diseases as definitions rather than dangers.

For example:

Asthma is not only airway inflammation.
It is a condition that can suddenly threaten ventilation and oxygenation.

Atrial fibrillation is not only an irregular rhythm.
It may threaten cardiac output, trigger heart failure, and increase stroke risk.

AKI is not only high creatinine.
It may threaten potassium balance, acid-base status, fluid balance, and medicine safety.

Anemia is not only low hemoglobin.
It may threaten oxygen delivery, coronary reserve, function, and cognition.

For each illness script, ask:

What can this condition do to the patient if I miss it?

13. Illness Scripts Must Include Coupling Conditions

Diseases do not occur in isolation.

Each illness script should include coupling conditions.

For example, a heart failure script should include:

- salt intake
- kidney function
- medication access
- arrhythmia
- blood pressure
- anemia
- home weighing
- health literacy
- transport to clinic
- caregiver support

A diabetes script should include:

- food access
- insulin access
- glucose monitoring
- sick-day understanding
- kidney function
- infection
- work schedule
- fear of hypoglycemia
- family support

A COPD script should include:

- smoking
- inhaler technique
- air quality
- infection exposure
- steroid risks
- oxygen access
- anxiety
- exercise tolerance
- pulmonary rehabilitation availability

Coupling conditions explain why illness persists or recurs.

They turn the script from a textbook description into real medicine.

14. Illness Scripts Must Include Repair

A script without repair is incomplete.

Students often stop at diagnosis:

“This is pneumonia.”

But the clinician must ask:

“How will I know the pneumonia is repairing?”

For each condition, define repair markers.

Examples:

Pneumonia Repair

- fever settles
- respiratory rate improves
- oxygenation improves
- appetite returns
- confusion clears
- mobility improves

Heart Failure Repair

- breathlessness improves
- orthopnea improves
- edema reduces
- weight trends safely
- renal function stable
- patient understands medicines and monitoring

AKI Repair

- urine output improves
- potassium safe

- acid-base status safe
- creatinine stabilizes or falls
- obstruction relieved if present
- nephrotoxins stopped
- follow-up labs arranged

Delirium Repair

- attention improves
- sleep-wake cycle improves
- infection, pain, constipation, retention, dehydration, or medication triggers addressed
- family reorientation helps
- mobility and nutrition improve

Repair trajectory protects against superficial improvement.

15. Strong Scripts and Weak Scripts

A Strong Illness Script

A strong script includes:

- who gets it
- what triggers it
- how it unfolds
- key symptoms
- key signs
- key tests
- danger signs
- mimics
- treatment principles
- repair trajectory

A Weak Illness Script

A weak script is just a label and a few facts.

Example:

“Pulmonary embolism causes chest pain and shortness of breath.”

This is too weak.

A stronger script is:

“Pulmonary embolism often presents with sudden dyspnea, pleuritic chest pain, tachycardia, hypoxia, syncope, hemoptysis, or unexplained collapse, especially in patients with clot risk such as recent surgery, immobility, cancer, prior clot, pregnancy/postpartum context where relevant, or estrogen exposure. It threatens pulmonary circulation, oxygenation, and right heart function. Repair requires risk assessment, imaging or exclusion pathway, anticoagulation or advanced treatment when indicated, and recurrence prevention.”

That script is clinically useful.

16. Script Errors

Illness scripts can mislead.

Common errors include:

Overfitting

The clinician forces the patient into a script even when important features do not fit.

Example:

Calling all dizziness “vertigo” and missing arrhythmia or stroke.

Underdeveloped Scripts

The clinician knows the disease name but not the real pattern.

Example:

Knowing “sepsis is infection” but not recognizing confusion, tachypnea, hypotension, oliguria, and frailty decline as sepsis signs.

Prototype Bias

The clinician expects the classic textbook case and misses atypical presentations.

Example:

Missing myocardial infarction in a diabetic patient with weakness, nausea, or breathlessness but no classic crushing chest pain.

Premature Closure

The clinician stops thinking after the first plausible diagnosis.

Example:

Calling cough “bronchitis” without reassessing persistent hemoptysis and weight loss.

Failure to Update

The clinician does not revise the script when the patient fails to improve.

Example:

Treating pneumonia while oxygenation worsens and imaging suggests pulmonary embolism or heart failure.

Context Blindness

The clinician ignores coupling conditions.

Example:

Prescribing insulin without asking whether the patient can afford it, store it, measure glucose, or eat reliably.

17. How to Build Better Illness Scripts

A student can build illness scripts deliberately.

For each common condition, write:

1. Typical patient
2. Common triggers
3. Time course
4. Key symptoms
5. Key signs

6. Key investigations
7. Danger signs
8. Mimics
9. Capacity failure
10. Treatment principles
11. Repair trajectory
12. Safety-netting

Then update the script after each patient.

Ask:

- What was typical?
- What was atypical?
- What did I miss?
- What changed the diagnosis?
- What treatment helped?
- What treatment harmed?
- What showed repair?
- What coupling conditions mattered?

This is how clinical judgment grows.

18. Using Illness Scripts at the Bedside

At the bedside, the clinician can think:

Step 1: What syndrome is this?

Chest pain, dyspnea, fever, weakness, confusion, edema, jaundice, AKI, cough, hemoptysis.

Step 2: Which dangerous scripts must be considered first?

For chest pain: ACS, PE, dissection, pneumothorax.
For dyspnea: hypoxia, asthma/COPD, heart failure, PE, pneumonia.
For confusion: hypoglycemia, sepsis, stroke, hypoxia, drug toxicity.
For weakness: stroke, cord compression, electrolyte disturbance, sepsis, neuromuscular respiratory risk.

Step 3: Which script best fits the pattern?

Use time course, risk factors, symptoms, signs, and tests.

Step 4: What capacity is failing?

Oxygenation, circulation, clearance, defense, cognition, mobility, regulation, repair.

Step 5: What perturbation is wise?

Treat danger first. Avoid harmful reflex treatment.

Step 6: What repair trajectory should follow?

Define what should improve and when to reconsider.

19. Worked Example: Chest Pain Scripts

A 62-year-old man presents with chest discomfort, sweating, nausea, and shortness of breath.

Do not ask only:

“Is this cardiac?”

Ask which scripts are active.

Acute Coronary Syndrome Script

Supports:

- pressure-like pain
- sweating
- nausea
- vascular risk
- exertional trigger
- ECG or troponin changes

Capacity failure:

Coronary circulation

Danger:

Myocardial infarction, arrhythmia, shock.

Pulmonary Embolism Script

Supports:

- sudden dyspnea
- pleuritic pain
- tachycardia
- hypoxia
- hemoptysis
- clot risk

Capacity failure:

Pulmonary circulation and oxygenation

Danger:

Right heart strain, collapse.

Aortic Dissection Script

Supports:

- sudden severe tearing pain
- radiation to back
- pulse difference
- neurological symptoms
- severe hypertension
- known aneurysm or connective tissue disease

Capacity failure:

Vascular integrity

Danger:

Rupture, stroke, tamponade, organ ischemia.

Reflux Script

Supports:

- burning pain
- after meals
- lying down
- sour taste
- no exertional component
- no danger signs

Capacity failure:

Comfort and upper GI regulation

Danger:

Usually lower, but only after dangerous scripts are considered.

The clinician compares scripts, investigates appropriately, and treats danger first.

20. Worked Example: Fever Scripts

A 78-year-old woman presents with weakness, poor intake, confusion, and fever.

Possible scripts include:

Sepsis Script

Supports:

- fever
- confusion
- tachypnea
- hypotension
- oliguria
- infection source

Capacity failure:

Defense, circulation, cognition, clearance

Danger:

Shock and organ failure.

Pneumonia Script

Supports:

- cough
- tachypnea
- low oxygen
- crackles
- chest imaging changes

Capacity failure:

Defense and oxygenation

Urinary Infection Script

Supports:

- dysuria
- frequency
- suprapubic pain
- flank pain
- urine findings
- delirium in frailty

Capacity failure:

Defense, cognition, hydration

Medication Toxicity Script

Supports:

- new medicine
- renal impairment
- sedation
- confusion
- falls

Capacity failure:

Medicine safety and cognition

The clinician should not say:

“She is old and weak.”

The correct script is:

“This is acute frailty decompensation with fever and confusion. Sepsis must be assessed, source found, hydration and kidney function checked, medicines reviewed, and delirium triggers repaired.”

21. Worked Example: AKI Scripts

A 73-year-old man has rising creatinine.

Possible scripts include:

Hypovolemic AKI Script

Supports:

- vomiting
- diarrhea
- poor intake
- low blood pressure
- dizziness
- diuretic use

- low urine output

Capacity failure:

Circulation to kidneys and clearance

Septic AKI Script

Supports:

- fever
- infection source
- hypotension
- tachypnea
- confusion
- oliguria

Capacity failure:

Defense, circulation, clearance

Obstructive AKI Script

Supports:

- urinary retention
- weak stream
- distended bladder
- hydronephrosis
- anuria
- prostate or pelvic disease

Capacity failure:

Urine drainage and clearance

Glomerulonephritis Script

Supports:

- hematuria
- proteinuria
- edema
- hypertension
- rash
- joint symptoms
- kidney injury

Capacity failure:

Filtration and vascular integrity

The script prevents reflex treatment.

Not all AKI needs fluids.
Not all AKI is dehydration.
Not all AKI is intrinsic kidney disease.
Not all AKI is irreversible.

22. Clinical Practice Box

When building an illness script, complete this structure:

Condition or syndrome:

Typical patient context:
Who usually gets this?

Triggers:
What sets it off?

Time course:
Sudden, acute, subacute, chronic, recurrent, fluctuating?

Core symptoms:

Core signs:

Capacity failure:
What function is failing?

Danger signs:
What must not be missed?

Mimics:
What else can look like this?

Initial investigations:
What questions should testing answer?

Wise perturbation:
What treatment restores capacity and avoids harm?

Repair trajectory:
What should improve if the script is correct?

Safety-net:
What should prompt urgent reassessment?

23. Mini-Case for Practice

A 69-year-old woman presents with breathlessness, cough, fatigue, and mild leg swelling. She has hypertension, diabetes, and chronic kidney disease. She has crackles at both lung bases and oxygen saturation is mildly reduced.

Build illness scripts for the main possibilities.

Possible Script 1: Pneumonia

Supports:

- cough
- breathlessness
- crackles
- possible infection if fever or sputum present

Capacity failure:

Defense and oxygenation.

Danger:

Hypoxia, sepsis, frailty decline.

Repair:

Fever and respiratory rate improve, oxygenation stabilizes, cough improves, appetite and mobility return.

Possible Script 2: Heart Failure

Supports:

- breathlessness
- leg swelling
- crackles
- hypertension
- CKD
- possible orthopnea or weight gain if present

Capacity failure:

Circulation, fluid balance, oxygenation, kidney perfusion.

Danger:

Pulmonary edema, AKI, hypoxia.

Repair:

Breathing improves, edema reduces, oxygenation stabilizes, renal function remains safe, trigger addressed.

Possible Script 3: Pulmonary Embolism

Supports if present:

- sudden dyspnea
- pleuritic chest pain
- tachycardia
- hypoxia
- clot risk
- hemoptysis

Capacity failure:

Pulmonary circulation and oxygenation.

Danger:

Right heart strain, collapse.

Repair:

Oxygenation and dyspnea improve, clot pathway completed, recurrence prevention planned.

Possible Script 4: CKD-Related Fluid Overload

Supports:

- CKD
- edema
- crackles
- reduced urine output or recent renal worsening if present

Capacity failure:

Clearance and fluid balance.

Danger:

Pulmonary edema, hyperkalemia, AKI progression.

Repair:

Fluid status improves, oxygenation improves, potassium safe, renal function monitored.

Final Synthesis

The clinician should not choose one script too early.

They should ask:

- Is there fever or infection?
- Is there orthopnea or weight gain?
- Is the onset sudden?
- Is there chest pain or clot risk?
- What does the ECG show?
- What does chest imaging show?
- What are renal function and electrolytes?
- Is oxygenation worsening or improving?

The correct plan compares scripts, treats danger first, and follows the repair trajectory.

24. Student Takeaway

Illness scripts become easier when the clinician asks:

Who gets this condition?
What triggers it?
How does it unfold?
What syndrome does it create?
What capacity fails?
What findings support it?

What findings argue against it?
What mimics it?
What danger must not be missed?
What treatment restores capacity?
What repair trajectory should follow?

Illness scripts are not memorized labels.

They are living clinical maps.

The safe clinician uses them to recognize patterns, compare possibilities, avoid premature closure, treat danger, understand context, and follow the patient toward repair.

Chapter 35. Problem Representation Made Easy

Problem representation is the art of summarizing a patient's situation in one clear clinical sentence or paragraph.

It helps the clinician move from:

"There are many symptoms, tests, and details."

to:

"This is an older patient with acute fever, confusion, tachypnea, hypotension, and reduced urine output, most concerning for sepsis with early shock."

A good problem representation does not repeat everything.

It selects what matters.

It names:

- who the patient is clinically
- what the main syndrome is
- how quickly it developed
- what danger is present
- what capacity is failing
- what context changes risk
- what diagnoses must be considered

Problem representation is the bridge between history-taking and clinical reasoning.

It turns information into meaning.

Problem representation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Problem Representation?

A problem representation is a concise clinical summary that captures the essence of the case.

It is not the full history.

It is not a diagnosis.

It is not a random list of findings.

It is the patient's story translated into clinical reasoning language.

For example:

Weak representation:

"A 70-year-old woman has cough, fever, weakness, and abnormal blood tests."

Stronger representation:

"A 70-year-old woman with diabetes and chronic kidney disease presents with three days of productive cough, fever, tachypnea, hypoxia, confusion, and acute kidney injury, concerning for pneumonia complicated by sepsis and impaired clearance."

The second version is stronger because it includes:

- age and risk context

- key syndrome
- time course
- danger
- likely diagnosis
- capacity failure
- complication

A good problem representation helps the clinician know what to do next.

2. Why Problem Representation Matters

Students often collect information well but struggle to organize it.

They may know many details:

- cough
- fever
- glucose high
- creatinine elevated
- oxygen low
- patient weak
- medicines uncertain
- chest sounds abnormal

But they may not yet know what the case means.

Problem representation creates order.

It helps with:

- choosing the most important diagnosis
- building a differential diagnosis
- identifying danger
- deciding investigations
- communicating with seniors
- making referrals
- writing notes
- presenting cases
- preventing missed diagnoses
- tracking whether the patient is improving

A good problem representation is like a clinical compass.

It does not tell the whole journey, but it points in the right direction.

3. The Core Formula

A simple formula is:

Patient context + time course + syndrome + danger/capacity failure + key modifiers

For example:

"A 62-year-old man with hypertension and diabetes presents with sudden central chest pressure radiating to the left arm, associated with sweating and nausea, concerning for acute coronary syndrome threatening coronary circulation."

This includes:

- patient context: 62-year-old man with vascular risk
- time course: sudden
- syndrome: central chest pressure
- associated features: radiation, sweating, nausea
- danger: acute coronary syndrome
- capacity failure: coronary circulation

Another example:

"An 84-year-old woman with frailty and dementia presents with two days of reduced intake, fever, new confusion, tachypnea, and low blood pressure, concerning for sepsis with delirium, dehydration, and early circulatory failure."

This includes:

- patient context: frailty and dementia
- time course: two days
- syndrome: fever and confusion
- danger: sepsis
- capacity failure: cognition, hydration, circulation
- risk modifier: frailty

The formula is simple, but powerful.

4. The Life-Coherent Problem Representation Template

A life-coherent problem representation asks six questions:

1. Who Is the Patient Clinically?

Not just name and age.

Clinically relevant identity includes:

- age
- frailty
- pregnancy context where relevant
- immune status
- major comorbidities
- baseline function
- key risks
- current medicines

- social vulnerability where relevant

Example:

“A frail 82-year-old man with CKD, heart failure, and recent NSAID use…”

2. What Is the Main Syndrome?

Examples:

- acute chest pain
- progressive dyspnea
- fever with confusion
- AKI with oliguria
- jaundice with pale stools
- acute focal weakness
- chronic cough with weight loss
- generalized edema
- severe hyperglycemia with vomiting

The syndrome should be named clearly.

3. What Is the Time Course?

Examples:

- sudden onset
- acute over hours
- progressive over days
- subacute over weeks
- chronic over months
- recurrent episodic
- fluctuating

Time course changes probability.

4. What Danger Is Present?

Examples:

- hypoxia
- shock
- sepsis
- hyperkalemia
- stroke symptoms
- acute coronary syndrome
- pulmonary embolism
- acute liver failure
- spinal cord compression
- respiratory failure

Danger determines urgency.

5. What Capacity Is Failing?

Examples:

- oxygenation
- circulation
- clearance
- defense
- cognition
- glucose regulation
- fluid balance
- airway protection
- mobility
- vascular integrity

Capacity failure connects diagnosis to life.

6. What Coupling Conditions Matter?

Examples:

- frailty
- CKD
- heart failure
- diabetes
- immunosuppression
- polypharmacy
- anticoagulants
- poor intake
- social isolation
- medication access
- recent surgery
- travel or exposure
- aspiration risk

Coupling conditions explain why this patient is vulnerable.

5. Weak Versus Strong Problem Representations

Weak Representation

“The patient has shortness of breath and leg swelling.”

This is too vague.

It does not tell us:

- how fast symptoms developed

- severity
- oxygenation
- comorbidities
- likely syndrome
- danger
- capacity failure

Strong Representation

“A 76-year-old woman with known heart failure and CKD presents with five days of worsening dyspnea, orthopnea, leg edema, crackles, hypoxia, and rising creatinine, concerning for acute decompensated heart failure with impaired oxygenation, fluid overload, and renal vulnerability.”

This is stronger because it guides action.

It suggests:

- check oxygenation
- assess congestion
- review renal function and electrolytes
- identify trigger
- treat fluid overload carefully
- monitor repair

A strong representation makes the next step easier.

6. Problem Representation Is Not Premature Diagnosis

A problem representation should allow uncertainty.

Avoid saying:

“This patient has pneumonia.”

when the diagnosis is not secure.

Instead say:

“This patient has acute cough, fever, hypoxia, and focal crackles, concerning for pneumonia, while heart failure and pulmonary embolism remain important alternatives depending on imaging, ECG, volume status, and risk factors.”

This representation is safer.

It names the leading diagnosis but keeps the differential open.

Good problem representation balances confidence with humility.

7. Include Pertinent Positives and Pertinent Negatives

A pertinent positive is a finding that supports a diagnosis or risk.

A pertinent negative is an absent finding that meaningfully reduces or redirects concern.

For example, in chest pain:

Pertinent positives:

- central pressure
- exertional onset
- radiation to left arm
- sweating
- nausea
- vascular risk factors

Pertinent negatives:

- no pleuritic pain
- no tearing back pain
- no syncope
- no focal neurological symptoms
- no reproducible chest wall tenderness

But be careful.

Pertinent negatives are not magic erasers.

A patient can have myocardial infarction without classic radiation.
A patient can have pulmonary embolism without hemoptysis.
A patient can have sepsis without fever.
A patient can have stroke without headache.

Use negatives to shape probability, not to dismiss danger too quickly.

8. Use Semantic Qualifiers

Semantic qualifiers are clinical adjectives that sharpen the case.

Examples:

- acute versus chronic
- sudden versus gradual
- progressive versus intermittent
- unilateral versus bilateral
- pleuritic versus pressure-like
- productive versus dry
- focal versus generalized
- proximal versus distal
- exertional versus resting
- painful versus painless
- febrile versus afebrile
- stable versus unstable
- compensated versus decompensated
- mild versus severe
- recurrent versus first episode

Compare:

Weak:

“The patient has abdominal pain.”

Stronger:

“The patient has acute severe right upper quadrant pain with fever and jaundice.”

Even stronger:

“A 68-year-old woman presents with acute right upper quadrant pain, fever, jaundice, hypotension, and confusion, concerning for cholangitis with sepsis and biliary obstruction.”

Semantic qualifiers turn vague symptoms into clinical patterns.

9. Problem Representation by Time Course

Time course is often the hidden key.

Sudden

Suggests:

- vascular event
- arrhythmia
- embolism
- rupture
- obstruction
- seizure
- anaphylaxis
- pneumothorax

Example:

“Sudden pleuritic chest pain and dyspnea after surgery…”

This raises pulmonary embolism.

Acute Over Hours to Days

Suggests:

- infection
- inflammation
- metabolic decompensation
- acute heart failure
- AKI
- medication toxicity
- bleeding
- asthma/COPD exacerbation

Example:

“Three days of fever, cough, tachypnea, and hypoxia…”

This raises pneumonia or acute respiratory infection.

Subacute Over Weeks

Suggests:

- malignancy
- tuberculosis
- inflammatory disease
- heart failure progression
- endocrine disease
- anemia
- chronic infection

Example:

“Six weeks of cough, weight loss, night sweats, and hemoptysis…”

This raises TB or malignancy.

Chronic Over Months to Years

Suggests:

- chronic organ disease
- degenerative disease
- chronic inflammation
- long-term exposure
- deconditioning
- depression
- endocrine disease
- malignancy in some contexts

Example:

“Progressive exertional dyspnea over six months with smoking history and wheeze…”

This raises COPD, heart failure, anemia, or malignancy depending on findings.

10. Problem Representation by Capacity Failure

A life-coherent representation should name the threatened capacity when possible.

Oxygenation Failure

Example:

“A 69-year-old man with COPD presents with acute cough, wheeze, increased sputum, tachypnea, and hypoxia, concerning for COPD exacerbation with impaired ventilation and oxygenation.”

Circulation Failure

Example:

“A 74-year-old woman presents with fever, confusion, hypotension, tachycardia, and oliguria, concerning for septic shock with impaired circulation and kidney perfusion.”

Clearance Failure

Example:

“A 78-year-old man with CKD presents after vomiting and NSAID use with oliguria, hyperkalemia, and rising creatinine, concerning for AKI with impaired clearance and potassium regulation.”

Defense Failure

Example:

“A frail 83-year-old woman presents with fever, delirium, cough, tachypnea, and hypoxia, concerning for pneumonia with impaired defense and oxygenation.”

Cognition Failure

Example:

“An 86-year-old woman with dementia presents with acute fluctuating confusion, fever, urinary symptoms, dehydration, and new immobility, concerning for delirium triggered by infection and fluid imbalance.”

Mobility Failure

Example:

“A 68-year-old man presents with progressive ascending leg weakness, tingling, and reduced reflexes after diarrheal illness, concerning for Guillain-Barré syndrome threatening mobility and respiratory reserve.”

Naming capacity failure makes the problem representation clinically alive.

11. How to Build a Problem Representation Step by Step

Step 1: Identify the Main Complaint

What brought the patient to care?

Examples:

- chest pain
- dyspnea
- fever
- confusion
- weakness
- jaundice
- edema
- AKI
- cough
- hemoptysis

Step 2: Add the Time Course

Examples:

- sudden
- acute
- progressive
- recurrent

- chronic

Step 3: Add Key Risk Context

Examples:

- older age
- diabetes
- CKD
- heart failure
- immunosuppression
- cancer
- anticoagulation
- smoking
- recent surgery
- frailty

Step 4: Add the Syndrome Pattern

Use semantic qualifiers.

Examples:

- pleuritic chest pain
- exertional dyspnea
- painless jaundice
- acute focal weakness
- chronic productive cough
- generalized edema
- fluctuating confusion

Step 5: Add Danger or Capacity Failure

Examples:

- hypoxia
- hypotension
- hyperkalemia
- altered mental state
- reduced urine output
- respiratory distress
- inability to walk
- severe dehydration

Step 6: Add the Leading Concern and Alternatives

Examples:

- concerning for pneumonia, with PE and heart failure also considered
- concerning for acute coronary syndrome

- concerning for sepsis from urinary source
- concerning for obstructive jaundice from malignancy
- concerning for stroke versus hypoglycemia mimic

This produces a useful representation.

12. Worked Example: Chest Pain

Raw information:

- 58-year-old man
- hypertension
- diabetes
- central chest pressure
- started while walking
- radiates to left arm
- sweating
- nausea
- shortness of breath
- no cough
- no fever

Weak representation:

“A man has chest pain and shortness of breath.”

Strong representation:

“A 58-year-old man with hypertension and diabetes presents with acute exertional central chest pressure radiating to the left arm, associated with sweating, nausea, and dyspnea, concerning for acute coronary syndrome threatening coronary circulation.”

Why this is strong:

- includes risk context
- includes time course
- describes pain quality
- includes associated symptoms
- names danger
- names capacity failure

Next clinical steps become clear.

13. Worked Example: Dyspnea

Raw information:

- 82-year-old woman
- known heart failure

- CKD
- worsening breathlessness for one week
- cannot lie flat
- swollen legs
- crackles
- oxygen saturation low
- creatinine rising

Weak representation:

“An elderly woman is short of breath and swollen.”

Strong representation:

“An 82-year-old woman with heart failure and CKD presents with one week of progressive dyspnea, orthopnea, leg edema, crackles, hypoxia, and rising creatinine, concerning for acute decompensated heart failure with impaired oxygenation, fluid balance, and renal reserve.”

This representation guides:

- oxygen assessment
- congestion assessment
- renal monitoring
- trigger search
- cautious diuresis
- follow-up trajectory

14. Worked Example: Fever and Confusion

Raw information:

- 87-year-old woman
- frail
- dementia
- fever
- more confused
- reduced intake
- urinary frequency
- tachypnea
- borderline low blood pressure
- reduced mobility

Weak representation:

“An elderly patient is confused and may have a UTI.”

Strong representation:

“A frail 87-year-old woman with dementia presents with acute fever, worsening confusion, reduced intake, urinary symptoms, tachypnea, borderline hypotension, and new immobility, concerning for infection-associated delirium with possible sepsis, dehydration, and mobility collapse.”

This is stronger because it avoids reducing the case to “UTI.”

It keeps the danger visible.

15. Worked Example: AKI

Raw information:

- 76-year-old man
- CKD
- diarrhea for four days
- poor intake
- continued diuretic and ACE inhibitor
- took NSAID
- dizzy
- low urine output
- creatinine increased
- potassium high

Weak representation:

“A man with CKD has AKI.”

Strong representation:

“A 76-year-old man with CKD presents with acute oliguria, rising creatinine, and hyperkalemia after diarrheal illness, poor intake, diuretic/ACE inhibitor continuation, and NSAID use, concerning for AKI from hypovolemia and medication-amplified renal hypoperfusion with impaired clearance and potassium regulation.”

This representation immediately identifies:

- danger: hyperkalemia
- mechanism: hypovolemia plus medicine effect
- coupling conditions: CKD and nephrotoxic exposure
- capacity failure: clearance and potassium regulation

16. Worked Example: Weakness

Raw information:

- 69-year-old man
- leg weakness over four days
- tingling feet
- recent diarrhea two weeks earlier
- difficulty climbing stairs

- reduced reflexes
- breathing currently okay

Weak representation:

“A man has leg weakness and tingling.”

Strong representation:

“A 69-year-old man presents with four days of progressive ascending leg weakness, distal paresthesias, and reduced reflexes following recent diarrheal illness, concerning for Guillain-Barré syndrome threatening mobility, autonomic stability, and respiratory reserve.”

This representation is strong because it names future danger before it happens.

17. Worked Example: Chronic Cough

Raw information:

- 61-year-old man
- smoker
- cough for three months
- weight loss
- night sweats
- blood-streaked sputum
- cared for relative with prolonged cough

Weak representation:

“A smoker has chronic cough.”

Strong representation:

“A 61-year-old smoker presents with three months of cough, weight loss, night sweats, and recurrent blood-streaked sputum, with possible TB exposure, concerning for tuberculosis, lung cancer, or chronic infection threatening defense, lung integrity, nutrition, and public health safety.”

This representation keeps both cancer and TB visible.

18. Common Student Pitfalls

Pitfall 1: Making the Representation Too Long

A problem representation is not the whole clerking.

It should be concise enough to guide thought.

Pitfall 2: Making It Too Vague

“Patient with fever and weakness” is not enough.

Add context, time course, danger, and capacity failure.

Pitfall 3: Naming a Diagnosis Too Early

Avoid premature closure.

Use “concerning for” or “suggestive of” when uncertain.

Pitfall 4: Leaving Out Time Course

Sudden, acute, subacute, chronic, recurrent, and fluctuating patterns change the differential diagnosis.

Pitfall 5: Leaving Out Risk Context

The same symptom means different things in different patients.

Chest pain in a young low-risk patient differs from chest pain in an older diabetic with CKD.

Pitfall 6: Leaving Out Danger

The most important purpose of a problem representation is to keep danger visible.

Pitfall 7: Leaving Out Function

A patient who cannot walk, eat, drink, toilet, or think clearly has a capacity problem even if the diagnosis seems simple.

Pitfall 8: Failing to Update

Problem representations must change when new information appears.

A good clinician revises the representation as the patient evolves.

19. Updating the Problem Representation

The first problem representation is provisional.

It should change when new data arrive.

Example first representation:

“A 70-year-old man presents with fever, cough, tachypnea, and hypoxia, concerning for pneumonia.”

After new data:

- ECG shows rapid atrial fibrillation
- chest X-ray shows pulmonary edema
- fever is low-grade
- BNP or clinical heart failure evidence supports congestion
- renal function is worsening

Updated representation:

“A 70-year-old man with acute dyspnea, cough, hypoxia, pulmonary edema, rapid atrial fibrillation, and renal dysfunction now appears more consistent with acute decompensated heart failure triggered by arrhythmia, though infection remains a possible contributor.”

Updating is not weakness.

It is good medicine.

20. Problem Representation in Handovers

A good handover begins with a strong problem representation.

Weak handover:

“This is Mrs. Jones. She came in with fever and confusion. We started antibiotics.”

Stronger handover:

“Mrs. Jones is an 86-year-old frail woman with dementia and CKD admitted with acute fever, delirium, poor intake, tachypnea, and AKI, concerning for sepsis from a urinary or respiratory source. She is currently hemodynamically stable but remains confused and at high falls risk.”

This tells the receiving clinician:

- who is vulnerable
- what syndrome is active
- what danger has been considered
- what still needs watching
- what capacity failures remain

Problem representation improves continuity.

21. Problem Representation in Referrals

A referral should not begin with scattered details.

Weak referral:

“I have a patient with abnormal kidney tests. Can you see him?”

Stronger referral:

“I am referring a 74-year-old man with CKD who has acute oliguria, rising creatinine, hyperkalemia, and pulmonary edema despite initial management, concerning for severe AKI with impaired clearance, potassium regulation, and fluid balance. I would appreciate urgent renal input regarding further management and possible renal support pathway.”

A strong referral helps the consultant understand urgency.

It also shows that the referring clinician has thought through danger and capacity failure.

22. Problem Representation in Notes

Clinical notes should show reasoning.

Instead of writing only:

“Impression: pneumonia.”

Write:

“Impression: acute febrile cough syndrome with tachypnea, hypoxia, focal crackles, and elevated inflammatory markers, most consistent with community-acquired pneumonia. Main risks are hypoxia, sepsis, dehydration, and frailty-related functional decline. PE and heart failure less likely currently but will reassess if oxygenation or chest findings do not improve.”

This documents:

- syndrome
- leading diagnosis
- danger
- alternatives
- repair trigger for reassessment

Good notes protect patients and clinicians.

23. Practice Template

Use this template at the end of each history.

Patient context:
Age, frailty, key comorbidities, medicines, immune status, baseline function.

Time course:
Sudden, acute, subacute, chronic, recurrent, fluctuating.

Main syndrome:
Chest pain, dyspnea, fever, weakness, confusion, edema, AKI, cough, jaundice, etc.

Key supporting features:

Key danger features:

Capacity failure:
Oxygenation, circulation, clearance, defense, cognition, mobility, fluid balance, glucose regulation, airway protection.

Coupling conditions:
CKD, diabetes, frailty, medicines, social context, exposure, adherence, access, function.

Leading concern:

Important alternatives:

One-sentence representation:

24. Mini-Case for Practice

A 79-year-old woman with diabetes, CKD, and mild dementia is brought by her daughter because she is more confused than usual. She has had poor oral intake for two days, urinary frequency, fever, and a fall overnight. In clinic she is tachypneic, mildly hypotensive, dehydrated, and unable to walk without help.

Build a problem representation.

Step 1: Patient Context

Older woman with diabetes, CKD, dementia, frailty risk, and new fall.

Step 2: Time Course

Acute over two days.

Step 3: Main Syndrome

Fever, confusion, urinary symptoms, dehydration, fall, and mobility decline.

Step 4: Danger Features

Tachypnea, hypotension, dehydration, delirium, fall, inability to walk, possible sepsis, possible AKI.

Step 5: Capacity Failure

Defense, cognition, hydration, circulation, clearance, mobility safety.

Step 6: Representation

"A 79-year-old woman with diabetes, CKD, and mild dementia presents with two days of fever, urinary symptoms, poor intake, acute worsening confusion, tachypnea, mild hypotension, dehydration, fall, and new inability to walk independently, concerning for infection-associated delirium with possible sepsis, AKI risk, and acute mobility collapse."

This representation is useful because it does not reduce the case to:

"UTI."

It protects against missed sepsis, delirium, dehydration, AKI, and unsafe discharge.

25. Student Takeaway

Problem representation becomes easier when the clinician asks:

Who is this patient clinically?
What is the time course?
What is the main syndrome?
What danger is present?
What capacity is failing?
What coupling conditions change risk?
What diagnosis is most likely?
What alternatives must remain open?
How should the representation be updated as new information appears?

Problem representation is not decoration.

It is clinical reasoning compressed into a useful form.

The safe clinician uses problem representation to transform scattered data into a clear, humble, danger-aware, life-coherent clinical map.

Chapter 36. Differential Diagnosis Made Easy

Differential diagnosis is the disciplined process of asking:

“What else could this be?”

It is how the clinician avoids jumping too quickly to one explanation.

Patients do not arrive with labels.

They arrive with:

chest pain
shortness of breath
fever
confusion
weakness
abdominal pain
jaundice
edema
cough
abnormal blood tests

The clinician must decide what possibilities matter, what is dangerous, what is likely, what is treatable, and what must not be missed.

A differential diagnosis is not a long random list.

It is a structured comparison of plausible and dangerous illness scripts.

Differential diagnosis becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Differential Diagnosis?

A differential diagnosis is a prioritized list of possible explanations for the patient’s presentation.

It should include:

- the most likely causes
- the most dangerous causes
- the most treatable causes
- the causes that fit the patient’s context
- the causes that would change management immediately
- the mimics that commonly confuse the presentation

For example, for acute chest pain, the differential diagnosis may include:

- acute coronary syndrome
- pulmonary embolism
- aortic dissection
- pneumothorax
- pneumonia
- pericarditis
- reflux

- chest wall pain
- anxiety after danger is considered

But the clinician should not simply list these.

The clinician should ask:

Which of these fits best?
Which of these could kill the patient soon?
Which of these must be excluded before discharge?
Which test or bedside finding will separate them?

Differential diagnosis is not listing.

It is sorting.

2. Why Differential Diagnosis Matters

Students often feel that differential diagnosis is overwhelming because every symptom can have many causes.

This is true.

But not every cause has the same urgency.

The purpose of differential diagnosis is to organize uncertainty.

It helps the clinician:

- avoid premature closure
- identify danger
- choose useful investigations
- avoid unnecessary tests
- treat time-sensitive illness early
- explain uncertainty honestly
- communicate clearly
- update the plan when new data appear
- protect the patient from missed diagnosis

A weak differential diagnosis asks:

“What are all the possible causes?”

A stronger differential diagnosis asks:

“What are the most likely, most dangerous, most reversible, and most contextually relevant causes?”

That question makes medicine easier.

3. The Four-Part Differential

A practical differential diagnosis can be built in four layers.

1. Most Likely

What diagnosis best fits the pattern?

Example:

Fever, cough, sputum, focal crackles, and hypoxia may make pneumonia likely.

2. Most Dangerous

What diagnosis would be catastrophic if missed?

Example:

In pleuritic chest pain and breathlessness, pulmonary embolism may be dangerous even if pneumonia seems possible.

3. Most Reversible

What diagnosis can be rapidly treated if recognized?

Examples:

- hypoglycemia in confusion
- hyperkalemia in weakness or AKI
- sepsis in fever and hypotension
- urinary obstruction in AKI
- adrenal crisis in shock
- anaphylaxis in collapse

4. Most Contextual

What diagnosis is made more likely by this patient's specific context?

Examples:

- tuberculosis exposure in chronic cough
- anticoagulants in bleeding
- CKD and NSAIDs in AKI
- diabetes in foot infection
- cancer in back pain with weakness
- recent surgery in pulmonary embolism
- long-term steroids in adrenal crisis

This four-part approach prevents both overconfidence and chaos.

4. Start With the Syndrome

A differential diagnosis should begin with the presenting syndrome.

Do not begin with a final disease label.

Examples:

- chest pain syndrome
- dyspnea syndrome
- fever syndrome
- confusion syndrome
- edema syndrome
- jaundice syndrome
- AKI syndrome

- weakness syndrome
- cough syndrome
- hemoptysis syndrome

The syndrome keeps the clinician honest.

For example:

A patient with dyspnea may have:

- pneumonia
- asthma
- COPD exacerbation
- heart failure
- pulmonary embolism
- anemia
- metabolic acidosis
- anxiety after danger is considered

If the clinician says too early:

“This is asthma.”

they may miss pulmonary embolism, heart failure, or pneumonia.

The safer starting point is:

“This is acute dyspnea. I need to identify whether oxygenation, ventilation, circulation, or metabolic compensation is failing.”

5. Use Danger First

The first differential diagnosis is always a danger differential.

For each syndrome, ask:

What must I not miss?

Chest Pain

Dangerous causes include:

- acute coronary syndrome
- pulmonary embolism
- aortic dissection
- pneumothorax
- pericardial tamponade
- esophageal rupture in selected contexts

Dyspnea

Dangerous causes include:

- hypoxia
- asthma or COPD with respiratory failure
- pneumonia with sepsis

- pulmonary embolism
- heart failure or pulmonary edema
- pneumothorax
- metabolic acidosis
- anaphylaxis

Fever

Dangerous causes include:

- sepsis
- meningitis
- pneumonia
- pyelonephritis
- cholangitis
- endocarditis
- neutropenic sepsis
- tropical or travel-related severe infection where relevant

Confusion

Dangerous causes include:

- hypoglycemia
- sepsis
- hypoxia
- stroke
- intracranial bleed
- drug toxicity
- electrolyte disturbance
- hepatic or renal failure

Weakness

Dangerous causes include:

- stroke
- spinal cord compression
- Guillain-Barré syndrome
- myasthenic crisis
- severe electrolyte disturbance
- sepsis
- rhabdomyolysis
- severe anemia

Danger-first reasoning does not mean every patient has a dangerous disease.

It means dangerous diseases are considered before reassurance.

6. Use Capacity Failure to Organize the Differential

Capacity failure helps group diagnoses by what function is failing.

Oxygenation Failure

Possible causes:

- pneumonia
- asthma
- COPD
- pulmonary embolism
- heart failure
- pneumothorax
- interstitial lung disease
- anemia
- respiratory muscle weakness

Circulation Failure

Possible causes:

- sepsis
- bleeding
- dehydration
- cardiogenic shock
- arrhythmia
- pulmonary embolism
- anaphylaxis
- adrenal crisis

Clearance Failure

Possible causes:

- acute kidney injury
- chronic kidney disease worsening
- urinary obstruction
- drug toxicity
- liver failure
- sepsis-related organ dysfunction

Defense Failure

Possible causes:

- infection
- immunosuppression
- neutropenia
- diabetes-related infection
- aspiration

- tuberculosis
- chronic wounds

Cognition Failure

Possible causes:

- delirium
- hypoglycemia
- stroke
- sepsis
- hypoxia
- medication toxicity
- dementia exacerbation
- hepatic encephalopathy
- uremia

Mobility Failure

Possible causes:

- stroke
- spinal cord disease
- neuropathy
- myopathy
- frailty
- electrolyte disturbance
- pain
- deconditioning

This approach helps students see that diagnoses are not just names.

They are explanations for failed life-capacities.

7. Use Anatomy When Helpful

Anatomy is useful when the symptom points to a body region.

For abdominal pain, ask:

- right upper quadrant
- epigastric
- right lower quadrant
- left lower quadrant
- suprapubic
- flank
- diffuse
- pelvic

For weakness, ask:

- brain
- spinal cord
- nerve root
- peripheral nerve
- neuromuscular junction
- muscle
- systemic energy supply

For chest pain, ask:

- heart
- lungs
- pleura
- aorta
- esophagus
- chest wall
- upper abdomen

For jaundice, ask:

- before the liver
- within the liver
- after the liver

Anatomy prevents vague reasoning.

But anatomy must be combined with time course, danger, and capacity failure.

8. Use Time Course

Time course is one of the most powerful tools in differential diagnosis.

Sudden Onset

Think:

- vascular event
- embolism
- rupture
- obstruction
- arrhythmia
- seizure
- anaphylaxis
- pneumothorax

Examples:

- sudden dyspnea after surgery: pulmonary embolism

- sudden tearing chest pain: aortic dissection
- sudden focal weakness: stroke
- sudden collapse after allergen: anaphylaxis

Acute Over Hours to Days

Think:

- infection
- inflammation
- metabolic decompensation
- acute organ failure
- bleeding
- medication toxicity
- exacerbation of chronic disease

Examples:

- fever and cough over three days: pneumonia
- vomiting and hyperglycemia over one day: DKA
- confusion and urinary symptoms over two days: delirium from infection

Subacute Over Weeks

Think:

- malignancy
- tuberculosis
- inflammatory disease
- anemia
- endocrine disease
- chronic infection
- heart failure progression

Examples:

- cough, night sweats, weight loss: TB or malignancy
- fatigue, pallor, weight loss: anemia, malignancy, chronic disease

Chronic Over Months to Years

Think:

- chronic organ disease
- degenerative disease
- long-term exposure
- depression
- frailty
- chronic inflammatory disease
- deconditioning

Examples:

- progressive exertional dyspnea in smoker: COPD, heart failure, anemia, malignancy
- slow gait decline: neuropathy, Parkinsonism, frailty, spinal disease

A diagnosis that does not fit the time course should be questioned.

9. Use Patient Context

The same symptom means different things in different patients.

Chest Pain

In a young healthy person, chest wall pain, reflux, anxiety, or viral pleurisy may be more likely.

In an older diabetic with CKD, acute coronary syndrome must be carefully considered.

Fever

In a healthy adult, viral illness may be common.

In a neutropenic patient, fever is an emergency.

Back Pain

In a young person after lifting, mechanical strain may be likely.

In a patient with cancer, back pain with weakness may be spinal cord compression until proven otherwise.

Cough

In a nonsmoker after a cold, post-viral cough may be likely.

In a smoker with weight loss and hemoptysis, cancer and TB must be considered.

AKI

In a young dehydrated patient, hypovolemia may be likely.

In an older patient with prostate symptoms and anuria, obstruction must be considered.

Context changes probability and danger.

10. Use Pertinent Positives and Negatives

A differential diagnosis is built by comparing features.

For example, in dyspnea:

Pneumonia

Supports:

- fever
- cough
- sputum
- pleuritic pain
- crackles
- hypoxia

Against:

- no fever
- no cough

- normal chest imaging
- alternative strong heart failure signs

Heart Failure

Supports:

- orthopnea
- edema
- crackles
- raised venous pressure
- known heart disease
- pulmonary edema

Against:

- sudden pleuritic pain with clot risk may suggest PE
- fever and focal infection signs may suggest pneumonia

Pulmonary Embolism

Supports:

- sudden onset
- pleuritic pain
- tachycardia
- hypoxia
- hemoptysis
- recent surgery or immobility

Against:

- clear alternative explanation and low clot risk may reduce probability, but does not always exclude

Pertinent negatives help, but they must be used carefully.

Absence of one classic feature does not exclude a dangerous diagnosis.

11. Avoid Random Lists

A common student differential looks like this:

“Chest pain could be MI, PE, pneumonia, reflux, anxiety, pericarditis, pneumothorax, dissection, gastritis, pancreatitis, musculoskeletal pain.”

This list is not wrong, but it is not yet useful.

A better differential is grouped and prioritized:

Most dangerous: ACS, PE, aortic dissection, pneumothorax
Most likely from current pattern: ACS versus reflux versus chest wall pain depending on features
Contextual risks: diabetes, hypertension, smoking, recent travel, anticoagulants
Initial tests needed: ECG, troponin pathway, oxygen saturation, chest exam, chest imaging if indicated, PE/dissection pathway if features suggest

This is clinical reasoning.

12. Compare Competing Illness Scripts

Differential diagnosis is a contest between scripts.

For example:

A patient has fever, shortness of breath, cough, and low oxygen saturation.

Possible scripts:

Pneumonia Script

Fits if:

- fever
- productive cough
- crackles
- focal chest findings
- pleuritic pain
- chest imaging supports infection

Heart Failure Script

Fits if:

- orthopnea
- edema
- raised venous pressure
- crackles
- known heart disease
- weight gain
- pulmonary edema

Pulmonary Embolism Script

Fits if:

- sudden onset
- pleuritic pain
- tachycardia
- hypoxia
- clot risk
- syncope or hemoptysis

COPD Exacerbation Script

Fits if:

- known COPD
- wheeze
- increased sputum
- smoking history
- hyperinflation
- prior similar episodes

The clinician asks:

Which script best explains the whole pattern?
Which script is dangerous enough to pursue even if not the most likely?
Can more than one script be true?

Often, more than one condition is active.

A patient can have pneumonia triggering heart failure.
A patient can have sepsis causing AKI.
A patient can have anemia worsening angina.
A patient can have COPD and pulmonary embolism.

Differential diagnosis must allow mixed reality.

13. The "Can't Miss, Can't Wait, Can Treat" Rule

For each presentation, identify:

Can't Miss

Dangerous diagnoses that cause serious harm if overlooked.

Example:

- stroke in acute weakness
- PE in sudden dyspnea
- cancer/TB in chronic hemoptysis
- spinal cord compression in back pain with weakness

Can't Wait

Diagnoses that require immediate action before full certainty.

Example:

- sepsis
- anaphylaxis
- DKA
- severe hyperkalemia
- shock
- acute coronary syndrome
- stroke pathway
- airway obstruction

Can Treat

Diagnoses that are reversible if identified.

Example:

- hypoglycemia
- urinary obstruction
- medication toxicity
- dehydration
- electrolyte disturbance

- infection
- adrenal crisis
- BPPV
- iron deficiency anemia

This rule keeps the differential practical.

14. Differential Diagnosis and Investigations

Tests should be chosen to answer clinical questions.

Poor approach:

“Order everything.”

Better approach:

“What test will change the differential?”

Examples:

Chest Pain

Questions:

- Is there myocardial ischemia?
- Is oxygenation safe?
- Is there pneumothorax or pneumonia?
- Is PE or dissection plausible?
- Is the patient unstable?

Tests may include ECG, troponin pathway, oxygen saturation, chest imaging, and targeted PE/dissection testing when indicated.

AKI

Questions:

- Is potassium dangerous?
- Is the patient dry, overloaded, septic, obstructed, or intrinsically kidney-injured?
- Are medicines contributing?
- Is urine abnormal?

Tests may include renal function, electrolytes, urinalysis, urine output monitoring, ECG, bladder scan, ultrasound, infection tests, and medication review.

Confusion

Questions:

- Is glucose low?
- Is oxygen low?
- Is there sepsis?
- Is there stroke?
- Is there medication toxicity?
- Is there metabolic disturbance?

Tests may include glucose, oxygenation, vitals, infection assessment, electrolytes, renal/liver function, urine retention assessment, medication review, and neuroimaging when indicated.

Tests are tools for refining the differential, not substitutes for thinking.

15. Differential Diagnosis Changes Over Time

The first differential is provisional.

It must be updated.

Example:

Initial presentation:

“Fever and cough likely pneumonia.”

New information:

- oxygenation worsens despite antibiotics
- leg swelling and recent surgery are discovered
- chest pain is pleuritic
- ECG shows right heart strain pattern
- imaging does not show pneumonia

Updated differential:

Pulmonary embolism becomes more likely.

Another example:

Initial presentation:

“Dizziness likely vestibular.”

New information:

- patient cannot walk unaided
- slurred speech appears
- atrial fibrillation is present

Updated differential:

Posterior circulation stroke becomes urgent.

A safe clinician asks repeatedly:

What does not fit my current diagnosis?

16. Differential Diagnosis Under Pressure

In emergencies, there is no time for perfect reasoning.

Use a rapid structure.

Step 1: Stabilize

Airway, breathing, circulation, disability, exposure.

Step 2: Identify the Syndrome

Shock, dyspnea, chest pain, confusion, weakness, bleeding, collapse.

Step 3: Name Immediate Killers

Examples:

- shock: sepsis, bleeding, cardiogenic, obstructive, anaphylaxis
- dyspnea: asthma/COPD, PE, heart failure, pneumonia, pneumothorax, acidosis
- chest pain: ACS, PE, dissection, pneumothorax
- confusion: glucose, oxygen, sepsis, stroke, drugs, electrolytes

Step 4: Treat Reversible Danger

Examples:

- hypoglycemia
- anaphylaxis
- hyperkalemia
- sepsis
- airway obstruction
- severe hypoxia
- shock
- DKA

Step 5: Reassess

Response to treatment helps refine the differential.

Emergency reasoning is not less thoughtful.

It is more focused.

17. Common Cognitive Errors in Differential Diagnosis

Premature Closure

Stopping after the first plausible diagnosis.

Example:

Calling dyspnea “anxiety” without checking oxygenation, pulse, chest, and risk factors.

Anchoring

Sticking to the first impression despite new evidence.

Example:

Continuing to treat “pneumonia” when cultures, imaging, and response suggest heart failure or PE.

Availability Bias

Overdiagnosing what was recently seen.

Example:

After seeing many viral infections, missing sepsis or TB.

Confirmation Bias

Looking only for evidence that supports the favored diagnosis.

Example:

Interpreting all symptoms as reflux while ignoring exertional chest pain.

Diagnostic Momentum

Accepting a label because previous clinicians used it.

Example:

“Frequent flyer with anxiety” who actually has arrhythmia.

Framing Error

Being misled by how the case is presented.

Example:

“Social admission” hiding delirium, sepsis, or medication toxicity.

Search Satisfaction

Stopping after finding one abnormality.

Example:

Finding UTI in a confused older patient and missing hypoxia, dehydration, or stroke.

The antidote is to ask:

What else could this be?
What does not fit?
What would be dangerous to miss?
What capacity is still failing?

18. Differential Diagnosis in Multimorbidity

Real patients often have several active problems.

A frail patient may present with:

- pneumonia
- heart failure
- AKI
- delirium
- poor intake
- medication toxicity
- falls

The differential diagnosis must not force one cause.

Instead, ask:

Which problems are primary?
Which are complications?
Which are triggers?
Which are coupling conditions?
Which capacity failure is most urgent?

Example:

“This patient’s dyspnea is likely pneumonia triggering heart failure decompensation and AKI, with delirium from hypoxia, infection, and dehydration.”

This is more realistic than choosing only one label.

19. Differential Diagnosis and Wise Perturbation

Treatment should match the differential.

If the differential includes dehydration and heart failure, fluids must be cautious.

If the differential includes infection and pulmonary embolism, antibiotics alone may not be enough.

If the differential includes stroke and hypoglycemia, glucose must be checked immediately.

If the differential includes DKA and gastroenteritis, ketones and acid-base status matter.

If the differential includes spinal cord compression, physiotherapy alone is unsafe.

A wise perturbation asks:

What treatment helps the likely diagnosis while protecting against dangerous alternatives?

20. Differential Diagnosis and Repair Trajectory

Repair trajectory tests the differential.

If the diagnosis is correct and treatment is appropriate, the patient should improve in expected ways.

Examples:

Pneumonia

Expected repair:

- fever settles
- respiratory rate improves
- oxygenation improves
- appetite returns

If oxygenation worsens, reconsider PE, heart failure, resistant infection, empyema, aspiration, or wrong diagnosis.

Heart Failure

Expected repair:

- orthopnea improves
- edema reduces
- oxygenation improves
- weight and fluid balance improve

If fever rises and sputum worsens, reconsider pneumonia.

AKI From Dehydration

Expected repair:

- urine output improves
- creatinine stabilizes
- potassium remains safe
- dizziness improves

If creatinine worsens despite fluids, reconsider obstruction, intrinsic kidney disease, sepsis, or fluid overload.

Delirium From Infection

Expected repair:

- attention improves
- sleep-wake cycle improves
- fever settles
- hydration improves

If confusion persists, reconsider drugs, hypoxia, stroke, retention, constipation, pain, metabolic disturbance, or dementia baseline.

Failure to repair is a diagnostic clue.

21. Practical Differential Templates

Chest Pain Differential Template

Dangerous first: ACS, PE, dissection, pneumothorax, tamponade
Common: reflux, chest wall pain, pneumonia, anxiety after danger considered
Capacity failure: coronary circulation, oxygenation, vascular integrity, ventilation
Initial questions: ECG? oxygen? hemodynamics? risk factors? pain character?

Dyspnea Differential Template

Dangerous first: hypoxia, asthma/COPD failure, PE, heart failure, pneumonia, pneumothorax, acidosis
Common: infection, asthma/COPD, heart failure, anemia, anxiety after danger considered
Capacity failure: oxygenation, ventilation, circulation, acid-base regulation
Initial questions: oxygen saturation? respiratory rate? chest signs? ECG? onset?

Fever Differential Template

Dangerous first: sepsis, meningitis, pneumonia, pyelonephritis, cholangitis, neutropenic sepsis
Common: viral infection, urinary infection, respiratory infection, skin infection
Capacity failure: defense, circulation, cognition, clearance
Initial questions: source? vitals? confusion? hypotension? immune status?

Confusion Differential Template

Dangerous first: hypoglycemia, hypoxia, sepsis, stroke, intracranial bleed, drug toxicity, electrolytes
Common: delirium, dementia, medication effect, dehydration, infection, pain, retention
Capacity failure: cognition, brain energy, oxygenation, defense, clearance
Initial questions: glucose? oxygen? vitals? medicines? infection? focal signs?

AKI Differential Template

Dangerous first: hyperkalemia, pulmonary edema, obstruction, sepsis, glomerulonephritis
Common: dehydration, medicines, sepsis, heart failure, obstruction, CKD progression
Capacity failure: clearance, potassium regulation, fluid balance, acid-base balance
Initial questions: urine output? potassium? volume status? medicines? obstruction? urine findings?

22. Clinical Practice Box

When building a differential diagnosis, complete this structure:

Presenting syndrome:

Dangerous diagnoses to exclude:

Most likely diagnoses:

Most reversible diagnoses:

Patient-specific contextual diagnoses:

Capacity failure:
Oxygenation, circulation, clearance, defense, cognition, mobility, glucose regulation, fluid balance?

Key supporting findings:

Key findings that do not fit:

Initial tests to refine the differential:

Wise perturbation while uncertain:

Repair trajectory expected if correct:

What would make you reconsider?

23. Mini-Case for Practice

A 72-year-old woman presents with acute shortness of breath, cough, mild fever, swollen ankles, and low oxygen saturation. She has known heart failure, CKD, and diabetes. She is tachypneic, has crackles, and her creatinine is slightly worse than baseline.

Build a differential diagnosis.

Presenting Syndrome

Acute dyspnea with cough, fever, edema, hypoxia, crackles, and renal vulnerability.

Dangerous Diagnoses

- pneumonia with hypoxia or sepsis
- acute decompensated heart failure
- pulmonary embolism
- acute coronary syndrome presenting with heart failure
- severe renal-related fluid overload

Most Likely Diagnoses

Heart failure exacerbation and pneumonia are both plausible.

They may coexist.

Capacity Failure

Oxygenation, circulation, fluid balance, defense, kidney clearance.

Coupling Conditions

Heart failure, CKD, diabetes, possible infection, medication adherence, salt intake, renal reserve, frailty risk.

Initial Tests

Oxygen saturation trend, ECG, chest imaging, renal function and electrolytes, inflammatory markers where appropriate, glucose, urine output, and assessment for heart failure trigger or infection source.

Wise Perturbation

Support oxygenation, assess severity, treat infection if likely according to local guidance, manage congestion carefully with renal monitoring, avoid reflex fluids unless hypovolemia is clear, and reassess response.

Repair Trajectory

Breathing improves, oxygenation stabilizes, fever settles if infection present, edema reduces if overloaded, renal function remains safe, and the trigger is identified.

Reconsider If

Oxygenation worsens, chest pain develops, tachycardia persists, imaging does not fit, renal function deteriorates, fever persists, or response does not match the working diagnosis.

24. Student Takeaway

Differential diagnosis becomes easier when the clinician asks:

What syndrome is present?
What is most likely?
What is most dangerous?
What is most reversible?
What is most relevant to this patient's context?
What capacity is failing?
Which illness scripts fit, and which do not?
What test will separate the possibilities?
What treatment is wise while uncertainty remains?
What repair trajectory should follow if we are right?
What would make us change our mind?

Differential diagnosis is not a random list.

It is disciplined humility.

The safe clinician keeps danger visible, probability honest, context alive, and the repair trajectory under constant review.

Chapter 37. Capacity Mapping Made Easy

Capacity mapping is the clinical skill of asking:

“What function is failing in this patient?”

It helps the clinician move from diagnosis labels to living physiology.

Instead of thinking only:

“This patient has pneumonia.”

the clinician asks:

“What capacities are threatened?”

The answer may be:

- oxygenation
- defense
- airway clearance
- hydration
- cognition
- mobility
- circulation if sepsis develops

Instead of thinking only:

“This patient has AKI.”

the clinician asks:

“What capacities are threatened?”

The answer may be:

- clearance
- potassium regulation
- acid-base balance
- fluid balance
- medicine safety
- kidney perfusion
- cognition if uremia develops

Capacity mapping makes Internal Medicine easier because it connects symptoms, diseases, physiology, danger, treatment, and recovery.

It asks:

What is the patient losing the ability to do, regulate, clear, defend, coordinate, repair, or sustain?

Capacity mapping becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Capacity?

A capacity is a vital function that allows the person to remain alive, coherent, and able to participate in life.

Capacities include:

- breathing
- oxygenating
- circulating
- clearing toxins
- regulating glucose
- regulating potassium
- maintaining acid-base balance
- defending against infection
- clotting appropriately
- protecting the airway
- thinking clearly
- walking safely
- eating and drinking
- sleeping
- repairing tissue
- communicating
- making decisions
- living with dignity

A disease label describes what condition may be present.

A capacity map describes what the condition is doing to the person.

For example:

Heart failure is a diagnosis.
The capacity failures may include circulation, fluid balance, oxygenation, kidney perfusion, exercise tolerance, sleep, and agency.

Delirium is a syndrome.
The capacity failures may include attention, cognition, sleep-wake regulation, hydration, mobility, safety, and participation.

Shock is a life-threatening capacity collapse.
The failures include circulation, oxygen delivery, brain perfusion, kidney perfusion, and cellular metabolism.

Capacity mapping keeps the clinician focused on what matters most.

2. Why Capacity Mapping Matters

Students often learn diseases as names.

But patients suffer failures of capacity.

A patient does not experience “congestive heart failure” as a textbook label.

They experience:

“I cannot breathe lying down.”
“I cannot walk to the bathroom.”

“My legs are swollen.”
“I cannot sleep.”
“I am afraid I will suffocate.”

A patient does not experience “acute kidney injury” as a creatinine value.

They experience:

“I am passing no urine.”
“I feel nauseated.”
“I am weak.”
“My potassium is dangerous.”
“My usual medicines are no longer safe.”

Capacity mapping helps the clinician see the patient’s real predicament.

It helps with:

- identifying danger
- prioritizing treatment
- avoiding reflex interventions
- explaining illness
- coordinating care
- monitoring recovery
- deciding discharge readiness
- preventing harm
- integrating multimorbidity
- protecting dignity

A diagnosis tells us what disease may be present.

A capacity map tells us what must be protected.

3. The Core Question

The core capacity mapping question is:

What is this patient currently unable to maintain safely?

Examples:

- oxygen level
- blood pressure
- perfusion
- potassium
- glucose
- consciousness
- urine output
- fluid balance
- airway protection
- mobility

- nutrition
- medication safety
- infection control
- tissue repair

Then ask:

How severe is the failure?
What is causing it?
What is making it persist?
What intervention may restore it?
How will we know repair is happening?

Capacity mapping is not separate from diagnosis.

It strengthens diagnosis by showing what the diagnosis means physiologically and functionally.

4. Capacity Mapping Begins With Danger

The first capacities to map are those that can fail quickly and kill the patient.

These include:

- airway protection
- breathing
- oxygenation
- circulation
- brain perfusion
- glucose regulation
- potassium regulation
- acid-base balance
- major bleeding control
- severe infection defense
- consciousness
- spinal cord function
- severe allergic response
- renal clearance in dangerous AKI

In any sick patient, ask:

Is airway safe?
Is breathing safe?
Is oxygenation safe?
Is circulation safe?
Is consciousness safe?
Is glucose safe?
Is potassium safe?
Is there sepsis, bleeding, shock, stroke, or respiratory failure?

Danger-first capacity mapping keeps the clinician from being distracted by less urgent details.

5. The Main Capacity Domains in Internal Medicine

Capacity mapping becomes easier when grouped into major domains.

Oxygenation

Can the body get enough oxygen into the blood?

Threatened by:

- pneumonia
- asthma
- COPD
- pulmonary embolism
- heart failure
- pneumothorax
- interstitial lung disease
- anemia
- respiratory muscle weakness
- aspiration

Signals:

- low oxygen saturation
- breathlessness
- tachypnea
- cyanosis
- confusion
- chest signs
- exhaustion

Ventilation

Can the patient move air in and out adequately?

Threatened by:

- asthma
- COPD
- respiratory muscle weakness
- obesity hypoventilation
- sedatives or opioids
- neuromuscular disease
- severe chest wall restriction
- airway obstruction

Signals:

- wheeze

- poor air entry
- rising carbon dioxide where measured
- drowsiness
- shallow breathing
- weak cough
- respiratory exhaustion

Circulation

Can blood flow reach organs adequately?

Threatened by:

- shock
- sepsis
- bleeding
- dehydration
- heart failure
- myocardial infarction
- arrhythmia
- pulmonary embolism
- anaphylaxis
- adrenal crisis

Signals:

- hypotension
- tachycardia
- cold peripheries
- mottling
- altered mental state
- reduced urine output
- elevated lactate where measured
- syncope

Clearance

Can the body clear waste, toxins, medicines, and fluid appropriately?

Threatened by:

- AKI
- CKD
- liver failure
- urinary obstruction
- sepsis
- drug toxicity

- rhabdomyolysis

Signals:

- rising creatinine
- oliguria
- uremic symptoms
- hyperkalemia
- acidosis
- drug accumulation
- confusion
- fluid overload

Defense

Can the body contain infection, inflammation, or injury?

Threatened by:

- pneumonia
- urinary infection
- sepsis
- cellulitis
- meningitis
- cholangitis
- immunosuppression
- diabetes
- neutropenia
- chronic wounds
- aspiration

Signals:

- fever or low temperature
- tachypnea
- hypotension
- confusion
- raised inflammatory markers where measured
- local infection signs
- pus
- rigors
- organ dysfunction

Regulation

Can the body regulate internal biochemical and hormonal balance?

Threatened by:

- diabetes
- hypoglycemia
- DKA
- HHS
- thyroid disease
- adrenal insufficiency
- electrolyte disturbance
- calcium disorders
- acid-base disorders
- endocrine crisis

Signals:

- glucose abnormality
- sodium abnormality
- potassium abnormality
- calcium abnormality
- weakness
- confusion
- vomiting
- dehydration
- arrhythmia
- altered breathing pattern

Cognition

Can the patient attend, think, remember, understand, and participate?

Threatened by:

- delirium
- dementia
- hypoxia
- hypoglycemia
- sepsis
- stroke
- drug toxicity
- electrolyte disturbance
- hepatic encephalopathy
- uremia
- pain
- sleep deprivation

Signals:

- confusion
- inattention
- drowsiness
- agitation
- hallucinations
- poor cooperation
- unsafe behavior
- fluctuating mental state

Mobility

Can the patient move safely?

Threatened by:

- weakness
- stroke
- neuropathy
- myopathy
- frailty
- falls
- pain
- dizziness
- orthostatic hypotension
- arthritis
- deconditioning
- delirium

Signals:

- inability to stand
- falls
- unsteady gait
- difficulty transferring
- fear of walking
- need for assistance
- loss of independence

Airway Protection and Swallowing

Can the patient protect the airway and swallow safely?

Threatened by:

- stroke
- dementia
- Parkinsonism

- frailty
- intoxication
- reduced consciousness
- neuromuscular disease
- myasthenia
- aspiration risk
- sedatives

Signals:

- choking
- wet voice
- cough during meals
- recurrent pneumonia
- drooling
- weak cough
- aspiration
- inability to manage secretions

Repair

Can the body heal tissue and recover function?

Threatened by:

- diabetes
- malnutrition
- poor perfusion
- infection
- pressure injury
- vascular disease
- steroids
- immune suppression
- chronic inflammation
- smoking
- immobility

Signals:

- non-healing wounds
- recurrent infection
- pressure sores
- weight loss
- poor appetite
- delayed recovery

- functional decline

Participation and Agency

Can the patient understand, choose, adhere, and live meaningfully?

Threatened by:

- poor health literacy
- cognitive impairment
- depression
- poverty
- medication cost
- social isolation
- caregiver strain
- pain
- fear
- stigma
- complex treatment plans

Signals:

- missed medicines
- repeated admissions
- inability to monitor symptoms
- poor follow-up
- treatment refusal without understanding
- distress
- loss of confidence

These domains help the clinician move from disease-centered care to patient-centered physiology.

6. Capacity Mapping Is Not the Same as Diagnosis

Two patients can have the same diagnosis but different capacity failures.

Example: Pneumonia

Patient A:

- young
- mild cough
- fever
- normal oxygenation
- eating and drinking
- stable

Capacity failures:

- defense

- comfort
- mild airway inflammation

Patient B:

- frail older adult
- pneumonia
- hypoxia
- delirium
- hypotension
- AKI
- cannot walk

Capacity failures:

- defense
- oxygenation
- circulation
- cognition
- clearance
- mobility
- hydration

Same diagnosis.

Very different danger.

Very different treatment intensity.

Example: Diabetes

Patient A:

- mild chronic hyperglycemia
- no symptoms
- stable kidney function

Capacity failures:

- glucose regulation
- long-term vascular protection

Patient B:

- vomiting
- ketones
- dehydration
- rapid breathing
- confusion

Capacity failures:

- glucose regulation

- energy transformation
- acid-base balance
- hydration
- circulation
- cognition

Same broad disease area.

Different emergency.

Capacity mapping prevents superficial similarity from hiding clinical danger.

7. The Capacity Map at the Bedside

At the bedside, use this quick sequence.

Step 1: What is the presenting syndrome?

Examples:

- dyspnea
- chest pain
- fever
- confusion
- weakness
- edema
- AKI
- jaundice
- cough
- hemoptysis

Step 2: What capacity is most threatened?

Examples:

- oxygenation in dyspnea
- coronary circulation in chest pain
- defense and circulation in fever with hypotension
- cognition in confusion
- mobility in weakness
- clearance in AKI
- bile flow and liver transformation in jaundice

Step 3: What secondary capacities are affected?

Example:

In pneumonia:

- defense is primary
- oxygenation may be secondary

- cognition may fail in frailty
- circulation may fail in sepsis
- mobility may collapse
- hydration may worsen

Step 4: What coupling conditions make failure worse?

Examples:

- frailty
- CKD
- diabetes
- heart failure
- polypharmacy
- poor intake
- immunosuppression
- social isolation
- medication access problems

Step 5: What intervention restores capacity?

Examples:

- oxygen support
- antibiotics
- fluids
- diuresis
- insulin
- glucose
- relieving obstruction
- stopping harmful medicines
- transfusion
- bronchodilation
- rehabilitation

Step 6: What repair trajectory should follow?

Examples:

- oxygenation improves
- urine output returns
- mental state clears
- fever settles
- mobility improves
- potassium stabilizes
- wound begins healing

- appetite returns

This is capacity mapping in action.

8. Capacity Mapping in Dyspnea

A patient presents with shortness of breath.

The differential diagnosis may include pneumonia, asthma, COPD, heart failure, pulmonary embolism, anemia, metabolic acidosis, or anxiety after danger is considered.

Capacity mapping asks:

Which breathing-related capacity is failing?

Oxygenation Failure

Clues:

- low oxygen saturation
- cyanosis
- confusion
- tachypnea
- pneumonia
- PE
- heart failure
- lung disease

Ventilation Failure

Clues:

- wheeze
- poor air entry
- drowsiness
- high carbon dioxide where measured
- severe COPD or asthma
- neuromuscular weakness
- sedative effect

Circulation Failure

Clues:

- hypotension
- shock
- pulmonary edema
- PE
- myocardial infarction
- sepsis

Acid-Base Compensation

Clues:

- deep rapid breathing
- DKA
- severe metabolic acidosis
- renal failure
- sepsis

Participation and Anxiety

Clues:

- panic symptoms
- normal oxygenation
- normal examination
- recurrent episodes
- danger excluded
- fear of breathlessness

A dyspnea capacity map prevents the clinician from saying only:

“The patient is short of breath.”

It asks:

What part of breathing, circulation, metabolism, or safety is failing?

9. Capacity Mapping in Fever

A patient presents with fever.

Capacity mapping asks:

Is this fever a contained defense response or systemic defense failure?

Defense Capacity

Clues:

- fever
- localizing symptoms
- raised inflammatory markers where measured
- rigors
- source such as chest, urine, skin, abdomen, CNS

Circulation Capacity

Clues:

- hypotension
- tachycardia
- mottling
- reduced urine output
- high lactate where available
- sepsis or shock

Cognition Capacity

Clues:

- delirium
- drowsiness
- agitation
- inattention
- frailty

Clearance Capacity

Clues:

- AKI
- oliguria
- rising creatinine
- medication accumulation

Oxygenation Capacity

Clues:

- pneumonia
- hypoxia
- tachypnea
- respiratory distress

The fever capacity map asks:

Is the infection local, systemic, or causing organ dysfunction?

This determines urgency.

10. Capacity Mapping in AKI

AKI is a perfect example of capacity mapping.

The diagnosis is not enough.

Ask which kidney-related capacities are failing.

Clearance

- rising creatinine
- uremic symptoms
- drug accumulation

Potassium Regulation

- hyperkalemia
- ECG changes
- weakness
- arrhythmia risk

Acid-Base Balance

- acidosis
- tachypnea

- weakness
- shock context

Fluid Balance

- edema
- pulmonary edema
- low urine output
- dehydration if pre-renal

Medicine Safety

- sedatives accumulate
- hypoglycemic medicines may become dangerous
- anticoagulant effects may change
- nephrotoxins worsen injury

Urine Drainage

- retention
- obstruction
- hydronephrosis
- catheter blockage

A safe AKI problem representation includes capacity failure:

“AKI with hyperkalemia, oliguria, and fluid overload.”

This is much more useful than:

“Creatinine elevated.”

11. Capacity Mapping in Confusion

Confusion is a failure of cognition, but the cause may lie anywhere.

Ask:

What is disturbing brain function?

Possible capacity failures include:

Brain Energy

- hypoglycemia
- hypoxia
- shock

Defense

- sepsis
- meningitis
- pneumonia
- urinary infection

Clearance

- uremia

- hepatic encephalopathy
- drug toxicity

Electrolyte Regulation

- sodium disturbance
- calcium disturbance
- acid-base disturbance

Brain Integrity

- stroke
- intracranial hemorrhage
- seizure
- tumor

Sleep-Wake Regulation

- delirium
- pain
- hospital environment
- dementia
- medications

Sensory and Participation Capacity

- poor hearing
- poor vision
- unfamiliar environment
- isolation
- restraints
- fear

Capacity mapping helps the clinician avoid saying:

“Confusion equals dementia.”

Acute confusion is delirium until proven otherwise, and delirium is often a signal of capacity failure somewhere else.

12. Capacity Mapping in Frailty

Frailty is reduced reserve across multiple capacities.

A frail patient may appear to present with one problem, but several capacities may fail at once.

Example:

A frail older adult with pneumonia may develop:

- hypoxia
- delirium
- poor intake
- dehydration

- AKI
- falls
- immobility
- pressure injury
- swallowing difficulty
- medication toxicity
- caregiver collapse

The diagnosis is pneumonia.

The capacity map is much larger.

Frailty means the clinician must ask:

Which capacities will fail next if we do not protect them?

Common frailty capacities to map:

- cognition
- mobility
- hydration
- nutrition
- continence
- skin integrity
- swallowing
- medication safety
- sleep
- caregiver support
- home safety

Frailty care is capacity protection.

13. Capacity Mapping and Treatment

Treatment should target capacity failure.

If Oxygenation Is Failing

Interventions may include:

- oxygen support
- bronchodilation
- antibiotics if pneumonia
- diuresis if pulmonary edema
- anticoagulation pathway if PE
- ventilatory support where needed
- treating anemia where relevant

If Circulation Is Failing

Interventions may include:

- fluids if hypovolemic
- antibiotics/source control if sepsis
- blood if bleeding
- cardiac pathway if cardiogenic
- anaphylaxis treatment
- vasopressor/critical care pathway where needed

If Clearance Is Failing

Interventions may include:

- stop nephrotoxins
- relieve obstruction
- treat sepsis or hypovolemia
- manage potassium
- adjust medicine doses
- renal referral if severe
- monitor urine output

If Cognition Is Failing

Interventions may include:

- correct hypoxia
- correct glucose
- treat infection
- stop deliriogenic medicines
- manage pain
- hydrate
- restore sleep
- reorient
- involve family
- prevent falls

If Mobility Is Failing

Interventions may include:

- treat cause
- pain control
- physiotherapy
- mobility aid
- falls precautions
- nutrition
- home support
- rehabilitation

- medication review

Capacity mapping makes treatment rational.

It asks:

What must be restored, supported, or protected?

14. Capacity Mapping Prevents Reflex Treatment

Reflex treatment can harm.

Reflex Fluids

In AKI, fluids may help dehydration.

But if the capacity failure is fluid overload from heart failure, fluids worsen oxygenation.

Capacity map before fluids:

- dry?
- overloaded?
- septic?
- obstructed?
- cardiogenic?
- kidney failure with pulmonary edema?

Reflex Antibiotics

In fever, antibiotics may be lifesaving.

But not all fever is bacterial infection, and antibiotics do not repair obstruction, abscess, viral illness, drug fever, autoimmune disease, or malignancy.

Capacity map before antibiotics:

- defense failure?
- source?
- sepsis?
- immune status?
- source control needed?

Reflex Sedation

In agitation, sedation may be necessary for safety.

But agitation may reflect hypoxia, hypoglycemia, sepsis, pain, urinary retention, or drug toxicity.

Capacity map before sedation:

- oxygen?
- glucose?
- pain?
- retention?
- infection?
- withdrawal?
- intracranial event?

Reflex Reassurance

In chest pain, palpitations, dizziness, or weakness, reassurance may be appropriate after danger is excluded.

But premature reassurance can miss ACS, arrhythmia, stroke, PE, spinal cord disease, or sepsis.

Capacity map before reassurance:

- circulation?
- oxygenation?
- rhythm?
- brain integrity?
- mobility safety?

Wise perturbation begins with capacity mapping.

15. Capacity Mapping and Investigations

Investigations should answer capacity questions.

Examples:

Oxygenation

Useful assessments:

- oxygen saturation
- respiratory rate
- chest examination
- chest imaging
- blood gas where severe
- hemoglobin
- PE pathway where appropriate

Circulation

Useful assessments:

- blood pressure
- pulse
- capillary refill
- urine output
- ECG
- lactate where available
- hemoglobin if bleeding
- cardiac markers if ACS
- infection workup if sepsis

Clearance

Useful assessments:

- creatinine
- urea

- electrolytes
- potassium
- bicarbonate
- urine output
- urinalysis
- bladder scan
- renal imaging where obstruction possible
- medicine review

Defense

Useful assessments:

- temperature
- respiratory rate
- blood pressure
- examination for source
- blood count
- inflammatory markers where helpful
- cultures where indicated
- imaging where source unclear
- immune status

Cognition

Useful assessments:

- glucose
- oxygenation
- medication review
- electrolytes
- renal/liver function
- infection screen
- neurological examination
- brain imaging when indicated
- pain, retention, constipation, sleep

The rule is:

Do not order tests only because they are available. Order tests because they answer capacity questions.

16. Capacity Mapping and Monitoring

Monitoring should follow the capacity failure.

If Oxygenation Is Failing

Monitor:

- respiratory rate

- oxygen saturation
- work of breathing
- mental state
- blood gas where needed
- response to oxygen or bronchodilator
- chest findings

If Circulation Is Failing

Monitor:

- blood pressure
- pulse
- mental state
- urine output
- skin perfusion
- lactate/acidosis where available
- response to fluids, blood, antibiotics, or cardiac treatment

If Clearance Is Failing

Monitor:

- urine output
- creatinine
- potassium
- bicarbonate
- fluid balance
- medicine doses
- signs of uremia or overload

If Cognition Is Failing

Monitor:

- attention
- sleep-wake cycle
- agitation
- orientation
- hydration
- infection markers
- medication exposure
- falls risk

If Mobility Is Failing

Monitor:

- transfers
- gait

- falls
- strength
- pain
- need for assistance
- therapy progress
- home readiness

Monitoring is not generic.

It must match the threatened capacity.

17. Capacity Mapping and Discharge

A diagnosis may be treated, but the patient may still be unsafe.

Discharge requires capacity readiness.

Ask:

Oxygenation

Can the patient breathe safely at rest and with necessary activity?

Circulation

Is blood pressure stable?
Is dizziness controlled?
Is shock resolved?

Clearance

Are renal function, potassium, and medicines safe enough for discharge?

Cognition

Can the patient understand the plan?
Is delirium resolved or safely supported?

Mobility

Can the patient stand, walk, toilet, and manage stairs if needed?

Nutrition and Hydration

Can the patient eat and drink enough?

Medicine Safety

Does the patient know what to take, stop, restart, and monitor?

Follow-Up Capacity

Can the patient attend follow-up and get repeat blood tests?

Caregiver and Home Capacity

Is there support for meals, mobility, medicines, wound care, monitoring, and transport?

Discharge is not simply the absence of acute danger.

It is the restoration of enough capacity to continue repair outside hospital.

18. Capacity Mapping in Communication

Capacity language helps patients understand.

Instead of saying:

“You have AKI.”

Say:

“Your kidneys are not clearing waste and potassium safely right now, so we need to protect them, review your medicines, monitor your urine, and repeat your blood tests.”

Instead of saying:

“You have heart failure.”

Say:

“Your heart and circulation are allowing fluid to build up in your lungs and legs, which is why breathing and walking are harder. Treatment aims to remove extra fluid while protecting your kidneys and blood pressure.”

Instead of saying:

“You have delirium.”

Say:

“Your brain is temporarily not processing normally because the body is under stress from infection, dehydration, and medicines. We need to treat the triggers and keep you safe while the brain clears.”

Capacity language reduces fear and improves cooperation.

It explains what is failing and what repair should look like.

19. Capacity Mapping in Handover

A handover should include capacity failures.

Weak handover:

“This is a pneumonia patient on antibiotics.”

Stronger handover:

“This is a frail 82-year-old admitted with pneumonia complicated by hypoxia, delirium, poor intake, and AKI. Oxygenation has improved, but cognition and mobility remain unsafe. Please monitor respiratory rate, oxygen saturation, urine output, and falls risk overnight.”

This handover tells the next clinician what capacities still need protection.

Another example:

Weak handover:

“AKI improving.”

Stronger handover:

“AKI from dehydration and NSAID use is improving. Urine output has returned and creatinine is falling, but potassium remains borderline and ACE inhibitor/diuretic restart plan is pending. Repeat renal function tomorrow.”

Capacity language makes handover safer.

20. Worked Case 1: Pneumonia With Frailty

A frail 84-year-old woman presents with cough, fever, low oxygen saturation, confusion, poor intake, and inability to walk.

Diagnosis Label

Pneumonia.

Capacity Map

- defense failure: infection
- oxygenation failure: low oxygen saturation
- cognition failure: delirium
- hydration/nutrition failure: poor intake
- mobility failure: unable to walk
- clearance risk: AKI risk
- safety failure: falls risk

Wise Perturbation

Treat pneumonia according to local guidance, support oxygenation, hydrate carefully, monitor renal function, prevent falls, reorient, involve family, mobilize early when safe, and assess discharge capacity.

Repair Trajectory

Fever settles, oxygenation improves, confusion clears, intake improves, urine output remains safe, walking returns toward baseline, family understands follow-up.

21. Worked Case 2: AKI With Hyperkalemia

A 76-year-old man with CKD presents after diarrhea and poor intake. He has oliguria, rising creatinine, high potassium, dizziness, and has taken NSAIDs.

Diagnosis Label

Acute kidney injury.

Capacity Map

- clearance failure: rising creatinine
- potassium regulation failure: hyperkalemia
- circulation-to-kidney failure: dehydration and hypoperfusion
- medicine safety failure: NSAIDs and usual medicines now risky
- mobility safety failure: dizziness
- fluid balance risk: dehydration now, overload possible if overtreated

Wise Perturbation

Assess severity, ECG and potassium pathway where indicated, restore volume carefully if depleted, stop harmful medicines, monitor urine output, repeat renal function and electrolytes, and arrange follow-up.

Repair Trajectory

Potassium safe, urine output improves, creatinine stabilizes or falls, dizziness resolves, medicines reviewed, sick-day plan understood.

22. Worked Case 3: Heart Failure With Renal Vulnerability

A 72-year-old woman has heart failure, CKD, worsening breathlessness, orthopnea, edema, crackles, low oxygen saturation, and rising creatinine.

Diagnosis Label

Acute decompensated heart failure.

Capacity Map

- oxygenation failure: pulmonary congestion
- circulation/fluid balance failure: edema and orthopnea
- kidney perfusion/clearance vulnerability: rising creatinine
- sleep failure: cannot lie flat
- mobility failure: reduced exertion
- medicine safety risk: diuretics, renal function, potassium

Wise Perturbation

Treat congestion according to local heart failure guidance, monitor oxygenation, renal function, potassium, urine output, weight, blood pressure, and trigger.

Repair Trajectory

Breathing improves, oxygenation stabilizes, orthopnea reduces, edema improves, creatinine stabilizes, potassium safe, walking improves, home plan clear.

23. Worked Case 4: Delirium

An 86-year-old man with dementia becomes acutely confused after constipation, urinary retention, poor sleep, and a new sedative.

Diagnosis Label

Delirium.

Capacity Map

- cognition failure: acute inattention and confusion
- clearance/medicine safety failure: sedative effect
- bladder capacity failure: retention
- bowel function failure: constipation
- sleep-wake failure: poor sleep
- mobility safety failure: falls risk
- dignity risk: agitation and loss of agency

Wise Perturbation

Check glucose, oxygenation, infection, electrolytes, renal function, pain, retention, constipation, and medicines. Stop or reduce deliriogenic contributors where appropriate, relieve retention and constipation, restore sleep cues, reorient, involve family, and prevent falls.

Repair Trajectory

Attention improves, sleep-wake cycle normalizes, bladder and bowel function restored, sedation clears, mobility safer, family recognizes baseline.

24. Worked Case 5: Chronic Wound

A 63-year-old patient with diabetes and peripheral vascular disease has a non-healing foot ulcer.

Diagnosis Label

Diabetic foot ulcer.

Capacity Map

- repair failure: non-healing tissue

- defense risk: infection
- circulation failure: poor perfusion
- sensation failure: neuropathy
- mobility risk: pressure and offloading difficulty
- glucose regulation failure: hyperglycemia
- participation risk: work, footwear, transport, wound care access

Wise Perturbation

Assess infection, perfusion, neuropathy, pressure, glucose, footwear, offloading, renal function, and wound care access. Treat infection if present, improve offloading, optimize perfusion pathway, and support feasible wound care.

Repair Trajectory

Wound size decreases, infection controlled, pressure reduced, perfusion addressed, glucose safer, mobility preserved, patient can follow care plan.

25. Common Student Pitfalls

Pitfall 1: Stopping at the Diagnosis Label

"Pneumonia" is not enough. Ask whether oxygenation, cognition, circulation, hydration, and mobility are safe.

Pitfall 2: Mapping Only Organs, Not Function

Capacity mapping is about function, not anatomy alone.

Pitfall 3: Missing Secondary Capacity Failures

A patient admitted with infection may also develop AKI, delirium, falls, pressure injury, and malnutrition.

Pitfall 4: Treating One Capacity While Damaging Another

Fluids may improve circulation but worsen oxygenation. Diuresis may improve breathing but worsen kidney function. Sedation may reduce agitation but worsen delirium or falls.

Pitfall 5: Forgetting Medicine Safety

When clearance changes, medicines change meaning.

Pitfall 6: Ignoring Mobility and Function

A patient may be medically improving but unable to walk, toilet, or eat safely.

Pitfall 7: Forgetting Agency

A treatment plan that the patient cannot understand, afford, access, or perform is not a repaired plan.

Pitfall 8: Not Using Capacity Maps in Handover

Handover should say what capacities remain unsafe.

26. Clinical Practice Box

When capacity mapping, complete this structure:

Presenting syndrome:

Diagnosis or working diagnosis:

Primary capacity failure:
Oxygenation, circulation, clearance, defense, regulation, cognition, mobility, repair, airway protection?

Secondary capacity failures:

Danger capacity failures:
Airway, breathing, oxygenation, circulation, brain, potassium, glucose, acid-base, bleeding?

Coupling conditions:
Frailty, CKD, diabetes, heart failure, medicines, social support, nutrition, access?

Treatment target:
What capacity must be restored first?

Risk of treatment harm:
What capacity might treatment worsen?

Monitoring plan:
What must be followed?

Repair trajectory:
What should improve if care is working?

Discharge capacity:
What must be safe before discharge?

27. Mini-Case for Practice

A 78-year-old man with diabetes, CKD, and heart failure presents with fever, cough, worsening shortness of breath, confusion, poor oral intake, and reduced urine output. He is tachypneic, mildly hypoxic, and has crackles at the right base. Creatinine is above baseline and potassium is mildly elevated.

Build a capacity map.

Presenting Syndrome

Fever, cough, dyspnea, confusion, poor intake, AKI, and reduced urine output.

Working Diagnosis

Likely pneumonia with possible sepsis physiology, complicated by AKI and frailty-type functional vulnerability.

Primary Capacity Failures

- defense: infection
- oxygenation: hypoxia and tachypnea
- clearance: AKI with reduced urine output
- potassium regulation: mild hyperkalemia

- cognition: delirium
- hydration/nutrition: poor intake
- circulation risk: possible sepsis or dehydration
- mobility risk: likely unsafe while confused and breathless

Coupling Conditions

Diabetes, CKD, heart failure, age, poor intake, medicine vulnerability, possible dehydration, risk of fluid overload, home support, baseline function.

Wise Perturbation

Support oxygenation, assess sepsis severity, treat pneumonia according to local guidance, review medicines, monitor renal function and potassium, assess volume carefully before fluids because heart failure is present, prevent falls, reorient, support intake, and reassess frequently.

Repair Trajectory

Fever settles, respiratory rate improves, oxygenation stabilizes, confusion clears, urine output improves, creatinine and potassium stabilize, appetite returns, mobility improves, and discharge plan protects medicines and follow-up.

28. Student Takeaway

Capacity mapping becomes easier when the clinician asks:

What is the patient losing the ability to maintain?
Is oxygenation safe?
Is circulation safe?
Is clearance safe?
Is defense failing?
Is glucose, potassium, sodium, acid-base, or fluid balance unsafe?
Is cognition intact?
Can the patient swallow, walk, eat, drink, toilet, understand, and participate?
What treatment restores the failing capacity?
What treatment might harm another capacity?
What repair trajectory should follow?

Capacity mapping is the bridge between diagnosis and healing.

It turns disease labels into living physiology.

The safe clinician maps capacity failure, protects danger first, treats the cause, avoids harmful reflexes, monitors repair, and ensures the patient has enough restored capacity to continue healing.

Chapter 38. Coupling Conditions Made Easy

Coupling conditions are the factors that shape why illness appears, persists, worsens, or recurs in a particular patient.

They answer the question:

“Why this illness, in this person, in this context, at this time?”

A diagnosis tells us what disease may be present.

A capacity map tells us what function is failing.

Coupling conditions tell us what is keeping the patient vulnerable.

For example:

A patient may have pneumonia.

But the coupling conditions may include:

- frailty
- aspiration risk
- diabetes
- poor dentition
- smoking
- COPD
- malnutrition
- delayed presentation
- poor access to transport
- living alone
- difficulty affording medicines

Another patient may have recurrent hyperglycemia.

But the coupling conditions may include:

- steroid therapy
- food insecurity
- insulin cost
- poor refrigeration
- irregular meals
- fear of hypoglycemia
- infection
- kidney disease
- depression
- low health literacy

Without coupling conditions, treatment becomes shallow.

With coupling conditions, treatment becomes realistic.

Coupling conditions become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Are Coupling Conditions?

Coupling conditions are the internal and external factors that connect the patient to illness.

They may include:

- biology
- physiology
- comorbidities
- medicines
- habits
- exposures
- environment
- family support
- culture
- work
- finances
- access to care
- food
- housing
- health literacy
- emotional state
- trauma
- caregiving
- system barriers

They are called coupling conditions because they describe how the patient is coupled to the world.

Illness does not happen in isolation.

A body is always connected to:

- microbes
- food
- air
- water
- medicines
- stress
- work
- family
- institutions
- climate

- social expectations
- care systems
- economic constraints

A purely disease-centered approach asks:

“What does the patient have?”

A life-coherent approach also asks:

“What conditions are making this illness possible, persistent, or recurrent?”

2. Why Coupling Conditions Matter

Coupling conditions matter because many treatment failures are not failures of diagnosis.

They are failures of fit.

For example:

A patient with hypertension may receive the correct medicine but still remain uncontrolled because:

- the tablets are unaffordable
- side effects are intolerable
- the dosing schedule is too complex
- the patient works shifts
- the patient misunderstands silent risk
- NSAIDs are being taken daily for pain
- salt intake is high because processed food is cheaper
- sleep apnea is untreated
- follow-up is irregular

The diagnosis is correct.

The prescription may be pharmacologically correct.

But the plan does not fit the coupling conditions.

Similarly, a patient with heart failure may be readmitted because:

- they do not own a scale
- they cannot recognize early fluid gain
- diuretic timing conflicts with travel or work
- they cannot access low-salt food
- renal function worsens after medication changes
- they live alone
- they do not understand when to call for help
- they cannot attend follow-up

Coupling conditions explain why disease returns.

They help the clinician move from:

“Why is this patient non-compliant?”

to:

“What conditions make adherence difficult or unsafe?”

This shift is central to humane medicine.

3. Coupling Conditions Are Not Excuses

Naming coupling conditions does not remove responsibility from the patient.

It makes responsibility realistic.

For example:

A patient with diabetes still needs to take treatment seriously.

But the clinician must ask:

- Can the patient afford insulin?
- Can the patient store insulin safely?
- Can the patient eat regularly?
- Can the patient recognize hypoglycemia?
- Can the patient read instructions?
- Can the patient test glucose?
- Does the patient understand sick-day rules?
- Is depression interfering with self-care?
- Is the treatment plan too complex?

A plan that ignores reality is not responsible care.

A plan that fits reality gives responsibility a chance to succeed.

Coupling conditions turn blame into diagnosis.

They reveal the living field in which treatment must work.

4. The Main Types of Coupling Conditions

Coupling conditions can be grouped into several domains.

Biological Coupling Conditions

These include the patient’s internal vulnerability.

Examples:

- age
- genetics
- immune status
- frailty
- pregnancy context where relevant
- baseline organ reserve
- nutritional state
- inflammatory state

- prior disease
- microbiome and infection exposure where relevant
- healing capacity

Clinical examples:

- frailty increases delirium risk during infection
- CKD increases medication toxicity risk
- diabetes increases infection and wound risk
- COPD reduces respiratory reserve
- heart failure reduces fluid tolerance
- immunosuppression changes infection risk
- malnutrition delays wound healing

Comorbidity Coupling Conditions

These are other diseases that change the meaning of the current illness.

Examples:

- diabetes
- CKD
- heart failure
- COPD
- liver disease
- dementia
- stroke history
- cancer
- autoimmune disease
- depression
- chronic pain
- obesity
- sleep apnea

Clinical examples:

- pneumonia in COPD may cause ventilatory failure
- sepsis in CKD may cause dangerous AKI
- steroids for autoimmune disease may worsen glucose
- dementia increases aspiration, delirium, and medication error risk
- chronic pain may lead to NSAID use and AKI

Medicine Coupling Conditions

Medicines can heal, harm, interact, or become unsafe when illness changes.

Examples:

- NSAIDs worsening AKI, hypertension, heart failure, or bleeding

- diuretics worsening dehydration or electrolyte imbalance
- ACE inhibitors or ARBs becoming unsafe during severe dehydration or AKI
- insulin causing hypoglycemia when meals are missed
- sulfonylureas causing prolonged hypoglycemia in CKD
- anticoagulants increasing bleeding risk
- sedatives worsening delirium or falls
- steroids increasing infection and hyperglycemia risk
- opioids worsening constipation, sedation, aspiration, or falls
- anticholinergics causing urinary retention and confusion

Medicine coupling asks:

Which medicines are helping?
Which medicines have become harmful because the patient's condition changed?

Behavioral Coupling Conditions

These include repeated patterns of daily life.

Examples:

- smoking
- alcohol use
- diet
- salt intake
- physical inactivity
- sleep pattern
- medication-taking routine
- health-seeking behavior
- exercise habits
- substance use
- self-monitoring

Clinical examples:

- smoking worsens COPD, cancer risk, and wound healing
- alcohol with poor intake increases hypoglycemia risk
- high salt intake worsens hypertension and heart failure
- poor sleep worsens pain, mood, and glucose regulation
- inconsistent meals complicate insulin therapy

Behavior matters, but behavior is often shaped by deeper social conditions.

Environmental Coupling Conditions

These are features of the patient's surroundings.

Examples:

- air quality
- heat exposure

- allergens
- mold
- occupational dust
- unsafe housing
- stairs
- bathroom access
- food environment
- water security
- transport
- noise
- crowding
- infectious exposure

Clinical examples:

- heat increases dehydration and AKI risk
- mold or dust worsens asthma
- stairs increase falls risk after weakness
- poor ventilation increases respiratory infection exposure
- lack of safe bathroom access worsens nocturia falls risk

Social Coupling Conditions

These are relational and practical supports or burdens.

Examples:

- living alone
- caregiver availability
- family conflict
- caregiver burnout
- social isolation
- employment demands
- school responsibilities
- transport limitations
- financial stress
- stigma
- domestic safety
- language barriers
- cultural beliefs

Clinical examples:

- living alone increases danger after hypoglycemia
- caregiver burnout worsens dementia care

- work schedule disrupts meal timing and insulin use
- financial stress delays care
- stigma may prevent disclosure of symptoms

Health System Coupling Conditions

These are features of the care system itself.

Examples:

- clinic access
- appointment delays
- medication supply
- referral pathways
- lab availability
- imaging access
- continuity of care
- discharge communication
- insurance or payment barriers
- fragmented records
- unclear responsibility
- lack of rehabilitation services
- lack of patient education

Clinical examples:

- AKI follow-up fails because repeat labs are not arranged
- heart failure readmission occurs because discharge medicines are unclear
- tuberculosis diagnosis is delayed by poor access to testing
- wound healing fails because dressing supplies are inconsistent
- hypertension remains uncontrolled because refills are unreliable

Health system coupling reminds the clinician that patients do not fail alone.

Systems can fail patients.

5. Coupling Conditions in Common Presentations

Chest Pain

Important coupling conditions include:

- age
- diabetes
- hypertension
- smoking
- CKD
- family history

- stress
- cocaine or stimulant use
- anemia
- known coronary disease
- medication adherence
- access to emergency care

These conditions change the probability of acute coronary syndrome and the safety of discharge.

Dyspnea

Important coupling conditions include:

- asthma or COPD
- heart failure
- CKD
- anemia
- obesity
- smoking
- occupational exposures
- medication access
- inhaler technique
- anxiety
- home air quality
- infection exposure

These conditions shape whether dyspnea is respiratory, cardiac, metabolic, environmental, or mixed.

Fever

Important coupling conditions include:

- age
- immune suppression
- diabetes
- CKD
- devices or catheters
- travel
- animal exposure
- occupation
- vaccination history
- living conditions
- recent antibiotics
- local infection patterns

These conditions shape infection risk and severity.

Confusion

Important coupling conditions include:

- dementia
- frailty
- poor hearing or vision
- infection
- dehydration
- pain
- constipation
- urinary retention
- sedatives
- alcohol
- sleep disruption
- unfamiliar environment
- social isolation

These conditions shape delirium risk and recovery.

AKI

Important coupling conditions include:

- CKD
- dehydration
- vomiting or diarrhea
- sepsis
- heart failure
- liver disease
- NSAIDs
- diuretics
- ACE inhibitors or ARBs
- contrast exposure
- urinary obstruction
- poor access to fluids
- heat exposure
- follow-up lab access

These conditions explain why kidney clearance failed.

Falls

Important coupling conditions include:

- frailty
- weakness
- dizziness

- orthostatic hypotension
- sedatives
- poor vision
- neuropathy
- unsafe home
- nocturia
- footwear
- alcohol
- cognitive impairment
- lack of mobility aids

Falls are almost always coupled events, not isolated accidents.

6. Coupling Conditions and Multimorbidity

Multimorbidity is where coupling conditions become essential.

A patient may have:

- diabetes
- CKD
- hypertension
- heart failure
- osteoarthritis
- depression
- frailty
- polypharmacy

Each condition changes the treatment of the others.

For example:

Osteoarthritis pain may lead to NSAID use.

NSAID use may worsen:

- blood pressure
- kidney function
- heart failure
- gastrointestinal bleeding risk

Worsened kidney function may change:

- diabetes medicine safety
- diuretic dosing
- potassium balance
- anticoagulant safety

Heart failure may require diuretics.

Diuretics may worsen:

- dehydration
- dizziness
- falls
- AKI
- electrolyte imbalance

Depression may reduce:

- medication adherence
- exercise
- diet quality
- appointment attendance
- hope

A single-disease plan may fail because it does not see the coupling.

Life-coherent medicine asks:

How do the patient's conditions interact as a system?

7. Coupling Conditions and Medication Safety

Medicines are among the most important coupling conditions.

A medicine that is safe in one state may become dangerous in another.

Example: Diuretics

Helpful when:

- fluid overload is present
- heart failure congestion needs treatment

Harmful when:

- severe dehydration exists
- orthostatic hypotension causes falls
- AKI worsens
- potassium or sodium become unsafe

Example: Insulin

Helpful when:

- glucose is high
- insulin deficiency exists
- DKA or severe hyperglycemia requires treatment

Harmful when:

- meals are missed
- kidney function declines
- dose is too high

- patient cannot monitor
- hypoglycemia awareness is poor

Example: Anticoagulants

Helpful when:

- atrial fibrillation stroke prevention is needed
- venous thrombosis or pulmonary embolism is treated

Harmful when:

- active bleeding occurs
- falls risk is severe
- renal function changes drug exposure
- adherence is unreliable
- procedures are planned

Example: Steroids

Helpful when:

- inflammation, asthma, COPD, autoimmune disease, or adrenal replacement requires them

Harmful when:

- infection worsens
- glucose rises
- bones weaken
- muscles weaken
- adrenal suppression occurs
- mood or sleep deteriorates

Medication safety is dynamic.

Ask at every acute illness:

Which usual medicines are no longer usual because the patient's physiology has changed?

8. Coupling Conditions and Frailty

Frailty means reduced reserve across many systems.

Small illnesses can cause large consequences.

For example:

A younger robust patient with a urinary infection may have dysuria and fever.

A frail older patient with the same infection may develop:

- delirium
- fall
- dehydration
- AKI
- immobility

- pressure injury
- poor intake
- caregiver crisis
- loss of independence

The coupling condition is frailty.

Frailty changes:

- presentation
- risk
- treatment tolerance
- recovery speed
- discharge needs
- communication needs
- goals of care

In frailty, always ask:

- What was baseline function?
- What has changed?
- Can the patient walk?
- Can the patient eat and drink?
- Can the patient toilet?
- Is cognition altered?
- Is there caregiver support?
- What would recovery mean for this person?

Frailty turns diagnosis into function-sensitive care.

9. Coupling Conditions and Social Reality

A treatment plan may be clinically correct but socially impossible.

Examples:

A patient is told to take tablets twice daily but works irregular shifts.

A patient is told to refrigerate insulin but has unreliable electricity.

A patient is told to reduce salt but affordable food is processed and salty.

A patient is told to elevate legs but cannot lie down safely at work.

A patient is told to attend weekly wound clinic but has no transport.

A patient is told to check glucose but cannot afford strips.

A patient is told to rest but is the only caregiver for a family member.

A patient is told to avoid dust but works in construction.

These are not minor details.

They determine whether treatment can exist in real life.

A life-coherent clinician asks:

What would make this plan actually possible?

10. Coupling Conditions and Recurrent Admissions

Recurrent admissions often indicate unresolved coupling conditions.

For example:

Recurrent Heart Failure Admissions

Possible coupling conditions:

- missed diuretics
- poor access to medicines
- salt intake
- renal dysfunction
- arrhythmia
- poor understanding of weight gain
- no scale
- no early clinic access
- depression
- social isolation
- food insecurity
- medication side effects

Recurrent DKA

Possible coupling conditions:

- insulin access
- adolescent transition
- eating disorder
- infection
- pump failure
- depression
- substance use
- fear of weight gain
- low health literacy
- family conflict
- cost
- lack of sick-day plan

Recurrent COPD Exacerbations

Possible coupling conditions:

- smoking
- poor inhaler technique

- air pollution
- occupational exposure
- poor vaccination access
- anxiety
- poor pulmonary rehabilitation access
- inhaler cost
- recurrent infection
- heart failure mimic

Recurrent Falls

Possible coupling conditions:

- sedatives
- orthostatic hypotension
- neuropathy
- poor vision
- unsafe home
- nocturia
- weakness
- footwear
- cognitive impairment
- alcohol
- lack of physiotherapy

Recurrent presentations are invitations to map coupling conditions more deeply.

11. Coupling Conditions and "Non-Compliance"

The phrase "non-compliant" is often clinically lazy.

It describes an outcome without explaining the cause.

Instead of writing:

"Patient non-compliant with medication."

Ask:

- Did the patient understand the diagnosis?
- Did the patient understand the medicine?
- Were side effects intolerable?
- Was the medicine affordable?
- Was the dose schedule realistic?
- Was there depression?
- Was there cognitive impairment?
- Was there fear?

- Was there cultural concern?
- Was there mistrust?
- Was there poor follow-up?
- Was there a pharmacy access problem?
- Was the instruction confusing?
- Did the patient stop because symptoms improved?
- Did the patient stop because symptoms worsened?
- Did the clinician fail to explain?

Better documentation:

“Patient has not been taking antihypertensive medication because of dizziness after dosing, cost barriers, and uncertainty about whether treatment is needed when asymptomatic.”

This statement identifies repairable coupling conditions.

It opens the door to a better plan.

12. Mapping Coupling Conditions at the Bedside

Use a structured approach.

Biological

What internal vulnerabilities matter?

- frailty
- CKD
- diabetes
- immune status
- heart failure
- COPD
- liver disease
- dementia
- pregnancy context where relevant
- nutrition
- baseline function

Medicines

What medicines help or harm?

- prescribed medicines
- actual medicines taken
- over-the-counter medicines
- herbal products
- adherence
- side effects
- interactions

- renal or liver dosing
- sick-day changes

Behavior

What repeated patterns matter?

- smoking
- alcohol
- diet
- salt
- exercise
- sleep
- meal timing
- monitoring
- substance use

Environment

What surroundings matter?

- housing
- stairs
- bathroom access
- heat
- air quality
- allergens
- occupational exposures
- water and food access
- transport

Social Support

Who helps?

- family
- caregiver
- friends
- work support
- community
- faith or social groups
- home nursing
- caregiver burden

Health System

What access problems exist?

- medicine supply
- appointments

- labs
- imaging
- referrals
- cost
- transport
- discharge instructions
- follow-up ownership
- communication between providers

This structure prevents vague social history.

It turns context into clinical reasoning.

13. Coupling Conditions and Wise Perturbation

Treatment should target both disease and coupling.

Example:

A patient with uncontrolled hypertension may need medicine adjustment.

But wise perturbation may also include:

- checking side effects
- simplifying regimen
- reducing NSAID use
- addressing pain
- arranging refills
- teaching home blood pressure measurement
- considering sleep apnea
- scheduling follow-up
- agreeing on realistic salt changes
- checking renal function and potassium

The disease label is hypertension.

The coupling conditions are the reason control failed.

Another example:

A patient with recurrent aspiration pneumonia may need antibiotics.

But wise perturbation may also include:

- swallow assessment
- food texture modification
- feeding position
- oral care
- caregiver training
- medication review

- goals-of-care discussion
- nutrition support

Antibiotics alone treat the episode.

Coupling repair prevents recurrence.

14. Coupling Conditions and Repair Trajectory

Repair should include coupling conditions.

For example, after AKI:

Laboratory repair:

- creatinine improves
- potassium safe
- urine output returns

Coupling repair:

- NSAID stopped or safer pain plan arranged
- sick-day medicine advice understood
- repeat labs scheduled
- dehydration trigger addressed
- diuretic/ACE inhibitor restart plan clarified
- patient knows when to seek help

Without coupling repair, the AKI may recur.

After hypoglycemia:

Biochemical repair:

- glucose normal
- patient awake

Coupling repair:

- insulin dose reviewed
- meal timing addressed
- CKD considered
- alcohol risk discussed
- rescue carbohydrate available
- caregiver knows plan
- hypoglycemia awareness assessed

Without coupling repair, the next episode may be worse.

Repair trajectory must include the conditions that made the failure happen.

15. Coupling Conditions and Discharge Planning

Discharge is where coupling conditions often decide success or failure.

Before discharge, ask:

- Can the patient obtain medicines?
- Does the patient understand what changed?
- Are stopped medicines clearly documented?
- Are restarted medicines clearly timed?
- Are follow-up labs arranged?
- Can the patient attend follow-up?
- Is transport available?
- Can the patient eat and drink?
- Can the patient monitor symptoms?
- Can the patient walk and toilet safely?
- Is home support adequate?
- Does the caregiver understand the plan?
- Are equipment or supplies needed?
- Are warning signs clear?
- Who is responsible for reviewing results?

A discharge plan that ignores coupling conditions is only a paper plan.

16. Coupling Conditions in Communication

Patients often feel blamed for illness.

Capacity and coupling language can reduce shame.

Instead of saying:

“You are not controlling your diabetes.”

Say:

“Your glucose is running high, and we need to understand what is making control difficult — food timing, medicines, infection, stress, cost, fear of lows, or anything else.”

Instead of saying:

“You keep coming back with heart failure.”

Say:

“The fluid is building up again. Let us identify what pushed the balance off this time — salt, rhythm, kidney function, medicines, infection, or difficulty getting treatment.”

Instead of saying:

“You are not compliant.”

Say:

“Help me understand what gets in the way of taking the treatment as planned.”

This kind of language preserves dignity and improves clinical accuracy.

17. Coupling Conditions in Teamwork

Different team members see different coupling conditions.

Doctors may see diagnosis and medicines.

Nurses may see eating, toileting, sleep, confusion, mobility, wound care, family support, and medication tolerance.

Pharmacists may see interactions, dose errors, access issues, and adherence barriers.

Physiotherapists may see mobility, strength, balance, stairs, and rehabilitation potential.

Dietitians may see food access, malnutrition, swallowing, diabetes diet difficulty, and cultural food patterns.

Social workers may see transport, housing, finances, family strain, safeguarding, and care packages.

Caregivers may see baseline function, medication habits, fear, mood, and daily routines.

A life-coherent clinician asks:

Who on the team can see the coupling condition I am missing?

18. Worked Case 1: Recurrent Heart Failure

A 74-year-old man is admitted for the third time in six months with worsening breathlessness, orthopnea, leg swelling, and pulmonary congestion.

Diagnosis Label

Recurrent heart failure exacerbation.

Capacity Failure

Circulation, fluid balance, oxygenation, sleep, mobility, kidney vulnerability.

Coupling Conditions

- inconsistent diuretic use because of urinary frequency during work
- high-salt processed foods
- no home scale
- CKD limiting medication flexibility
- missed cardiology follow-up due to transport problems
- poor understanding of early warning signs
- possible atrial fibrillation trigger

Wise Perturbation

Treat congestion, monitor renal function and potassium, assess rhythm and ischemic triggers, adjust diuretic timing to fit life, arrange refill and follow-up support, provide weight and symptom plan, involve family where appropriate.

Repair Trajectory

Breathlessness improves, edema reduces, kidney function stable, patient understands early warning signs, diuretic plan is feasible, follow-up occurs, readmission risk reduced.

19. Worked Case 2: Recurrent Hypoglycemia

An 81-year-old woman with type 2 diabetes and CKD has repeated episodes of confusion and falls due to low glucose. She takes a sulfonylurea and often skips meals.

Diagnosis Label

Recurrent hypoglycemia.

Capacity Failure

Glucose regulation, cognition, mobility safety, medicine safety, nutrition.

Coupling Conditions

- CKD prolonging medicine effect
- sulfonylurea use
- irregular meals
- poor appetite
- living alone
- cognitive impairment
- no caregiver medication check
- tight glucose targets inappropriate for frailty

Wise Perturbation

Treat acute hypoglycemia, monitor recurrence, review diabetes targets, stop or change high-risk medicine according to local practice, support meals, involve caregiver, arrange follow-up and safety-net.

Repair Trajectory

No recurrent lows, falls reduce, cognition stable, medicine plan safer, meals supported, glucose goals fit frailty and safety.

20. Worked Case 3: Poorly Controlled Asthma

A 28-year-old woman has frequent asthma symptoms and repeated urgent visits. She uses her reliever inhaler often but rarely uses her preventer.

Diagnosis Label

Poorly controlled asthma.

Capacity Failure

Airway regulation, ventilation reserve, sleep, exercise capacity, safety.

Coupling Conditions

- poor inhaler technique
- fear of steroids
- cost of preventer inhaler
- mold exposure at home
- workplace dust
- allergic rhinitis
- no written action plan
- anxiety after severe attacks

Wise Perturbation

Assess severity, inhaler technique, trigger exposure, adherence barriers, rhinitis, occupational factors, and access. Provide education, affordable regimen if possible, action plan, and follow-up.

Repair Trajectory

Symptoms reduce, reliever use decreases, sleep improves, exacerbations reduce, inhaler technique correct, patient understands when to escalate care.

21. Worked Case 4: AKI After Gastroenteritis

A 69-year-old man with CKD develops vomiting and diarrhea. He continues NSAIDs, diuretic, and ACE inhibitor. He presents with oliguria, dizziness, AKI, and high potassium.

Diagnosis Label

AKI.

Capacity Failure

Clearance, potassium regulation, hydration, circulation to kidneys, medicine safety.

Coupling Conditions

- CKD
- fluid losses
- poor intake
- NSAID use
- diuretic and ACE inhibitor during dehydration
- lack of sick-day medicine advice
- no early access to blood tests
- pain management relying on NSAIDs

Wise Perturbation

Manage hyperkalemia according to local pathway if needed, restore hydration carefully, stop harmful medicines temporarily where appropriate, review pain strategy, arrange repeat labs, and provide clear sick-day advice.

Repair Trajectory

Urine output returns, potassium safe, creatinine improves, pain plan safer, patient knows what to stop and when to seek help during future illness.

22. Worked Case 5: Delirium in Hospital

An 87-year-old man admitted with pneumonia becomes more confused at night, pulls out lines, refuses food, and falls while trying to reach the toilet.

Diagnosis Label

Delirium complicating pneumonia.

Capacity Failure

Cognition, sleep-wake regulation, mobility safety, hydration/nutrition, defense, dignity.

Coupling Conditions

- pneumonia
- hypoxia
- unfamiliar environment
- poor hearing
- no glasses
- sleep disruption

- urinary urgency
- constipation
- sedating medicines
- family absent overnight
- baseline cognitive impairment

Wise Perturbation

Treat pneumonia and hypoxia, restore hearing aids/glasses, orient regularly, involve family, manage toileting, pain, constipation, sleep, hydration, and remove unnecessary sedatives where possible.

Repair Trajectory

Attention improves, night agitation reduces, intake improves, falls prevented, mobility supported, family recognizes return toward baseline.

23. Common Student Pitfalls

Pitfall 1: Treating Coupling Conditions as "Social Extras"

Context is not extra. It often determines whether treatment works.

Pitfall 2: Using "Non-Compliance" Too Quickly

Non-adherence is a finding, not an explanation.

Pitfall 3: Ignoring Medicines as Dynamic Risks

A medicine that helped yesterday may harm today if kidney function, intake, blood pressure, or cognition changes.

Pitfall 4: Missing Frailty

Frailty changes presentation, treatment tolerance, recovery, and discharge safety.

Pitfall 5: Treating Recurrent Admissions as Patient Failure

Recurrent admissions often mean unresolved coupling conditions.

Pitfall 6: Creating Plans the Patient Cannot Perform

A plan must fit food, money, transport, cognition, family, work, and access.

Pitfall 7: Ignoring Caregiver Capacity

Caregivers also have limits. Caregiver failure can become patient danger.

Pitfall 8: Failing to Repair the Coupling Condition

If the trigger remains, recurrence is likely.

24. Clinical Practice Box

When assessing coupling conditions, complete this structure:

Working diagnosis or syndrome:

Capacity failure:
What function is failing?

Biological vulnerabilities:
Frailty, CKD, diabetes, immune status, heart/lung/liver disease, nutrition?

Medicine factors:
Helpful medicines, harmful medicines, interactions, adherence, side effects, access?

Behavioral patterns:
Meals, smoking, alcohol, salt, activity, sleep, monitoring, substance use?

Environmental factors:
Housing, heat, air quality, stairs, bathroom, workplace, exposures, transport?

Social supports and burdens:
Living alone, caregiver, family, work, finances, language, culture, isolation?

Health system factors:
Refills, follow-up, labs, referrals, discharge clarity, costs, continuity?

Main coupling conditions driving this illness:

Wise perturbation that addresses them:

Repair trajectory:
How will we know the coupling condition has been repaired or supported?

25. Mini-Case for Practice

A 58-year-old man with diabetes has repeated admissions with infected foot ulcers. He has neuropathy, poor vision, irregular work, limited income, and often misses wound clinic appointments. He wears old shoes because he cannot afford new ones. His glucose is often high, but he also fears hypoglycemia because he works long shifts and sometimes skips meals.

Map the coupling conditions.

Working Diagnosis

Recurrent diabetic foot ulcer infection.

Capacity Failure

Repair, defense, sensation, mobility, glucose regulation, participation.

Biological Coupling Conditions

Diabetes, neuropathy, poor vision, impaired wound healing, possible vascular disease.

Medicine and Treatment Coupling Conditions

Glucose treatment may not fit irregular meals. Fear of hypoglycemia reduces adherence. Wound care requires supplies and follow-up.

Behavioral Coupling Conditions

Long shifts, skipped meals, delayed foot checks, continued walking on ulcer.

Environmental Coupling Conditions

Old footwear, work demands, pressure on feet, possible limited access to clean dressing environment.

Social and Economic Coupling Conditions

Limited income, missed appointments, transport or scheduling barriers, inability to afford shoes.

Health System Coupling Conditions

Wound clinic access does not fit work schedule. Footwear support may be unavailable. Follow-up may not address work realities.

Wise Perturbation

Treat infection and assess perfusion, but also address offloading, footwear, affordable wound supplies, work-compatible follow-up, glucose plan that reduces hypoglycemia fear, vision support, and education for daily foot inspection.

Repair Trajectory

Wound infection resolves, ulcer size reduces, footwear/offloading improves, glucose plan becomes safer, missed appointments decrease, patient can continue work with less foot harm, recurrence risk falls.

26. Student Takeaway

Coupling conditions become easier when the clinician asks:

Why this illness, in this person, at this time?
What biological vulnerabilities matter?
What comorbidities shape risk?
Which medicines help, and which now harm?
What behaviors are shaped by work, food, fear, cost, or understanding?
What environmental exposures or home risks matter?
What social supports or burdens affect recovery?
What health system barriers make the plan fragile?
What must change so treatment can actually work?

Coupling conditions are not background details.

They are part of the illness system.

The safe clinician treats disease, protects capacity, and repairs the conditions that make illness persist or recur.

Chapter 39. Wise Perturbation Made Easy

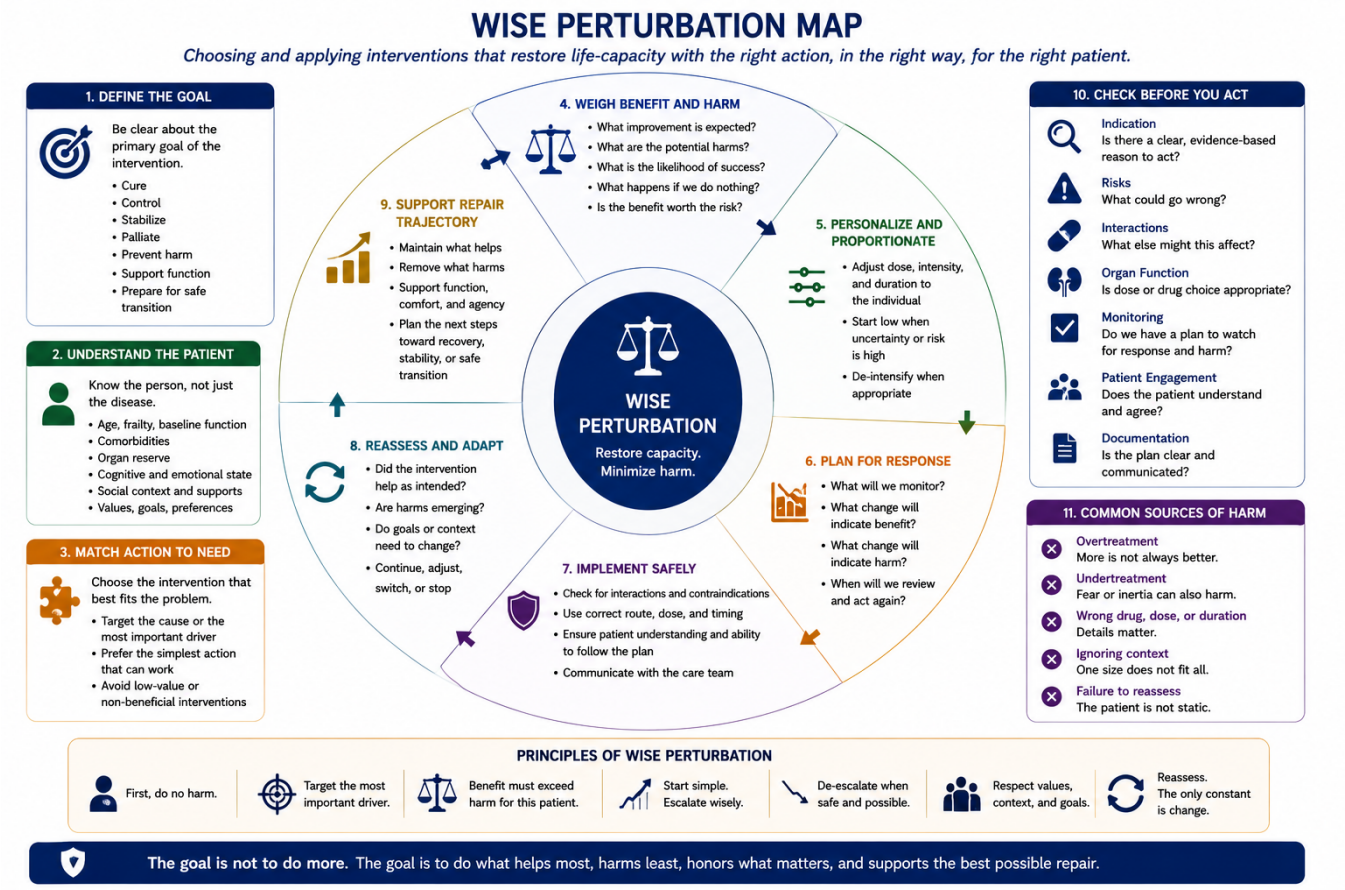

Figure 6. Wise Perturbation Map

A wise perturbation is an intervention chosen to restore capacity, reduce suffering, and prevent harm while remaining proportionate, individualized, monitorable, and adaptable.

Wise perturbation means choosing an intervention that helps the patient move toward repair without causing unnecessary harm.

In ordinary language, it means:

Do the right thing, at the right time, in the right dose, for the right reason, in the right patient, with reassessment.

Treatment is not simply action.

Treatment is a perturbation.

It changes the patient's physiology, psychology, relationships, medicines, risks, and future trajectory.

A wise perturbation restores capacity.

An unwise perturbation may make the numbers look better while the patient becomes worse.

For example:

- fluids may help dehydration but worsen pulmonary edema
- diuretics may help heart failure but worsen AKI or dizziness
- insulin may correct hyperglycemia but cause hypoglycemia

- antibiotics may treat infection but cause adverse effects or resistance if unnecessary
- sedation may reduce agitation but worsen delirium, aspiration, or falls
- anticoagulation may prevent stroke or treat clot but worsen bleeding
- opioids may relieve pain but worsen constipation, sedation, respiratory depression, or falls

The first task is not to “do something” reflexively.

The first task is to ask:

What capacity is failing, what intervention may restore it, and what harm might that intervention cause?

Wise perturbation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Perturbation?

A perturbation is any intervention that changes the patient’s system.

It may be:

- a medicine
- a fluid bolus
- oxygen
- insulin
- glucose
- antibiotics
- diuresis
- transfusion
- anticoagulation
- bronchodilation
- dialysis pathway
- catheterization
- surgery
- drainage
- stopping a medicine
- changing diet
- mobilization
- rehabilitation
- explanation
- reassurance
- family involvement
- palliative care
- watchful waiting
- safety-netting

Doing nothing can also be a perturbation if observation is chosen deliberately.

The question is not:

“Did we intervene?”

The question is:

“Did our intervention move the patient toward repair?”

2. Wise Perturbation Is Not Passive

Sometimes students think careful treatment means slow treatment.

That is not true.

Wise perturbation can be very fast.

In anaphylaxis, shock, hypoglycemia, severe hyperkalemia, sepsis, stroke, acute coronary syndrome, airway obstruction, or respiratory failure, wise perturbation means urgent action.

But urgent action still has structure.

In an emergency, ask quickly:

- What danger is present?
- What capacity is failing?
- What intervention cannot wait?
- What harm must be avoided?
- Who needs to be called?
- How will response be monitored?

Wise perturbation is not hesitation.

It is disciplined action.

3. The First Rule: Treat Danger First

The first perturbation should protect life-threatening capacity failure.

Examples:

Hypoglycemia

Capacity failing:

- brain energy
- cognition
- safety

Wise perturbation:

- correct glucose immediately according to local protocol
- then prevent recurrence

Severe Hyperkalemia

Capacity failing:

- electrical stability
- potassium regulation

- cardiac rhythm safety

Wise perturbation:

- follow local hyperkalemia emergency pathway
- identify cause
- monitor ECG and potassium

Shock

Capacity failing:

- circulation
- oxygen delivery
- brain and kidney perfusion

Wise perturbation:

- ABCDE assessment
- oxygenation support
- fluids, blood, antibiotics, source control, cardiac treatment, or other targeted intervention depending on shock type
- early escalation

Stroke Symptoms

Capacity failing:

- brain integrity
- mobility
- speech
- agency

Wise perturbation:

- activate local stroke pathway
- check glucose
- protect airway, blood pressure, and time-sensitive decisions

Danger-first treatment prevents the clinician from getting lost in less urgent details.

4. The Second Rule: Match Treatment to Capacity Failure

Treatment should target the failing capacity.

If Oxygenation Is Failing

Potential perturbations include:

- oxygen support
- bronchodilators
- antibiotics if pneumonia
- diuresis if pulmonary edema
- anticoagulation pathway if pulmonary embolism
- airway support

- ventilatory support where needed

But the wise choice depends on the cause.

Oxygen helps hypoxia but does not cure pulmonary edema, pneumonia, PE, or asthma by itself.

If Circulation Is Failing

Potential perturbations include:

- fluids
- blood products
- antibiotics and source control
- vasopressor pathway
- cardiac treatment
- rhythm control pathway
- anaphylaxis treatment
- adrenal crisis treatment

But fluids are not always wise.

They may help dehydration and some septic states, but worsen cardiogenic shock or pulmonary edema.

If Clearance Is Failing

Potential perturbations include:

- stopping nephrotoxins
- relieving obstruction
- treating sepsis
- correcting hypovolemia
- managing potassium
- adjusting medicine doses
- renal referral
- dialysis pathway where indicated

But simply “watching creatinine” is not enough if potassium, fluid balance, acid-base status, or obstruction is unsafe.

If Cognition Is Failing

Potential perturbations include:

- correcting hypoxia
- correcting glucose
- treating infection
- stopping harmful medicines
- treating pain
- relieving urinary retention
- treating constipation
- hydration
- sleep restoration

- family reorientation
- reducing restraints and unnecessary lines

Sedation may sometimes be necessary for immediate safety, but it rarely repairs delirium by itself.

If Mobility Is Failing

Potential perturbations include:

- treating the cause
- pain control
- physiotherapy
- mobility aids
- falls prevention
- nutrition
- medication review
- rehabilitation
- home support

Bed rest may be necessary briefly, but prolonged immobility becomes a harmful perturbation.

5. The Third Rule: Do Not Treat Numbers Alone

Numbers matter.

But numbers must be interpreted through the patient.

Examples:

Blood Pressure

A high blood pressure number without organ damage is different from high blood pressure with stroke symptoms, pulmonary edema, chest pain, or AKI.

Wise perturbation asks:

Is this hypertensive emergency or chronic vascular risk?

Glucose

A high glucose number in a stable patient is different from high glucose with ketones, vomiting, dehydration, and rapid breathing.

Wise perturbation asks:

Is this chronic hyperglycemia or metabolic emergency?

Creatinine

A high creatinine number is different when urine output is normal versus absent, potassium is safe versus dangerous, or the patient is dry versus overloaded.

Wise perturbation asks:

Which kidney capacity is failing?

Hemoglobin

A low hemoglobin number is different in chronic stable anemia versus active bleeding, chest pain, syncope, or shock.

Wise perturbation asks:

Is oxygen delivery failing now?

Numbers guide care.

They should not replace clinical reasoning.

6. The Fourth Rule: Consider Treatment Harm Before Treatment

Every intervention has possible harm.

Before treatment, ask:

- What could this intervention worsen?
- What monitoring is needed?
- What patient-specific risk changes the intervention?
- What medicine interactions exist?
- What organ reserve is limited?
- What is the exit plan?

Examples:

Fluids

May worsen:

- pulmonary edema
- heart failure
- hypoxia
- hyponatremia in some contexts
- renal congestion

Monitor:

- breathing
- oxygenation
- blood pressure
- urine output
- lungs
- edema
- electrolytes

Diuretics

May worsen:

- dehydration
- AKI
- dizziness
- falls
- hypokalemia or hyponatremia
- hypotension

Monitor:

- weight
- urine output
- blood pressure
- creatinine
- electrolytes
- symptoms

Insulin

May worsen:

- hypoglycemia
- hypokalemia
- confusion
- falls
- fear of treatment

Monitor:

- glucose
- potassium
- meals
- renal function
- mental state

Sedatives

May worsen:

- delirium
- falls
- aspiration
- respiratory depression
- urinary retention
- loss of agency

Monitor:

- consciousness
- breathing
- gait
- swallowing
- falls risk

Anticoagulation

May worsen:

- bleeding
- anemia

- falls-related hemorrhage
- procedure risk

Monitor:

- bleeding
- renal function
- hemoglobin
- indication
- duration
- interactions

A wise clinician asks about harm before harm appears.

7. The Fifth Rule: Treat the Cause and the Coupling Conditions

A perturbation should not only treat the immediate symptom.

It should also address what made the illness happen.

For example:

Recurrent AKI

Immediate treatment:

- correct dehydration
- manage potassium
- stop harmful medicines temporarily

Coupling repair:

- sick-day medication advice
- safer pain plan
- follow-up renal tests
- hydration strategy
- medication restart plan

Recurrent Heart Failure

Immediate treatment:

- relieve congestion
- support oxygenation

Coupling repair:

- diuretic timing
- salt intake
- home weight monitoring
- medication access
- rhythm control
- renal monitoring

- follow-up

Recurrent Hypoglycemia

Immediate treatment:

- correct glucose

Coupling repair:

- revise medicine regimen
- match treatment to meals
- address CKD
- reduce overly tight targets in frailty
- educate caregiver
- provide rescue plan

Recurrent Asthma Exacerbation

Immediate treatment:

- bronchodilator and acute pathway

Coupling repair:

- inhaler technique
- preventer access
- trigger control
- written action plan
- smoking or occupational exposure
- allergic rhinitis management

Treating the episode without treating coupling conditions invites recurrence.

8. The Sixth Rule: Use the Smallest Effective Perturbation

More treatment is not always better.

The wise clinician asks:

What is the least disruptive intervention that safely restores capacity?

Examples:

- not every fever needs broad-spectrum antibiotics
- not every high blood pressure reading needs emergency lowering
- not every dizzy patient needs sedating medication
- not every patient with edema needs aggressive diuresis
- not every abnormal lab needs hospital admission
- not every pain needs opioids
- not every cough needs antibiotics
- not every agitation needs sedation
- not every frail patient benefits from invasive escalation

The smallest effective perturbation is not undertreatment.

It is careful treatment.

It protects the patient from avoidable harm.

9. The Seventh Rule: Reassess After Every Perturbation

No intervention is complete without reassessment.

After giving treatment, ask:

- Did the patient improve?
- Which capacity improved?
- Which capacity worsened?
- Did the diagnosis become clearer?
- Did new danger appear?
- Should the plan continue, stop, escalate, or change?

Examples:

After Fluids

Ask:

- Did blood pressure improve?
- Did urine output improve?
- Did breathing worsen?
- Did crackles appear?
- Did oxygen requirement rise?

After Diuresis

Ask:

- Did breathlessness improve?
- Did edema reduce?
- Did blood pressure fall too much?
- Did creatinine worsen?
- Did potassium change?

After Antibiotics

Ask:

- Is fever settling?
- Is respiratory rate improving?
- Is mental state improving?
- Is source control needed?
- Is the diagnosis still correct?

After Insulin

Ask:

- Is glucose safer?

- Is potassium safe?
- Is the patient eating?
- Is hypoglycemia risk rising?

After Sedation

Ask:

- Is the patient breathing safely?
- Is delirium worse?
- Can the patient swallow?
- Is falls risk higher?

Treatment without reassessment is incomplete treatment.

10. Wise Perturbation Under Uncertainty

Medicine often requires treatment before full certainty.

The clinician may not know whether the patient's dyspnea is pneumonia, heart failure, PE, COPD, or mixed.

The patient may not wait for perfect clarity.

Wise perturbation under uncertainty asks:

- What danger cannot wait?
- What treatment is safe across several possibilities?
- What treatment could harm if the diagnosis is wrong?
- What tests will clarify quickly?
- What response will help update the diagnosis?
- Who should be involved early?

Example:

A patient with fever, hypoxia, crackles, edema, CKD, and dyspnea may have pneumonia, heart failure, or both.

Wise perturbation may include:

- oxygen support
- chest imaging
- infection assessment
- careful fluid assessment
- avoiding reflex large-volume fluids if overloaded
- treating likely infection if severity warrants
- cautious congestion management if heart failure is evident
- renal and electrolyte monitoring
- reassessment

Uncertainty does not justify paralysis.

It requires careful action.

11. Wise Perturbation in Multimorbidity

Multimorbidity means each intervention affects several conditions.

Example:

A patient has heart failure, CKD, diabetes, frailty, and infection.

Possible perturbations:

- fluids for sepsis may worsen heart failure
- diuretics for congestion may worsen AKI
- insulin for hyperglycemia may cause hypoglycemia if intake is poor
- antibiotics may require renal dosing
- sedatives may worsen delirium
- bed rest may worsen frailty
- anticoagulation may prevent clot but increase bleeding risk

The wise clinician does not ask:

“What is the protocol for one disease?”

The wise clinician asks:

“How do I apply treatment in this patient’s whole capacity field?”

This does not mean ignoring guidelines.

It means applying them with clinical judgment.

12. Wise Perturbation in Frailty

Frailty changes treatment tolerance.

A treatment that is safe in a robust patient may destabilize a frail patient.

Examples:

- rapid medication changes may cause falls
- sedatives may cause prolonged delirium
- bed rest may cause functional collapse
- hospitalization may worsen confusion
- invasive testing may not match goals of care
- fluid shifts may be poorly tolerated
- strict glucose control may cause harm
- polypharmacy may overwhelm the patient

Wise perturbation in frailty asks:

- What was baseline function?
- What capacity is most threatened?
- What treatment is likely to restore function?
- What treatment may cause functional decline?
- What are the patient’s goals?

- What does recovery realistically mean?
- What support is needed after discharge?

In frailty, the goal is not merely survival.

The goal is survival with protected function and dignity where possible.

13. Wise Perturbation and Deprescribing

Stopping a harmful medicine can be one of the most powerful treatments.

Examples:

- stop NSAID in AKI, heart failure, bleeding risk, or uncontrolled hypertension
- stop sedative contributing to delirium or falls
- stop unnecessary anticholinergic causing urinary retention or confusion
- stop sulfonylurea causing recurrent hypoglycemia in frailty or CKD
- stop duplicate antihypertensives causing orthostatic hypotension
- stop QT-prolonging medicine contributing to arrhythmia risk
- stop steroid only with appropriate tapering and adrenal awareness where needed

Deprescribing is not neglect.

It is active repair when the medicine has become harmful.

The key questions are:

- Is the medicine still needed?
- Is it still safe?
- Is it helping this patient now?
- Has the patient's physiology changed?
- What happens if we stop?
- What happens if we continue?
- Who will review after stopping?

14. Wise Perturbation and Explanation

Explanation is a treatment.

It can reduce fear, improve adherence, prevent recurrence, and restore agency.

Examples:

AKI

"Your kidneys became stressed because fluid loss and certain medicines reduced kidney reserve. We are stopping those medicines temporarily, correcting the fluid balance, and repeating blood tests to make sure potassium and kidney function are safe."

Heart Failure

"Your breathlessness is from fluid backing up into the lungs. The treatment aims to remove extra fluid while watching kidney function and blood pressure."

Hypoglycemia

“The low sugar happened because the medicine continued working when food intake dropped. We need to adjust the plan so your brain is protected and this does not happen again.”

Delirium

“The confusion is not simply dementia. It is a temporary brain stress state caused by illness, dehydration, medicines, pain, or other triggers. We will treat the triggers and keep the patient safe.”

A patient who understands the perturbation is more likely to participate in repair.

15. Wise Perturbation and Safety-Netting

Safety-netting is part of treatment.

It tells the patient what would mean the perturbation is failing or causing harm.

For example:

After treating pneumonia, advise urgent review for:

- worsening breathlessness
- persistent high fever
- confusion
- chest pain
- low oxygen
- inability to drink

After changing blood pressure medicine, advise review for:

- fainting
- severe dizziness
- swelling
- breathlessness
- very low blood pressure symptoms
- allergic reaction

After AKI discharge, advise review for:

- reduced urine
- vomiting
- diarrhea
- weakness
- palpitations
- swelling
- medication uncertainty

Safety-netting completes the perturbation because it creates a feedback loop.

16. Wise Perturbation and Repair Trajectory

Every treatment should have an expected repair trajectory.

Ask:

If this intervention is working, what should improve?

Examples:

Bronchodilator in Asthma

Expected repair:

- wheeze improves
- air entry improves
- respiratory rate decreases
- speech improves
- oxygenation stabilizes
- distress reduces

Diuresis in Heart Failure

Expected repair:

- breathlessness improves
- orthopnea improves
- edema decreases
- weight trends down if overloaded
- urine output increases
- oxygenation improves
- renal function remains acceptable

Antibiotics in Pneumonia

Expected repair:

- fever settles
- respiratory rate improves
- oxygenation improves
- sputum improves
- appetite returns
- confusion clears

Glucose in Hypoglycemia

Expected repair:

- sweating and tremor improve
- mental state clears
- glucose remains stable
- patient can eat
- recurrence prevented

If expected repair does not occur, reconsider:

- diagnosis
- severity
- source control

- adherence
- complications
- wrong treatment
- new capacity failure

Repair trajectory turns treatment into learning.

17. When Not to Perturb Aggressively

Sometimes the wisest intervention is restraint.

Examples:

- asymptomatic severe hypertension without acute organ damage usually should not be rapidly lowered outside an appropriate pathway
- mild viral cough may not need antibiotics
- stable chronic anemia may not need urgent transfusion
- mild asymptomatic electrolyte abnormalities may need confirmation and cause review rather than aggressive correction
- incidental imaging findings may need thoughtful follow-up rather than invasive testing
- frail end-of-life patients may not benefit from burdensome interventions that do not improve comfort or meaningful function

Restraint must be active, not lazy.

Active restraint includes:

- clear reasoning
- monitoring plan
- safety-netting
- follow-up
- patient explanation
- readiness to act if trajectory changes

Wise non-intervention is still care.

18. When to Escalate

Wise perturbation includes knowing when the current level of care is not enough.

Escalate when there is:

- airway threat
- respiratory failure
- shock
- persistent hypoxia
- severe hyperkalemia
- severe acidosis
- severe sepsis

- acute stroke symptoms
- acute coronary syndrome
- uncontrolled bleeding
- massive hemoptysis
- anaphylaxis
- obstructed infected kidney
- acute liver failure
- severe AKI with complications
- rapidly progressive weakness
- spinal cord compression features
- diagnostic uncertainty with deterioration
- failure to improve as expected

Escalation is not defeat.

It is matching the perturbation to the severity of capacity failure.

19. Worked Case 1: Fluids in AKI

A 76-year-old man with CKD presents after vomiting and diarrhea. He is dizzy, dry, oliguric, and has rising creatinine. Potassium is mildly high. He also has a history of heart failure.

Capacity Failure

Hydration, kidney perfusion, clearance, potassium regulation, medicine safety.

Possible Perturbation

Fluids may restore kidney perfusion.

Possible Harm

Excess fluids may worsen heart failure and oxygenation.

Wise Perturbation

Assess volume status carefully, check oxygenation and lungs, review medicines, treat potassium according to severity, give fluids cautiously if hypovolemic, and reassess after each step.

Repair Trajectory

Dizziness improves, urine output increases, creatinine stabilizes, potassium becomes safe, breathing remains stable, no pulmonary edema develops.

20. Worked Case 2: Sedation in Delirium

An 84-year-old man with dementia and pneumonia becomes agitated at night. He is trying to climb out of bed and pull out his IV line.

Capacity Failure

Cognition, sleep-wake regulation, defense, oxygenation, mobility safety, dignity.

Possible Perturbation

Sedation may reduce immediate unsafe behavior.

Possible Harm

Sedation may worsen delirium, breathing, aspiration risk, falls, and functional decline.

Wise Perturbation

First assess hypoxia, pain, urinary retention, constipation, fever, medication effects, hunger, fear, and need for toileting. Use reorientation, family presence, glasses/hearing aids, sleep protection, and environmental measures. If medication is needed for immediate safety, use the least harmful option according to local guidance and reassess frequently.

Repair Trajectory

Patient becomes safer without oversedation, oxygenation remains safe, sleep improves, infection improves, confusion gradually clears, mobility protected.

21. Worked Case 3: Antibiotics in Cough

A 35-year-old patient has cough, runny nose, sore throat, normal oxygen saturation, normal chest examination, no fever, and feels well except for cough.

Capacity Failure

Comfort and airway irritation, without clear oxygenation or systemic defense failure.

Possible Perturbation

Antibiotics.

Possible Harm

Adverse effects, resistance, false belief that antibiotics are needed for viral illness, unnecessary cost.

Wise Perturbation

Explain likely viral upper respiratory infection, provide symptom care, advise expected course, avoid unnecessary antibiotics, and safety-net for fever, breathlessness, chest pain, hemoptysis, or prolonged/worsening symptoms.

Repair Trajectory

Cough gradually improves, patient remains afebrile and well, no dyspnea develops, patient understands when to return.

22. Worked Case 4: Insulin in Poor Intake

A 79-year-old woman with diabetes and CKD has high glucose during infection but is eating poorly and has had previous hypoglycemia.

Capacity Failure

Glucose regulation, defense, nutrition, clearance, medicine safety.

Possible Perturbation

Increase insulin or diabetes medicines.

Possible Harm

Hypoglycemia, especially with poor intake and CKD.

Wise Perturbation

Assess infection severity, hydration, ketones where indicated, renal function, usual regimen, oral intake, and hypoglycemia risk. Treat infection and glucose according to local guidance, with close monitoring and a plan that fits intake.

Repair Trajectory

Glucose becomes safer without hypoglycemia, infection improves, appetite returns, renal function stable, medicine plan adjusted as intake changes.

23. Worked Case 5: Anticoagulation in Hemoptysis

A 67-year-old man has sudden pleuritic chest pain, dyspnea, tachycardia, and blood-streaked sputum after recent surgery. Pulmonary embolism is suspected, but he is also coughing blood.

Capacity Failure

Pulmonary circulation, oxygenation, vascular integrity, coagulation safety.

Possible Perturbation

Anticoagulation pathway.

Possible Harm

Bleeding may worsen.

Wise Perturbation

Assess severity of hemoptysis, oxygenation, hemodynamic stability, clot probability, imaging pathway, bleeding risk, hemoglobin, renal function, and need for senior input. Follow local PE guidance while explicitly managing bleeding risk.

Repair Trajectory

PE confirmed or excluded, oxygenation improves, bleeding does not worsen, anticoagulation plan is safe and documented, recurrence prevention addressed.

24. Common Student Pitfalls

Pitfall 1: Doing Something Just to Feel Active

Action is not automatically care. The intervention must restore capacity or reduce danger.

Pitfall 2: Treating Numbers Without Context

High or low numbers must be connected to syndrome, capacity failure, and patient risk.

Pitfall 3: Forgetting Treatment Harm

Every treatment has possible side effects, interactions, and unintended consequences.

Pitfall 4: Giving Fluids Reflexively

Fluids can save or harm. Map volume status and oxygenation.

Pitfall 5: Giving Antibiotics Reflexively

Antibiotics save lives when indicated but should not replace diagnostic reasoning.

Pitfall 6: Sedating Delirium Instead of Treating Triggers

Agitation often reflects unmet physiological needs or environmental distress.

Pitfall 7: Failing to Reassess

A perturbation is not complete until response is observed.

Pitfall 8: Ignoring Feasibility

A treatment plan that the patient cannot afford, understand, access, or perform is not wise.

25. Clinical Practice Box

Before any major intervention, complete this structure:

What danger am I treating?

What capacity is failing?
Oxygenation, circulation, clearance, defense, regulation, cognition, mobility, repair?

What intervention am I considering?

Why this intervention?

What could this intervention worsen?

What patient-specific risks matter?
CKD, heart failure, frailty, liver disease, pregnancy context, medicines, allergies, cognition, access?

What monitoring is needed?

What response do I expect?

When will I reassess?

What will make me stop, change, or escalate?

What safety-net or follow-up is needed?

26. Mini-Case for Practice

A 73-year-old woman with heart failure, CKD, diabetes, and frailty presents with fever, cough, mild hypoxia, crackles, swollen legs, poor intake, and rising creatinine. She may have pneumonia, heart failure exacerbation, or both.

Apply wise perturbation.

Danger

Hypoxia, infection, heart failure congestion, AKI, medication harm, frailty decline.

Syndrome

Acute dyspnea and cough with fever, crackles, edema, renal worsening, and poor intake.

Capacity Failure

Defense, oxygenation, circulation/fluid balance, clearance, hydration/nutrition, mobility safety.

Coupling Conditions

Heart failure, CKD, diabetes, frailty, poor intake, possible infection, risk of fluid overload, medicine vulnerability, home support.

Wise Perturbation

Support oxygenation. Assess severity, chest imaging, ECG, renal function, electrolytes, infection markers where appropriate, volume status, urine output, and medicines. Treat likely pneumonia according to local guidance if

supported. Manage congestion carefully if heart failure is present. Avoid reflex large-volume fluids because edema and heart failure are present. Adjust medicines to kidney function and intake. Reassess frequently.

Expected Repair Trajectory

Respiratory rate improves, oxygenation stabilizes, fever settles, breathlessness improves, edema reduces if overloaded, creatinine and potassium stabilize, appetite returns, confusion or weakness does not develop, mobility remains safe, and discharge plan includes follow-up labs and medicine review.

What Would Make You Reconsider?

Worsening oxygenation, persistent fever, falling blood pressure, rising creatinine, hyperkalemia, chest pain, new arrhythmia, poor response to antibiotics or diuresis, or new evidence for pulmonary embolism, ACS, aspiration, or alternative diagnosis.

27. Student Takeaway

Wise perturbation becomes easier when the clinician asks:

What danger am I treating?
What capacity is failing?
What intervention may restore that capacity?
What harm could the intervention cause?
What coupling conditions change the treatment?
What is the smallest effective intervention?
What must be monitored?
What response should occur if we are right?
When should we stop, change, or escalate?
Can the patient actually carry out the plan?

Wise perturbation is treatment with judgment.

It is neither passive nor reckless.

The safe clinician acts when danger is present, avoids reflex treatment, matches intervention to capacity failure, anticipates harm, reassesses response, and follows the patient toward repair.

Chapter 40. Repair Trajectory Made Easy

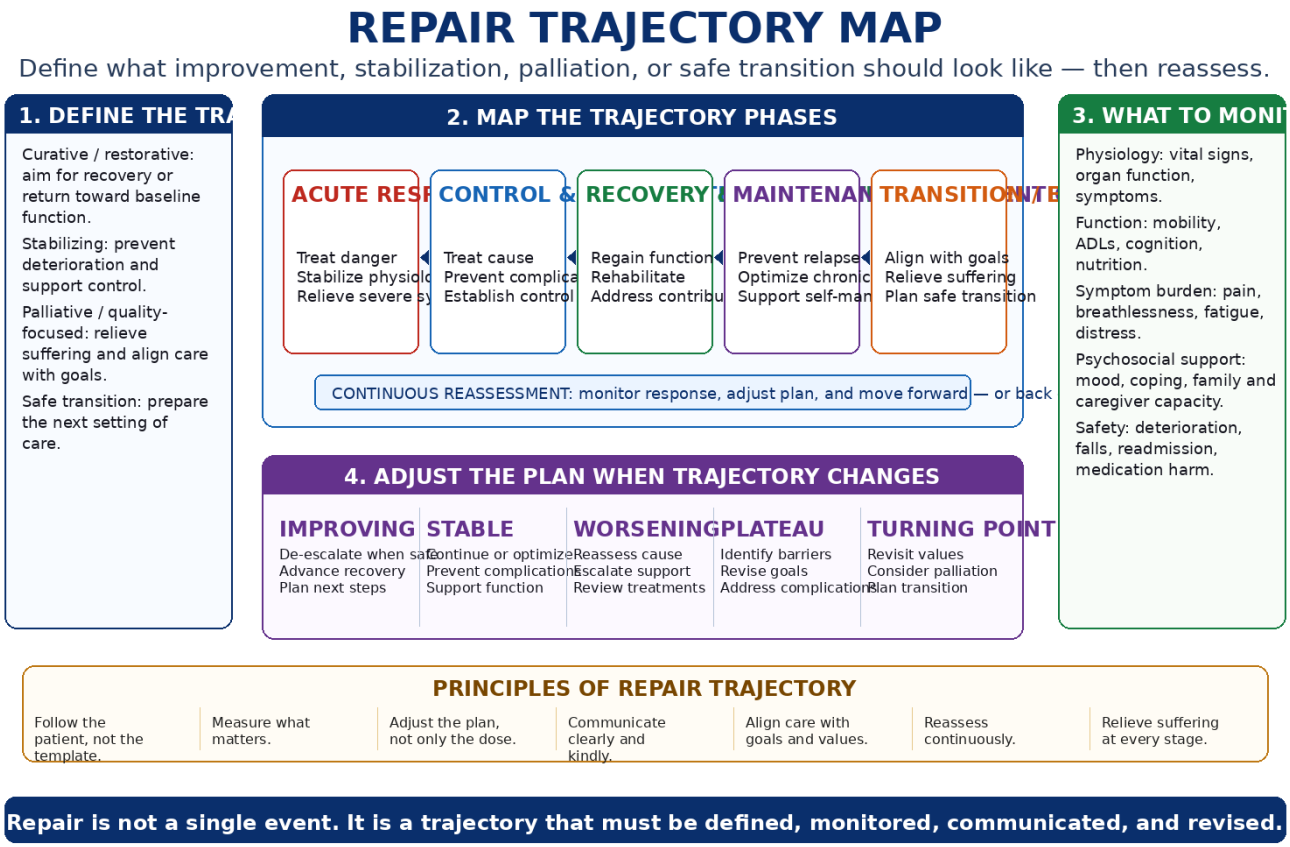

Figure 7. Repair Trajectory Map

Repair is not a single endpoint but a responsive trajectory. Care must be reassessed and redirected according to whether the patient is improving, unchanged, worsening, experiencing harm, stabilizing, rehabilitating, transitioning, or moving toward comfort-focused goals.

Repair trajectory means the expected path of recovery after illness has been recognized and treatment has begun.

It answers the question:

“How will we know the patient is truly getting better?”

A diagnosis is not the end of clinical reasoning.

Treatment is not the end of clinical reasoning.

A patient may look better for a moment but still be unsafe.
A laboratory value may improve while function remains poor.
A fever may settle while oxygenation worsens.
A creatinine may fall while the patient cannot walk.
A glucose may normalize while hypoglycemia risk increases.
A confused patient may become quieter because of sedation, not because delirium has repaired.

Repair trajectory keeps the clinician honest.

It asks:

What should improve, in what order, over what time, and what would make us reconsider?

Repair trajectory completes the life-coherent clinical loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Repair Trajectory?

A repair trajectory is the pattern of improvement expected if the diagnosis is correct, the treatment is appropriate, and the patient's capacities are recovering.

It includes:

- symptom improvement
- vital sign improvement
- laboratory improvement
- functional improvement
- cognitive improvement
- hydration and nutrition improvement
- mobility improvement
- medicine safety
- patient confidence
- reduced recurrence risk
- safe follow-up

For example, in pneumonia, repair may include:

- fever settling
- respiratory rate decreasing
- oxygenation improving
- cough and sputum improving
- appetite returning
- confusion clearing
- mobility improving
- kidney function staying safe
- patient understanding when to seek help

If only the fever improves, but oxygenation worsens, the repair trajectory is not secure.

If the cough improves, but the patient remains delirious, dehydrated, and unable to walk, the patient is not fully repaired.

Repair trajectory asks the clinician to follow the whole person, not only the disease label.

2. Why Repair Trajectory Matters

Students often think the clinical process ends when they make a diagnosis.

But in real medicine, diagnosis is only the beginning.

The real questions are:

- Is the patient improving?
- Is the treatment working?
- Is the diagnosis correct?
- Is another diagnosis present?
- Is treatment causing harm?
- Is function returning?
- Is the patient safe for discharge?
- Is recurrence being prevented?
- Does the patient understand the plan?

Repair trajectory protects against false reassurance.

It helps identify:

- wrong diagnosis
- incomplete diagnosis
- treatment failure
- complications
- adverse effects
- poor source control
- unresolved coupling conditions
- unsafe discharge
- recurrence risk

A patient's trajectory is often more informative than a single observation.

3. Repair Is Not the Same as Symptom Relief

Symptom relief is important, but it is not always repair.

Examples:

Pain Relief

Pain may improve because the cause is resolving.

But pain may also improve because opioids sedated the patient while the underlying pathology worsens.

Less Agitation

Agitation may improve because delirium is resolving.

But agitation may also improve because sedatives caused drowsiness, increasing aspiration and falls risk.

Less Fever

Fever may settle because infection is controlled.

But fever may also settle while oxygenation worsens from pneumonia progression, PE, heart failure, or sepsis.

Lower Glucose

Glucose may improve because diabetes is controlled.

But glucose may also fall too low if treatment is excessive for poor intake or CKD.

Lower Blood Pressure

Blood pressure may improve because vascular stress is controlled.

But it may also fall because of sepsis, bleeding, over-diuresis, or medication harm.

Repair requires interpretation.

The question is not only:

“Did the symptom change?”

The question is:

“Did the patient’s capacity improve safely?”

4. Repair Is Capacity Recovery

Repair trajectory should follow the capacities that were failing.

Oxygenation Repair

Expected signs:

- less breathlessness
- lower respiratory rate
- improved oxygen saturation
- reduced work of breathing
- better speech
- improved sleep
- improved walking tolerance

Circulation Repair

Expected signs:

- blood pressure stabilizes
- pulse improves
- mental state clears
- urine output improves
- skin perfusion improves
- dizziness resolves
- lactate or acidosis improves where measured

Clearance Repair

Expected signs:

- urine output improves
- creatinine stabilizes or falls
- potassium safe
- acid-base status improves
- fluid overload resolves
- medicine dosing becomes safer

Defense Repair

Expected signs:

- fever settles
- rigors stop
- source control achieved
- inflammatory markers improve where useful
- appetite returns
- energy improves
- organ dysfunction improves

Regulation Repair

Expected signs:

- glucose stabilizes
- electrolytes normalize
- acid-base balance improves
- hydration improves
- endocrine crisis resolves
- symptoms of dysregulation reduce

Cognition Repair

Expected signs:

- attention improves
- sleep-wake cycle improves
- orientation improves
- agitation reduces without oversedation
- family recognizes return toward baseline
- patient can participate in care

Mobility Repair

Expected signs:

- strength improves
- transfers become safer
- gait improves
- falls risk decreases
- patient can toilet
- patient can climb necessary stairs
- rehabilitation plan is active

Airway Protection Repair

Expected signs:

- swallowing safer
- cough during meals reduces
- wet voice improves

- secretions managed
- aspiration risk reduced
- nutrition and hydration supported

Participation Repair

Expected signs:

- patient understands diagnosis
- patient understands medicines
- patient can access treatment
- follow-up is arranged
- caregiver plan is realistic
- warning signs are understood
- treatment fits daily life

Repair is multidimensional because illness is multidimensional.

5. The First Repair Question: What Was Supposed to Improve?

Every treatment should have an expected response.

Before giving treatment, ask:

“What do I expect to improve if this treatment is correct?”

Examples:

Antibiotics for Pneumonia

Expected repair:

- fever improves
- respiratory rate improves
- oxygenation improves
- cough and sputum improve
- appetite returns
- delirium improves if infection was the trigger

Diuresis for Heart Failure

Expected repair:

- breathlessness improves
- orthopnea improves
- edema reduces
- weight trends appropriately
- oxygenation improves
- urine output increases
- renal function and electrolytes remain safe

Fluids for Hypovolemia

Expected repair:

- dizziness improves
- pulse improves
- blood pressure improves
- urine output improves
- creatinine stabilizes
- skin perfusion improves
- mental state improves

Glucose for Hypoglycemia

Expected repair:

- sweating and tremor improve
- confusion clears
- glucose remains stable
- patient can eat
- recurrence risk addressed

Bronchodilator for Asthma

Expected repair:

- wheeze improves
- air entry improves
- respiratory rate decreases
- speech improves
- oxygenation improves
- distress reduces

If expected repair does not occur, the clinician must reconsider.

6. The Second Repair Question: What Could Get Worse?

Every treatment can improve one capacity while harming another.

Repair trajectory must include harm monitoring.

Examples:

Treating Heart Failure With Diuretics

Expected benefit:

- less congestion
- improved oxygenation
- less edema

Possible harm:

- AKI
- low blood pressure
- electrolyte disturbance

- dizziness
- falls

Monitor:

- blood pressure
- urine output
- creatinine
- potassium
- sodium
- symptoms
- weight

Treating Hyperglycemia With Insulin

Expected benefit:

- safer glucose
- reduced metabolic stress

Possible harm:

- hypoglycemia
- hypokalemia
- confusion
- falls
- fear of treatment

Monitor:

- glucose
- potassium where relevant
- meals
- renal function
- mental state

Treating Delirium With Sedation

Expected benefit:

- immediate safety if severe agitation threatens harm

Possible harm:

- worsened delirium
- aspiration
- falls
- respiratory depression
- immobility
- loss of dignity

Monitor:

- consciousness
- breathing
- swallowing
- mobility
- falls risk
- underlying triggers

Repair trajectory is not only about improvement.

It is also about detecting treatment harm early.

7. The Third Repair Question: What Would Make Us Reconsider?

A repair trajectory should include triggers for reassessment.

Examples:

Pneumonia

Reconsider if:

- oxygenation worsens
- fever persists
- respiratory rate remains high
- chest pain worsens
- confusion persists
- hypotension develops
- imaging does not fit
- hemoptysis appears
- recurrent pneumonia occurs

Possible reconsiderations:

- pulmonary embolism
- heart failure
- resistant infection
- aspiration
- empyema
- tuberculosis
- malignancy
- wrong diagnosis

AKI

Reconsider if:

- urine output does not improve
- potassium rises
- pulmonary edema develops

- creatinine continues rising
- urinalysis suggests glomerular disease
- obstruction is not excluded
- sepsis develops
- medicines remain unsafe

Possible reconsiderations:

- obstruction
- intrinsic kidney disease
- ongoing hypovolemia
- heart failure congestion
- sepsis
- nephrotoxic injury
- rhabdomyolysis

Delirium

Reconsider if:

- attention does not improve
- agitation worsens
- sedation increases
- fever persists
- oxygenation worsens
- urinary retention, constipation, pain, or medication toxicity persists
- focal neurological signs appear

Possible reconsiderations:

- stroke
- intracranial bleed
- hypoxia
- drug toxicity
- uncontrolled infection
- metabolic disturbance
- withdrawal
- pain
- retention
- constipation

Repair trajectory must always ask:

What does failure to improve mean?

8. Repair Has Different Time Scales

Not all capacities repair at the same speed.

Immediate Repair

Minutes to hours.

Examples:

- glucose correction in hypoglycemia
- oxygenation support in hypoxia
- rhythm stabilization
- airway opening in bronchospasm
- blood pressure support in shock
- pain relief in severe pain
- potassium stabilization in emergency pathway

Early Repair

Hours to days.

Examples:

- fever settling
- respiratory rate improving
- urine output returning
- confusion beginning to clear
- vomiting stopping
- dehydration improving
- heart failure congestion improving
- glucose stabilizing

Functional Repair

Days to weeks.

Examples:

- walking returning
- appetite improving
- sleep normalizing
- strength recovering
- wound healing
- rehabilitation gains
- confidence returning

Deep Repair

Weeks to months.

Examples:

- frailty recovery
- chronic disease control
- medication simplification

- smoking cessation
- nutrition restoration
- depression improvement
- caregiver support
- recurrent admission prevention
- life participation

A patient may be biologically improving but functionally unrepaired.

This matters for discharge planning.

9. Repair Trajectory in Common Presentations

Chest Pain

Repair trajectory depends on cause.

For acute coronary syndrome:

- pain resolves
- ECG/troponin pathway clarified
- rhythm stable
- hemodynamics stable
- secondary prevention started
- risk factors addressed
- follow-up arranged

For reflux:

- burning improves
- swallowing safe
- no danger features
- triggers understood
- red flags safety-netted

For chest wall pain:

- localized pain improves
- breathing comfortable
- no cardiac or pulmonary danger
- function returns

Repair requires that dangerous causes have been considered before reassurance.

Dyspnea

Repair trajectory may include:

- respiratory rate improves
- oxygenation stabilizes
- work of breathing decreases

- wheeze or crackles improve
- patient can speak and walk better
- cause identified
- treatment response fits diagnosis
- relapse plan clear

Fever

Repair trajectory may include:

- temperature settles
- source identified or monitored
- circulation stable
- cognition improves
- urine output safe
- appetite returns
- antimicrobial plan appropriate
- source control achieved if needed

Weakness

Repair trajectory may include:

- power improves
- progression stops
- breathing and swallowing safe
- walking improves
- falls risk reduced
- cause treated
- rehabilitation begins
- home safety secured

Confusion

Repair trajectory may include:

- attention improves
- sleep-wake cycle improves
- agitation reduces without oversedation
- infection, hypoxia, dehydration, pain, retention, constipation, and medicines addressed
- family recognizes return toward baseline
- mobility and nutrition protected

AKI

Repair trajectory may include:

- potassium safe
- urine output improves
- creatinine stabilizes or falls

- acid-base status safe
- fluid status safe
- medicines adjusted
- repeat labs arranged
- obstruction excluded or relieved

Edema

Repair trajectory may include:

- swelling reduces
- breathlessness improves if fluid overload present
- renal function and electrolytes safe
- skin integrity protected
- underlying cause addressed
- mobility improves

Repair is presentation-specific and capacity-specific.

10. Repair Trajectory and Diagnosis Accuracy

The patient's response helps test the diagnosis.

Example:

A patient is treated for asthma.

Expected repair:

- wheeze improves
- air entry improves
- breathlessness reduces

If instead the patient remains hypoxic, tachycardic, pleuritic, and anxious, reconsider pulmonary embolism, pneumonia, pneumothorax, heart failure, or severe asthma not responding.

Example:

A patient is treated for cellulitis.

Expected repair:

- fever settles
- pain reduces
- spreading redness stops
- systemic symptoms improve

If pain worsens dramatically, the patient becomes toxic, or skin changes progress rapidly, reconsider necrotizing infection, abscess, ischemia, DVT, or alternative diagnosis.

Example:

A patient is treated for UTI-related delirium.

Expected repair:

- fever settles

- hydration improves
- attention improves
- mobility improves

If confusion persists, reconsider drugs, hypoxia, stroke, retention, constipation, pain, metabolic disturbance, or baseline dementia.

Failure to follow the expected trajectory is not an inconvenience.

It is diagnostic information.

11. Repair Trajectory in Multimorbidity

In multimorbidity, several repair trajectories overlap.

Example:

A frail patient with pneumonia, heart failure, AKI, and delirium may need repair in several domains:

Pneumonia Repair

- fever settles
- oxygenation improves
- cough improves

Heart Failure Repair

- orthopnea improves
- edema reduces
- oxygenation improves

AKI Repair

- urine output improves
- potassium remains safe
- creatinine stabilizes

Delirium Repair

- attention improves
- sleep improves
- agitation reduces

Functional Repair

- appetite returns
- mobility improves
- toileting safe
- falls risk reduced

The clinician must not declare success after only one domain improves.

For example, oxygenation may improve while delirium and immobility remain severe.

That patient is still on a repair journey.

12. Repair Trajectory and Frailty

Frailty changes the meaning of recovery.

In a robust patient, repair may mean return to baseline quickly.

In a frail patient, repair may be slower, incomplete, and easily reversed.

Frailty repair should include:

- cognition
- mobility
- nutrition
- hydration
- continence
- skin integrity
- sleep
- pain control
- medication simplification
- caregiver support
- rehabilitation
- goals of care

A frail patient with pneumonia may be afebrile and oxygenating well, but still unable to stand.

That patient is not fully repaired.

The question is:

Has the acute illness resolved enough, and are the remaining capacities supported enough, for safe ongoing recovery?

13. Repair Trajectory and Discharge Readiness

Discharge is a repair decision.

Before discharge, ask:

Diagnosis and Danger

- Is the working diagnosis clear enough?
- Have dangerous alternatives been excluded or planned for?
- Is the patient stable?
- Are red flags absent or addressed?

Capacity

- Is oxygenation safe?
- Is circulation safe?
- Is clearance safe?
- Is glucose safe?
- Is cognition safe?
- Is mobility safe?
- Is swallowing safe?

- Is pain controlled?
- Is hydration and nutrition adequate?

Treatment

- Are medicines correct?
- Are harmful medicines stopped?
- Are dose changes explained?
- Are follow-up tests arranged?
- Are pending results assigned to someone?
- Is the patient able to use inhalers, insulin, anticoagulants, or other treatments safely?

Function

- Can the patient walk?
- Can the patient toilet?
- Can the patient eat and drink?
- Can the patient manage stairs?
- Can the patient perform essential self-care?
- Is caregiver support adequate?

Coupling Conditions

- Can the patient obtain medicines?
- Can the patient attend follow-up?
- Is transport available?
- Is home safe?
- Are finances, cognition, language, or literacy barriers addressed?
- Does the family understand the plan?

Discharge before repair capacity is secured invites recurrence.

14. Repair Trajectory and Follow-Up

Some repair happens after discharge.

Follow-up should be linked to the capacities that remain vulnerable.

Examples:

After AKI

Follow-up should address:

- repeat renal function
- potassium
- medicine restart plan
- avoidance of nephrotoxins
- hydration and sick-day advice
- underlying cause
- CKD risk

After Pneumonia

Follow-up should address:

- symptom resolution
- persistent cough
- oxygenation if previously low
- appetite and strength
- imaging follow-up where indicated
- smoking or aspiration risk
- recurrent pneumonia concerns

After Heart Failure

Follow-up should address:

- weight
- breathlessness
- edema
- renal function
- potassium
- medicine titration
- salt/fluid plan where appropriate
- early warning signs

After Hypoglycemia

Follow-up should address:

- recurrence
- medicine adjustment
- meal pattern
- kidney function
- frailty goals
- caregiver support
- access to glucose monitoring

After Delirium

Follow-up should address:

- return to cognitive baseline
- sleep
- mobility
- medicines
- caregiver strain
- dementia assessment if needed
- falls risk

Follow-up is not a formality.

It is part of the repair trajectory.

15. Repair Trajectory and Patient Explanation

Patients should know what improvement should look like.

For example:

Pneumonia

"We expect your breathing, fever, and energy to gradually improve. If your breathlessness worsens, fever persists, confusion develops, or you cannot drink, you need urgent review."

AKI

"We expect your urine output and kidney blood tests to improve. We also need to keep potassium safe and review which medicines to restart. If you pass much less urine, vomit again, become weak, or develop swelling or breathlessness, seek help."

Heart Failure

"We expect your breathing lying flat and leg swelling to improve. We must also protect your kidneys and blood pressure. If weight rises quickly, breathlessness worsens, or dizziness becomes severe, contact us."

Delirium

"We expect attention, sleep, and orientation to improve as the triggers are treated. If confusion worsens, fever returns, breathing worsens, or the patient stops eating or drinking, they need reassessment."

Explaining repair turns the patient and family into partners in monitoring.

16. Repair Trajectory and Safety-Netting

Safety-netting is the patient-facing version of repair monitoring.

A good safety-net includes:

- what diagnosis is suspected
- what improvement is expected
- how long improvement may take
- what symptoms suggest deterioration
- what side effects to watch for
- what medicines to stop or restart
- what follow-up is required
- who to contact
- when to seek emergency care

Weak safety-net:

"Come back if worse."

Stronger safety-net:

"Seek urgent care if breathlessness worsens, fever persists beyond the expected period, confusion develops, chest pain occurs, oxygen readings fall, or you cannot keep fluids down."

Safety-netting should be specific to the capacity at risk.

17. Repair Trajectory and Recurrent Illness

Repair is incomplete if recurrence conditions remain unchanged.

Example:

A patient with recurrent AKI improves in hospital.

If they leave without:

- sick-day medicine advice
- NSAID avoidance plan
- repeat renal tests
- hydration plan
- clear restart instructions

then the repair trajectory is incomplete.

Example:

A patient with recurrent asthma improves after nebulizers.

If they leave without:

- inhaler technique review
- preventer access
- trigger control
- action plan
- follow-up

then the repair trajectory is incomplete.

Example:

A patient with recurrent falls has no fracture.

If they leave without:

- medication review
- orthostatic blood pressure assessment
- vision review
- footwear advice
- mobility support
- home hazard assessment where possible

then the repair trajectory is incomplete.

Repair includes recurrence prevention.

18. Repair Trajectory and Goals of Care

Repair does not always mean cure.

In chronic, advanced, or end-of-life illness, repair may mean:

- less pain
- less breathlessness

- less fear
- fewer burdensome interventions
- better sleep
- family understanding
- dignity preserved
- care aligned with patient goals
- avoidance of unwanted hospitalization
- meaningful time at home

For example:

In advanced heart failure, repair may not mean normal cardiac function.

It may mean:

- comfortable breathing
- reduced panic
- fewer hospital admissions
- clear diuretic plan
- family support
- palliative care involvement
- goals understood

In advanced cancer, repair may not mean tumor cure.

It may mean:

- pain controlled
- nausea controlled
- nutrition and hydration decisions clarified
- family supported
- spiritual and emotional needs addressed
- dignity protected

Repair trajectory must fit the patient's stage of life and goals.

19. Repair Trajectory in Documentation

Good documentation should include expected repair.

Weak note:

"Plan: antibiotics, fluids, monitor."

Stronger note:

"Plan: treat likely pneumonia with local antibiotic pathway, support hydration, monitor oxygenation, respiratory rate, temperature, mental state, urine output, renal function, and mobility. Expected repair: fever and respiratory rate improve, oxygenation remains stable, intake improves, confusion clears. Reconsider PE, heart failure, aspiration, or resistant infection if oxygenation worsens, fever persists, or functional status declines."

This note shows reasoning.

It helps the whole team know what to watch.

20. Repair Trajectory in Handover

A safe handover includes:

- diagnosis or working diagnosis
- current capacity failures
- what has improved
- what has not improved
- what to monitor
- what would trigger escalation
- pending tests
- follow-up actions

Weak handover:

“Pneumonia, on antibiotics, stable.”

Stronger handover:

“Frail 82-year-old with pneumonia complicated by mild hypoxia, delirium, poor intake, and AKI. Fever is settling and oxygenation is stable on low support, but confusion and mobility remain unsafe. Please monitor respiratory rate, oxygen saturation, urine output, oral intake, falls risk, and repeat renal function. Escalate if oxygen requirement rises, blood pressure falls, or confusion worsens.”

Repair handover protects continuity.

21. Worked Case 1: Pneumonia

A 75-year-old man presents with fever, productive cough, pleuritic chest pain, tachypnea, and low oxygen saturation. Pneumonia is diagnosed and treatment begins.

Capacity Failures

Defense, oxygenation, airway clearance, energy, hydration, possible circulation risk.

Expected Repair

- fever settles
- respiratory rate decreases
- oxygen saturation improves
- cough and sputum gradually improve
- pleuritic pain reduces
- appetite returns
- energy improves
- no sepsis develops

Monitor for Harm or Failure

- worsening oxygenation

- persistent fever
- hypotension
- confusion
- reduced urine output
- antibiotic adverse effects
- dehydration
- chest pain worsening
- hemoptysis

Reconsider If

No improvement or deterioration suggests resistant infection, wrong diagnosis, empyema, PE, heart failure, aspiration, TB, malignancy, or immunosuppression-related infection.

Discharge Repair

Patient can breathe safely, drink, mobilize, understand warning signs, obtain medicines, and attend follow-up.

22. Worked Case 2: Heart Failure

A 79-year-old woman with known heart failure and CKD presents with orthopnea, edema, crackles, hypoxia, and weight gain.

Capacity Failures

Fluid balance, oxygenation, circulation, kidney vulnerability, sleep, mobility.

Expected Repair

- breathlessness improves
- orthopnea improves
- edema reduces
- oxygenation stabilizes
- weight trends appropriately
- sleep improves
- mobility improves
- kidney function remains acceptable
- potassium remains safe

Monitor for Harm or Failure

- worsening creatinine
- low blood pressure
- electrolyte disturbance
- dizziness
- falls
- persistent hypoxia
- arrhythmia
- chest pain

Reconsider If

Breathlessness does not improve, fever appears, chest pain develops, renal function worsens severely, or oxygenation remains poor.

Possible alternatives or additions include pneumonia, PE, ACS, renal failure, anemia, or medication non-adherence.

Discharge Repair

Patient understands weight plan, medicines, diuretic instructions, warning signs, follow-up labs, and when to seek help.

23. Worked Case 3: AKI

A 68-year-old man with CKD presents after diarrhea and poor intake. He has AKI, reduced urine output, dizziness, and hyperkalemia.

Capacity Failures

Clearance, potassium regulation, hydration, kidney perfusion, medicine safety.

Expected Repair

- potassium becomes safe
- dizziness improves
- urine output increases
- creatinine stabilizes or falls
- hydration improves
- usual medicines reviewed
- nephrotoxins stopped
- oral intake returns

Monitor for Harm or Failure

- worsening potassium
- ECG changes
- pulmonary edema after fluids
- persistent oliguria
- worsening creatinine
- hypotension
- medication accumulation

Reconsider If

Urine output does not improve, obstruction has not been excluded, urinalysis suggests intrinsic disease, sepsis develops, or fluid overload appears.

Discharge Repair

Repeat labs arranged, potassium safe, medicine restart plan clear, sick-day advice understood, pain plan avoids nephrotoxic harm where possible.

24. Worked Case 4: Delirium

An 86-year-old woman with dementia develops acute confusion during a urinary infection, dehydration, constipation, and sleep disruption.

Capacity Failures

Cognition, sleep-wake regulation, hydration, defense, bowel function, mobility safety, dignity.

Expected Repair

- attention improves
- orientation improves
- sleep-wake cycle stabilizes
- infection improves
- hydration improves
- constipation relieved
- mobility safer
- family recognizes return toward baseline

Monitor for Harm or Failure

- oversedation
- falls
- aspiration
- worsening infection
- urinary retention
- pain
- persistent constipation
- hypoxia
- medication toxicity

Reconsider If

Confusion persists despite treating triggers, focal neurological signs appear, sedation worsens alertness, fever persists, or intake remains poor.

Discharge Repair

Cognition near baseline or safely supported, falls risk addressed, medicines simplified, caregiver understands plan, follow-up arranged.

25. Worked Case 5: Hypoglycemia

A 78-year-old woman with diabetes and CKD is found confused and sweaty after taking her usual diabetes tablets but eating little.

Capacity Failures

Glucose regulation, brain energy, cognition, mobility safety, medicine safety, nutrition.

Expected Repair

- glucose rises safely
- sweating and tremor improve
- mental state clears

- patient eats safely
- glucose remains stable
- diabetes medicine plan adjusted
- recurrence risk reduced

Monitor for Harm or Failure

- recurrent hypoglycemia
- overshoot hyperglycemia
- persistent confusion
- poor intake
- kidney function worsening
- falls

Reconsider If

Mental state does not clear after glucose correction.

Consider stroke, sepsis, drug toxicity, head injury, electrolyte disturbance, or prolonged hypoglycemia effect.

Discharge Repair

Medicine plan safer, meal pattern addressed, caregiver informed, glucose monitoring feasible, follow-up arranged.

26. Common Student Pitfalls

Pitfall 1: Thinking Diagnosis Ends the Case

Diagnosis starts the repair plan. It does not complete it.

Pitfall 2: Watching Only One Marker

Fever may improve while oxygenation worsens. Creatinine may improve while mobility remains unsafe.

Pitfall 3: Confusing Sedation With Delirium Repair

A quieter patient is not necessarily a better patient.

Pitfall 4: Discharging Before Functional Repair

A patient who cannot walk, toilet, eat, drink, or understand the plan may not be safe.

Pitfall 5: Ignoring Treatment Harm

Every treatment should have harm monitoring.

Pitfall 6: Failing to Reconsider

Failure to improve is diagnostic information.

Pitfall 7: Forgetting Coupling Repair

If the conditions that caused the illness remain unchanged, recurrence is likely.

Pitfall 8: Not Explaining Expected Recovery

Patients need to know what should improve and what should prompt urgent review.

27. Clinical Practice Box

When defining repair trajectory, complete this structure:

Working diagnosis or syndrome:

Primary capacity failures:

Treatment started:

Expected early improvement:
What should improve in hours to days?

Expected functional improvement:
What should improve before discharge or follow-up?

What must be monitored for harm?

What would make you reconsider the diagnosis?

What would make you escalate care?

What coupling conditions must be repaired?

Discharge readiness criteria:
Oxygenation, circulation, clearance, cognition, mobility, hydration, medicines, support?

Safety-netting:
What should the patient or caregiver watch for?

Follow-up plan:
Who reviews what, and when?

28. Mini-Case for Practice

A 72-year-old woman with diabetes, CKD, and heart failure presents with fever, cough, mild hypoxia, confusion, poor oral intake, and rising creatinine. She is treated for pneumonia with careful attention to fluid balance and kidney function.

Define the repair trajectory.

Working Diagnosis

Pneumonia complicated by hypoxia, delirium, poor intake, and AKI risk in a patient with CKD and heart failure.

Capacity Failures

Defense, oxygenation, cognition, hydration/nutrition, clearance, fluid balance, mobility safety.

Expected Early Repair

- fever begins to settle
- respiratory rate improves
- oxygen saturation stabilizes
- cough and sputum improve gradually
- oral intake improves
- confusion begins to clear
- urine output remains adequate
- creatinine and potassium stabilize

Harm Monitoring

- worsening hypoxia
- fluid overload
- worsening AKI
- hyperkalemia
- hypotension
- antibiotic adverse effects
- falls
- aspiration
- persistent delirium

Reconsider If

Oxygenation worsens, fever persists, confusion worsens, chest pain appears, renal function deteriorates, or the patient fails to improve as expected.

Consider PE, heart failure, aspiration, resistant infection, TB, malignancy, medication toxicity, or another source of sepsis.

Coupling Repair

Review medicines, hydration plan, diabetes plan during poor intake, kidney follow-up, heart failure fluid balance, family support, mobility safety, and warning signs.

Discharge Readiness

Safe oxygenation, stable renal function and potassium, improving cognition, adequate intake, safe mobility or support, medicine plan clear, follow-up labs arranged, caregiver understands warning signs.

29. Student Takeaway

Repair trajectory becomes easier when the clinician asks:

What capacity was failing?
What treatment was chosen?
What should improve first?
What should improve later?
What harm could the treatment cause?
What would make us reconsider the diagnosis?
What would make us escalate care?
What coupling conditions must be repaired to prevent recurrence?

What must be true before discharge is safe?
Does the patient or caregiver understand what recovery should look like?

Repair trajectory is the final test of clinical reasoning.

It shows whether danger was identified, the syndrome was understood, capacity failure was treated, coupling conditions were addressed, and wise perturbation actually moved the patient toward life.

The safe clinician does not stop at diagnosis or treatment.

The safe clinician follows the patient until repair is real, safe, functional, and understood.

Chapter 41. Bedside Integration Made Easy

Bedside integration is the skill of bringing everything together in front of the patient.

It means combining:

- the story
- the examination
- the vital signs
- the medications
- the laboratory results
- the imaging
- the patient's baseline function
- the family's observations
- the nurse's concerns
- the diagnosis
- the danger
- the capacity failure
- the coupling conditions
- the treatment plan
- the repair trajectory

Bedside integration is where Internal Medicine becomes real.

It is not enough to know diseases separately.
It is not enough to collect facts.
It is not enough to order tests.
It is not enough to prescribe treatment.

The clinician must ask:

What is happening to this patient now, what matters most, what must be done next, and how will we know the patient is repairing?

Bedside integration is the full clinical loop in action:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Bedside Integration?

Bedside integration means turning scattered information into a coherent clinical picture.

A patient may have:

- fever
- cough
- low oxygen saturation
- confusion
- poor intake
- rising creatinine

- diabetes
- heart failure
- several medicines
- new immobility
- family worry
- abnormal chest imaging

The inexperienced clinician may see a list.

The integrated clinician sees a living pattern:

“This is a frail patient with likely pneumonia causing impaired defense and oxygenation, complicated by delirium, poor intake, AKI risk, and mobility collapse, in the context of diabetes, heart failure, CKD, and medicine vulnerability. The immediate priorities are oxygenation, sepsis assessment, careful fluid balance, renal and potassium monitoring, delirium prevention, mobility safety, and reassessment of response.”

That is bedside integration.

It does not ignore details.

It organizes details around what is clinically alive.

2. Why Bedside Integration Matters

Students often learn medicine in separate compartments.

They learn:

- cardiology
- respiratory medicine
- nephrology
- endocrinology
- infectious disease
- geriatrics
- pharmacology
- ethics
- communication

But patients do not arrive in compartments.

A patient with pneumonia may also have:

- heart failure
- CKD
- diabetes
- frailty
- delirium
- polypharmacy
- depression

- poor social support

A patient with AKI may also have:

- dehydration
- heart failure
- NSAID use
- sepsis
- hyperkalemia
- urinary obstruction
- medication toxicity

Bedside integration matters because real patients are complex.

It helps the clinician:

- identify what is urgent
- avoid missed danger
- avoid fragmented care
- avoid harmful treatment
- communicate clearly
- prioritize wisely
- involve the team
- monitor repair
- plan safe discharge

Integration is what turns knowledge into judgment.

3. The Bedside Integration Question

At the bedside, ask:

What is the whole clinical situation?

Then break that into six questions:

1. **What danger is present?**
2. **What syndrome is active?**
3. **What capacity is failing?**
4. **What coupling conditions are shaping the illness?**
5. **What perturbation is wise now?**
6. **What repair trajectory should follow?**

This is the clinical loop.

The loop is not theoretical.

It is a bedside tool.

4. Before Entering the Room

Before seeing the patient, prepare briefly.

Ask:

- Why is the patient here?
- What is the main complaint?
- What are the vital signs?
- Is there any immediate danger?
- What are the major comorbidities?
- What medicines matter?
- What recent tests are available?
- What is the baseline function?
- What question must be answered at the bedside?

Do not spend too long reading before seeing a sick patient.

If the patient is unstable, go to the bedside first.

But a brief preparation helps prevent missing obvious danger.

5. The First Minute at the Bedside

The first minute is powerful.

Look at the patient before speaking too much.

Ask:

- Is the patient alert?
- Is the patient breathing comfortably?
- Can the patient speak?
- Is there cyanosis?
- Is there distress?
- Is there pain?
- Is there sweating?
- Is there confusion?
- Is there agitation?
- Is there pallor?
- Is there visible bleeding?
- Is there weakness?
- Is the patient sitting up because they cannot lie flat?
- Is there vomiting?
- Is there family concern?
- Is the nurse worried?

The first minute often tells you whether the situation is safe or dangerous.

A patient who looks unwell deserves immediate danger assessment.

6. Danger Integration: The Bedside ABCDE Mindset

Even outside the emergency room, the clinician should think in an ABCDE way when danger is possible.

Airway

Ask:

- Is the airway open?
- Can the patient speak?
- Is there choking?
- Is there stridor?
- Is there vomiting?
- Is there blood?
- Is there reduced consciousness?
- Can the patient protect the airway?

Breathing

Ask:

- What is the respiratory rate?
- Is oxygen saturation safe?
- Is work of breathing increased?
- Is air entry adequate?
- Is there wheeze?
- Are there crackles?
- Is there exhaustion?
- Is there cyanosis?

Circulation

Ask:

- What is the blood pressure?
- What is the pulse?
- Is the rhythm regular?
- Is the patient cold or mottled?
- Is there bleeding?
- Is urine output reduced?
- Is there chest pain?
- Is there edema or fluid overload?

Disability

Ask:

- Is the patient alert?
- Is glucose safe?
- Is there confusion?

- Is there seizure?
- Is there focal neurological deficit?
- Is there severe pain?
- Is there delirium?

Exposure

Ask:

- Is there fever?
- Is there rash?
- Is there swelling?
- Is there injury?
- Is there infection source?
- Is there pressure injury?
- Is there dehydration?
- Is there hidden bleeding?

This danger scan does not replace diagnosis.

It makes diagnosis safe.

7. Story Integration

After danger is addressed, listen to the story.

The story should answer:

- What changed?
- When did it start?
- How fast did it progress?
- What was the baseline?
- What triggered it?
- What symptoms came together?
- What has been tried?
- What made it better or worse?
- What is the patient most afraid of?
- What is the family worried about?
- What has this illness stopped the patient from doing?

A good clinical story includes both disease and life.

For example:

Weak story:

“Cough and fever for three days.”

Integrated story:

“Three days of cough and fever have now led to breathlessness, poor intake, confusion, and inability to walk in a previously independent older adult.”

The second story reveals capacity failure.

8. Examination Integration

The examination should answer specific questions.

Do not examine randomly.

Ask:

What am I trying to confirm, exclude, or monitor?

For dyspnea:

- oxygenation
- work of breathing
- wheeze
- crackles
- edema
- heart rhythm
- signs of PE
- signs of pneumonia
- signs of heart failure

For confusion:

- glucose
- oxygenation
- infection
- neurological deficit
- hydration
- pain
- urinary retention
- constipation
- medication effect
- sensory deprivation

For weakness:

- focal or generalized
- proximal or distal
- reflexes
- sensation
- gait
- breathing

- swallowing
- spinal signs

For edema:

- distribution
- heart failure signs
- kidney/liver signs
- venous disease
- medication causes
- protein loss
- skin integrity

A focused examination is not a short examination.

It is an examination guided by reasoning.

9. Vital Sign Integration

Vital signs are not isolated numbers.

They are a pattern.

Fever + Tachypnea + Confusion

Think:

- infection
- sepsis
- hypoxia
- delirium
- metabolic stress

Tachycardia + Hypotension + Low Urine Output

Think:

- shock
- dehydration
- bleeding
- sepsis
- arrhythmia
- cardiogenic failure

Low Oxygen + High Respiratory Rate

Think:

- pneumonia
- heart failure
- PE
- asthma/COPD

- pneumothorax
- severe anemia
- metabolic acidosis

Bradycardia + Dizziness

Think:

- heart block
- medication effect
- hyperkalemia
- increased intracranial pressure in selected contexts
- athletic baseline only after danger considered

Normal Vital Signs

Normal vital signs are reassuring only when the whole pattern is low-risk.

A patient may still have serious disease with normal early vital signs.

Always integrate vital signs with story, examination, risk, and trajectory.

10. Laboratory Integration

Laboratory results must be interpreted through the patient.

A creatinine is not just a number.

Ask:

- What was baseline?
- Is urine output reduced?
- Is potassium safe?
- Is the patient dry or overloaded?
- Are medicines accumulating?
- Is obstruction possible?
- Is sepsis present?

A white cell count is not just a number.

Ask:

- Is there fever?
- Is there infection source?
- Is the patient immunosuppressed?
- Is the patient septic?
- Are steroids affecting the count?
- Is the patient improving?

A glucose value is not just a number.

Ask:

- Is the patient symptomatic?

- Are ketones present?
- Is the patient eating?
- Is kidney function impaired?
- Are medicines causing lows or highs?
- Is infection driving hyperglycemia?

Laboratory results answer clinical questions.

They should not create unanchored anxiety.

11. Imaging Integration

Imaging must also be interpreted clinically.

A chest X-ray showing infiltrates may support pneumonia.

But ask:

- Does the patient have fever?
- Is there sputum?
- Is oxygenation impaired?
- Could this be heart failure?
- Could this be aspiration?
- Could this be malignancy or TB if persistent?
- Does the clinical trajectory fit?

A CT finding may be real but incidental.

Ask:

- Does it explain the syndrome?
- Does it change management?
- Does it require follow-up?
- Is it the main problem or a background finding?

Imaging is powerful, but it is not the patient.

The patient remains the center of interpretation.

12. Medication Integration

Medicines often explain clinical deterioration.

At the bedside, ask:

- What is prescribed?
- What is actually taken?
- What was recently started?
- What was recently stopped?
- What dose changed?
- What over-the-counter medicines are used?

- Are NSAIDs being taken?
- Are sedatives being taken?
- Are diuretics contributing to dehydration?
- Are diabetes medicines causing hypoglycemia?
- Are anticoagulants contributing to bleeding?
- Are antihypertensives causing dizziness or falls?
- Is kidney or liver function changing medicine safety?
- Is the patient using inhalers correctly?
- Can the patient afford the medicines?

Medication reconciliation is not clerical.

It is diagnostic and therapeutic.

13. Baseline Function Integration

Always ask:

What was the patient like before this illness?

Baseline matters.

A patient who normally walks independently but now cannot stand has a major capacity failure.

A patient with mild dementia who is now acutely inattentive has delirium until proven otherwise.

A patient who normally eats well but now refuses food may be severely ill.

A patient who usually climbs stairs but now cannot reach the bathroom has functional decline.

Baseline function includes:

- walking
- transfers
- toileting
- feeding
- cognition
- communication
- swallowing
- continence
- sleep
- medicines
- work
- caregiving roles
- social participation

Without baseline, improvement cannot be judged.

Repair means movement toward meaningful baseline or a supported new baseline.

14. Family and Caregiver Integration

Families often know the trajectory better than the chart.

They may tell you:

- this confusion is new
- this weakness is not normal
- the patient has stopped eating
- medicines are not being taken
- falls are increasing
- breathlessness is worse at night
- the patient is hiding symptoms
- memory has declined
- caregiving is becoming impossible
- the home is unsafe

Do not treat family input as secondary.

It is often essential data.

Ask:

- What is different from normal?
- When did you first notice the change?
- What worries you most?
- Can the patient manage at home?
- Who helps with medicines?
- Has there been weight loss?
- Has there been a fall?
- Has there been missed treatment?
- What would safe recovery look like?

Caregivers help complete the clinical picture.

15. Nursing and Team Integration

Nurses often detect deterioration early.

They may notice:

- rising respiratory rate
- reduced urine output
- increasing confusion
- poor intake
- unsafe mobility
- pressure injury risk
- pain

- medication refusal
- family distress
- swallowing problems
- sleep disruption

A wise clinician asks:

“What are you worried about?”

This question is often more useful than:

“Are there any issues?”

Other team members also add essential integration:

- pharmacists identify medicine harm
- physiotherapists assess mobility
- occupational therapists assess function and home safety
- dietitians assess nutrition
- speech therapists assess swallowing
- social workers assess support and access
- palliative care teams assess comfort, goals, and dignity

Bedside integration is a team activity.

16. The Integrated Problem Representation

After gathering bedside data, create an integrated problem representation.

Use this structure:

Patient context + time course + syndrome + danger/capacity failure + coupling conditions + leading concern

Example:

“A frail 82-year-old woman with diabetes, CKD, and mild dementia presents with three days of fever, productive cough, poor intake, acute confusion, tachypnea, mild hypoxia, and rising creatinine, concerning for pneumonia causing impaired defense and oxygenation, complicated by delirium, dehydration, AKI risk, and acute mobility decline.”

This representation helps guide:

- oxygen support
- infection treatment
- hydration strategy
- renal monitoring
- delirium care
- mobility safety
- discharge planning

A good bedside representation should make the next action clearer.

17. Prioritization at the Bedside

Integration must lead to prioritization.

Ask:

What must be done now?

Examples:

- oxygen
- glucose correction
- ECG
- sepsis pathway
- stroke pathway
- hyperkalemia pathway
- airway support
- fluids or blood if shock
- urgent imaging
- escalation

What must be done today?

Examples:

- medication review
- renal monitoring
- chest imaging
- cultures where indicated
- physiotherapy assessment
- swallow assessment
- family update
- treatment adjustment

What must be done before discharge?

Examples:

- medicine plan
- mobility safety
- follow-up tests
- caregiver support
- warning signs
- equipment
- education
- referral
- recurrence prevention

Prioritization prevents the clinician from treating all tasks as equal.

Not all tasks are equal.

18. Bedside Integration During Ward Rounds

A ward round should not be a ritual of listing results.

It should ask:

- What was the diagnosis yesterday?
- What changed overnight?
- What capacities are improving?
- What capacities remain unsafe?
- Are there treatment harms?
- Are there new data that change the diagnosis?
- Are coupling conditions addressed?
- Is the patient moving toward discharge?
- What is the plan for today?
- What would trigger escalation?

A good ward round statement might be:

"The pneumonia is improving: fever is down and oxygenation is better. However, delirium persists, oral intake is poor, and creatinine has risen. Today we need to reassess hydration, review nephrotoxic medicines, monitor urine output and potassium, involve family for reorientation, and assess mobility before considering discharge."

This is bedside integration.

19. Bedside Integration During Clinical Deterioration

When a patient worsens, do not simply add more treatment.

Reintegrate.

Ask:

- What has changed?
- Is airway safe?
- Is breathing worse?
- Is circulation worse?
- Is cognition worse?
- Is urine output falling?
- Is glucose abnormal?
- Is potassium abnormal?
- Is there bleeding?
- Is there sepsis?
- Is treatment causing harm?
- Was the diagnosis wrong or incomplete?

- Is there a new complication?

Example:

A patient treated for pneumonia becomes more breathless.

Possible reasons:

- pneumonia worsening
- pulmonary embolism
- heart failure
- aspiration
- pneumothorax
- asthma/COPD
- fluid overload
- sepsis
- anemia
- myocardial infarction

Deterioration means the clinical picture must be rebuilt.

20. Bedside Integration and Uncertainty

Uncertainty is normal.

The goal is not to pretend certainty.

The goal is to manage uncertainty safely.

Say:

“The leading concern is pneumonia, but heart failure and pulmonary embolism remain possible. We are treating the infection because fever, cough, and chest findings support it, while monitoring oxygenation, ECG, fluid status, and response. If oxygenation worsens or the trajectory does not fit, we will reassess for PE, heart failure, or another diagnosis.”

This is honest and safe.

Uncertainty becomes dangerous when it is hidden.

It becomes manageable when it is named, monitored, and linked to a plan.

21. Bedside Integration and Communication With Patients

Patients need to understand the integrated picture.

Avoid overwhelming them with disconnected data.

Instead of saying:

“Your creatinine is up, your CRP is high, your oxygen is low, and your sodium is borderline.”

Say:

“The infection is stressing your lungs and kidneys. Your oxygen level is lower than usual, and your kidneys are not clearing as well, probably because you have been eating and drinking less. We are treating the infection, supporting your breathing, watching the kidneys and salts, and making sure you can safely eat, walk, and recover.”

This explanation is integrated.

It helps the patient understand what matters.

22. Bedside Integration and Shared Decision-Making

Shared decision-making requires integration.

Patients cannot make good decisions if they are only given isolated facts.

For example, a frail patient with advanced heart failure and recurrent admissions may need to understand:

- what is happening physiologically
- what treatments may help
- what treatments may burden
- what recovery is realistic
- what hospital care can and cannot fix
- what matters most to them
- what support is available at home
- what palliative care can offer

Integrated explanation supports meaningful choice.

The clinician should ask:

- What matters most to you if time is limited?
- What level of function would be acceptable?
- What treatments feel too burdensome?
- What are you hoping we can achieve?
- What are you afraid of?
- Who should be involved in decisions?

Integration protects autonomy.

23. Bedside Integration and Documentation

Clinical notes should reflect integrated thinking.

Weak note:

“Pneumonia. Continue antibiotics. Monitor.”

Stronger note:

“Pneumonia with mild hypoxia and delirium in frail patient with CKD. Fever and oxygenation improving, but oral intake poor and creatinine rising. Continue local pneumonia pathway, encourage/support fluids cautiously, review nephrotoxins, monitor urine output, renal function, potassium, oxygenation, cognition, and mobility. Reassess if oxygen need rises, fever persists, or renal function worsens.”

This note tells the next clinician:

- what the diagnosis is
- what capacities are failing
- what is improving

- what remains unsafe
- what to monitor
- what would change the plan

Good documentation is bedside integration written down.

24. Bedside Integration and Handover

A safe handover includes:

- who the patient is
- main syndrome
- current working diagnosis
- danger status
- capacity failures
- what has improved
- what remains unsafe
- pending results
- escalation triggers
- plan for next review

Example:

“Mr. James is a 78-year-old man with COPD and CKD admitted with pneumonia causing hypoxia and delirium. Oxygenation has improved, but he remains intermittently confused and has poor intake with rising creatinine. Please monitor respiratory rate, oxygen saturation, mental state, urine output, and potassium. Escalate if oxygen requirement increases, blood pressure falls, confusion worsens, or urine output drops.”

This is much safer than:

“Pneumonia, stable.”

25. Bedside Integration and Discharge

Discharge requires integrated readiness.

Do not ask only:

“Is the diagnosis treated?”

Ask:

- Is oxygenation safe?
- Is circulation stable?
- Is cognition safe?
- Is mobility safe?
- Is swallowing safe?
- Is hydration adequate?
- Is renal function safe?

- Are medicines correct?
- Are follow-up tests arranged?
- Is home support adequate?
- Does the patient understand warning signs?
- Can the patient obtain medicines?
- Are pending results assigned?
- Is recurrence prevention addressed?

A patient may be medically improved but functionally unsafe.

Safe discharge requires enough restored capacity and enough supported coupling conditions.

26. Worked Case 1: Pneumonia With AKI Risk

A 79-year-old man with diabetes and CKD presents with cough, fever, tachypnea, mild hypoxia, poor intake, and rising creatinine.

Danger

Hypoxia, sepsis risk, AKI, hyperkalemia risk, dehydration, delirium risk.

Syndrome

Acute respiratory infection syndrome with systemic stress and kidney vulnerability.

Capacity Failure

Defense, oxygenation, hydration, clearance, mobility risk.

Coupling Conditions

Diabetes, CKD, poor intake, age, medicines that may affect kidneys, home support.

Wise Perturbation

Treat pneumonia according to local guidance, support oxygenation, assess volume status carefully, review nephrotoxic or kidney-sensitive medicines, monitor renal function, potassium, urine output, respiratory rate, oxygenation, and function.

Repair Trajectory

Fever settles, breathing improves, oxygenation stable, oral intake improves, creatinine stabilizes, potassium safe, mobility preserved, follow-up labs arranged.

Integrated Bedside Summary

“This is pneumonia with mild oxygenation failure and kidney vulnerability, not just a cough. The plan must protect lungs, kidneys, hydration, medicines, and mobility together.”

27. Worked Case 2: Heart Failure and Confusion

An 84-year-old woman with known heart failure presents with worsening dyspnea, orthopnea, leg swelling, confusion, and poor sleep.

Danger

Pulmonary edema, hypoxia, delirium, AKI risk, arrhythmia or ischemic trigger.

Syndrome

Acute decompensated heart failure with cognitive and functional impact.

Capacity Failure

Oxygenation, fluid balance, circulation, cognition, sleep, mobility.

Coupling Conditions
Frailty, CKD risk, polypharmacy, medication adherence, salt intake, living alone, baseline cognition.

Wise Perturbation
Assess oxygenation, volume status, ECG, renal function, electrolytes, medicine adherence, triggers, delirium contributors, and mobility. Treat congestion according to local guidance while protecting kidney function and blood pressure.

Repair Trajectory
Breathlessness improves, orthopnea reduces, edema decreases, oxygenation improves, sleep improves, cognition clears, renal function remains safe, discharge plan supports medicines and monitoring.

Integrated Bedside Summary
“This is not only fluid overload. It is heart failure decompensation affecting breathing, sleep, cognition, kidneys, and independence.”

28. Worked Case 3: Delirium After Medication Change
An 87-year-old man with dementia becomes acutely confused after starting a sedative for sleep. He has also been constipated, eating poorly, and passing urine frequently at night.

Danger
Delirium, falls, urinary retention or infection, dehydration, medication harm, aspiration risk.

Syndrome
Acute confusion in vulnerable brain with medication and bodily stressors.

Capacity Failure
Cognition, sleep-wake regulation, medicine safety, hydration/nutrition, bowel/bladder function, mobility safety.

Coupling Conditions
Dementia, sedative exposure, constipation, nocturia, poor intake, frailty, sensory impairment, home support.

Wise Perturbation
Check glucose, oxygenation, vitals, infection, urinary retention, constipation, pain, electrolytes, renal function, and medication list. Stop or reduce harmful medicine where appropriate, treat triggers, reorient, protect mobility, involve family.

Repair Trajectory
Attention improves, sleep normalizes, constipation relieved, hydration improves, unsafe wandering reduces without oversedation, mobility protected.

Integrated Bedside Summary
“This is delirium from a vulnerable brain interacting with sedative exposure, constipation, poor intake, and possible urinary problems.”

29. Worked Case 4: Dizziness and Falls
A 76-year-old woman presents after two falls. She feels dizzy on standing. She recently had diarrhea but continued diuretics and blood pressure medicines.

Danger
Orthostatic hypotension, dehydration, AKI, electrolyte disturbance, medication harm, injury from falls.

Syndrome
Presyncope and falls after fluid loss in a patient on blood pressure and diuretic therapy.

Capacity Failure

Brain perfusion, hydration, circulation, clearance risk, mobility safety.

Coupling Conditions

Diarrhea, poor intake, diuretics, antihypertensives, age, home hazards, toileting needs, baseline mobility.

Wise Perturbation

Check orthostatic blood pressure where safe, renal function, electrolytes, injury, medicine list, hydration, and mobility. Adjust medicines and fluids according to clinical context. Plan falls prevention.

Repair Trajectory

Dizziness improves, standing blood pressure safer, renal function stable, falls stop, medicine plan clarified, home safety addressed.

Integrated Bedside Summary

"This is not just dizziness. It is a circulation-perfusion problem coupled to fluid loss, medicines, and falls risk."

30. Worked Case 5: Chronic Cough With Weight Loss

A 62-year-old smoker presents with chronic cough, weight loss, night sweats, and blood-streaked sputum.

Danger

Tuberculosis, lung cancer, chronic infection, public health risk, progressive lung disease.

Syndrome

Chronic cough with constitutional symptoms and hemoptysis.

Capacity Failure

Defense, lung integrity, nutrition, oxygenation risk, public health safety.

Coupling Conditions

Smoking, possible TB exposure, occupational exposure, fear of diagnosis, access to imaging, family contacts, follow-up reliability.

Wise Perturbation

Confirm true hemoptysis, assess oxygenation and stability, arrange chest imaging and targeted TB/cancer evaluation according to local pathways, consider infection control advice where appropriate, and ensure follow-up.

Repair Trajectory

Diagnosis clarified, bleeding monitored, treatment pathway activated, weight and cough addressed, public health risk managed if TB, patient supported emotionally and practically.

Integrated Bedside Summary

"This is not chronic bronchitis until proven otherwise. It is chronic cough with systemic danger requiring investigation for TB, malignancy, or chronic infection."

31. Common Student Pitfalls

Pitfall 1: Collecting Data Without Synthesis

More data does not automatically create understanding.

Pitfall 2: Ignoring the First Look

The patient's appearance often reveals danger before tests return.

Pitfall 3: Treating Labs Instead of the Patient

Laboratory results must be interpreted through syndrome, baseline, and capacity failure.

Pitfall 4: Forgetting Baseline Function

Without baseline, you cannot judge severity or repair.

Pitfall 5: Ignoring Nurses and Family

They often notice deterioration, delirium, poor intake, and mobility failure first.

Pitfall 6: Failing to Update the Picture

A clinical impression must change when new data or trajectory contradicts it.

Pitfall 7: Thinking Discharge Means Diagnosis Improved

Discharge requires functional and practical safety, not only disease improvement.

Pitfall 8: Handover Without Capacity Failures

“Stable” is not enough. Say what remains unsafe.

32. Clinical Practice Box

When integrating at the bedside, complete this structure:

First look:
Does the patient look well, unwell, distressed, confused, breathless, pale, cyanosed, or unsafe?

Danger scan:
Airway, breathing, circulation, disability, exposure.

Main syndrome:
Chest pain, dyspnea, fever, confusion, weakness, AKI, edema, cough, hemoptysis, etc.

Integrated problem representation:

Primary capacity failures:
Oxygenation, circulation, clearance, defense, cognition, mobility, regulation, airway protection?

Coupling conditions:
Comorbidities, medicines, frailty, function, social support, access, environment?

Key bedside evidence:
Story, examination, vitals, labs, imaging, medicines, baseline, family/nursing input.

Wise perturbation now:

Monitoring plan:
What must be watched today?

Repair trajectory:
What should improve?

Reconsideration triggers:
What would make the diagnosis or plan change?

Discharge readiness:
What capacities and supports must be safe?

33. Mini-Case for Practice

A 77-year-old woman with diabetes, CKD, heart failure, and mild dementia is admitted with fever, cough, mild hypoxia, confusion, poor intake, leg swelling, and rising creatinine. Chest examination reveals crackles at the right base and mild bilateral edema. Her daughter says she was walking independently last week but now cannot get to the bathroom without help.

Perform bedside integration.

Danger

Hypoxia, infection, possible sepsis, heart failure congestion, AKI, delirium, falls, dehydration or fluid overload, medicine harm.

Syndrome

Acute respiratory infection syndrome with dyspnea, confusion, renal vulnerability, edema, and functional decline.

Capacity Failure

- defense: fever and suspected infection
- oxygenation: mild hypoxia
- cognition: delirium
- clearance: rising creatinine
- fluid balance: edema and possible heart failure
- hydration/nutrition: poor intake
- mobility: new inability to toilet independently
- medicine safety: CKD and acute illness affecting usual medicines

Coupling Conditions

Diabetes, CKD, heart failure, mild dementia, age, poor intake, possible diuretic or nephrotoxic medicine exposure, baseline independence, caregiver support, home toileting needs.

Integrated Problem Representation

"A 77-year-old woman with diabetes, CKD, heart failure, and mild dementia presents with acute fever, cough, mild hypoxia, confusion, poor intake, rising creatinine, edema, and new mobility loss, concerning for pneumonia with impaired defense and oxygenation, complicated by delirium, renal vulnerability, fluid balance difficulty, and acute functional decline."

Wise Perturbation

Support oxygenation. Treat likely pneumonia according to local guidance. Assess volume status carefully because both poor intake and edema are present. Review kidney-sensitive medicines. Monitor renal function,

potassium, urine output, respiratory rate, oxygenation, cognition, intake, and mobility. Involve family, nursing, physiotherapy, and pharmacy.

Repair Trajectory

Fever settles, oxygenation stabilizes, confusion clears, oral intake improves, creatinine and potassium stabilize, edema does not worsen, mobility returns toward baseline, daughter understands warning signs, follow-up labs and medicines are clear.

Reconsider If

Oxygenation worsens, fever persists, chest pain develops, edema worsens, renal function deteriorates, confusion deepens, urine output falls, or the patient fails to improve.

Consider heart failure predominance, PE, aspiration, resistant infection, medication toxicity, urinary infection, or other sepsis source.

34. Student Takeaway

Bedside integration becomes easier when the clinician asks:

What do I see in the first minute?
Is there immediate danger?
What is the main syndrome?
What is the integrated problem representation?
What capacities are failing?
What coupling conditions shape risk?
What do the story, examination, vitals, labs, imaging, medicines, family, and team say together?
What must be done now?
What must be monitored?
What repair trajectory should follow?
What would make me reconsider?
What must be true before discharge is safe?

Bedside integration is the art of seeing the patient whole.

It is where diagnosis, physiology, context, treatment, communication, and follow-up become one coherent act of care.

The safe clinician does not merely gather information.

The safe clinician integrates it into a living clinical judgment that protects danger, restores capacity, addresses context, and follows the patient toward repair.

Part IV. Systems of Capacity in Internal Medicine

This part reorganizes Internal Medicine around life-capacities. Instead of memorizing organs in isolation, students learn to ask what the patient can no longer sustain.

Chapter 42. Oxygenation Made Easy

Oxygenation is the body's ability to get oxygen from the air into the blood and deliver it to tissues where life's work is done.

Patients do not usually say:

"My oxygenation capacity is failing."

They say:

"I am short of breath."
"I cannot breathe."
"I get tired walking."
"I feel weak."
"I feel dizzy."
"My lips look blue."
"I am confused."
"I cannot lie flat."
"I am coughing."
"I feel like I am suffocating."

Oxygenation is one of the central capacities in Internal Medicine.

When oxygenation fails, every organ is threatened.

The brain becomes confused.
The heart strains.
The kidneys receive less oxygen.
The muscles weaken.
The patient becomes frightened.
The body shifts into emergency physiology.

The first task is not to name the lung disease.

The first task is to ask:

Is oxygen reaching the blood, and is oxygenated blood reaching the tissues?

Oxygenation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Oxygenation?

Oxygenation means loading oxygen into the blood.

But clinically, oxygenation cannot be separated from delivery.

For oxygen to support life, several steps must work:

Air must enter the lungs.

Oxygen must reach the alveoli.

Oxygen must cross from alveoli into blood.

Blood must carry oxygen on hemoglobin.

The heart must pump oxygenated blood to tissues.

The microcirculation must deliver oxygen to cells.

Cells must use oxygen to produce energy.

A failure at any step can produce tissue oxygen stress.

This is why a patient may be short of breath because of pneumonia, asthma, pulmonary embolism, heart failure, anemia, shock, neuromuscular weakness, carbon monoxide exposure, or severe metabolic acidosis.

Oxygenation is not only a lung issue.

It is a whole-system capacity.

2. Oxygenation Versus Ventilation

Students often confuse oxygenation and ventilation.

They are related, but not the same.

Oxygenation

Oxygenation asks:

Is enough oxygen getting into the blood?

It is commonly reflected by oxygen saturation and, in more severe cases, arterial oxygen measurements.

Oxygenation is impaired in conditions such as:

- pneumonia
- pulmonary edema
- pulmonary embolism
- pneumothorax
- interstitial lung disease
- acute respiratory distress
- severe asthma or COPD
- aspiration
- shunt or severe ventilation-perfusion mismatch

Ventilation

Ventilation asks:

Is the patient moving enough air in and out to clear carbon dioxide?

Ventilation is impaired in conditions such as:

- severe COPD
- severe asthma with exhaustion
- opioid or sedative toxicity
- neuromuscular weakness
- obesity hypoventilation
- chest wall restriction
- brainstem depression
- severe fatigue of breathing muscles

A patient can have oxygenation failure, ventilation failure, or both.

For example:

A patient with pneumonia may primarily fail oxygenation.

A patient with opioid toxicity may primarily fail ventilation.

A patient with severe COPD exacerbation may fail both oxygenation and ventilation.

The clinical question is:

Is the problem oxygen loading, air movement, or both?

3. The First Question: Is Oxygenation Dangerous Now?

Oxygenation becomes dangerous when the patient cannot maintain adequate oxygen supply to the brain, heart, kidneys, and tissues.

Urgent assessment is needed when there is:

- severe breathlessness
- low oxygen saturation
- cyanosis
- confusion
- drowsiness
- agitation
- inability to speak full sentences
- exhaustion
- fast respiratory rate
- very slow or shallow breathing
- chest pain
- shock
- hemoptysis
- severe wheeze or silent chest
- stridor
- choking
- new neurological symptoms
- poor perfusion
- reduced urine output
- severe anemia symptoms
- carbon monoxide exposure risk
- neuromuscular weakness with weak cough or swallowing difficulty
- worsening oxygen requirement
- failure to improve with initial treatment

The danger-first question is:

Is oxygenation failing enough to threaten life, brain function, heart function, or organ perfusion now?

4. Immediate Red Flags in Oxygenation Failure

Red flags include:

- severe respiratory distress
- inability to speak
- cyanosis
- low oxygen saturation despite oxygen
- confusion or drowsiness
- exhaustion
- silent chest in asthma
- stridor
- airway obstruction
- hypotension
- chest pain with breathlessness
- sudden severe dyspnea
- syncope with dyspnea
- hemoptysis with hypoxia
- unilateral absent breath sounds
- rapidly worsening breathing
- weak cough or poor airway clearance
- difficulty swallowing with aspiration risk
- severe pneumonia signs
- pulmonary edema signs
- severe COPD or asthma exacerbation
- suspected pulmonary embolism
- suspected carbon monoxide poisoning
- severe anemia with cardiac symptoms
- respiratory failure in frailty or neuromuscular disease

A patient with oxygenation failure should never be assessed only from the doorway or by laboratory results.

They must be seen, heard, and watched.

5. Oxygenation Is a Capacity, Not a Number

Oxygen saturation matters.

But oxygenation is not only a number on a monitor.

A patient's oxygen status includes:

- respiratory rate
- work of breathing
- ability to speak
- mental state

- pulse
- blood pressure
- skin perfusion
- chest examination
- hemoglobin
- cardiac output
- underlying disease
- trajectory
- response to oxygen
- ability to clear secretions
- ability to walk or eat safely

A saturation value may look acceptable while the patient is tiring.

A saturation value may be misleading in poor perfusion, motion, nail polish, carbon monoxide exposure, severe anemia, or technical error.

The clinician should ask:

Does the whole patient look oxygen-safe?

6. The Oxygenation Pathway Made Easy

Oxygenation depends on several linked steps.

Step 1: Airway

Air must reach the lungs.

Failure may occur with:

- choking
- swelling
- anaphylaxis
- tumor
- foreign body
- reduced consciousness
- secretions
- blood
- aspiration
- stridor

Danger signs:

- noisy breathing
- inability to speak
- choking
- drooling
- stridor

- gurgling
- reduced consciousness
- cyanosis

Step 2: Ventilation

Air must move in and out.

Failure may occur with:

- asthma
- COPD
- sedatives
- opioids
- neuromuscular weakness
- chest wall disease
- fatigue
- severe obesity-related hypoventilation
- central nervous system depression

Danger signs:

- shallow breathing
- drowsiness
- weak cough
- poor air entry
- exhaustion
- rising carbon dioxide where measured

Step 3: Alveolar Gas Exchange

Oxygen must cross from alveoli into blood.

Failure may occur with:

- pneumonia
- pulmonary edema
- acute respiratory distress
- interstitial lung disease
- aspiration
- pulmonary hemorrhage
- atelectasis

Danger signs:

- low oxygen saturation
- crackles
- severe breathlessness
- worsening oxygen need

- cyanosis
- confusion

Step 4: Ventilation-Perfusion Matching

Airflow and blood flow must meet in the lungs.

Failure may occur with:

- pulmonary embolism
- COPD
- asthma
- pneumonia
- atelectasis
- pulmonary vascular disease

Danger signs:

- sudden dyspnea
- pleuritic chest pain
- tachycardia
- hypoxia
- wheeze
- uneven chest findings

Step 5: Hemoglobin Carrying Capacity

Blood must carry oxygen.

Failure may occur with:

- severe anemia
- carbon monoxide poisoning
- methemoglobinemia
- major bleeding
- chronic disease anemia
- hemolysis

Danger signs:

- pallor
- weakness
- chest pain
- dyspnea
- syncope
- headache after smoke exposure
- unexpectedly normal saturation in carbon monoxide exposure

Step 6: Circulatory Delivery

Oxygenated blood must reach tissues.

Failure may occur with:

- shock
- heart failure
- myocardial infarction
- arrhythmia
- pulmonary embolism
- sepsis
- severe dehydration
- bleeding

Danger signs:

- hypotension
- cold peripheries
- confusion
- reduced urine output
- mottling
- chest pain
- high lactate where measured

Oxygenation and circulation are inseparable at the tissue level.

7. Common Oxygenation Failure Patterns

Pneumonia Pattern

Features:

- cough
- fever
- sputum
- pleuritic chest pain
- crackles
- tachypnea
- low oxygen saturation if severe
- confusion in older patients

Capacity failures:

- defense
- oxygenation
- airway clearance
- energy
- circulation if sepsis develops

Pulmonary Edema Pattern

Features:

- severe breathlessness

- orthopnea
- crackles
- frothy sputum in severe cases
- leg swelling
- hypertension or known heart disease may be present
- low oxygen saturation

Capacity failures:

- circulation
- fluid balance
- oxygenation
- sleep
- kidney vulnerability

Asthma or COPD Pattern

Features:

- wheeze
- cough
- chest tightness
- breathlessness
- prolonged expiration
- poor air entry in severe disease
- exhaustion if severe
- drowsiness if ventilation failure develops

Capacity failures:

- airway caliber
- ventilation
- oxygenation
- airway clearance
- confidence and agency

Pulmonary Embolism Pattern

Features:

- sudden dyspnea
- pleuritic chest pain
- tachycardia
- hypoxia
- hemoptysis in some cases
- syncope in severe cases
- clot risk factors

Capacity failures:

- pulmonary circulation
- oxygenation
- right heart function
- circulation if severe

Pneumothorax Pattern

Features:

- sudden breathlessness
- pleuritic chest pain
- reduced breath sounds on one side
- distress if large or tension physiology
- possible hypotension if severe

Capacity failures:

- lung expansion
- oxygenation
- ventilation
- circulation if tension physiology develops

Severe Anemia Pattern

Features:

- breathlessness
- fatigue
- dizziness
- pallor
- tachycardia
- chest pain in vulnerable patients
- syncope in severe cases

Capacity failure:

- oxygen carrying capacity
- energy
- coronary reserve
- mobility

Carbon Monoxide Pattern

Features:

- headache
- dizziness
- nausea
- confusion
- weakness
- collapse

- exposure to smoke, faulty appliances, enclosed combustion, or multiple affected people
- pulse oximetry may be falsely reassuring

Capacity failure:

- oxygen carriage and tissue oxygen use
- brain energy
- cardiac safety

Neuromuscular Respiratory Weakness Pattern

Features:

- weak cough
- shallow breathing
- difficulty swallowing
- nasal speech
- neck weakness
- progressive weakness
- inability to clear secretions
- oxygen saturation may be late to fall

Capacity failures:

- ventilation
- airway protection
- secretion clearance
- swallowing
- oxygenation late in disease

This pattern is dangerous because oxygen saturation can look acceptable until failure is advanced.

8. Capacity Failure in Oxygenation

Oxygenation failure affects the whole person.

Brain

Signals:

- confusion
- agitation
- drowsiness
- headache
- poor attention
- collapse

The brain is an early warning organ.

Heart

Signals:

- tachycardia

- chest pain
- arrhythmia
- worsening heart failure
- hypotension if severe

The heart strains to deliver oxygen.

Kidneys

Signals:

- reduced urine output
- worsening creatinine
- fluid and electrolyte vulnerability

Kidney function worsens when oxygen delivery and perfusion are poor.

Muscles

Signals:

- weakness
- inability to walk
- fatigue
- falls

Muscle function declines quickly when oxygen delivery is impaired.

Whole Person

Signals:

- fear
- panic
- inability to sleep
- inability to eat
- inability to speak
- inability to participate

Oxygenation failure is physically and emotionally terrifying.

The clinician should not treat the patient's fear as separate from physiology.

9. Bedside Assessment of Oxygenation

Look First

Observe:

- distress
- posture
- ability to speak
- respiratory rate
- work of breathing
- accessory muscle use

- cyanosis
- sweating
- agitation
- drowsiness
- cough strength
- sputum
- audible wheeze
- stridor
- pallor
- edema
- signs of exhaustion

A patient sitting upright, unable to finish sentences, breathing rapidly, and using accessory muscles needs urgent attention.

Listen

Listen to:

- voice strength
- breath sounds
- wheeze
- crackles
- stridor
- silence where wheeze was expected
- wet voice suggesting aspiration
- cough quality

A silent chest in a distressed asthmatic patient is dangerous.

Feel

Assess:

- pulse
- temperature
- perfusion
- chest expansion
- tracheal position where relevant
- edema
- calf swelling where PE is suspected

Measure

Check:

- oxygen saturation
- respiratory rate
- pulse

- blood pressure
- temperature
- glucose if confused or unwell
- level of consciousness
- peak flow where appropriate and safe in asthma/COPD context
- blood gas where severe illness, ventilation failure, COPD, drowsiness, shock, or acid-base concern exists according to local practice

Respiratory rate and mental state are as important as oxygen saturation.

10. Oxygen Saturation: Useful but Limited

Pulse oximetry is helpful because it gives rapid information.

But it has limits.

It may be unreliable with:

- poor perfusion
- shock
- cold extremities
- motion artifact
- nail polish or artificial nails
- technical error
- carbon monoxide poisoning
- severe anemia where saturation may not reflect total oxygen content
- abnormal hemoglobins
- very dark or very bright ambient light in some settings
- poor probe placement

Also, saturation does not measure ventilation directly.

A patient may retain carbon dioxide while saturation looks temporarily acceptable, especially when supplemental oxygen is being given.

Therefore, always integrate saturation with:

- respiratory rate
- work of breathing
- mental state
- blood gas where indicated
- diagnosis
- trajectory

Do not treat the monitor while ignoring the patient.

11. Initial Investigations

Investigations depend on syndrome and severity.

Common investigations may include:

- oxygen saturation trend
- ECG
- chest X-ray
- blood gas where severe, drowsy, COPD, shock, or ventilation failure is suspected
- full blood count for anemia or infection
- renal function and electrolytes
- glucose
- inflammatory markers where infection is possible
- cultures where sepsis or severe infection is suspected
- cardiac markers where ACS is possible
- heart failure assessment where pulmonary edema is possible
- D-dimer or CT pulmonary angiography pathway where PE is suspected according to local guidance
- CT chest where diagnosis remains unclear or serious lung disease is suspected
- sputum testing where pneumonia, TB, bronchiectasis, or chronic infection is relevant
- carbon monoxide level where exposure is possible
- respiratory viral testing where clinically or public health relevant
- echocardiography where heart failure, pulmonary hypertension, right heart strain, or structural disease is suspected
- hemoglobin and bleeding assessment where anemia is possible

Testing should answer:

- Is oxygenation failing?
- Is ventilation failing?
- Is the cause lung, airway, blood, heart, circulation, or toxin?
- Is the patient deteriorating?
- What treatment is safest?
- What must be monitored?

12. Dangerous Diagnoses Not to Miss

Airway Obstruction

Clues:

- choking
- stridor
- inability to speak
- drooling
- swelling
- foreign body risk
- reduced consciousness

- cyanosis

Capacity failure:

Airway patency, **ventilation**, **oxygenation**

Wise action:

Emergency airway assessment and local emergency pathway.

Severe Asthma

Clues:

- severe breathlessness
- wheeze or silent chest
- inability to speak
- accessory muscle use
- exhaustion
- poor response to usual reliever
- low oxygen saturation
- previous severe attacks

Capacity failure:

Airway caliber, **ventilation**, **oxygenation**, **life**

Wise action:

Treat urgently according to local asthma emergency pathway and escalate early if poor response.

COPD With Ventilatory Failure

Clues:

- known COPD
- increased dyspnea
- wheeze
- sputum change
- drowsiness
- confusion
- high carbon dioxide where measured
- oxygen requirement changes

Capacity failure:

Ventilation, **oxygenation**, **airway clearance**, **acid-base balance**

Wise action:

Assess oxygenation and ventilation carefully. Use local COPD guidance for oxygen and ventilatory support.

Pneumonia With Sepsis or Hypoxia

Clues:

- cough
- fever
- sputum

- tachypnea
- hypoxia
- confusion
- hypotension
- focal chest signs
- frailty or immune vulnerability

Capacity failure:

Defense, **oxygenation**, **circulation**, **cognition**

Wise action:

Assess severity, oxygenation, sepsis, hydration, and treat according to local pneumonia/sepsis guidance.

Pulmonary Embolism

Clues:

- sudden dyspnea
- pleuritic pain
- tachycardia
- hypoxia
- syncope
- hemoptysis
- recent surgery or immobility
- cancer or prior clot
- pregnancy/postpartum context where relevant

Capacity failure:

Pulmonary circulation, **oxygenation**, **right heart function**

Wise action:

Assess probability and follow local PE pathway. Escalate if unstable.

Pulmonary Edema

Clues:

- severe breathlessness
- orthopnea
- crackles
- pink frothy sputum in severe cases
- edema
- hypertension or known heart disease
- low oxygen saturation

Capacity failure:

Fluid balance, **oxygenation**, **circulation**, **sleep**

Wise action:

Support oxygenation and treat congestion according to local heart failure/pulmonary edema guidance while monitoring blood pressure, renal function, and electrolytes.

Pneumothorax

Clues:

- sudden pleuritic chest pain
- sudden dyspnea
- reduced breath sounds on one side
- tall thin body habitus or lung disease in some cases
- trauma or procedure
- hypotension if tension physiology

Capacity failure:

Lung expansion, **oxygenation**, **ventilation**, **circulation if severe**

Wise action:

Urgent assessment and local pneumothorax pathway.

Carbon Monoxide Poisoning

Clues:

- headache
- dizziness
- nausea
- confusion
- collapse
- multiple people affected
- fire or smoke exposure
- faulty heater or generator exposure
- pulse oximetry may be misleading

Capacity failure:

Oxygen carriage, **brain energy**, **cardiac safety**

Wise action:

Remove from exposure, provide emergency care according to local toxicology/emergency guidance, and do not rely on pulse oximetry alone.

Severe Anemia or Bleeding

Clues:

- pallor
- breathlessness
- dizziness
- fatigue
- chest pain
- tachycardia

- bleeding symptoms
- black stools
- hypotension if acute

Capacity failure:

Oxygen carrying capacity, **circulation**, **coronary reserve**

Wise action:

Assess hemoglobin, bleeding source, stability, and treat according to local pathway.

13. Wise Perturbation in Oxygenation Failure

Treatment depends on the cause and severity.

Do not treat oxygenation failure with oxygen alone and stop thinking.

Oxygen may buy time.

It does not replace diagnosis.

Ask:

- Is the airway safe?
- Is breathing effective?
- Is oxygenation low?
- Is ventilation failing?
- Is circulation failing?
- Is hemoglobin adequate?
- Is the cause pneumonia, asthma, COPD, PE, heart failure, pneumothorax, anemia, toxin, or neuromuscular disease?
- What intervention restores the failing capacity?
- What harm could treatment cause?

Oxygen Support

Oxygen is used to correct hypoxemia and protect organs.

But oxygen strategy should follow local protocols, especially in patients at risk of carbon dioxide retention.

Monitor:

- saturation
- respiratory rate
- work of breathing
- mental state
- blood gas where indicated
- response over time

Bronchodilation

Useful when airway narrowing contributes.

Monitor:

- wheeze

- air entry
- respiratory rate
- pulse
- tremor or palpitations
- response

Antibiotics

Useful when bacterial pneumonia or severe bacterial infection is likely.

Monitor:

- fever
- respiratory rate
- oxygenation
- cultures where relevant
- renal function
- adverse effects
- source control needs

Diuresis

Useful when pulmonary edema or heart failure congestion causes oxygenation failure.

Monitor:

- breathing
- oxygenation
- urine output
- blood pressure
- creatinine
- electrolytes
- dizziness
- weight where relevant

Anticoagulation Pathway

Useful when PE is confirmed or sufficiently suspected according to local pathway.

Monitor:

- oxygenation
- bleeding
- renal function
- hemodynamics
- right heart strain where relevant

Ventilatory Support

Needed when ventilation fails or work of breathing becomes unsustainable.

This may include non-invasive or invasive support depending on disease, severity, local resources, and goals of care.

Monitor closely and escalate early.

Treating Anemia or Bleeding

If oxygen delivery is impaired by low hemoglobin or active bleeding, treatment must address blood loss, oxygen-carrying capacity, and the cause.

Removing Toxin Exposure

For carbon monoxide and inhalational injury, the first intervention is removal from exposure and emergency care.

Wise perturbation asks:

What step in the oxygen pathway is broken, and how do we repair it without worsening another capacity?

14. Repair Trajectory in Oxygenation

Repair is shown by:

- reduced breathlessness
- lower respiratory rate
- improved oxygen saturation
- reduced work of breathing
- better air entry
- wheeze or crackles improving where relevant
- ability to speak more comfortably
- mental state clearing
- chest pain improving where relevant
- urine output maintained
- pulse and blood pressure stabilizing
- oxygen requirement decreasing
- patient can eat, sleep, and mobilize more safely
- cause treated
- recurrence plan clear

Repair is not simply a better saturation number.

Repair means the patient is breathing with less distress, delivering oxygen to tissues, and regaining function.

15. Monitoring Oxygenation

Monitoring should match severity.

In mild illness, periodic vital signs and symptom review may be enough.

In severe illness, monitor:

- respiratory rate
- oxygen saturation
- oxygen delivery device and flow
- work of breathing

- mental state
- pulse
- blood pressure
- temperature
- urine output
- blood gas where indicated
- chest findings
- response to treatment
- escalation triggers

A rising oxygen requirement is a warning sign.

A falling respiratory rate in an exhausted or drowsy patient may be deterioration, not improvement.

A patient who becomes quieter may be tiring.

Always ask:

Is the patient improving, or simply losing the ability to struggle?

16. Oxygenation and Frailty

Frailty changes oxygenation assessment.

A frail patient may not mount dramatic symptoms.

Pneumonia may present as:

- confusion
- falls
- poor intake
- weakness
- reduced mobility
- mild cough
- low oxygen saturation
- functional collapse

Frailty also increases the risks of:

- delirium
- aspiration
- dehydration
- AKI
- pressure injury
- immobility
- medication harm
- slow recovery

In frail patients, oxygenation repair must include:

- cognition
- swallowing
- mobility
- nutrition
- hydration
- skin protection
- caregiver support
- goals of care

Do not declare repair only because oxygen saturation improves.

Ask whether the person can return safely toward baseline.

17. Oxygenation and Anemia

Oxygen saturation may be normal in anemia because the hemoglobin present is saturated.

But the total oxygen-carrying capacity may be low.

A patient with severe anemia may have:

- breathlessness
- fatigue
- dizziness
- palpitations
- chest pain
- syncope
- heart failure worsening

The capacity failure is not oxygen loading.

It is oxygen carrying capacity.

This is why oxygenation must be understood beyond pulse oximetry.

Ask:

Is there enough hemoglobin to carry oxygen to tissues?

This matters especially in patients with:

- coronary disease
- heart failure
- active bleeding
- frailty
- chronic kidney disease
- malignancy
- heavy bleeding symptoms

18. Oxygenation and Circulation

Oxygen in the blood must be delivered.

A patient in shock may have acceptable oxygen saturation but poor tissue oxygen delivery.

Examples:

- sepsis
- bleeding
- dehydration
- cardiogenic shock
- pulmonary embolism
- arrhythmia

Signs of poor delivery include:

- confusion
- cold peripheries
- reduced urine output
- hypotension
- mottling
- high lactate where measured
- severe weakness

This is why oxygenation and circulation must be assessed together.

The question is:

Is oxygen only in the blood, or is it reaching the tissues?

19. Oxygenation and Acid-Base Stress

Not all rapid breathing is primary lung disease.

A patient may breathe rapidly to compensate for metabolic acidosis.

Examples:

- DKA
- sepsis
- renal failure
- lactic acidosis
- poisoning in selected contexts

In these cases, the lungs are helping compensate.

Suppressing the breathing or assuming anxiety can be dangerous.

Clues include:

- deep rapid breathing
- vomiting
- dehydration
- high glucose or ketones

- shock
- renal failure
- altered mental state

The capacity failure may be acid-base regulation, not primarily oxygenation.

But the patient still appears breathless.

Ask:

Is this breathing problem actually metabolic compensation?

20. Oxygenation and Anxiety

Breathlessness is frightening.

Anxiety can worsen breathlessness, and panic can cause intense air hunger.

But anxiety should be diagnosed only after danger is considered.

Before calling dyspnea anxiety, assess:

- oxygen saturation
- respiratory rate
- pulse
- chest examination
- wheeze
- chest pain
- PE risk
- asthma history
- heart failure signs
- anemia symptoms
- glucose if relevant
- medication or stimulant use

Once danger is excluded, explanation is therapeutic.

Say:

“Your breathing feels frightening, but your oxygen level, chest examination, and danger checks are reassuring. We will still give you clear warning signs, but the pattern fits a stress-breathing cycle rather than dangerous oxygen failure.”

This protects both safety and dignity.

21. Oxygenation and Goals of Care

In advanced illness, oxygenation decisions should match goals.

For some patients, the goal is reversal.

For others, the goal is comfort.

Examples:

- advanced COPD

- advanced heart failure
- metastatic cancer
- end-stage neurological disease
- severe frailty
- end-of-life pneumonia

In these settings, ask:

- Is this reversible?
- What treatment burden is acceptable?
- What does the patient want?
- Is hospital transfer desired?
- Would ventilatory support help or burden?
- Is comfort the priority?
- Is breathlessness being relieved?
- Is family supported?

Oxygen may help some breathless patients, but comfort also includes positioning, airflow, calm explanation, medicines where appropriate, and palliative support.

Repair may mean peaceful breathing, not normal oxygen numbers.

22. Discharge Safety in Oxygenation Problems

Before discharge after oxygenation failure, ask:

- Is oxygenation stable at rest?
- Is breathing safe with basic activity?
- Is respiratory rate acceptable for the patient's condition?
- Is work of breathing improved?
- Is mental state stable?
- Is the cause identified or safely followed?
- Are medicines clear?
- Can the patient use inhalers correctly?
- Is oxygen equipment needed or arranged where relevant?
- Is smoking or fire risk addressed if oxygen is used?
- Is follow-up arranged?
- Are warning signs understood?
- Is mobility safe?
- Can the patient eat and drink?
- Is home support adequate?
- Are pending tests assigned to someone?

A patient who looks stable in bed may still desaturate, collapse, or fail at home if function is not assessed.

23. Worked Case 1: Pneumonia With Hypoxia

A 73-year-old woman presents with cough, fever, sputum, tachypnea, and low oxygen saturation. She is mildly confused.

Danger

Pneumonia with hypoxia, possible sepsis, delirium, dehydration, frailty-related decline.

Oxygenation Pattern

Alveolar gas exchange is impaired by infection and inflammation.

Capacity Failure

Defense, oxygenation, cognition, hydration, mobility risk.

Coupling Conditions

Age, frailty, diabetes or CKD if present, poor intake, baseline function, home support.

Wise Perturbation

Support oxygenation, assess severity and sepsis, treat pneumonia according to local guidance, monitor hydration, renal function, oxygenation, mental state, and mobility.

Repair Trajectory

Fever settles, respiratory rate improves, oxygen saturation stabilizes, confusion clears, appetite returns, walking improves, follow-up arranged.

24. Worked Case 2: Pulmonary Edema

A 68-year-old man with known heart failure presents with severe breathlessness, orthopnea, crackles, swollen legs, and low oxygen saturation.

Danger

Pulmonary edema, hypoxia, possible ACS or arrhythmia trigger, AKI risk.

Oxygenation Pattern

Fluid in the lungs impairs gas exchange.

Capacity Failure

Fluid balance, oxygenation, circulation, sleep, renal vulnerability.

Coupling Conditions

Heart failure, CKD, salt intake, medication adherence, arrhythmia, ischemic heart disease, access to medicines.

Wise Perturbation

Support oxygenation and treat congestion according to local heart failure guidance. Assess ECG, renal function, electrolytes, blood pressure, urine output, and trigger.

Repair Trajectory

Breathlessness improves, oxygenation stabilizes, orthopnea reduces, edema decreases, renal function and potassium remain safe, home plan clear.

25. Worked Case 3: COPD Exacerbation With Drowsiness

A 70-year-old man with COPD presents with increased cough, sputum, wheeze, breathlessness, and increasing drowsiness.

Danger

COPD exacerbation with possible ventilatory failure and carbon dioxide retention.

Oxygenation Pattern

Airflow obstruction impairs ventilation and gas exchange.

Capacity Failure

Ventilation, oxygenation, airway clearance, cognition, acid-base balance.

Coupling Conditions

Smoking history, inhaler technique, infection trigger, baseline lung function, oxygen sensitivity, home support, previous admissions.

Wise Perturbation

Assess oxygenation and ventilation carefully, including blood gas where indicated. Treat according to local COPD exacerbation guidance. Monitor mental state, respiratory rate, oxygenation, carbon dioxide risk, and response.

Repair Trajectory

Breathing improves, wheeze reduces, sputum improves, mental state clears, oxygenation stable, ventilation safe, inhaler and prevention plan reviewed.

26. Worked Case 4: Sudden Dyspnea After Surgery

A 61-year-old woman develops sudden breathlessness, pleuritic chest pain, tachycardia, and low oxygen saturation two weeks after surgery.

Danger

Pulmonary embolism.

Oxygenation Pattern

Pulmonary blood flow is obstructed, causing ventilation-perfusion mismatch and right heart strain risk.

Capacity Failure

Pulmonary circulation, oxygenation, right heart function.

Coupling Conditions

Recent surgery, immobility, clot risk, bleeding risk, renal function, access to imaging.

Wise Perturbation

Support oxygenation, assess hemodynamic stability, ECG, clot probability, and follow local PE pathway. Escalate if unstable.

Repair Trajectory

Oxygenation improves, chest pain settles, PE confirmed or excluded, anticoagulation or alternative plan clarified, recurrence prevention addressed.

27. Worked Case 5: Severe Anemia

A 76-year-old woman presents with weakness, breathlessness on exertion, dizziness, pallor, and chest tightness. Oxygen saturation is normal.

Danger

Severe anemia with impaired oxygen delivery, possible bleeding or malignancy, coronary strain.

Oxygenation Pattern

Oxygen loading may be normal, but oxygen-carrying capacity is low.

Capacity Failure

Oxygen delivery, energy, coronary reserve, mobility safety.

Coupling Conditions

CKD, anticoagulants, GI bleeding risk, nutrition, malignancy risk, frailty, cardiac disease.

Wise Perturbation

Assess hemoglobin, bleeding source, hemodynamic stability, cardiac symptoms, medicines, and cause. Treat according to local anemia/bleeding pathway.

Repair Trajectory

Breathlessness and dizziness improve, chest symptoms settle, hemoglobin stabilizes, bleeding source addressed, functional capacity improves.

28. Worked Case 6: Carbon Monoxide Exposure

A family presents with headache, dizziness, nausea, confusion, and weakness after using a generator indoors. Pulse oximetry appears normal.

Danger

Carbon monoxide poisoning.

Oxygenation Pattern

Hemoglobin is occupied by carbon monoxide, and tissue oxygen use is impaired. Pulse oximetry may be misleading.

Capacity Failure

Oxygen carriage, brain energy, cardiac safety.

Coupling Conditions

Generator exposure, enclosed space, multiple affected people, housing and power insecurity, public safety risk.

Wise Perturbation

Remove from exposure, provide emergency care according to local toxicology pathway, assess all exposed persons, and arrange environmental safety intervention.

Repair Trajectory

Headache and confusion improve, cardiac and neurological risks assessed, exposure source eliminated, family understands prevention.

29. Common Student Pitfalls

Pitfall 1: Equating Oxygenation With Pulse Oximetry Alone

Pulse oximetry is useful but limited. Always assess the whole patient.

Pitfall 2: Forgetting Ventilation

A patient can retain carbon dioxide even when oxygen saturation looks temporarily acceptable.

Pitfall 3: Missing Severe Anemia

Normal saturation does not mean adequate oxygen-carrying capacity.

Pitfall 4: Missing Carbon Monoxide Poisoning

Pulse oximetry can be falsely reassuring.

Pitfall 5: Calling Breathlessness Anxiety Too Early

Anxiety is common, but oxygenation, circulation, airway, anemia, PE, asthma, and heart failure must be considered.

Pitfall 6: Treating Oxygenation Failure With Oxygen Alone

Oxygen supports the patient while the cause is diagnosed and treated.

Pitfall 7: Missing Exhaustion

A quieter breathing patient may be improving or may be tiring. Reassess mental state and work of breathing.

Pitfall 8: Ignoring Function

A patient may be stable in bed but unsafe walking, eating, or going home.

30. Clinical Practice Box

When assessing oxygenation, complete this structure:

First look:
Breathless, cyanosed, confused, exhausted, speaking full sentences, sitting upright?

Airway:
Open, obstructed, secretions, blood, vomit, stridor, aspiration risk?

Breathing:
Respiratory rate, work of breathing, air entry, wheeze, crackles, chest symmetry?

Oxygenation:
Oxygen saturation, oxygen requirement, trend, cyanosis, mental state?

Ventilation:
Drowsiness, shallow breathing, COPD, sedatives, neuromuscular weakness, blood gas if indicated?

Circulation and delivery:
Pulse, blood pressure, perfusion, hemoglobin, shock, heart failure, PE risk?

Likely mechanism:
Airway obstruction, bronchospasm, pneumonia, edema, PE, pneumothorax, anemia, toxin, neuromuscular weakness?

Wise perturbation:
Oxygen, bronchodilation, antibiotics, diuresis, PE pathway, ventilation support, transfusion/bleeding pathway, toxin removal?

Monitoring:
Respiratory rate, saturation, work of breathing, mental state, blood pressure, urine output, blood gas where needed?

Repair trajectory:
What should improve, and what would make you escalate?

31. Mini-Case for Practice

A 74-year-old man with COPD and heart failure presents with worsening breathlessness, cough, swollen ankles, wheeze, crackles, low oxygen saturation, and increasing drowsiness. He recently missed diuretics and has had a chest infection.

Apply the oxygenation approach.

Danger

Oxygenation failure, possible ventilation failure with carbon dioxide retention, heart failure congestion, COPD exacerbation, pneumonia, AKI risk, delirium or drowsiness from respiratory failure.

Syndrome

Acute-on-chronic dyspnea with mixed obstructive, infectious, and congestive features.

Capacity Failure

Oxygenation, ventilation, airway clearance, fluid balance, circulation, cognition, clearance risk.

Coupling Conditions

COPD, heart failure, missed diuretics, possible infection, inhaler technique, smoking history, CKD risk, medicines, home support, previous admissions.

Wise Perturbation

Assess airway, respiratory rate, oxygen saturation, work of breathing, mental state, chest signs, ECG, chest imaging, renal function, electrolytes, and blood gas where indicated. Support oxygenation according to local COPD guidance, treat bronchospasm and infection if indicated, manage congestion carefully, monitor ventilation and mental state, and escalate early if drowsiness or work of breathing worsens.

Repair Trajectory

Breathlessness improves, respiratory rate decreases, oxygenation stabilizes, carbon dioxide risk improves where measured, drowsiness clears, wheeze and crackles improve, sputum improves, edema reduces, renal function and potassium remain safe, discharge plan addresses inhalers, diuretics, infection prevention, and follow-up.

32. Student Takeaway

Oxygenation becomes easier when the clinician asks:

Is the airway open?
Is the patient moving air?
Is oxygen entering the blood?
Is hemoglobin carrying enough oxygen?
Is the circulation delivering oxygen to tissues?
Is the patient ventilating and clearing carbon dioxide?
Is the cause pneumonia, asthma, COPD, PE, heart failure, pneumothorax, anemia, toxin, shock, or neuromuscular weakness?
What intervention restores oxygen capacity without causing harm?
What repair trajectory should follow?

Oxygenation is not just a saturation number.

It is a life-capacity linking lungs, blood, heart, circulation, brain, kidneys, muscles, and the patient's felt sense of safety.

The safe clinician sees the whole oxygen pathway, treats danger quickly, identifies the broken step, supports breathing, treats the cause, monitors response, and follows the patient back toward oxygen-safe function.

Chapter 43. Circulation Made Easy

Circulation is the body's ability to move blood through the vascular system so that oxygen, nutrients, hormones, immune cells, heat, and waste products reach the right places at the right time.

Patients do not usually say:

"My circulation capacity is failing."

They say:

"I feel dizzy."
"I nearly fainted."
"I feel weak."
"My chest hurts."
"I cannot breathe."
"My heart is racing."
"My legs are swollen."
"I am passing very little urine."
"I feel cold and clammy."
"I feel like I am going to collapse."

Circulation is one of the central capacities in Internal Medicine.

When circulation fails, organs do not receive enough blood flow.

The brain becomes confused.
The kidneys stop making urine.
The heart may become ischemic.
The skin becomes cold or mottled.
The gut may become ischemic.
The muscles become weak.
The patient may collapse.

The first task is not simply to ask whether the blood pressure is normal.

The first task is to ask:

Is blood flow reaching the organs adequately?

Circulation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Circulation?

Circulation depends on several linked parts:

The heart must pump.

The blood vessels must maintain appropriate tone.

The blood volume must be adequate.

The blood must carry oxygen.

The rhythm must allow filling and ejection.

The microcirculation must deliver blood to tissues.

The venous system must return blood to the heart.

The kidneys, hormones, and nervous system must regulate pressure and volume.

Circulation is not just blood pressure.

A patient can have a “normal” blood pressure but poor tissue perfusion.

A patient can have high blood pressure and still have failing circulation in acute heart failure or aortic catastrophe.

A patient can have low blood pressure because of dehydration, sepsis, bleeding, arrhythmia, myocardial infarction, anaphylaxis, adrenal crisis, or pulmonary embolism.

The clinical question is:

Is the circulation delivering enough blood flow for life?

2. Circulation Versus Blood Pressure

Blood pressure is important, but it is not the whole story.

Blood pressure is a measured pressure in the arteries.

Circulation is the delivery of blood flow to tissues.

A patient with low blood pressure may still be awake and passing urine if compensated.

A patient with “acceptable” blood pressure may still be in shock if they are confused, cold, oliguric, acidotic, or deteriorating.

A patient with chronic hypertension may have organ hypoperfusion at pressures that appear numerically acceptable.

Therefore, always interpret blood pressure with:

- mental state
- pulse
- capillary refill and skin perfusion
- urine output
- respiratory rate
- oxygenation
- chest pain
- lactate or acidosis where measured
- baseline blood pressure
- medication exposure
- trajectory

The question is not only:

“What is the blood pressure?”

The question is:

“Is the patient perfusing?”

3. The First Question: Is Circulation Dangerous Now?

Circulation becomes dangerous when blood flow to organs is inadequate or unstable.

Urgent assessment is needed when there is:

- hypotension
- shock
- collapse
- syncope
- confusion
- severe dizziness
- cold or mottled skin
- chest pain
- severe breathlessness
- reduced urine output
- rapid pulse
- very slow pulse with symptoms
- irregular rhythm with instability
- active bleeding
- severe dehydration
- sepsis features
- anaphylaxis
- pulmonary embolism features
- acute heart failure or pulmonary edema
- myocardial infarction features
- severe anemia
- severe electrolyte disturbance
- adrenal crisis context
- pregnancy/postpartum circulatory collapse where relevant
- worsening vital signs despite treatment

The danger-first question is:

Is the brain, heart, kidneys, lungs, or whole body being under-perfused now?

4. Immediate Red Flags in Circulatory Failure

Red flags include:

- low blood pressure with symptoms
- collapse or syncope
- altered mental state
- chest pain
- severe breathlessness
- cyanosis or severe hypoxia
- cold clammy skin

- mottling
- weak or thready pulse
- very fast heart rate
- very slow heart rate with dizziness or syncope
- new irregular rhythm with instability
- active bleeding
- black stools or vomiting blood
- severe abdominal pain with shock
- sepsis signs
- fever with hypotension
- anaphylaxis signs
- pulmonary edema
- sudden dyspnea with pleuritic pain and tachycardia
- reduced urine output
- severe dehydration
- severe anemia symptoms
- new heart murmur with shock or infection context
- recent myocardial infarction or known severe heart disease
- failure to respond to initial treatment

Circulatory failure is high-risk because deterioration can be rapid.

5. Circulation Is a Capacity, Not a Number

A circulation assessment includes:

- blood pressure
- pulse rate
- pulse rhythm
- pulse volume
- mental state
- skin temperature
- capillary refill
- urine output
- respiratory rate
- oxygenation
- chest pain
- breathlessness
- edema
- jugular venous pressure where assessed

- heart sounds
- lung crackles
- lactate or acid-base status where available
- hemoglobin
- renal function
- ECG
- response to treatment

A single normal number cannot prove circulation is safe.

A single abnormal number cannot explain the cause.

The clinician must integrate the whole circulatory pattern.

6. The Circulation Pathway Made Easy

Circulation depends on five major components.

1. Pump

The heart must pump effectively.

Pump failure may occur with:

- myocardial infarction
- heart failure
- myocarditis
- cardiomyopathy
- severe valve disease
- tamponade
- severe arrhythmia

Signals include:

- breathlessness
- pulmonary edema
- low blood pressure
- chest pain
- cold peripheries
- reduced urine output
- raised venous pressure where present
- fatigue
- shock

2. Rhythm

The heart rhythm must support filling and forward flow.

Rhythm failure may occur with:

- atrial fibrillation with rapid rate

- supraventricular tachycardia
- ventricular tachycardia
- complete heart block
- severe bradycardia
- medication toxicity
- electrolyte disturbance

Signals include:

- palpitations
- dizziness
- syncope
- chest pain
- breathlessness
- hypotension
- irregular pulse
- very fast or very slow pulse

3. Volume

There must be enough circulating volume.

Volume failure may occur with:

- bleeding
- vomiting
- diarrhea
- dehydration
- burns
- poor intake
- over-diuresis
- osmotic diuresis
- third spacing in sepsis or pancreatitis

Signals include:

- thirst
- dizziness on standing
- tachycardia
- low blood pressure
- dry mucosa
- reduced urine output
- AKI
- collapse

4. Vascular Tone

Blood vessels must constrict or dilate appropriately.

Tone failure may occur with:

- sepsis
- anaphylaxis
- adrenal crisis
- spinal shock
- severe liver disease
- medication effects
- autonomic failure

Signals include:

- low blood pressure
- warm peripheries early in some sepsis
- flushing in anaphylaxis
- collapse
- confusion
- reduced urine output
- high pulse pressure in some states

5. Flow Obstruction

Blood flow must not be blocked.

Obstructive failure may occur with:

- pulmonary embolism
- cardiac tamponade
- tension pneumothorax
- severe valve obstruction
- massive venous obstruction in selected contexts

Signals include:

- sudden dyspnea
- chest pain
- hypotension
- raised venous pressure where present
- tachycardia
- syncope
- shock
- hypoxia

The circulation question becomes:

Is the problem pump, rhythm, volume, tone, obstruction, or a combination?

7. Common Circulatory Failure Patterns

Hypovolemic Pattern

Features:

- vomiting
- diarrhea
- bleeding
- poor intake
- thirst
- dizziness on standing
- tachycardia
- low blood pressure
- reduced urine output
- dry mucosa
- AKI

Capacity failure:

Volume, organ perfusion, clearance, brain perfusion

Common causes:

- dehydration
- gastrointestinal bleeding
- trauma
- over-diuresis
- burns
- severe fluid loss

Septic Pattern

Features:

- infection source
- fever or low temperature
- tachypnea
- hypotension
- confusion
- reduced urine output
- warm or cold peripheries depending on stage
- organ dysfunction

Capacity failure:

Defense, vascular tone, circulation, clearance, cognition

Common causes:

- pneumonia
- urinary infection

- abdominal infection
- skin and soft tissue infection
- meningitis
- cholangitis
- device infection
- severe tropical or systemic infection where relevant

Cardiogenic Pattern

Features:

- chest pain
- breathlessness
- pulmonary edema
- cold peripheries
- low blood pressure
- raised venous pressure where present
- oliguria
- arrhythmia
- known heart disease

Capacity failure:

Pump, **oxygenation**, **organ perfusion**, **kidney perfusion**

Common causes:

- myocardial infarction
- severe heart failure
- myocarditis
- cardiomyopathy
- severe valve disease
- dangerous arrhythmia

Obstructive Pattern

Features:

- sudden dyspnea
- chest pain
- hypotension
- tachycardia
- raised venous pressure where present
- hypoxia
- syncope
- poor response to fluids alone

Capacity failure:

Flow through heart or lungs, **oxygenation**, **circulation**

Common causes:

- massive pulmonary embolism
- cardiac tamponade
- tension pneumothorax

Anaphylactic Pattern

Features:

- sudden collapse
- airway swelling
- wheeze
- rash or urticaria in many cases
- flushing
- vomiting or abdominal symptoms
- hypotension
- exposure to allergen, medicine, food, or sting

Capacity failure:

Vascular tone, **airway**, **oxygenation**, **circulation**

Bradyarrhythmic Pattern

Features:

- slow pulse
- dizziness
- syncope
- weakness
- confusion
- chest pain
- hypotension
- medication exposure
- electrolyte disturbance

Capacity failure:

Rhythm, **cardiac output**, **brain perfusion**

Tachyarrhythmic Pattern

Features:

- very fast pulse
- palpitations
- chest pain
- breathlessness
- low blood pressure
- dizziness
- syncope

heart failure worsening

Capacity failure:

Rhythm coordination, **filling time**, **cardiac output**, **coronary circulation**

8. Capacity Failure in Circulation

Circulatory failure affects every organ system.

Brain Perfusion

Signals:

dizziness

syncope

confusion

agitation

drowsiness

blurred vision

collapse

The brain is often the first organ to reveal low flow.

Coronary Perfusion

Signals:

chest pain

ECG changes

arrhythmia

sweating

nausea

cardiogenic shock

The heart needs circulation to maintain circulation.

Kidney Perfusion

Signals:

reduced urine output

rising creatinine

hyperkalemia

acid-base disturbance

fluid imbalance

The kidneys are sensitive to low perfusion and congestion.

Skin and Muscle Perfusion

Signals:

cold peripheries

mottling

weak pulses

- delayed capillary refill
- weakness
- pain in severe ischemia

Gut and Liver Perfusion

Signals:

- abdominal pain
- nausea
- ileus
- rising liver enzymes in shock states
- lactic acidosis where measured

Circulation is not only about survival.

It is about preserving organ coherence.

9. Bedside Assessment of Circulation

Look First

Observe:

- alertness
- distress
- pallor
- sweating
- mottling
- cyanosis
- respiratory distress
- bleeding
- vomiting
- edema
- posture
- agitation
- collapse
- ability to speak
- visible dehydration

A patient who is pale, sweaty, confused, and hypotensive is in danger until proven otherwise.

Feel the Pulse

Assess:

- rate
- rhythm
- volume
- regularity

- symmetry where relevant
- very fast or very slow pulse
- weak or bounding pulse

Do not rely only on the monitor.

Feel the patient.

Check Perfusion

Assess:

- capillary refill
- skin temperature
- mottling
- mental state
- urine output
- peripheral pulses
- dizziness on standing where safe
- limb ischemia signs where relevant

Measure

Check:

- blood pressure
- pulse
- respiratory rate
- oxygen saturation
- temperature
- glucose if unwell or altered
- urine output
- ECG
- lactate or blood gas where severe shock or sepsis is suspected and available
- hemoglobin if bleeding or anemia possible
- renal function and electrolytes

Circulation assessment is repeated, not one-time.

10. Volume Status Made Easy

Volume status is often difficult.

Do not rely on one sign.

Use a pattern.

Hypovolemia Clues

- thirst
- poor intake
- vomiting or diarrhea

- bleeding
- dizziness on standing
- tachycardia
- low blood pressure
- dry mucosa
- reduced skin turgor in some patients
- low urine output
- rising creatinine
- collapsed veins where visible
- recent diuretic excess

Fluid Overload Clues

- breathlessness
- orthopnea
- crackles
- edema
- raised venous pressure where present
- weight gain
- ascites
- pulmonary edema
- low oxygen saturation
- worsening hypertension in some cases
- kidney congestion in some patients

Mixed States

Many patients are mixed.

For example:

- sepsis with capillary leak and edema but low effective circulation
- heart failure with edema and kidney hypoperfusion
- cirrhosis with ascites and low effective arterial volume
- nephrotic syndrome with edema and intravascular uncertainty
- frailty with poor intake and heart failure

The question is not simply:

“Dry or wet?”

The question is:

“What is the effective circulating volume, and what treatment will improve perfusion without worsening oxygenation?”

11. Initial Investigations

Investigations depend on the syndrome.

Common investigations may include:

- ECG
- glucose
- full blood count
- renal function and electrolytes
- potassium and bicarbonate
- lactate or blood gas where shock or severe illness is suspected
- troponin where ACS is possible
- chest X-ray where heart failure, pneumonia, pneumothorax, or pulmonary edema is possible
- infection tests and cultures where sepsis is possible
- urinalysis where infection or kidney disease is possible
- coagulation studies where bleeding, liver disease, or anticoagulation is relevant
- type and screen or crossmatch where bleeding is suspected
- bedside ultrasound where available and skilled use can assess fluid, heart, lungs, or obstruction
- echocardiography where pump failure, valve disease, tamponade, or shock cause is unclear
- CT or targeted imaging where bleeding, PE, dissection, abdominal catastrophe, or infection source is suspected

Testing should answer:

- Is the patient in shock?
- What type of shock is likely?
- Is rhythm safe?
- Is the heart ischemic?
- Is bleeding present?
- Is infection present?
- Is kidney perfusion failing?
- Is oxygenation failing?
- Is obstruction present?
- What treatment is safe?

12. Dangerous Diagnoses Not to Miss

Septic Shock

Clues:

- infection source
- fever or low temperature
- hypotension
- tachypnea
- confusion
- reduced urine output

- organ dysfunction
- poor perfusion

Capacity failure:

Defense, **vascular tone**, **circulation**, **clearance**, **cognition**

Wise action:

Follow local sepsis and shock pathway. Treat infection, support circulation, seek source control, and reassess frequently.

Major Bleeding

Clues:

- visible bleeding
- trauma
- black stools
- vomiting blood
- hemoptysis
- severe abdominal or pelvic pain
- anticoagulant use
- tachycardia
- hypotension
- pallor
- syncope
- falling hemoglobin

Capacity failure:

Volume, **oxygen carrying capacity**, **circulation**

Wise action:

Control bleeding where possible, support circulation, assess hemoglobin and coagulation, and escalate according to local hemorrhage pathway.

Myocardial Infarction With Pump Failure

Clues:

- chest pain
- sweating
- nausea
- breathlessness
- pulmonary edema
- hypotension
- arrhythmia
- ECG changes
- high-risk comorbidities

Capacity failure:

Coronary circulation, **pump function**, **oxygenation**

Wise action:

Follow local ACS pathway and manage heart failure or shock with urgent escalation.

Massive Pulmonary Embolism

Clues:

- sudden dyspnea
- syncope
- chest pain
- hypoxia
- tachycardia
- hypotension
- clot risk factors
- right heart strain where found

Capacity failure:

Pulmonary circulation, **right heart function**, **oxygenation**, **circulation**

Wise action:

Follow local PE pathway and escalate urgently if unstable.

Cardiac Tamponade

Clues:

- hypotension
- tachycardia
- raised venous pressure where present
- muffled heart sounds in some cases
- pulsus paradoxus where assessed
- cancer, uremia, trauma, procedure, or pericarditis context
- shock with poor response to fluids

Capacity failure:

Cardiac filling, **stroke volume**, **circulation**

Wise action:

Urgent specialist assessment and local emergency pathway.

Tension Pneumothorax

Clues:

- sudden severe dyspnea
- pleuritic chest pain
- hypotension
- tachycardia
- reduced breath sounds one side
- tracheal deviation late and unreliable

trauma, procedure, ventilation, or underlying lung disease context

Capacity failure:

Ventilation, **oxygenation**, **venous return**, **circulation**

Wise action:

Emergency recognition and local decompression pathway.

Anaphylaxis

Clues:

sudden collapse

airway swelling

wheeze

rash or urticaria in many cases

hypotension

gastrointestinal symptoms

exposure to allergen or medicine

Capacity failure:

Vascular tone, **airway**, **oxygenation**, **circulation**

Wise action:

Immediate treatment according to local anaphylaxis protocol.

Dangerous Arrhythmia

Clues:

palpitations

syncope

chest pain

breathlessness

hypotension

very fast or slow pulse

irregular unstable rhythm

structural heart disease

electrolyte disturbance

Capacity failure:

Rhythm, **cardiac output**, **brain perfusion**, **coronary perfusion**

Wise action:

ECG, monitoring, correction of reversible causes, and local arrhythmia pathway.

13. Wise Perturbation in Circulatory Failure

Treatment depends on the circulation pattern.

Do not reflexively give fluids to every hypotensive patient.

Do not reflexively give diuretics to every swollen patient.

Ask:

- Is the airway safe?
- Is breathing safe?
- Is oxygenation safe?
- Is circulation failing?
- Is the problem volume, pump, rhythm, tone, obstruction, or bleeding?
- What treatment restores perfusion?
- What treatment could worsen another capacity?
- What monitoring is needed?

If Hypovolemia Is Likely

Potential interventions:

- fluid replacement according to clinical context
- stop or hold contributing medicines where appropriate
- treat vomiting or diarrhea
- control bleeding if present
- monitor urine output, blood pressure, perfusion, renal function, and oxygenation

Possible harm:

- pulmonary edema in heart failure or kidney disease
- dilutional effects in bleeding if not balanced appropriately
- worsening hyponatremia in selected contexts

If Sepsis Is Likely

Potential interventions:

- early recognition
- antimicrobials according to local guidance
- blood cultures where indicated and feasible before antibiotics if this does not delay treatment
- fluids or circulatory support according to local sepsis pathway
- source control
- oxygenation support
- monitoring organ function

Possible harm:

- fluid overload
- kidney injury from delayed perfusion or nephrotoxic medicines
- missed non-infectious mimics

If Cardiogenic Failure Is Likely

Potential interventions:

- oxygenation support
- ECG and ACS pathway where indicated
- diuresis if congested

- rhythm management if arrhythmia trigger
- blood pressure support pathway where needed
- urgent specialist escalation

Possible harm:

- excessive fluids worsening pulmonary edema
- excessive diuresis worsening kidney perfusion
- rate control worsening low output in some contexts

If Obstructive Shock Is Likely

Potential interventions:

- urgent diagnosis
- emergency pathway for PE, tamponade, or tension pneumothorax
- oxygenation support
- specialist escalation

Possible harm:

- delay
- treating as simple dehydration
- missing the mechanical obstruction

If Arrhythmia Is Likely

Potential interventions:

- ECG
- monitoring
- correction of electrolytes
- local arrhythmia pathway
- treat ischemia, infection, thyroid disease, or medication toxicity if present

Possible harm:

- inappropriate rate control in unstable patient
- missing wide-complex tachycardia
- ignoring bradyarrhythmia

Wise perturbation is circulatory pattern recognition plus reassessment.

14. Repair Trajectory in Circulation

Repair is shown by:

- mental state improves
- dizziness resolves
- blood pressure stabilizes for that patient
- pulse rate and rhythm improve
- skin becomes warmer

- mottling improves
- urine output increases
- chest pain settles
- breathlessness improves
- oxygenation stabilizes
- lactate or acidosis improves where measured
- renal function stabilizes
- bleeding stops
- infection source controlled
- edema improves if overloaded
- patient can sit, stand, and mobilize safely
- cause identified and recurrence plan made

Repair is not simply a higher blood pressure number.

Repair means organs are receiving enough blood flow and the cause of instability is being addressed.

15. Monitoring Circulation

Monitoring should match severity.

In mild dehydration:

- pulse
- blood pressure
- oral intake
- urine output
- dizziness
- renal function where relevant

In shock:

- mental state
- respiratory rate
- oxygenation
- blood pressure
- pulse
- urine output
- skin perfusion
- ECG
- blood gas or lactate where available
- renal function and electrolytes
- hemoglobin if bleeding possible
- response to treatment

escalation triggers

A falling pulse may be improvement.

But a falling pulse with worsening drowsiness may be deterioration.

A rising blood pressure may be improvement.

But rising blood pressure with pulmonary edema may indicate worsening cardiac stress.

Always integrate the whole pattern.

16. Circulation and the Kidneys

The kidneys are circulation sensors.

Reduced kidney perfusion may cause:

- low urine output
- rising creatinine
- hyperkalemia
- acidosis
- fluid imbalance
- medicine accumulation

But kidney function can worsen from both underfilling and congestion.

Underfilling

Examples:

- dehydration
- bleeding
- sepsis
- over-diuresis

Congestion

Examples:

- heart failure
- venous congestion
- fluid overload

This is why AKI must be interpreted with volume and circulation.

The question is:

Are the kidneys under-perfused, congested, obstructed, inflamed, or poisoned by medicines?

17. Circulation and the Brain

The brain reveals circulation failure through:

- dizziness
- presyncope
- syncope
- confusion

- agitation
- drowsiness
- falls

Do not dismiss dizziness in a high-risk patient.

Dizziness may reflect:

- orthostatic hypotension
- arrhythmia
- bleeding
- dehydration
- sepsis
- medication effect
- heart block
- pulmonary embolism
- hypoglycemia

The brain asks for blood flow continuously.

When flow fails, symptoms may appear before laboratory results.

18. Circulation and the Lungs

The lungs reveal circulation failure in two major ways.

Pulmonary Congestion

When the heart cannot manage fluid pressure, the lungs fill with fluid.

Signals:

- orthopnea
- crackles
- low oxygen saturation
- frothy sputum in severe cases
- nighttime breathlessness
- pulmonary edema

Pulmonary Vascular Obstruction

When blood flow through the lungs is blocked, oxygenation and right heart function suffer.

Signals:

- sudden breathlessness
- pleuritic chest pain
- tachycardia
- hypoxia
- syncope
- hemoptysis

The lungs are often where circulation failure becomes visible.

19. Circulation and Medications

Medicines commonly disturb circulation.

Examples:

Antihypertensives

May cause:

- dizziness
- hypotension
- falls
- AKI in some contexts
- bradycardia depending on class

Diuretics

May cause:

- dehydration
- electrolyte disturbance
- orthostatic hypotension
- AKI

May also treat:

- heart failure congestion
- edema
- pulmonary edema

Beta Blockers and Rate-Limiting Medicines

May cause:

- bradycardia
- heart block
- hypotension
- fatigue

May also treat:

- arrhythmia
- angina
- heart failure in selected stable contexts

NSAIDs

May worsen:

- hypertension
- AKI
- heart failure
- bleeding risk

Sedatives and Alcohol

May worsen:

- hypotension
- falls
- aspiration
- respiratory drive
- delirium

Anticoagulants

May worsen:

- bleeding
- anemia
- shock if bleeding is severe

Medication review is essential in any circulatory presentation.

20. Circulation and Frailty

Frailty reduces circulatory reserve.

A small insult can cause major decline.

Examples:

- mild infection causes delirium and falls
- modest dehydration causes AKI
- small blood pressure drop causes collapse
- diuretic change causes orthostatic hypotension
- rapid fluid administration causes pulmonary edema
- arrhythmia causes heart failure

In frailty, assess:

- baseline blood pressure
- baseline mobility
- falls history
- cognition
- oral intake
- medicines
- home support
- renal reserve
- goals of care

Circulatory repair in frailty includes function.

A frail patient may be “hemodynamically stable” but still unable to stand safely.

21. Circulation and Goals of Care

In advanced illness, circulation decisions should match the patient's goals.

Examples:

- advanced heart failure
- advanced cancer
- severe frailty
- end-stage dementia
- recurrent sepsis
- end-stage kidney disease
- terminal shock states

Ask:

- Is the cause reversible?
- Would intensive treatment restore meaningful life-capacity?
- What treatment burden is acceptable?
- What does the patient value most?
- Is comfort the priority?
- Should palliative care be involved?
- Are family and patient informed honestly?

Repair may mean restoring blood pressure and organ function.

But near end of life, repair may mean relief of distress, warmth, presence, dignity, and avoidance of burdensome interventions.

22. Discharge Safety in Circulatory Problems

Before discharge, ask:

- Is blood pressure stable for this patient?
- Is dizziness resolved or explained?
- Is standing blood pressure safe where relevant?
- Is pulse rate and rhythm safe?
- Is urine output adequate?
- Are renal function and electrolytes safe?
- Is bleeding excluded or controlled?
- Is infection controlled?
- Is heart failure congestion improved?
- Are medicines adjusted safely?
- Are dangerous medicines stopped or restarted clearly?
- Can the patient stand and walk safely?
- Is falls risk addressed?
- Is follow-up arranged?

Are warning signs understood?

Can the patient obtain and take medicines?

Are pending results assigned?

A patient is not ready for discharge simply because blood pressure is temporarily normal.

The circulation plan must be stable, functional, and understandable.

23. Worked Case 1: Dehydration With AKI

A 72-year-old man with CKD presents after three days of vomiting and diarrhea. He feels dizzy on standing, has reduced urine output, tachycardia, and rising creatinine.

Danger

Hypovolemia, AKI, electrolyte disturbance, falls, possible sepsis or abdominal cause depending on context.

Circulation Pattern

Volume depletion causing reduced kidney perfusion and brain perfusion.

Capacity Failure

Circulating volume, brain perfusion, kidney clearance, electrolyte regulation, mobility safety.

Coupling Conditions

CKD, age, diuretics or ACE inhibitor use where present, poor intake, access to fluids, living situation.

Wise Perturbation

Assess severity, glucose, renal function, electrolytes, infection or abdominal danger, medication contributors, and volume status. Restore volume according to local guidance while monitoring oxygenation and urine output. Review kidney-sensitive medicines.

Repair Trajectory

Dizziness improves, pulse settles, urine output increases, creatinine stabilizes, potassium safe, oral intake returns, medicine restart plan clear.

24. Worked Case 2: Sepsis With Hypotension

A 79-year-old woman presents with fever, confusion, tachypnea, low blood pressure, and reduced urine output. She has cough and crackles.

Danger

Sepsis or septic shock from pneumonia, hypoxia, AKI, delirium, circulatory collapse.

Circulation Pattern

Infection causing vascular tone failure, capillary leak, and organ hypoperfusion.

Capacity Failure

Defense, circulation, oxygenation, cognition, kidney perfusion.

Coupling Conditions

Age, frailty, CKD, diabetes, poor intake, delayed presentation, home support.

Wise Perturbation

Follow local sepsis pathway: assess airway, breathing, circulation, oxygenation, cultures where appropriate, antibiotics according to guidance, circulatory support, and source evaluation. Monitor urine output, renal function, oxygenation, mental state, and response.

Repair Trajectory

Blood pressure and perfusion improve, respiratory rate improves, fever settles, mental state clears, urine output returns, kidney function stabilizes, mobility recovers.

25. Worked Case 3: Cardiogenic Shock

A 66-year-old man presents with chest pressure, sweating, breathlessness, low blood pressure, cold clammy skin, crackles, and reduced urine output.

Danger

Myocardial infarction with cardiogenic shock and pulmonary edema.

Circulation Pattern

Pump failure causing poor forward flow and pulmonary congestion.

Capacity Failure

Coronary circulation, pump function, oxygenation, kidney perfusion, brain perfusion.

Coupling Conditions

Hypertension, diabetes, smoking, CKD, delayed presentation, medication history, access to cardiac pathway.

Wise Perturbation

Urgent ECG and local ACS/shock pathway. Support oxygenation, avoid reflex fluids if pulmonary edema is present unless specifically indicated, monitor rhythm, blood pressure, urine output, renal function, and escalate urgently.

Repair Trajectory

Chest pain improves, oxygenation stabilizes, blood pressure and perfusion improve, urine output returns, rhythm stable, cardiac pathway completed.

26. Worked Case 4: Pulmonary Embolism With Collapse

A 58-year-old woman collapses with sudden breathlessness and pleuritic chest pain two weeks after surgery. She is tachycardic, hypoxic, and hypotensive.

Danger

Massive pulmonary embolism.

Circulation Pattern

Obstruction to pulmonary circulation causing right heart strain and low output.

Capacity Failure

Pulmonary circulation, oxygenation, right heart function, brain perfusion.

Coupling Conditions

Recent surgery, immobility, clot risk, bleeding risk, renal function, access to imaging and emergency therapy.

Wise Perturbation

Support airway and oxygenation, assess hemodynamic stability, ECG, PE probability, and follow local PE emergency pathway. Escalate immediately.

Repair Trajectory

Oxygenation improves, blood pressure stabilizes, chest pain and dyspnea improve, PE treatment pathway completed, recurrence prevention planned.

27. Worked Case 5: Orthostatic Hypotension and Falls

An 82-year-old woman has recurrent falls and dizziness on standing. She takes diuretics, antihypertensives, and a sedative. She has poor oral intake.

Danger

Orthostatic hypotension, falls injury, dehydration, medication harm, AKI.

Circulation Pattern

Brain perfusion drops on standing due to volume depletion, medicines, autonomic vulnerability, or frailty.

Capacity Failure

Brain perfusion, mobility safety, hydration, medicine safety.

Coupling Conditions

Frailty, polypharmacy, poor intake, nocturia, home hazards, sedative use, baseline mobility, caregiver support.

Wise Perturbation

Check postural blood pressure where safe, review medicines, assess hydration, renal function, electrolytes, falls injury, vision, gait, and home safety. Adjust treatment to reduce falls while preserving necessary disease control.

Repair Trajectory

Dizziness improves, standing safer, falls stop, medicines simplified, hydration improves, mobility support arranged.

28. Common Student Pitfalls

Pitfall 1: Treating Blood Pressure as the Whole Circulation

Perfusion includes brain, kidneys, skin, heart, and trajectory.

Pitfall 2: Giving Fluids Reflexively

Fluids may help hypovolemia but worsen heart failure, pulmonary edema, or kidney congestion.

Pitfall 3: Missing Sepsis in Frailty

Older patients may present with confusion, falls, weakness, or poor intake rather than obvious fever.

Pitfall 4: Missing Bleeding

Occult gastrointestinal bleeding can present as dizziness, syncope, anemia, or shock.

Pitfall 5: Missing Arrhythmia

Always feel the pulse and obtain ECG when circulation symptoms include palpitations, syncope, chest pain, or unexplained hypotension.

Pitfall 6: Missing Obstructive Shock

PE, tamponade, and tension pneumothorax may not improve with ordinary measures.

Pitfall 7: Ignoring Medicines

Antihypertensives, diuretics, sedatives, rate-limiting drugs, NSAIDs, anticoagulants, and diabetes medicines can all contribute.

Pitfall 8: Declaring Stability Too Early

A single stable blood pressure does not prove the patient is safe if urine output, mental state, oxygenation, or trajectory remain concerning.

29. Clinical Practice Box

When assessing circulation, complete this structure:

First look:
Pale, sweaty, confused, breathless, bleeding, mottled, collapsed, distressed?

Perfusion:
Mental state, skin temperature, capillary refill, urine output, dizziness, syncope?

Blood pressure and pulse:
Rate, rhythm, volume, baseline, postural changes where safe?

Likely circulation pattern:
Volume, pump, rhythm, tone, obstruction, bleeding, mixed?

Capacity failure:
Brain perfusion, coronary circulation, kidney perfusion, oxygen delivery, fluid balance?

Coupling conditions:
Heart disease, CKD, infection, bleeding risk, medicines, frailty, dehydration, recent surgery?

Immediate investigations:
ECG, glucose, FBC, renal/electrolytes, lactate/blood gas where indicated, troponin, cultures, imaging, coagulation, crossmatch?

Wise perturbation:
Fluids, blood, antibiotics, diuresis, rhythm pathway, ACS pathway, PE pathway, anaphylaxis pathway, escalation?

Monitoring:
BP, pulse, urine output, mental state, oxygenation, renal function, electrolytes, response?

Repair trajectory:
What should improve, and what would make you escalate?

30. Mini-Case for Practice

A 76-year-old man with diabetes, CKD, heart failure, and atrial fibrillation presents with fever, cough, confusion, low blood pressure, rapid irregular pulse, mild hypoxia, reduced urine output, and swollen ankles.

Apply the circulation approach.

Danger

Sepsis, atrial fibrillation with rapid ventricular response, heart failure, hypoxia, AKI, mixed shock physiology, medication harm.

Syndrome

Acute infection syndrome with circulatory instability, arrhythmia, renal hypoperfusion, and fluid balance complexity.

Capacity Failure

Defense, circulation, rhythm coordination, oxygenation, kidney perfusion, cognition, fluid balance.

Coupling Conditions

Diabetes, CKD, heart failure, atrial fibrillation, possible anticoagulation, diuretics or rate-control medicines, frailty risk, poor intake, infection trigger.

Wise Perturbation

Assess airway, breathing, circulation, oxygenation, ECG, infection source, renal function, electrolytes, potassium, urine output, medication list, anticoagulation status, and volume status. Treat suspected infection according to local sepsis guidance. Support circulation carefully because heart failure and edema are present. Manage rapid atrial fibrillation according to stability and local pathway. Monitor for pulmonary edema, worsening AKI, hypotension, and rhythm instability.

Repair Trajectory

Blood pressure and perfusion improve, mental state clears, urine output increases, oxygenation stabilizes, respiratory rate improves, pulse rate becomes safer, fever settles, renal function and potassium stabilize, edema does not worsen, and follow-up plan addresses medicines, rhythm, infection, kidneys, and heart failure.

31. Student Takeaway

Circulation becomes easier when the clinician asks:

Is the patient perfusing?
Is the brain receiving blood?
Are the kidneys making urine?
Is the heart pumping and in a safe rhythm?
Is the problem volume, pump, rhythm, vascular tone, obstruction, bleeding, or mixed?
Is oxygenated blood reaching tissues?
Which medicines are helping or harming circulation?
What intervention restores perfusion without worsening oxygenation, kidneys, rhythm, or function?
What repair trajectory should follow?

Circulation is not simply a blood pressure number.

It is the living movement of blood through heart, vessels, lungs, kidneys, brain, skin, and tissues.

The safe clinician feels the pulse, reads the whole patient, protects perfusion, identifies the circulatory pattern, treats danger quickly, reassesses response, and follows the patient back toward stable flow and function.

Chapter 44. Energy Transformation Made Easy

Energy transformation is the body's ability to convert food, oxygen, hormones, and stored fuel into usable biological work.

Patients do not usually say:

"My energy transformation capacity is failing."

They say:

"I am exhausted."
"I feel weak."
"I cannot walk far."
"I feel shaky."
"I am losing weight."
"I feel drained even after resting."
"I am always hungry and thirsty."
"I am vomiting and my sugars are high."
"I feel cold all the time."
"My heart races and I am losing weight."
"I cannot recover after illness."

Energy transformation is central to Internal Medicine because every organ needs energy.

The brain needs energy to think.
The heart needs energy to pump.
The muscles need energy to move.
The immune system needs energy to defend.
The kidneys need energy to clear.
The liver needs energy to transform.
The gut needs energy to absorb.
The whole person needs energy to participate in life.

The first task is not simply to say the patient is "tired."

The first task is to ask:

Can the body obtain, transform, distribute, and use energy safely?

Energy transformation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Energy Transformation?

Energy transformation means converting available resources into usable biological energy.

The body must:

Take in food and fluid.

Digest and absorb nutrients.

Store fuel safely.

Release fuel when needed.

Move glucose, fatty acids, and amino acids into appropriate pathways.

Use oxygen to generate cellular energy.

regulate hormones such as insulin, glucagon, cortisol, thyroid hormone, and catecholamines.

Maintain circulation and oxygen delivery.

Clear metabolic waste.

Repair tissues after stress.

Energy transformation is not only about calories.

A patient may have calories available but still fail to transform them.

Examples:

diabetes: glucose is present but not used properly

sepsis: metabolism becomes dysregulated despite available fuel

hypoxia: fuel is present but oxygen use is limited

anemia: oxygen carrying capacity is reduced

heart failure: fuel and oxygen may not reach tissues adequately

thyroid disease: metabolic rate is too low or too high

adrenal insufficiency: stress energy response fails

malnutrition: substrate is insufficient

mitochondrial dysfunction: cellular conversion may be impaired

chronic inflammation: energy is diverted into defense and catabolism

Energy transformation asks:

Is energy available, accessible, usable, and sustainable?

2. Energy Is a Capacity, Not a Feeling

Fatigue is a symptom.

Energy transformation is a capacity.

A patient may feel tired because of:

anemia

heart failure

COPD

hypothyroidism

hyperthyroidism

diabetes

hypoglycemia

chronic kidney disease

liver disease

depression

sleep disorder

chronic infection

malignancy

inflammatory disease

- malnutrition
- medication adverse effects
- adrenal insufficiency
- sepsis
- post-viral illness
- frailty
- chronic pain
- deconditioning

The symptom “tired” is broad.

The capacity question is sharper:

What part of energy transformation is failing?

Is the problem:

- fuel intake?
- fuel absorption?
- glucose regulation?
- oxygen delivery?
- circulation?
- mitochondrial use?
- endocrine regulation?
- inflammation?
- muscle mass?
- sleep?
- mood?
- medication effect?
- frailty reserve?

This question prevents fatigue from becoming a wastebasket diagnosis.

3. The First Question: Is Energy Failure Dangerous Now?

Energy transformation becomes dangerous when the brain, heart, circulation, acid-base system, or cellular metabolism is acutely threatened.

Urgent assessment is needed when there is:

- hypoglycemia
- severe hyperglycemia with dehydration, vomiting, ketones, or altered mental state
- diabetic ketoacidosis
- hyperosmolar hyperglycemic state
- shock
- sepsis

- severe hypoxia
- severe anemia with chest pain, syncope, or breathlessness
- adrenal crisis
- thyroid storm
- myxedema coma
- severe electrolyte disturbance
- severe malnutrition with refeeding risk
- acute liver failure
- acute kidney failure with metabolic complications
- poisoning or overdose affecting metabolism
- severe heat illness
- rhabdomyolysis
- altered mental state with metabolic disturbance
- inability to eat or drink safely
- profound weakness with respiratory compromise

The danger-first question is:

Is the brain, heart, circulation, or cellular metabolism being starved, poisoned, overheated, acidotic, or hormonally destabilized now?

4. Immediate Red Flags in Energy Transformation Failure

Red flags include:

- confusion
- drowsiness
- seizures
- collapse
- sweating and tremor with low glucose risk
- vomiting with high glucose
- rapid deep breathing
- severe dehydration
- hypotension
- shock
- fever with systemic illness
- very high or very low temperature
- chest pain
- severe breathlessness
- severe weakness
- inability to stand

- reduced urine output
- severe weight loss
- severe poor intake
- alcohol use with poor nutrition
- prolonged fasting
- insulin or diabetes medicine mismatch
- steroid withdrawal or adrenal risk
- severe thyroid symptoms
- dark urine with muscle pain
- frailty with acute collapse
- eating disorder or severe malnutrition context
- new medication causing metabolic harm

Energy failure with altered mental state, shock, hypoglycemia, severe hyperglycemia, acidosis, endocrine crisis, or inability to maintain intake is high-risk.

5. The Energy Transformation Pathway Made Easy

Energy transformation depends on several linked steps.

Step 1: Intake

The body must receive enough food and fluid.

Failure may occur with:

- poor appetite
- vomiting
- dysphagia
- depression
- dementia
- poverty
- food insecurity
- nausea
- cancer
- chronic infection
- frailty
- alcohol dependence
- eating disorders

Signals:

- weight loss
- weakness
- dehydration
- low glucose

- low albumin in some contexts
- muscle wasting
- poor wound healing

Step 2: Absorption

The gut must absorb nutrients.

Failure may occur with:

- chronic diarrhea
- malabsorption
- inflammatory bowel disease
- pancreatic insufficiency
- celiac disease
- bowel surgery
- chronic infection
- severe liver or biliary disease

Signals:

- weight loss
- diarrhea
- steatorrhea
- anemia
- vitamin deficiency
- edema
- fatigue

Step 3: Fuel Storage and Release

The liver, muscle, and fat stores must store and release energy appropriately.

Failure may occur with:

- diabetes
- liver disease
- starvation
- alcohol-related metabolic disturbance
- adrenal insufficiency
- sepsis
- cachexia

Signals:

- hypoglycemia
- hyperglycemia
- ketones
- weight loss

- muscle wasting
- weakness

Step 4: Hormonal Regulation

Hormones coordinate energy use.

Important hormones include:

- insulin
- glucagon
- cortisol
- thyroid hormone
- catecholamines
- growth hormone
- sex hormones in long-term body composition and strength

Failure may occur with:

- diabetes
- hypoglycemia from medicines
- adrenal insufficiency
- thyroid disease
- steroid excess or withdrawal
- endocrine tumors in selected contexts

Signals:

- abnormal glucose
- weight change
- heat or cold intolerance
- tremor
- palpitations
- low blood pressure
- salt craving in adrenal contexts
- fatigue
- muscle weakness

Step 5: Oxygen Delivery

Cells need oxygen to efficiently transform fuel.

Failure may occur with:

- hypoxia
- anemia
- shock
- heart failure
- pulmonary embolism
- severe lung disease

- carbon monoxide poisoning

Signals:

- breathlessness
- chest pain
- dizziness
- confusion
- weakness
- low oxygen saturation in many but not all causes
- pallor in anemia

Step 6: Cellular Transformation

Cells must convert fuel and oxygen into usable energy.

Failure may occur with:

- sepsis
- mitochondrial dysfunction
- toxins
- severe inflammation
- hypoxia
- ischemia
- endocrine crisis
- severe malnutrition
- chronic fatigue states in selected contexts

Signals:

- profound fatigue
- weakness
- exercise intolerance
- lactic acidosis in severe states
- organ dysfunction
- slow recovery

Step 7: Work and Repair

Energy must become function.

This includes:

- walking
- thinking
- breathing
- pumping blood
- clearing waste
- healing wounds

- fighting infection
- maintaining temperature
- participating in life

Failure appears as:

- fatigue
- immobility
- delirium
- poor wound healing
- recurrent infection
- frailty
- inability to recover

The whole pathway matters.

Food in the stomach is not yet energy.
Glucose in the blood is not yet usable energy.
Oxygen in the lungs is not yet tissue energy.
Treatment must restore transformation, not just supply.

6. Common Energy Transformation Failure Patterns

Hypoglycemia Pattern

Features:

- sweating
- tremor
- hunger
- palpitations
- anxiety
- confusion
- weakness
- seizure or collapse in severe cases
- diabetes medicine use, missed meals, alcohol, CKD, or poor intake may be present

Capacity failure:

Brain energy, **glucose regulation**, **cognition**, **safety**

This is immediately reversible and dangerous.

Hyperglycemic Crisis Pattern

Features:

- high glucose
- thirst
- polyuria
- dehydration

- vomiting
- abdominal pain
- weakness
- confusion
- rapid deep breathing if ketoacidosis
- infection or missed insulin may be present

Capacity failure:

Glucose regulation, **hydration**, **acid-base balance**, **circulation**, **cognition**

This is dangerous because fuel is present but not usable safely.

Anemia-Related Energy Failure

Features:

- fatigue
- breathlessness
- dizziness
- palpitations
- pallor
- reduced exercise tolerance
- chest pain in vulnerable patients

Capacity failure:

Oxygen carrying capacity, **energy delivery**, **mobility**, **coronary reserve**

The patient may have normal oxygen saturation but poor oxygen content.

Thyroid Energy Dysregulation

Hypothyroid Pattern

Features:

- fatigue
- cold intolerance
- weight gain
- constipation
- dry skin
- slow pulse in some cases
- low mood
- muscle aches
- cognitive slowing

Capacity failure:

Metabolic rate regulation, **energy availability**, **cognition**, **bowel function**

Hyperthyroid Pattern

Features:

- weight loss

heat intolerance

tremor

palpitations

anxiety

sweating

diarrhea

muscle weakness

atrial fibrillation in some patients

Capacity failure:

Metabolic rate regulation, rhythm stability, muscle strength, circulation

Adrenal Energy Failure

Features:

fatigue

weakness

weight loss

nausea

abdominal pain

low blood pressure

dizziness

salt craving in some contexts

hyperpigmentation in some chronic primary cases

shock in adrenal crisis

steroid withdrawal risk

Capacity failure:

Stress response, circulation, glucose regulation, salt-water balance

This can be life-threatening.

Sepsis-Related Energy Failure

Features:

fever or low temperature

weakness

confusion

tachypnea

hypotension

poor perfusion

high glucose or low glucose in severe illness

organ dysfunction

Capacity failure:

Defense, circulation, cellular energy use, clearance, cognition

Sepsis is not only infection. It is systemic energy and regulation failure.

Malnutrition and Cachexia Pattern

Features:

- weight loss
- muscle wasting
- weakness
- poor wound healing
- recurrent infections
- fatigue
- edema in some cases
- low intake or chronic inflammatory disease

Capacity failure:

Fuel reserve, **muscle mass**, **repair**, **defense**, **participation**

Frailty Energy Failure

Features:

- exhaustion
- slow walking
- weakness
- weight loss
- low activity
- poor recovery after minor illness
- falls
- reduced reserve

Capacity failure:

multisystem reserve, **mobility**, **repair**, **agency**, **resilience**

Frailty is an energy reserve problem as much as a strength problem.

7. Energy Failure in Acute Illness

During acute illness, the body needs more energy.

Fever increases metabolic demand.
Breathing harder uses energy.
The heart pumps faster.
Immune defense consumes fuel.
Repair requires protein and micronutrients.
Stress hormones shift metabolism.
Poor intake reduces supply.
Vomiting and diarrhea worsen dehydration and electrolyte loss.

This is why a patient with infection may become:

- weak
- confused

- hyperglycemic
- dehydrated
- catabolic
- immobile
- delirious
- unable to recover

Acute illness can expose hidden energy vulnerability.

A robust patient may tolerate a viral illness.

A frail patient may develop delirium, AKI, falls, and functional collapse.

The clinician should ask:

Does this patient have enough reserve to meet the metabolic demand of this illness?

8. Energy Failure in Chronic Illness

Chronic disease can slowly drain energy transformation.

Examples:

Heart Failure

Energy failure mechanisms:

- poor circulation
- reduced exercise tolerance
- muscle deconditioning
- poor sleep from orthopnea
- renal dysfunction
- inflammatory activation

COPD

Energy failure mechanisms:

- increased work of breathing
- hypoxia
- inflammation
- muscle wasting
- poor sleep
- anxiety
- reduced activity

CKD

Energy failure mechanisms:

- anemia
- toxin accumulation
- acidosis
- inflammation

- poor appetite
- mineral disturbance
- medication accumulation

Liver Disease

Energy failure mechanisms:

- impaired nutrient processing
- muscle wasting
- inflammation
- fluid accumulation
- encephalopathy
- poor protein handling in advanced disease

Cancer

Energy failure mechanisms:

- inflammatory cachexia
- poor intake
- pain
- treatment effects
- anemia
- depression
- metabolic reprogramming

Depression

Energy failure mechanisms:

- poor sleep
- low motivation
- altered appetite
- psychomotor slowing
- pain amplification
- social withdrawal
- inflammation in some contexts

Chronic fatigue should not be dismissed.

It should be mapped.

9. Capacity Failure in Energy Transformation

Energy transformation failure affects multiple capacities.

Brain Energy

Signals:

- confusion
- irritability

- drowsiness
- poor concentration
- seizure
- coma in severe hypoglycemia or metabolic crisis

Muscle Energy

Signals:

- weakness
- exercise intolerance
- falls
- difficulty rising from a chair
- muscle wasting
- cramps

Cardiac Energy

Signals:

- chest pain
- arrhythmia
- heart failure worsening
- tachycardia
- poor exercise tolerance

Immune Energy

Signals:

- recurrent infection
- poor fever response in frailty
- slow recovery
- chronic inflammation
- poor wound healing

Repair Energy

Signals:

- non-healing wounds
- pressure injuries
- slow rehabilitation
- prolonged post-illness weakness
- malnutrition

Participation Energy

Signals:

- inability to work
- inability to care for family
- social withdrawal

- loss of independence
- demoralization

Energy transformation is not only biochemical.

It is the foundation of participation.

10. Bedside Assessment of Energy Transformation

Look First

Observe:

- alertness
- distress
- wasting
- obesity with deconditioning
- dehydration
- sweating
- tremor
- pallor
- jaundice
- breathlessness
- edema
- muscle wasting
- poor mobility
- slow speech
- agitation
- frailty
- wounds
- pressure injuries
- ability to sit, stand, and walk

The patient's appearance often reveals whether energy reserves are intact.

Vital Signs

Check:

- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- glucose
- weight
- postural blood pressure where relevant

level of consciousness

Glucose should be checked early in unexplained weakness, confusion, sweating, collapse, or severe illness.

Focused History

Ask:

What do you mean by tired or weak?

Can you start activity?

Can you sustain activity?

Is this new or chronic?

Is it worsening?

Is there weight loss?

Is there poor appetite?

Is there thirst or frequent urination?

Is there vomiting or diarrhea?

Is there fever or night sweats?

Is there breathlessness?

Is there chest pain?

Is there cold or heat intolerance?

Is there tremor or palpitations?

Is there constipation or diarrhea?

Is sleep restorative?

Is mood low?

What medicines are being taken?

Are steroids involved?

Are diabetes medicines involved?

Is alcohol involved?

What is the patient eating?

What has the patient stopped doing?

Function is central:

Can the patient walk?

Can the patient climb stairs?

Can the patient cook?

Can the patient work?

Can the patient bathe?

Can the patient recover after exertion?

Energy is measured by life-capacity.

11. Physical Examination

Examine for:

- pallor
- dehydration
- edema
- wasting
- obesity and sarcopenia
- thyroid enlargement or tremor
- heart failure signs
- lung disease signs
- liver disease signs
- infection source
- lymph nodes
- skin pigmentation where adrenal disease is suspected
- orthostatic hypotension
- muscle strength
- proximal weakness
- neuropathy
- wounds
- pressure injuries
- oral health
- swallowing difficulty
- gait and transfers
- mood and psychomotor slowing

A good energy examination crosses systems.

Fatigue is not owned by one organ.

12. Initial Investigations

Investigations depend on the syndrome.

Common investigations may include:

- glucose
- ketones where hyperglycemia with illness, vomiting, or DKA concern exists
- renal function and electrolytes
- bicarbonate or acid-base assessment where acidosis is possible
- full blood count
- iron studies, B12, folate where anemia or deficiency is suspected
- thyroid function
- liver tests

- inflammatory markers where infection or inflammation is possible
- urinalysis
- HbA1c for chronic glucose pattern where appropriate
- cortisol or adrenal assessment where adrenal insufficiency is suspected according to local pathway
- creatine kinase where myopathy or rhabdomyolysis is suspected
- ECG where chest pain, palpitations, electrolyte disturbance, hyperthyroidism, hypoglycemia, or severe illness is present
- chest imaging where infection, cancer, heart failure, or chronic lung disease is possible
- oxygenation assessment and blood gas where severe respiratory or metabolic illness is suspected
- nutritional assessment where weight loss or malnutrition is present
- malignancy, chronic infection, or autoimmune workup where suggested by history and examination

Testing should answer:

- Is glucose dangerous?
- Is acid-base balance dangerous?
- Is oxygen delivery impaired?
- Is anemia present?
- Is thyroid disease present?
- Is adrenal stress response failing?
- Is infection or inflammation present?
- Are kidneys or liver contributing?
- Is malnutrition present?
- Are medicines causing energy failure?

13. Dangerous Diagnoses Not to Miss

Hypoglycemia

Clues:

- sweating
- tremor
- hunger
- confusion
- seizure
- collapse
- diabetes medicine use
- missed meal
- CKD
- alcohol use
- poor intake

Capacity failure:

Brain energy, **glucose regulation**, **safety**

Wise action:

Check glucose urgently and treat according to local hypoglycemia guidance. Prevent recurrence by addressing coupling conditions.

Diabetic Ketoacidosis

Clues:

- high glucose
- ketones
- vomiting
- abdominal pain
- dehydration
- rapid deep breathing
- confusion
- infection or missed insulin

Capacity failure:

Glucose regulation, **energy use**, **acid-base balance**, **hydration**, **circulation**

Wise action:

Follow local DKA pathway with careful monitoring of fluids, insulin, potassium, acid-base status, and trigger.

Hyperosmolar Hyperglycemic State

Clues:

- severe hyperglycemia
- profound dehydration
- confusion or drowsiness
- older patient with type 2 diabetes often
- infection, poor intake, or missed medicines may trigger

Capacity failure:

Glucose regulation, **hydration**, **cognition**, **circulation**

Wise action:

Follow local hyperglycemic emergency pathway and monitor fluid, electrolytes, renal function, and mental state.

Adrenal Crisis

Clues:

- severe weakness
- hypotension
- vomiting
- abdominal pain
- dehydration
- low glucose in some cases

- hyponatremia or hyperkalemia in some contexts
- steroid withdrawal or adrenal disease risk
- shock not responding as expected

Capacity failure:

Stress hormone response, **circulation**, **glucose regulation**, **salt-water balance**

Wise action:

Urgent treatment according to local adrenal crisis pathway. Do not delay when strongly suspected.

Thyroid Storm

Clues:

- fever
- severe agitation or confusion
- tachycardia
- palpitations
- diarrhea
- vomiting
- weight loss
- tremor
- heart failure or arrhythmia
- known or suspected hyperthyroidism

Capacity failure:

Metabolic regulation, **circulation**, **rhythm stability**, **temperature regulation**

Wise action:

Urgent endocrine/emergency management according to local pathway.

Myxedema Coma

Clues:

- severe hypothyroid features
- hypothermia
- drowsiness or coma
- bradycardia
- slow breathing
- hyponatremia
- precipitating infection, cold exposure, or sedatives

Capacity failure:

Metabolic rate, **ventilation**, **cognition**, **temperature regulation**, **circulation**

Wise action:

Urgent management according to local endocrine/emergency pathway.

Sepsis With Metabolic Failure

Clues:

- infection
- fever or low temperature
- hypotension
- confusion
- tachypnea
- reduced urine output
- high lactate where measured
- hyperglycemia or hypoglycemia
- organ dysfunction

Capacity failure:

Defense, **circulation**, **cellular energy use**, **clearance**, **cognition**

Wise action:

Follow local sepsis pathway and reassess frequently.

Rhabdomyolysis

Clues:

- muscle pain
- weakness
- dark urine
- prolonged immobilization
- seizure
- heat illness
- trauma
- exertion
- toxins or medications

Capacity failure:

Muscle integrity, **energy injury**, **kidney clearance**, **potassium regulation**

Wise action:

Check CK, renal function, potassium, urine, and treat according to local pathway.

14. Wise Perturbation in Energy Transformation Failure

Treatment depends on the failed step.

Do not simply prescribe vitamins or advise rest without mapping the capacity failure.

Ask:

- Is glucose safe?
- Is oxygen delivery safe?
- Is circulation safe?
- Is acid-base status safe?

- Is there infection?
- Is endocrine crisis possible?
- Is intake adequate?
- Is malabsorption present?
- Are medicines contributing?
- Is sleep restorative?
- Is mood part of the pattern?
- Is frailty or sarcopenia present?
- What intervention restores transformation and function?

If Glucose Is Low

Correct glucose urgently and prevent recurrence.

Repair requires identifying why it happened:

- missed meal
- diabetes medicine dose
- CKD
- alcohol
- poor intake
- frailty
- infection
- adrenal insufficiency
- medication error

If Glucose Is High With Illness

Assess for:

- dehydration
- ketones
- acidosis
- infection
- missed insulin
- kidney function
- mental state
- fluid balance

Treat according to local hyperglycemic emergency or diabetes guidance.

If Oxygen Delivery Is Low

Treat:

- hypoxia
- anemia
- shock

- heart failure
- pulmonary embolism
- lung disease
- carbon monoxide exposure

Energy cannot transform without oxygen delivery.

If Intake Is Poor

Assess:

- nausea
- swallowing
- depression
- pain
- oral health
- food access
- dementia
- medication side effects
- cancer or chronic infection
- social support

Nutrition support must fit the cause.

If Endocrine Disease Is Suspected

Evaluate thyroid, adrenal, or diabetes physiology based on the pattern.

Do not treat “stress” or “age” as the diagnosis when endocrine danger is present.

If Deconditioning or Frailty Is Present

Repair requires:

- protein-energy support where appropriate
- resistance and mobility work
- treatment of underlying illness
- medication simplification
- sleep restoration
- falls prevention
- rehabilitation
- social support

Energy repair is active.

Rest alone may worsen deconditioning.

15. Repair Trajectory in Energy Transformation

Repair is shown by:

- glucose stabilizes

- ketones clear where relevant
- acid-base balance improves
- hydration improves
- appetite returns
- vomiting stops
- mental state clears
- weakness improves
- breathlessness improves if oxygen delivery was impaired
- anemia is treated or investigated
- thyroid or adrenal disorder controlled
- infection improves
- muscle pain and dark urine resolve in rhabdomyolysis
- weight stabilizes
- wounds heal
- walking improves
- sleep improves
- patient can resume meaningful activity
- recurrence plan is clear

Repair is not simply a normal laboratory value.

Repair means the patient can transform fuel into life-capacity again.

16. Energy Transformation and Medicines

Medicines commonly disturb energy transformation.

Examples:

Diabetes Medicines

Can cause:

- hypoglycemia
- weight change
- dehydration in selected contexts
- need for adjustment during illness or CKD

Steroids

Can cause:

- hyperglycemia
- muscle weakness
- weight gain
- infection risk
- adrenal suppression when withdrawn
- mood and sleep disturbance

Beta Blockers

Can mask some hypoglycemia symptoms and contribute to fatigue or bradycardia in some patients.

Diuretics

Can cause:

- dehydration
- electrolyte disturbance
- AKI
- dizziness
- weakness

Statins and Other Medicines

May contribute to muscle symptoms in some patients.

Sedatives and Opioids

Can cause:

- fatigue
- reduced activity
- constipation
- respiratory depression
- falls
- poor intake

Thyroid Hormone

Too little may leave hypothyroid symptoms.

Too much may cause palpitations, weight loss, tremor, and bone or rhythm risk.

Medication review is essential in unexplained fatigue, weakness, glucose instability, weight change, or poor recovery.

17. Energy Transformation and Nutrition

Nutrition is more than calories.

The patient needs:

- protein
- energy
- fluid
- micronutrients
- safe swallowing
- functioning gut
- cultural acceptability
- affordability
- practical access
- appetite
- ability to prepare food

- support where needed

Malnutrition may appear as:

- weight loss
- muscle loss
- weakness
- poor wound healing
- recurrent infection
- fatigue
- edema in severe states
- pressure injury
- delayed rehabilitation

In hospitalized or frail patients, ask:

- Is the patient eating?
- Can the patient swallow?
- Are dentures available?
- Is nausea controlled?
- Is pain preventing eating?
- Is depression present?
- Does the patient need help feeding?
- Is food culturally acceptable?
- What was intake before admission?
- Is weight falling?

Energy repair often begins with noticing that the patient is not eating.

18. Energy Transformation and Sleep

Sleep is part of energy regulation.

Poor sleep worsens:

- pain
- glucose control
- mood
- cognition
- blood pressure
- immune function
- fatigue
- delirium risk
- recovery

Sleep may be disrupted by:

- hospital noise
- nocturia
- pain
- breathlessness
- cough
- anxiety
- sleep apnea
- restless legs
- medications
- depression
- caffeine
- alcohol

A patient who sleeps poorly may not repair well.

Ask:

Is the patient resting, or merely lying in bed exhausted?

19. Energy Transformation and Mood

Depression, grief, anxiety, trauma, and demoralization can profoundly affect energy.

Features may include:

- fatigue
- poor sleep
- low appetite or overeating
- psychomotor slowing
- poor concentration
- low motivation
- pain amplification
- social withdrawal
- hopelessness
- poor adherence
- reduced activity

But mood diagnoses should not be used to avoid medical assessment.

Before attributing fatigue to depression, consider:

- anemia
- hypothyroidism
- diabetes
- CKD
- liver disease

- sleep apnea
- infection
- malignancy
- inflammatory disease
- medications
- heart or lung disease

After medical danger is considered, mood may still be central.

Energy repair may require emotional repair.

20. Energy Transformation and Frailty

Frailty is reduced energy reserve across systems.

A frail patient may have:

- low appetite
- weight loss
- sarcopenia
- slow gait
- fatigue
- falls
- recurrent illness
- prolonged recovery
- medication sensitivity
- delirium risk
- social vulnerability

In frailty, energy repair includes:

- treating acute illness
- nutrition
- strength and mobility
- medication simplification
- sleep
- pain control
- mood
- caregiver support
- realistic goals
- prevention of further decline

The question is:

What reserve can be rebuilt, and what support is needed where reserve cannot fully return?

21. Energy Transformation and Chronic Fatigue

Chronic fatigue requires careful, respectful assessment.

Do not dismiss it.

Do not assume one cause too early.

Ask:

- When did it start?
- Was there a triggering illness?
- Is it post-exertional?
- Is sleep refreshing?
- Is there pain?
- Is there orthostatic intolerance?
- Is there brain fog?
- Is there weight loss, fever, night sweats?
- Is there depression or trauma?
- Are medicines contributing?
- Is there anemia, thyroid disease, diabetes, CKD, liver disease, inflammatory disease, sleep apnea, infection, or malignancy?
- What function has been lost?

Chronic fatigue may involve several overlapping capacities:

- energy transformation
- autonomic regulation
- sleep
- immune activation
- mood
- pain processing
- mitochondrial efficiency
- deconditioning
- social participation

The wise clinician validates the symptom while looking for treatable danger and reversible contributors.

22. Discharge Safety in Energy Transformation Problems

Before discharge, ask:

- Is glucose stable?
- Is the patient eating and drinking?
- Are ketones or acidosis resolved where relevant?
- Is hydration safe?
- Are electrolytes safe?
- Is mental state stable?

Is weakness improving?

Can the patient walk safely?

Are diabetes medicines adjusted to intake and kidney function?

Are steroid plans clear if relevant?

Are thyroid or adrenal plans clear?

Are nutrition needs addressed?

Are follow-up labs arranged?

Does the patient understand sick-day rules where relevant?

Is recurrence risk addressed?

Is caregiver support adequate?

A patient with normalized glucose but no food access is not repaired.

A patient with improved labs but severe weakness and no support is not safe.

23. Worked Case 1: Hypoglycemia

A 79-year-old woman with diabetes and CKD is brought in confused, sweaty, and shaky. She took her usual diabetes medicine but skipped breakfast because she felt unwell.

Danger

Hypoglycemia threatening brain energy and safety.

Syndrome

Acute confusion with adrenergic symptoms in diabetes treatment context.

Capacity Failure

Glucose regulation, brain energy, cognition, mobility safety, medicine safety.

Coupling Conditions

CKD, poor intake, usual diabetes medicine, frailty, living alone, meal inconsistency.

Wise Perturbation

Check and correct glucose according to local guidance. Monitor for recurrence. Review diabetes medicines, kidney function, meal pattern, and support.

Repair Trajectory

Mental state clears, glucose remains stable, patient eats safely, medicine plan adjusted, recurrence prevention understood.

24. Worked Case 2: DKA

A 24-year-old person with type 1 diabetes presents with vomiting, abdominal pain, thirst, frequent urination, dehydration, rapid deep breathing, and high glucose after missing insulin during an infection.

Danger

Diabetic ketoacidosis.

Syndrome

Hyperglycemia with vomiting, dehydration, ketones, and acid-base stress.

Capacity Failure

Glucose regulation, energy use, acid-base balance, hydration, circulation, cognition risk.

Coupling Conditions

Infection, missed insulin, sick-day understanding, access to insulin, vomiting, social support.

Wise Perturbation

Follow local DKA pathway. Monitor fluids, insulin, potassium, acid-base status, glucose, trigger, and mental state.

Repair Trajectory

Hydration improves, vomiting stops, ketones clear, acidosis resolves, glucose becomes safer, potassium remains safe, infection treated, insulin and sick-day plan restored.

25. Worked Case 3: Hyperthyroid Energy Excess

A 58-year-old woman presents with weight loss, tremor, palpitations, heat intolerance, diarrhea, anxiety, and new irregular pulse.

Danger

Hyperthyroidism with possible atrial fibrillation and cardiac strain.

Syndrome

Energy excess with adrenergic symptoms, weight loss, and rhythm disturbance.

Capacity Failure

Metabolic regulation, rhythm stability, muscle strength, circulation, heat regulation.

Coupling Conditions

Age, cardiac risk, thyroid disease, medication exposure, access to endocrine follow-up, anticoagulation considerations if atrial fibrillation confirmed.

Wise Perturbation

Assess pulse, ECG, thyroid function, weight loss, hydration, cardiac status, and severity. Treat according to local thyroid and arrhythmia guidance.

Repair Trajectory

Pulse becomes safer, tremor and heat intolerance improve, weight stabilizes, diarrhea improves, rhythm plan clarified, thyroid condition controlled.

26. Worked Case 4: Severe Anemia and Fatigue

A 70-year-old man presents with progressive fatigue, breathlessness on exertion, dizziness, pallor, and black stools.

Danger

Severe anemia from gastrointestinal bleeding, oxygen delivery failure, coronary strain.

Syndrome

Progressive fatigue and dyspnea with bleeding clue.

Capacity Failure

Oxygen carrying capacity, circulation reserve, mobility, coronary reserve.

Coupling Conditions

Age, anticoagulants or antiplatelets if present, NSAID use, malignancy risk, CKD, access to endoscopy pathway.

Wise Perturbation

Assess hemodynamic stability, hemoglobin, bleeding source, medicines, renal function, and cardiac symptoms. Treat according to local anemia and GI bleeding pathway.

Repair Trajectory

Bleeding controlled, hemoglobin stabilizes, dizziness improves, breathlessness reduces, cause identified, recurrence prevention planned.

27. Worked Case 5: Frailty and Poor Recovery

An 86-year-old woman recovers from pneumonia but remains exhausted, eating poorly, weak, and unable to walk to the bathroom independently.

Danger

Incomplete recovery, malnutrition, dehydration, falls, pressure injury, readmission, caregiver strain.

Syndrome

Post-acute illness energy and functional decline in frailty.

Capacity Failure

Energy reserve, nutrition, mobility, repair, cognition risk, participation.

Coupling Conditions

Frailty, poor intake, muscle loss, hospital immobility, sleep disruption, polypharmacy, home support, baseline function.

Wise Perturbation

Assess nutrition, swallowing, pain, mood, sleep, medications, hydration, infection resolution, anemia, renal function, and rehabilitation needs. Mobilize safely and involve family/team.

Repair Trajectory

Appetite improves, strength returns gradually, walking improves, sleep improves, medicines simplified, home support arranged, readmission risk reduced.

28. Worked Case 6: Adrenal Crisis Risk

A 62-year-old patient on long-term steroids stops them abruptly during a vomiting illness and presents with severe weakness, abdominal pain, low blood pressure, dehydration, and confusion.

Danger

Adrenal crisis.

Syndrome

Acute collapse with steroid withdrawal risk and gastrointestinal illness.

Capacity Failure

Stress hormone response, circulation, glucose regulation, salt-water balance, cognition.

Coupling Conditions

Long-term steroid use, abrupt cessation, vomiting, poor intake, infection risk, lack of sick-day steroid guidance.

Wise Perturbation

Treat urgently according to local adrenal crisis pathway. Assess glucose, electrolytes, renal function, infection, hydration, and steroid plan.

Repair Trajectory

Blood pressure improves, vomiting settles, mental state clears, electrolytes stabilize, steroid plan restored, patient understands sick-day rules.

29. Common Student Pitfalls

Pitfall 1: Calling Fatigue “Nonspecific” Too Quickly

Fatigue may signal anemia, endocrine disease, infection, malignancy, organ failure, medication harm, or depression.

Pitfall 2: Forgetting Glucose

Check glucose early in confusion, weakness, collapse, sweating, or severe illness.

Pitfall 3: Treating Hyperglycemia Without Checking for Ketones or Acidosis When Indicated

High glucose with vomiting, dehydration, rapid breathing, or altered mental state may be a metabolic emergency.

Pitfall 4: Missing Severe Anemia Because Oxygen Saturation Is Normal

Oxygen saturation does not measure total oxygen-carrying capacity.

Pitfall 5: Missing Endocrine Crisis

Adrenal crisis, thyroid storm, and myxedema coma are uncommon but dangerous.

Pitfall 6: Giving Nutrition Without Considering Refeeding Risk in Severe Malnutrition

Severely malnourished patients need careful nutritional repair according to local guidance.

Pitfall 7: Ignoring Medicines

Diabetes medicines, steroids, sedatives, diuretics, beta blockers, statins, opioids, and thyroid medicines can all affect energy.

Pitfall 8: Thinking Rest Alone Repairs Fatigue

Some fatigue improves with rest. Other fatigue requires mobilization, nutrition, endocrine correction, infection treatment, medication repair, sleep restoration, or rehabilitation.

30. Clinical Practice Box

When assessing energy transformation, complete this structure:

Main symptom:
Fatigue, weakness, weight loss, hyperglycemia, hypoglycemia, poor intake, exercise intolerance?

Danger features:
Confusion, collapse, seizures, vomiting, dehydration, rapid breathing, hypotension, chest pain, severe weight loss, endocrine crisis signs?

Glucose status:
Low, high, stable, ketones/acidosis concern, medicine mismatch?

Fuel supply:
Eating, swallowing, absorption, vomiting, diarrhea, food access, weight trend?

Oxygen delivery:
Oxygenation, anemia, circulation, heart/lung disease, shock?

Hormonal regulation:
Diabetes, thyroid, adrenal, steroids, pregnancy context where relevant?

Cellular transformation:
Sepsis, inflammation, toxins, mitochondrial stress, chronic illness, malnutrition?

Coupling conditions:
CKD, frailty, medicines, mood, sleep, infection, cancer, alcohol, food insecurity, social support?

Wise perturbation:
Glucose correction, DKA/HHS pathway, anemia/bleeding pathway, endocrine treatment, nutrition, infection treatment, medication review, rehabilitation?

Repair trajectory:
Glucose stability, appetite, hydration, strength, cognition, weight, mobility, recurrence prevention?

31. Mini-Case for Practice

A 75-year-old man with diabetes, CKD, heart failure, and recent pneumonia presents with profound fatigue, poor appetite, weight loss, dizziness, and two falls. His daughter reports he has been eating very little but continues his diabetes tablets and diuretics. He looks pale and weak.

Apply the energy transformation approach.

Danger

Hypoglycemia, dehydration, AKI, anemia, heart failure instability, medication harm, falls, malnutrition, incomplete recovery from infection.

Syndrome

Post-illness fatigue and functional decline with poor intake, weight loss, dizziness, falls, and high-risk medicines.

Capacity Failure

Energy supply, glucose regulation, hydration, circulation, oxygen carrying capacity, clearance, mobility safety, repair.

Coupling Conditions

Diabetes, CKD, heart failure, recent infection, poor intake, diuretics, diabetes medicines, frailty risk, family support, possible anemia, medication access and understanding.

Wise Perturbation

Check glucose immediately. Assess hydration, renal function, electrolytes, hemoglobin, infection recovery, heart failure status, medication list, orthostatic symptoms, nutrition, and falls injury. Adjust medicines to intake and kidney function according to local guidance. Support nutrition and rehabilitation. Involve family in monitoring and follow-up.

Repair Trajectory

Glucose remains safe, dizziness improves, renal function and electrolytes stabilize, appetite improves, weight stabilizes, strength and walking improve, falls stop, medicines are simplified and understood, follow-up labs arranged.

32. Student Takeaway

Energy transformation becomes easier when the clinician asks:

Is glucose safe?
Is the patient able to eat, absorb, store, release, and use fuel?
Is oxygen delivery adequate?
Is circulation adequate?
Are thyroid, adrenal, insulin, and stress responses appropriate?
Is infection, inflammation, malignancy, organ failure, medication harm, poor sleep, depression, malnutrition, or frailty draining energy?
Is this acute metabolic danger or chronic energy depletion?
What intervention restores energy transformation without causing hypoglycemia, overload, electrolyte disturbance, or functional decline?
What repair trajectory should follow?

Energy is not merely a feeling.

It is the transformed capacity to think, breathe, move, defend, heal, and participate.

The safe clinician does not dismiss exhaustion. The safe clinician maps the energy pathway, treats danger, restores fuel and oxygen use, corrects regulation, addresses coupling conditions, and follows the patient back toward functional vitality.

Chapter 45. Clearance and Transformation Made Easy

Clearance and transformation are the body's ability to process, neutralize, remove, recycle, or excrete substances that would otherwise accumulate and cause harm.

Patients do not usually say:

"My clearance capacity is failing."

They say:

"I am passing less urine."
"My legs are swollen."
"I feel nauseated."
"I am itchy."
"I feel confused."
"My eyes are yellow."
"My abdomen is swollen."
"My medicines are making me drowsy."
"My potassium is high."
"My blood tests are abnormal."

Clearance and transformation are central to Internal Medicine because the body is always processing.

The kidneys clear water, salts, acids, potassium, urea, and many medicines.
The liver transforms nutrients, toxins, bilirubin, hormones, clotting factors, and many drugs.
The lungs clear carbon dioxide.
The gut eliminates waste and participates in metabolism.
The immune system clears microbes and damaged tissue.
The lymphatic system clears fluid and proteins from tissues.
The skin helps excrete heat, water, and some waste products.

When clearance fails, the body becomes internally burdened.

Potassium may rise.
Acid may accumulate.
Fluid may overload the lungs.
Medicines may become toxic.
Bilirubin may accumulate.
Ammonia and other toxins may affect cognition.
Carbon dioxide may rise.
Inflammatory debris may persist.
The patient may become swollen, breathless, confused, itchy, weak, nauseated, or dangerously unstable.

The first task is not simply to notice an abnormal blood test.

The first task is to ask:

What is accumulating, why is it accumulating, and what capacity is now threatened?

Clearance and transformation become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Are Clearance and Transformation?

Clearance means removing substances from the body.

Transformation means changing substances into safer, more useful, or more removable forms.

Examples:

the kidneys clear potassium, acid, urea, creatinine, water, and medicines

the liver transforms bilirubin, drugs, alcohol, ammonia, hormones, toxins, and nutrients

the lungs clear carbon dioxide

the gut eliminates stool and some toxins

the immune system clears infection and damaged tissue

the lymphatic system clears tissue fluid and proteins

Clearance and transformation are not passive processes.

They require:

blood flow

oxygen

cellular energy

intact organs

hormones

transporters

enzymes

drainage pathways

adequate hydration

coordinated circulation

safe medication use

When clearance fails, illness may appear as:

abnormal labs

swelling

confusion

nausea

itching

breathlessness

jaundice

bleeding

drowsiness

reduced urine output

fluid overload

acid-base disturbance

medicine toxicity

The clinical question is:

Which substance is accumulating, and what harm is it causing?

2. Clearance Is a Capacity, Not a Number

Creatinine is a number.

Clearance is a capacity.

Bilirubin is a number.

Transformation is a capacity.

Carbon dioxide is a number.

Ventilatory clearance is a capacity.

A patient with a mildly abnormal number may be stable.

Another patient with a rapidly changing number may be in danger.

Always ask:

- What was baseline?
- Is the change acute or chronic?
- Is the patient symptomatic?
- Is urine output changing?
- Is potassium safe?
- Is acid-base status safe?
- Is fluid balance safe?
- Are medicines accumulating?
- Is cognition affected?
- Is bleeding risk present?
- Is infection contributing?
- Is obstruction present?
- Is the trajectory improving or worsening?

The clinician should not treat the laboratory value alone.

The clinician should treat the failing capacity.

3. The Main Clearance and Transformation Systems

Kidney Clearance

The kidneys help regulate:

- water
- sodium
- potassium
- acid-base balance
- urea and metabolic waste
- creatinine
- many medicines
- blood pressure through volume and hormones
- mineral balance

- red blood cell support through erythropoietin

Kidney clearance failure may appear as:

- rising creatinine
- reduced urine output
- high potassium
- acidosis
- swelling
- pulmonary edema
- nausea
- itching
- confusion
- medicine toxicity
- anemia in chronic disease

Liver Transformation

The liver helps regulate:

- bilirubin
- bile flow
- clotting factors
- albumin
- glucose storage and release
- ammonia and nitrogen metabolism
- drug metabolism
- alcohol metabolism
- lipid metabolism
- hormone transformation
- immune and inflammatory signaling

Liver transformation failure may appear as:

- jaundice
- dark urine
- pale stools
- itching
- abdominal swelling
- leg edema
- confusion
- bleeding or bruising
- low albumin
- high INR

- low glucose in severe failure
- drug toxicity
- muscle wasting

Lung Clearance

The lungs clear carbon dioxide.

Carbon dioxide clearance failure may appear as:

- drowsiness
- headache
- confusion
- shallow breathing
- severe COPD
- sedative or opioid toxicity
- neuromuscular weakness
- obesity hypoventilation
- severe asthma exhaustion

Oxygen saturation may not fully reveal carbon dioxide retention.

Gut Clearance

The gut removes stool and participates in toxin handling.

Gut clearance failure may appear as:

- constipation
- bowel obstruction
- abdominal distension
- vomiting
- delirium in vulnerable patients
- worsening hepatic encephalopathy where constipation contributes
- poor intake
- medication accumulation through altered absorption

Lymphatic and Tissue Fluid Clearance

The lymphatic system clears excess tissue fluid and proteins.

Failure may appear as:

- chronic limb swelling
- skin thickening
- recurrent cellulitis
- wound healing problems
- heaviness
- reduced mobility

Immune Clearance

The immune system clears microbes, dead cells, and inflammatory debris.

Failure may appear as:

- persistent infection
- abscess
- sepsis
- chronic inflammation
- poor wound healing
- recurrent infection
- fever without source
- immune suppression complications

Clearance is a whole-body function.

4. The First Question: Is Clearance Failure Dangerous Now?

Clearance failure becomes dangerous when accumulation threatens the brain, heart, lungs, circulation, coagulation, or acid-base balance.

Urgent assessment is needed when there is:

- severe hyperkalemia
- ECG changes with potassium disturbance
- severe acidosis
- pulmonary edema
- very low urine output or anuria
- severe AKI
- rapidly rising creatinine
- uremic symptoms
- drug toxicity
- severe confusion or drowsiness
- acute liver failure signs
- jaundice with confusion or bleeding
- severe coagulopathy
- vomiting with dehydration and AKI
- obstructed infected kidney
- cholangitis
- severe carbon dioxide retention
- opioid or sedative toxicity
- massive fluid overload
- severe hyponatremia or hypernatremia
- tumor lysis or rhabdomyolysis risk
- shock with organ dysfunction

sepsis with kidney or liver injury

The danger-first question is:

What accumulated substance can kill or permanently harm this patient today?

5. Immediate Red Flags in Clearance and Transformation Failure

Red flags include:

anuria

severe oliguria

high potassium symptoms or ECG concern

severe weakness with electrolyte disturbance

confusion with kidney or liver failure

drowsiness with high carbon dioxide risk

breathlessness with pulmonary edema

jaundice with fever

jaundice with confusion

jaundice with bleeding

abdominal pain with jaundice and sepsis signs

severe vomiting with kidney injury

dark urine after muscle injury or heat illness

medication overdose

excessive sedation in renal or liver failure

new bleeding in liver disease or anticoagulation

rapidly worsening swelling

severe itching with cholestasis and systemic illness

reduced urine output after starting nephrotoxic medicine

AKI with sepsis

AKI with obstruction symptoms

AKI with heart failure

Clearance failure can progress quietly until it becomes dangerous.

6. Kidney Clearance Made Easy

When kidney function worsens, ask five questions.

1. Is Potassium Safe?

Potassium is immediately dangerous because it affects cardiac rhythm.

Ask:

Is potassium elevated?

Is there weakness?

Are there palpitations?

Are there ECG changes?

Is kidney clearance impaired?

Are medicines contributing?

Is there tissue breakdown?

2. Is Fluid Balance Safe?

Ask:

Is the patient dry?

Is the patient overloaded?

Is there pulmonary edema?

Is urine output low?

Are lungs wet?

Is there swelling?

Is blood pressure low or high?

3. Is Acid-Base Balance Safe?

Ask:

Is there acidosis?

Is breathing deep and rapid?

Is the patient septic, in DKA, or in renal failure?

Is bicarbonate low where measured?

4. Are Medicines Accumulating?

Ask:

Which medicines are kidney-cleared?

Are sedatives, diabetes medicines, antibiotics, anticoagulants, opioids, or cardiac medicines affected?

Are NSAIDs, ACE inhibitors, ARBs, diuretics, or contrast contributing?

Do doses need review?

5. Is There Obstruction?

Ask:

Is the patient passing urine?

Is there retention?

Is there prostate disease?

Is there pelvic malignancy?

Is there flank pain?

Is there hydronephrosis?

Is there catheter blockage?

Is there an obstructed infected kidney?

These five questions make AKI safer.

7. AKI Patterns

AKI is not one disease.

It is a syndrome of impaired kidney clearance.

Pre-Renal Pattern

The kidney is under-perfused.

Possible causes:

- dehydration
- vomiting
- diarrhea
- bleeding
- sepsis
- over-diuresis
- poor intake
- heart failure with low effective perfusion
- cirrhosis with low effective arterial volume

Clues:

- dizziness
- thirst
- low urine output
- low blood pressure or orthostasis
- tachycardia
- poor intake or fluid losses
- renal function improves when perfusion improves, if injury is not advanced

Capacity failure:

kidney perfusion and clearance

Intrinsic Kidney Pattern

The kidney tissue itself is injured.

Possible causes:

- acute tubular injury
- glomerulonephritis
- interstitial nephritis
- vasculitis
- toxins
- rhabdomyolysis
- sepsis-related injury
- contrast-related injury in selected contexts

Clues:

- persistent AKI despite perfusion correction
- abnormal urinalysis
- blood and protein in urine
- rash or eosinophilia in some drug reactions
- muscle injury or dark urine
- systemic inflammatory signs

Capacity failure:

filtration tissue integrity and clearance

Post-Renal Pattern

Urine flow is blocked.

Possible causes:

- prostate obstruction
- urethral stricture
- stones
- malignancy
- pelvic mass
- catheter blockage
- neurogenic bladder

Clues:

- anuria or reduced urine
- bladder distension
- lower urinary tract symptoms
- hydronephrosis
- flank pain
- recurrent UTIs
- catheter not draining

Capacity failure:

urine drainage and clearance

The AKI question is:

Is the kidney under-filled, injured, obstructed, congested, poisoned, or inflamed?

8. Liver Transformation Made Easy

When liver tests or jaundice appear, ask five questions.

1. Is There Liver Failure?

Danger signs:

- confusion
- drowsiness

- bleeding
- high INR
- low glucose in severe disease
- severe jaundice
- rapidly worsening liver tests
- ascites with infection concern
- severe systemic illness

2. Is Bile Flow Obstructed?

Clues:

- jaundice
- dark urine
- pale stools
- itching
- right upper quadrant pain
- fever
- dilated bile ducts where imaged
- gallstones or malignancy risk

Danger diagnosis:

cholangitis, especially when jaundice, fever, abdominal pain, hypotension, or confusion are present.

3. Is Liver Cell Injury Present?

Possible causes:

- viral hepatitis
- alcohol-related injury
- drug-induced liver injury
- ischemic hepatitis
- autoimmune hepatitis
- fatty liver disease
- toxins
- sepsis
- biliary disease

4. Is Synthetic Function Impaired?

Ask:

- Is INR elevated?
- Is albumin low?
- Is there edema or ascites?
- Is there bleeding or bruising?
- Is glucose low in severe disease?

Synthetic failure means the liver is not only inflamed; it is failing to perform essential work.

5. Are Medicines or Toxins Involved?

Ask:

- acetaminophen/paracetamol use
- alcohol
- antibiotics
- herbal products
- anticonvulsants
- statins in selected contexts
- TB medicines where relevant
- chemotherapy or immunotherapy
- recreational substances
- occupational exposure

Liver transformation failure requires careful medicine history.

9. Jaundice Patterns

Pre-Hepatic Pattern

The liver receives too much bilirubin from red blood cell breakdown.

Possible causes:

- hemolysis
- large hematoma breakdown
- inherited conditions in some cases

Clues:

- anemia
- high reticulocytes where measured
- dark urine less prominent if unconjugated bilirubin predominates
- splenomegaly in some contexts

Capacity failure:

red cell stability and bilirubin load

Hepatic Pattern

The liver cells cannot process bilirubin properly.

Possible causes:

- hepatitis
- alcohol-related liver disease
- drug-induced injury
- cirrhosis
- sepsis

- autoimmune disease
- fatty liver disease

Clues:

- raised liver enzymes
- systemic symptoms
- liver tenderness in some cases
- impaired synthetic function if severe

Capacity failure:

hepatocyte transformation

Post-Hepatic Pattern

Bile cannot drain.

Possible causes:

- gallstone obstruction
- pancreatic cancer
- cholangiocarcinoma
- biliary stricture
- pancreatitis
- cholangitis

Clues:

- dark urine
- pale stools
- itching
- right upper quadrant pain
- fever if cholangitis
- weight loss if malignancy
- dilated ducts where imaged

Capacity failure:

bile drainage and toxin excretion

The jaundice question is:

Is bilirubin overproduced, poorly transformed, or blocked from leaving?

10. Lung Clearance of Carbon Dioxide

The lungs clear carbon dioxide through ventilation.

Carbon dioxide rises when ventilation is inadequate.

Possible causes:

- COPD exacerbation
- severe asthma with exhaustion

- opioid or sedative effect
- neuromuscular weakness
- obesity hypoventilation
- chest wall restriction
- brainstem depression
- severe fatigue

Clues:

- drowsiness
- headache
- confusion
- shallow breathing
- reduced respiratory effort
- severe wheeze or poor air entry
- weak cough
- known COPD or neuromuscular disease
- sedative or opioid exposure

Oxygen saturation may not reveal carbon dioxide retention.

The question is:

Is the patient clearing carbon dioxide safely?

If not, urgent assessment and ventilatory support pathway may be needed.

11. Medicine Clearance and Toxicity

Many patients become unwell because their usual medicines become unsafe.

Medicine toxicity is more likely when there is:

- AKI
- CKD
- liver disease
- dehydration
- frailty
- low body weight
- polypharmacy
- drug interactions
- poor intake
- overdose
- wrong dose
- duplicate therapy
- alcohol use

- cognitive impairment
- poor medication reconciliation

Possible presentations:

- confusion
- drowsiness
- falls
- bleeding
- hypoglycemia
- bradycardia
- hypotension
- nausea
- tremor
- arrhythmia
- AKI
- hyperkalemia
- respiratory depression

Always ask:

Has the patient's ability to clear this medicine changed?

A safe medicine yesterday may be unsafe today.

12. Common Medicine-Clearance Examples

Diabetes Medicines

Risk:

- hypoglycemia when kidney function declines or intake falls

Clinical concern:

- confusion
- sweating
- falls
- coma

Opioids and Sedatives

Risk:

- accumulation in frailty, CKD, liver disease, or overuse

Clinical concern:

- drowsiness
- falls
- respiratory depression
- constipation
- delirium

Anticoagulants

Risk:

- bleeding when kidney function, liver function, interactions, or dosing change

Clinical concern:

- black stool
- bruising
- anemia
- hematuria
- intracranial bleed after falls

NSAIDs

Risk:

- AKI, hypertension, fluid retention, bleeding

Clinical concern:

- reduced urine output
- edema
- high blood pressure
- GI bleeding
- worsening heart failure

ACE Inhibitors, ARBs, Diuretics

Risk:

- AKI or electrolyte disturbance during dehydration, sepsis, or poor intake

Clinical concern:

- dizziness
- hyperkalemia
- rising creatinine
- hypotension

Antibiotics

Risk:

- kidney or liver dose adjustment
- interactions
- adverse effects
- C. difficile risk in some contexts

Clinical concern:

- diarrhea
- rash
- worsening renal function
- confusion in vulnerable patients

Medication clearance is a core part of Internal Medicine.

13. Fluid Clearance and Edema

Fluid accumulation may occur when the body cannot clear or contain fluid properly.

Possible mechanisms:

- heart failure
- kidney failure
- liver disease
- nephrotic syndrome
- venous insufficiency
- lymphatic failure
- medication-induced edema
- low albumin
- inflammation
- immobility

Fluid overload can threaten:

- oxygenation
- skin integrity
- mobility
- sleep
- kidney function
- wound healing

Ask:

- Is edema local or generalized?
- Is there breathlessness?
- Is there orthopnea?
- Is urine output reduced?
- Is albumin low?
- Is kidney function abnormal?
- Is liver disease present?
- Are medicines contributing?
- Is venous or lymphatic disease present?
- Is this acute or chronic?

Fluid clearance is not just a cosmetic issue.

It can be a sign of organ failure.

14. Gut Clearance and Constipation

Constipation may seem minor, but in vulnerable patients it can cause major harm.

Constipation can contribute to:

- abdominal pain
- nausea
- poor appetite
- urinary retention
- delirium
- overflow diarrhea
- bowel obstruction
- worsening hepatic encephalopathy
- discomfort and agitation
- reduced mobility

Risk factors include:

- opioids
- anticholinergics
- dehydration
- immobility
- poor intake
- neurological disease
- dementia
- low fiber intake
- electrolyte disturbance
- frailty
- depression

In delirium, constipation is a common reversible coupling condition.

The gut is part of clearance.

15. Immune Clearance and Source Control

Infection clearance requires more than antibiotics.

The body may fail to clear infection because:

- abscess persists
- infected device remains
- obstructed urinary tract remains
- obstructed bile duct remains
- foreign body remains
- necrotic tissue remains
- immune system is suppressed
- glucose is uncontrolled

blood supply is poor

antibiotic penetration is poor

aspiration continues

wound care is inadequate

Source control means removing or correcting the focus that keeps infection alive.

Examples:

draining an abscess

relieving biliary obstruction

relieving urinary obstruction

removing infected lines where indicated

debriding infected necrotic tissue

treating dental source

addressing aspiration

If infection does not improve, ask:

Is the body unable to clear the source because the source is still present?

16. Clearance and Frailty

Frailty reduces clearance reserve.

A frail patient is more vulnerable to:

AKI from mild dehydration

delirium from mild drug accumulation

constipation from immobility

pulmonary edema from excess fluids

hypoglycemia from reduced intake

bleeding from anticoagulants

prolonged sedation

slow infection clearance

functional decline after metabolic stress

In frailty, always ask:

Is renal function stable?

Is liver function adequate?

Are medicines adjusted?

Is hydration safe?

Is constipation present?

Is urine output adequate?

Is fluid overload developing?

Is cognition changing?

Is mobility declining?

Frailty turns small clearance problems into whole-person crises.

17. Wise Perturbation in Clearance Failure

Treatment depends on what is accumulating and why.

If Potassium Is Dangerous

Treat urgently according to local hyperkalemia pathway.

Then ask why:

- AKI
- CKD
- medicines
- tissue breakdown
- acidosis
- adrenal insufficiency
- lab artifact in some contexts

Repair requires preventing recurrence.

If Fluid Is Accumulating

Treatment may include:

- diuresis
- salt/fluid strategy where appropriate
- renal support pathway
- heart failure treatment
- liver disease management
- compression where venous/lymphatic disease and safe
- medication review

But avoid reflex diuresis if the patient is intravascularly depleted.

If Medicines Are Accumulating

Treatment may include:

- stopping the drug
- reducing dose
- checking levels where relevant
- supportive care
- antidote where appropriate
- dialysis pathway for selected toxins
- medication reconciliation
- caregiver education

If Bile Is Obstructed

Treatment may include:

- imaging
- antibiotics if cholangitis suspected
- urgent biliary drainage pathway where indicated
- malignancy evaluation where relevant

If Carbon Dioxide Is Accumulating

Treatment may include:

- reducing sedative/opioid burden
- bronchodilation
- treating COPD/asthma exacerbation
- ventilatory support pathway
- treating neuromuscular or central cause
- careful oxygen strategy according to local guidance

If Infection Is Not Clearing

Treatment may include:

- source control
- antimicrobial review
- imaging
- immune status assessment
- glucose optimization
- removal of infected devices where indicated

Wise perturbation asks:

What must be removed, transformed, drained, excreted, ventilated, stopped, or supported?

18. Repair Trajectory in Clearance and Transformation

Repair is shown by:

- urine output improves
- potassium becomes safe
- acidosis improves
- creatinine stabilizes or falls
- fluid overload improves
- breathlessness improves
- medicine toxicity resolves
- mental state clears
- jaundice improves where reversible
- itching improves
- bile drainage restored where obstructed
- INR and synthetic function stabilize in liver disease where possible

- carbon dioxide clearance improves
- constipation resolves
- infection source controlled
- swelling reduces
- patient eats, walks, thinks, and participates more safely

Repair is not simply a better blood test.

Repair means the accumulated burden is reduced and the patient's capacities are restored.

19. Monitoring Clearance

Monitoring should match the clearance problem.

Kidney Monitoring

- urine output
- creatinine
- urea
- potassium
- bicarbonate
- fluid balance
- weight where relevant
- blood pressure
- medicine doses
- signs of uremia
- signs of overload

Liver Monitoring

- bilirubin
- liver enzymes
- INR
- albumin where useful
- glucose in severe disease
- mental state
- bleeding
- ascites
- infection signs
- medication exposure

Carbon Dioxide Monitoring

- respiratory rate
- mental state
- work of breathing
- oxygen saturation

- blood gas where indicated
- sedative/opioid exposure
- ventilatory support response

Medicine Toxicity Monitoring

- mental state
- falls
- breathing
- bleeding
- glucose
- ECG where relevant
- renal and liver function
- drug levels where relevant
- side effects
- adherence and dosing

Monitoring should answer:

Is the body clearing better, or is burden accumulating?

20. Discharge Safety in Clearance Problems

Before discharge, ask:

- Is urine output adequate?
- Is potassium safe?
- Is creatinine stable or improving?
- Is fluid balance safe?
- Is breathlessness controlled?
- Are medicines adjusted to kidney and liver function?
- Are stopped medicines clearly explained?
- Is there a restart plan?
- Are follow-up blood tests arranged?
- Is jaundice improving or safely investigated?
- Is bleeding risk addressed?
- Is constipation managed?
- Is carbon dioxide risk controlled where relevant?
- Is the patient eating and drinking?
- Can the patient obtain medicines?
- Does the patient know warning signs?
- Are pending results assigned?
- Is specialist follow-up needed?

Clearance problems often relapse after discharge if medicine and follow-up plans are unclear.

21. Worked Case 1: AKI With Hyperkalemia

A 74-year-old man with CKD presents after diarrhea and poor intake. He continued NSAIDs, diuretics, and an ACE inhibitor. He has reduced urine output, rising creatinine, and high potassium.

Danger

Hyperkalemia, AKI, dehydration, medication-amplified renal hypoperfusion, arrhythmia risk.

Clearance Pattern

Kidney clearance failure from reduced perfusion and medicine effects.

Capacity Failure

Potassium regulation, clearance, hydration, circulation to kidneys, medicine safety.

Coupling Conditions

CKD, diarrhea, poor intake, NSAIDs, diuretics, ACE inhibitor, lack of sick-day advice.

Wise Perturbation

Treat potassium according to local pathway if dangerous. Stop harmful medicines temporarily where appropriate. Restore hydration carefully. Monitor urine output, renal function, potassium, acid-base status, and fluid balance. Provide medicine restart and sick-day plan.

Repair Trajectory

Potassium becomes safe, urine output improves, creatinine stabilizes or falls, dizziness resolves, medicines clarified, recurrence prevention understood.

22. Worked Case 2: Obstructive AKI

An 80-year-old man presents with lower abdominal discomfort, poor urine output, overflow incontinence, and rising creatinine. He has a history of prostate symptoms.

Danger

Urinary retention causing obstructive AKI, hyperkalemia risk, infection risk, bladder injury.

Clearance Pattern

Post-renal obstruction preventing urine drainage.

Capacity Failure

Urine drainage, kidney clearance, potassium regulation, comfort, infection defense.

Coupling Conditions

Prostate disease, medications that worsen retention, delayed presentation, possible UTI, frailty.

Wise Perturbation

Assess bladder, catheter pathway where appropriate, renal function, potassium, infection, and imaging if needed. Review medicines that worsen retention. Monitor for post-obstructive diuresis where relevant.

Repair Trajectory

Urine drains, discomfort improves, creatinine stabilizes or improves, potassium safe, infection treated if present, urology follow-up arranged.

23. Worked Case 3: Jaundice With Fever

A 69-year-old woman presents with right upper quadrant pain, fever, jaundice, dark urine, and confusion.

Danger

Cholangitis with sepsis and biliary obstruction.

Clearance Pattern

Bile drainage failure with infection and systemic toxicity.

Capacity Failure

Bile excretion, defense, circulation, cognition, liver transformation.

Coupling Conditions

Gallstone disease, age, dehydration, diabetes if present, access to urgent imaging and biliary drainage.

Wise Perturbation

Assess severity, sepsis, liver tests, clotting, renal function, cultures where appropriate, imaging, antibiotics according to local guidance, and urgent biliary drainage pathway where indicated.

Repair Trajectory

Fever settles, pain improves, jaundice and bilirubin begin to improve, mental state clears, blood pressure stable, bile drainage restored, recurrence plan made.

24. Worked Case 4: Carbon Dioxide Retention

A 72-year-old man with COPD presents with worsening breathlessness, wheeze, cough, and drowsiness after taking extra sedatives for sleep.

Danger

Ventilatory failure with carbon dioxide retention.

Clearance Pattern

Lung clearance of carbon dioxide is impaired by COPD exacerbation and sedative effect.

Capacity Failure

Ventilation, carbon dioxide clearance, oxygenation, cognition, airway protection.

Coupling Conditions

COPD, sedative use, infection trigger, oxygen strategy, frailty, home support.

Wise Perturbation

Assess respiratory rate, oxygenation, mental state, blood gas where indicated, chest findings, infection, and medications. Treat COPD exacerbation and sedative contribution according to local guidance. Escalate if ventilation worsens.

Repair Trajectory

Drowsiness clears, breathing improves, carbon dioxide improves where measured, oxygenation stable, sedative plan revised, exacerbation prevention addressed.

25. Worked Case 5: Medicine Toxicity in CKD

An 83-year-old woman with CKD becomes confused and falls after starting a new sedating pain medicine. She is eating poorly and has worsening renal function.

Danger

Drug accumulation causing delirium, falls, possible respiratory depression, AKI.

Clearance Pattern

Reduced kidney clearance and frailty causing medicine toxicity.

Capacity Failure

Medicine clearance, cognition, mobility safety, hydration, kidney function.

Coupling Conditions

CKD, frailty, new medicine, poor intake, polypharmacy, pain, living alone.

Wise Perturbation

Stop or reduce offending medicine where appropriate, assess injury, glucose, oxygenation, renal function, electrolytes, hydration, pain source, and safer pain options. Involve caregiver and pharmacy.

Repair Trajectory

Alertness improves, falls stop, renal function stabilizes, pain controlled safely, medicine list simplified, follow-up arranged.

26. Worked Case 6: Constipation and Delirium

An 86-year-old man admitted with infection becomes agitated and confused. He has not opened his bowels for several days, is taking opioids, and has reduced mobility.

Danger

Delirium worsened by constipation, opioid effect, infection, dehydration, and immobility.

Clearance Pattern

Gut clearance failure contributing to discomfort, toxin burden, urinary retention risk, and cognitive stress.

Capacity Failure

Cognition, gut clearance, comfort, mobility, hydration, medicine safety.

Coupling Conditions

Age, infection, opioid use, immobility, poor intake, hospital environment, dementia risk.

Wise Perturbation

Assess and treat constipation according to local practice, review opioids and anticholinergic burden, hydrate appropriately, mobilize safely, treat infection, check urinary retention, and support sleep and orientation.

Repair Trajectory

Bowels open, discomfort reduces, agitation improves, intake improves, mobility returns, delirium clears.

27. Common Student Pitfalls

Pitfall 1: Treating Creatinine as the Whole Kidney

Creatinine matters, but potassium, urine output, acid-base status, fluid balance, and medicines may be more urgent.

Pitfall 2: Forgetting Obstruction

Post-renal causes are treatable and dangerous if missed.

Pitfall 3: Giving Fluids Without Considering Overload

AKI may be due to dehydration, but it may also coexist with heart failure or congestion.

Pitfall 4: Missing Medicine Accumulation

Confusion, falls, bleeding, hypoglycemia, and drowsiness may be drug clearance problems.

Pitfall 5: Ignoring Synthetic Liver Function

Liver enzymes may be abnormal, but INR, albumin, glucose, bleeding, and encephalopathy reveal deeper liver failure.

Pitfall 6: Missing Cholangitis

Jaundice with fever, pain, hypotension, or confusion is dangerous.

Pitfall 7: Forgetting Carbon Dioxide

Oxygen saturation may not show ventilatory clearance failure.

Pitfall 8: Treating Constipation as Minor

Constipation can worsen delirium, retention, pain, poor intake, and hospitalization harm.

28. Clinical Practice Box

When assessing clearance and transformation, complete this structure:

What is accumulating?
Potassium, acid, fluid, urea, bilirubin, ammonia, carbon dioxide, medicine, stool, inflammatory source?

Which organ or pathway is failing?
Kidney, liver, lung ventilation, gut, immune source control, lymphatic system?

Is there danger now?
Hyperkalemia, acidosis, pulmonary edema, confusion, bleeding, sepsis, obstruction, drug toxicity?

Time course:
Acute, chronic, acute-on-chronic, recurrent?

Capacity failures:
Clearance, fluid balance, cognition, oxygenation, coagulation, medicine safety, infection control?

Coupling conditions:
CKD, liver disease, heart failure, dehydration, sepsis, obstruction, medicines, frailty, alcohol, toxins?

Initial investigations:
Renal function, electrolytes, urine output, urinalysis, bladder scan, liver tests, INR, glucose, blood gas, imaging, drug levels where relevant?

Wise perturbation:
Remove toxin, stop harmful medicine, relieve obstruction, treat potassium, diurese, hydrate, drain source, ventilatory support, treat liver/biliary cause?

Monitoring:
Urine output, potassium, creatinine, fluid balance, mental state, bleeding, oxygenation, carbon dioxide, bilirubin, INR?

Repair trajectory:
What should clear, improve, drain, stabilize, or normalize?

29. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, and osteoarthritis presents with weakness, nausea, reduced urine output, swollen legs, mild breathlessness, rising creatinine, and high potassium. She recently had diarrhea but continued diuretics, ACE inhibitor, and NSAIDs for knee pain.

Apply the clearance and transformation approach.

Danger

AKI with hyperkalemia, fluid balance uncertainty, medication harm, possible dehydration and heart failure congestion, arrhythmia risk.

Syndrome

Acute-on-chronic kidney clearance failure with reduced urine output, nausea, high potassium, swelling, and breathlessness.

Capacity Failure

Kidney clearance, potassium regulation, fluid balance, medicine safety, oxygenation risk, circulation-to-kidney balance.

Coupling Conditions

CKD, heart failure, diarrhea, poor intake, diuretics, ACE inhibitor, NSAIDs, diabetes, frailty risk, pain management needs.

Wise Perturbation

Treat hyperkalemia according to local pathway if dangerous. Assess volume status carefully because diarrhea and edema coexist. Review and temporarily stop kidney-harming medicines where appropriate. Avoid reflex fluids if pulmonary edema is present, but correct true hypovolemia carefully if present. Monitor urine output, respiratory status, potassium, creatinine, acid-base status, ECG, and fluid balance. Create a safer pain and sick-day medicine plan.

Repair Trajectory

Potassium becomes safe, urine output improves, nausea settles, creatinine stabilizes or falls, breathlessness does not worsen, edema improves if overloaded, medicines are clarified, NSAID harm addressed, follow-up labs arranged.

30. Student Takeaway

Clearance and transformation become easier when the clinician asks:

What is accumulating?
Which pathway normally clears or transforms it?
Is the accumulation dangerous now?
Is the problem kidney, liver, lung ventilation, gut, immune source control, lymphatic drainage, or medicine clearance?
Is the patient under-filled, overloaded, obstructed, poisoned, inflamed, infected, or failing synthetically?
Which medicines have become unsafe because clearance has changed?
What must be stopped, drained, excreted, transformed, ventilated, or monitored?
What repair trajectory should follow?

Clearance is not merely a blood test.

It is the body's ability to remain internally clean, chemically safe, fluid-balanced, mentally clear, and free from accumulating harm.

The safe clinician watches what is building up, protects danger first, identifies the failed pathway, removes or transforms the burden, adjusts medicines, monitors response, and follows the patient back toward internal coherence.

Chapter 46. Defense and Tolerance Made Easy

Defense is the body's ability to recognize threat, contain harm, remove danger, and begin repair.

Tolerance is the body's ability to control the response so that defense does not damage the person it is trying to protect.

Patients do not usually say:

"My defense and tolerance systems are dysregulated."

They say:

"I have fever."
"I feel weak."
"I am shaking with chills."
"I have pain and swelling."
"This wound is not healing."
"I keep getting infections."
"My joints are swollen."
"My rash keeps coming back."
"I feel inflamed all the time."
"I was told my immune system is low."

Defense and tolerance are central to Internal Medicine because the body must constantly decide:

What is dangerous?
What should be attacked?
What should be tolerated?
When should inflammation begin?
When should inflammation stop?
How can repair occur without excessive damage?

Defense without tolerance becomes destructive inflammation.

Tolerance without defense becomes vulnerability to infection, malignancy, and poor healing.

The clinical task is not only to ask:

"Is there infection?"

The deeper question is:

"Is the body defending appropriately, under-defending, over-defending, or failing to resolve?"

Defense and tolerance become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Are Defense and Tolerance?

Defense is the body's protective response to danger.

It includes:

- fever
- inflammation
- immune activation
- clotting and containment
- wound response

- antibody production
- white blood cell activity
- barrier protection
- cough
- mucus
- vomiting or diarrhea in some infections
- pain and swelling around injury
- removal of microbes and damaged tissue

Tolerance is the body's ability to prevent defense from becoming excessive.

It includes:

- limiting inflammation
- preventing autoimmune attack
- protecting healthy tissue
- turning off immune responses after threat passes
- maintaining gut and skin barrier balance
- tolerating harmless exposures
- allowing repair instead of endless alarm

A healthy immune system is not simply "strong."

A healthy immune system is appropriately responsive.

Too weak, and infection spreads.
Too aggressive, and the body damages itself.
Too persistent, and inflammation becomes chronic.
Too suppressed, and wounds fail to heal.

The clinical question is:

Is the defense response proportionate to the threat?

2. Defense Is a Capacity, Not Just a Fever

Fever is one sign of defense.

But defense includes much more.

A patient with serious infection may have fever, but they may also have:

- low temperature
- confusion
- tachypnea
- low blood pressure
- poor intake
- reduced urine output
- weakness
- falls

- delirium
- high glucose
- worsening kidney function

Some patients cannot mount a strong fever.

This is common in:

- frailty
- older age
- immune suppression
- advanced kidney disease
- advanced liver disease
- steroid use
- chemotherapy
- severe sepsis
- malnutrition

A patient without fever can still be dangerously infected.

The clinician must assess the whole defense pattern.

3. Tolerance Is a Capacity, Not Weakness

Tolerance does not mean ignoring danger.

Tolerance means controlling the defense response so that it does not injure the host.

Examples:

- the lungs must fight pneumonia without drowning in inflammation
- the joints must defend against injury without becoming chronically inflamed
- the gut must tolerate food and microbiota without attacking itself
- the immune system must fight infection without causing sepsis physiology
- the body must form clots to stop bleeding without causing pathologic thrombosis
- the skin must inflame around a wound but then resolve and heal

When tolerance fails, disease may appear as:

- autoimmune disease
- allergy
- asthma
- inflammatory bowel disease
- chronic inflammatory pain
- recurrent rashes
- sepsis
- cytokine-driven systemic illness
- chronic non-healing wounds

- organ damage from inflammation

Defense and tolerance must be balanced.

4. The First Question: Is Defense Failure Dangerous Now?

Defense failure becomes dangerous when infection or inflammation threatens life, organs, or function.

Urgent assessment is needed when there is:

- fever with hypotension
- fever with confusion
- fever with tachypnea
- fever with hypoxia
- fever with reduced urine output
- suspected sepsis
- meningitis features
- severe pneumonia
- pyelonephritis with systemic illness
- cholangitis
- neutropenic fever
- infected obstruction
- severe cellulitis with systemic toxicity
- rapidly progressive skin pain or necrosis
- immunosuppression with infection symptoms
- diabetic foot infection with systemic illness
- fever in a frail older adult with functional collapse
- fever after recent surgery or procedure
- fever with severe abdominal pain
- fever with rash and systemic illness
- persistent fever with weight loss or night sweats
- wound infection with spreading redness or systemic symptoms
- suspected tuberculosis or public health risk

The danger-first question is:

Is infection or inflammation causing organ dysfunction, systemic instability, or rapid progression?

5. Immediate Red Flags in Defense and Tolerance Failure

Red flags include:

- altered mental state
- low blood pressure
- rapid breathing

- low oxygen saturation
- cold or mottled skin
- reduced urine output
- severe weakness or collapse
- new inability to walk
- severe headache with fever
- neck stiffness
- photophobia
- new seizure
- non-blanching rash or purpura
- rapidly spreading skin infection
- severe pain out of proportion to skin findings
- jaundice with fever
- abdominal pain with fever and shock signs
- fever with immune suppression
- fever with chemotherapy or neutropenia risk
- diabetic foot wound with spreading infection
- infected catheter or device
- fever with back pain and neurological signs
- fever with new heart murmur or embolic signs
- persistent fever with weight loss and night sweats
- severe allergic reaction with airway or circulatory compromise

These signs mean the defense-tolerance system may be in dangerous failure.

6. The Defense Pathway Made Easy

Defense depends on several linked steps.

Step 1: Barriers

The body must keep danger out.

Barriers include:

- skin
- mucous membranes
- gut lining
- airway lining
- urinary tract flow
- vaginal flora
- cough reflex
- stomach acid

- tears and saliva
- normal microbiome

Barrier failure may occur with:

- wounds
- burns
- pressure injuries
- catheters
- surgery
- poor dentition
- aspiration
- dysphagia
- diarrhea
- urinary retention
- devices
- diabetes
- malnutrition

Step 2: Recognition

The immune system must recognize danger.

Failure may occur with:

- immune suppression
- older age
- steroid therapy
- chemotherapy
- HIV or other immune compromise
- malnutrition
- severe chronic disease

Over-recognition may occur with:

- allergy
- autoimmunity
- asthma
- inflammatory bowel disease
- drug reactions

Step 3: Containment

The body must contain infection or injury.

Containment includes:

- local inflammation
- pus formation
- clotting

- swelling
- fever
- immune cell recruitment

Failure may lead to:

- spreading infection
- bacteremia
- sepsis
- abscess expansion
- poor wound control

Excess may lead to:

- tissue damage
- compartment pressure
- organ dysfunction
- excessive clotting
- inflammatory injury

Step 4: Elimination

The body must remove microbes, toxins, and damaged tissue.

Failure may occur with:

- abscess requiring drainage
- obstructed kidney infection
- cholangitis
- infected prosthetic material
- poor blood supply
- poor glycemic control
- immune suppression
- inadequate source control

Step 5: Resolution

The body must turn off inflammation after danger is controlled.

Failure of resolution may lead to:

- chronic inflammation
- autoimmune activity
- fibrosis
- persistent pain
- tissue remodeling
- organ damage

Step 6: Repair

The body must rebuild damaged tissue.

Failure may occur with:

- diabetes
- vascular disease
- malnutrition
- infection
- steroids
- smoking
- pressure
- edema
- poor oxygenation
- immune suppression

Defense is not complete until repair is underway.

7. Common Defense and Tolerance Patterns

Local Infection Pattern

Features:

- localized pain
- redness
- swelling
- warmth
- pus
- fever may or may not be present
- function affected locally

Examples:

- cellulitis
- abscess
- infected wound
- urinary tract infection
- tonsillitis
- dental infection

Capacity failure:

local defense and barrier integrity

Systemic Infection Pattern

Features:

- fever or low temperature
- chills
- tachycardia
- tachypnea
- weakness

- confusion
- low blood pressure
- reduced urine output
- organ dysfunction

Examples:

- pneumonia with sepsis
- pyelonephritis
- cholangitis
- meningitis
- abdominal sepsis
- severe cellulitis

Capacity failure:

defense, circulation, cognition, clearance, oxygenation

Immune Suppression Pattern

Features:

- recurrent infections
- unusual infections
- severe infection with mild symptoms
- poor wound healing
- persistent fever
- oral thrush or opportunistic signs in selected contexts
- low white cell count in some cases

Causes may include:

- steroids
- chemotherapy
- immune-modifying medicines
- HIV or other immune disorders
- diabetes
- CKD
- liver disease
- malnutrition
- malignancy
- advanced age and frailty

Capacity failure:

recognition, containment, elimination, repair

Autoimmune or Autoinflammatory Pattern

Features:

- recurrent fevers

- joint swelling
- rash
- serositis
- ulcers
- fatigue
- inflammatory markers
- organ involvement
- flares and remissions

Examples:

- rheumatoid arthritis
- lupus
- vasculitis
- inflammatory bowel disease
- periodic fever syndromes
- polymyalgia rheumatica
- other inflammatory syndromes

Capacity failure:

tolerance, immune regulation, tissue protection

Allergy or Hypersensitivity Pattern

Features:

- rash
- itching
- wheeze
- swelling
- urticaria
- rhinitis
- anaphylaxis in severe cases
- trigger exposure

Capacity failure:

tolerance to exposure, airway or vascular stability in severe cases

Chronic Non-Healing Pattern

Features:

- wound persists
- repeated infection
- poor granulation
- pain
- edema
- poor perfusion

pressure

high glucose

malnutrition

Capacity failure:

repair, defense, perfusion, tissue integrity

8. Infection Is Not Only Microbes

Infection is the interaction between a microbe and a host.

The same organism may cause mild illness in one patient and severe illness in another.

Severity depends on:

microbial burden

virulence

site of infection

host immunity

age

frailty

diabetes

kidney disease

liver disease

lung disease

vascular supply

nutrition

devices or foreign bodies

obstruction

access to care

time to treatment

The clinical question is not only:

“What organism is this?”

It is also:

“How vulnerable is this host, and what capacity is failing?”

9. Sepsis Made Easy Within Defense

Sepsis is not just “bad infection.”

Sepsis is infection with life-threatening organ dysfunction.

In life-coherent terms, sepsis is defense failure with systemic capacity collapse.

Capacities affected may include:

circulation

- oxygenation
- cognition
- clearance
- coagulation
- glucose regulation
- cellular energy use
- temperature regulation

Sepsis may present with:

- fever or low temperature
- confusion
- tachypnea
- low blood pressure
- reduced urine output
- weakness
- mottling
- hypoxia
- high or low glucose
- rising creatinine
- low platelets or clotting problems in severe cases

In frail older adults, sepsis may present as:

- falls
- delirium
- poor intake
- immobility
- weakness
- reduced urine output
- subtle fever or no fever

The sepsis question is:

Is infection causing organ dysfunction or systemic instability?

If yes, treat urgently according to local sepsis pathway.

10. Fever Made Easy Within Defense

Fever can mean many things.

Possible causes include:

- infection
- inflammatory disease
- autoimmune disease

malignancy

drug fever

thrombosis

heat illness

tissue injury

endocrine crisis

transfusion reaction

withdrawal states

post-operative inflammation

The fever question is not:

“Does fever equal infection?”

The question is:

“What is the pattern of fever, and is the patient systemically unsafe?”

Ask:

How long has fever been present?

Is there a source?

Is the patient unstable?

Is the patient immunosuppressed?

Is there travel or exposure?

Is there weight loss or night sweats?

Are medicines new?

Is there rash, arthritis, abdominal pain, cough, urinary symptoms, headache, or jaundice?

Are there devices or wounds?

Is there organ dysfunction?

Fever is a signal.

The clinician must interpret the whole pattern.

11. Inflammation Without Infection

Inflammation may occur without infection.

Examples:

gout

autoimmune arthritis

vasculitis

inflammatory bowel disease

pancreatitis

pulmonary embolism with inflammatory response

malignancy

drug reaction

tissue necrosis

trauma

crystal disease

thyroiditis

autoinflammatory syndromes

This matters because antibiotics may not repair non-infectious inflammation.

A hot swollen joint may be infection, gout, or inflammatory arthritis.

A fever with abdominal pain may be infection, pancreatitis, clot, malignancy, or inflammatory bowel disease.

A high inflammatory marker may support inflammation but does not prove bacterial infection.

Wise care asks:

What is inflamed, why, and is antimicrobial treatment, anti-inflammatory treatment, drainage, anticoagulation, or another intervention needed?

12. Defense and Autoimmunity

Autoimmune disease occurs when defense is directed against self.

Possible clues include:

recurrent inflammatory symptoms

symmetrical joint swelling

prolonged morning stiffness

rash

mouth ulcers

photosensitivity

Raynaud's phenomenon

unexplained kidney findings

neuropathy

serositis

fevers without infection

weight loss

inflammatory markers

multi-organ pattern

Capacity failure may include:

tolerance failure

tissue injury

vascular inflammation

kidney filtration injury

lung inflammation

- joint integrity loss
- fatigue and energy disruption

Autoimmune disease is not simply “immune system strong.”

It is misdirected defense with impaired tolerance.

Treatment often requires reducing harmful inflammation while preserving enough defense to avoid infection.

13. Defense and Allergy

Allergy occurs when the immune system reacts strongly to a usually harmless exposure.

Mild allergy may cause:

- itching
- rash
- rhinitis
- watery eyes

Moderate allergy may cause:

- wheeze
- swelling
- urticaria
- vomiting

Severe allergy may cause anaphylaxis:

- airway swelling
- wheeze
- low blood pressure
- collapse
- widespread rash or flushing in many cases
- gastrointestinal symptoms
- sudden onset after exposure

Capacity failure in anaphylaxis:

- airway
- oxygenation
- vascular tone
- circulation

This is tolerance failure becoming immediate danger.

Treat urgently according to local anaphylaxis pathway.

14. Defense and Wounds

A wound requires defense and repair.

A wound fails to heal when any of the following are impaired:

- blood supply
- oxygenation
- glucose regulation
- nutrition
- pressure relief
- infection control
- edema control
- immune function
- mobility
- wound care access
- smoking cessation
- offloading
- pain control
- patient understanding

A diabetic foot ulcer is not only a skin problem.

It may involve:

- neuropathy
- poor perfusion
- pressure
- infection
- high glucose
- kidney disease
- poor footwear
- limited finances
- reduced vision
- work demands
- delayed presentation

Defense and repair must both be mapped.

15. Defense and Barriers

Barriers are the first immune system.

Common barrier failures include:

Skin Barrier Failure

Examples:

- wounds
- ulcers
- eczema

- pressure injuries
- burns
- IV lines
- surgical wounds

Risks:

- cellulitis
- abscess
- sepsis
- poor healing

Airway Barrier Failure

Examples:

- aspiration
- impaired cough
- COPD
- smoking
- viral infection
- poor mucus clearance
- neuromuscular weakness

Risks:

- pneumonia
- bronchiectasis flare
- aspiration pneumonitis

Urinary Barrier Failure

Examples:

- catheter
- urinary retention
- obstruction
- stones
- reflux
- dehydration

Risks:

- UTI
- pyelonephritis
- urosepsis
- obstructed infected kidney

Gut Barrier Failure

Examples:

- inflammatory bowel disease

- diarrhea
- bowel ischemia
- obstruction
- perforation
- severe liver disease
- chemotherapy

Risks:

- bacterial translocation
- sepsis
- malnutrition
- inflammation

Protecting barriers is part of defense medicine.

16. Defense and Coupling Conditions

Defense is shaped by context.

Important coupling conditions include:

Age and Frailty

Frailty reduces reserve and changes presentation.

Infection may appear as:

- confusion
- falls
- poor intake
- immobility
- weakness

Diabetes

Diabetes increases risk of:

- skin infection
- foot infection
- urinary infection
- poor wound healing
- severe infection
- fungal infection in some contexts

CKD

CKD increases risk of:

- immune dysfunction
- medication toxicity
- fluid and electrolyte problems during infection
- poor vaccine response in some contexts

Liver Disease

Liver disease increases risk of:

- infection
- bleeding
- poor protein synthesis
- ascites infection
- encephalopathy during infection

Steroids and Immune-Modifying Medicines

These may:

- reduce fever response
- increase infection risk
- worsen glucose
- impair wound healing
- mask symptoms

Malnutrition

Malnutrition weakens:

- immunity
- skin integrity
- wound healing
- muscle reserve
- recovery

Devices

Devices create entry points.

Examples:

- catheters
- IV lines
- dialysis access
- prosthetic joints
- pacemakers
- drains
- ports

Social and Environmental Context

Risk may increase with:

- crowding
- poor sanitation
- unsafe water
- poor housing
- delayed access to care

- inability to afford medicines
- occupational exposure
- caregiving burden
- poor transport

Defense is biological and social.

17. Investigations in Defense and Tolerance Problems

Investigations should answer:

- Is infection present?
- Where is the source?
- Is there organ dysfunction?
- Is the host immunosuppressed?
- Is inflammation infectious or non-infectious?
- Is source control needed?
- Is there tolerance failure such as allergy or autoimmunity?
- Is the patient improving?

Possible investigations include:

- vital signs and trend
- oxygen saturation
- glucose
- full blood count
- renal function and electrolytes
- liver tests
- inflammatory markers where useful
- cultures where indicated
- urinalysis and urine culture where urinary source suspected
- chest imaging where respiratory source suspected
- blood gas or lactate where severe illness or shock suspected
- imaging for abscess, obstruction, pneumonia, osteomyelitis, abdominal source, or biliary source where indicated
- lumbar puncture pathway where meningitis is suspected and safe according to local guidance
- joint aspiration where septic arthritis or crystal arthritis is suspected
- wound swabs or tissue cultures where clinically useful
- viral testing where relevant
- TB testing where chronic cough, weight loss, exposure, or public health concern exists
- autoimmune tests when the clinical pattern suggests autoimmune disease
- allergy evaluation after acute stabilization where severe allergic reaction occurred

Testing should not replace bedside assessment.

A very sick patient needs treatment and escalation while investigations proceed.

18. Wise Perturbation in Defense Failure

Treatment depends on the defense pattern.

If Severe Infection or Sepsis Is Suspected

Wise perturbation may include:

- urgent clinical assessment
- oxygenation support
- circulatory support
- antimicrobials according to local guidance
- cultures where appropriate and feasible without delaying urgent treatment
- source identification
- source control where needed
- renal, glucose, and medication monitoring
- escalation when unstable

If Local Abscess Is Present

Antibiotics alone may not be enough.

Wise perturbation may include:

- drainage pathway
- pain control
- culture where appropriate
- diabetes and immune status assessment
- wound care

If Obstructed Infection Is Present

Examples:

- infected obstructed kidney
- cholangitis
- infected collection

Wise perturbation requires:

- antibiotics
- urgent drainage or relief of obstruction pathway
- sepsis monitoring
- organ support

If Autoimmune Inflammation Is Suspected

Wise perturbation requires:

- ruling out infection where relevant

- assessing organ-threatening involvement
- appropriate anti-inflammatory or immunosuppressive pathway
- monitoring infection risk
- specialist input where needed

If Allergy or Anaphylaxis Is Present

Wise perturbation requires:

- emergency treatment for airway/circulation danger
- trigger identification
- observation according to local guidance
- avoidance plan
- future emergency plan

If Wound Healing Fails

Wise perturbation requires:

- infection assessment
- perfusion assessment
- pressure relief
- glucose support
- nutrition
- edema control
- wound care access
- footwear/offloading where relevant
- social feasibility

Defense treatment must match the failure.

19. Antibiotics Are Powerful Perturbations

Antibiotics can save lives.

They can also cause harm when used poorly.

Potential harms include:

- allergic reactions
- diarrhea
- C. difficile infection in some contexts
- kidney or liver injury
- drug interactions
- resistance
- unnecessary cost
- false reassurance when source control is needed
- masking diagnosis without solving the problem

Antibiotics are wise when bacterial infection is likely or dangerous.

They are not wise when used as a substitute for reasoning.

Before antibiotics, ask:

- Is bacterial infection likely?
- Is the patient systemically unwell?
- What is the likely source?
- Are cultures needed and feasible before treatment?
- Is source control needed?
- Is renal or liver dosing relevant?
- Is allergy history clear?
- What is the expected repair trajectory?
- When should treatment be reviewed?

Antibiotics are part of defense support, not the whole of defense care.

20. Anti-Inflammatory Treatment Requires Balance

Anti-inflammatory treatment can reduce harmful inflammation.

But it may also reduce defense against infection.

Examples include:

- steroids
- NSAIDs
- colchicine
- disease-modifying antirheumatic drugs
- biologic therapies
- other immune-modifying medicines

Before suppressing inflammation, ask:

- Is infection excluded or treated?
- Is the inflammation organ-threatening?
- What is the diagnosis?
- What is the patient's immune risk?
- What is glucose risk?
- What is kidney risk?
- What is bleeding risk?
- What monitoring is needed?
- How will repair be recognized?

The goal is not to silence defense blindly.

The goal is to reduce harmful inflammation while preserving life-protective defense.

21. Repair Trajectory in Defense and Tolerance

Repair is shown by:

- fever settles
- rigors stop
- pain improves
- redness stops spreading
- swelling reduces
- oxygenation improves
- blood pressure stabilizes
- respiratory rate improves
- mental state clears
- urine output improves
- appetite returns
- inflammatory markers improve where useful
- wound begins healing
- source control achieved
- glucose stabilizes
- kidney and liver function stabilize
- mobility improves
- antimicrobial or anti-inflammatory plan reviewed
- recurrence prevention addressed

In autoimmune or inflammatory disease, repair may include:

- reduced pain and stiffness
- improved function
- reduced rash
- organ markers stabilizing
- fewer flares
- reduced steroid burden
- better quality of life

In allergy, repair may include:

- airway stable
- rash or swelling improves
- blood pressure stable
- trigger identified
- future plan clear

Repair is not only symptom reduction.

It is restored defense, restored tolerance, and safe resolution.

22. Monitoring Defense and Tolerance

Monitoring should match the risk.

Infection Monitoring

- temperature
- respiratory rate
- blood pressure
- pulse
- oxygenation
- mental state
- urine output
- source symptoms
- pain
- renal function
- glucose
- inflammatory markers where useful
- cultures and imaging results
- antibiotic adverse effects

Wound Monitoring

- size
- depth
- drainage
- odor
- pain
- surrounding redness
- warmth
- edema
- perfusion
- pressure relief
- glucose
- nutrition
- dressing feasibility

Autoimmune Monitoring

- symptoms
- function
- organ involvement
- inflammatory markers where useful
- medication adverse effects

- infection risk
- steroid complications
- patient-reported function

Allergy Monitoring

- airway
- breathing
- circulation
- rash/swelling
- recurrence
- trigger avoidance
- emergency plan

Monitoring asks:

Is defense resolving, persisting, spreading, or harming the host?

23. Defense and Frailty

In frailty, defense failure often appears indirectly.

A frail patient with infection may present with:

- fall
- confusion
- weakness
- immobility
- poor intake
- new incontinence
- low temperature
- functional collapse

The clinician must not wait for classic symptoms.

Ask:

- What changed from baseline?
- Is there delirium?
- Is respiratory rate elevated?
- Is oxygenation lower?
- Is urine output reduced?
- Is intake poor?
- Is mobility worse?
- Are medicines accumulating?
- Is there pain?
- Is there an occult infection source?

- Is there sepsis physiology?

Frailty care requires lower threshold for integrated assessment.

Repair must include function, not only infection control.

24. Defense and Diabetes

Diabetes affects defense and repair.

It may increase risk of:

- skin infection
- foot infection
- urinary infection
- fungal infection
- delayed wound healing
- severe infection
- hyperglycemia during illness
- dehydration
- DKA or hyperosmolar states in some contexts

In infection with diabetes, ask:

- Is glucose high?
- Are ketones needed based on the clinical picture?
- Is hydration safe?
- Is kidney function stable?
- Is there a foot wound?
- Is there peripheral vascular disease?
- Is there neuropathy?
- Is infection deeper than it looks?
- Can the patient manage medicines while ill?

Defense repair in diabetes includes glucose-aware care.

25. Defense and Steroids

Steroids are powerful.

They may reduce harmful inflammation, but they also affect defense.

Steroids can:

- reduce fever and inflammatory signs
- increase infection risk
- worsen glucose
- weaken muscles
- thin skin

impair wound healing

contribute to osteoporosis

suppress adrenal response

complicate acute illness if stopped abruptly after long use

In any patient on steroids, ask:

Why are they taking steroids?

How long have they taken them?

Are they immunosuppressed?

Is infection masked?

Is glucose elevated?

Is muscle weakness present?

Is wound healing impaired?

Is adrenal suppression relevant?

Is tapering or stress coverage needed according to local guidance?

Steroids are defense-tolerance medicines.

They require respect.

26. Defense and Public Health

Some defense problems affect others.

Examples:

tuberculosis

meningitis

measles or other vaccine-preventable infections

influenza outbreaks

COVID-like respiratory outbreaks

foodborne illness

sexually transmitted infections

antimicrobial-resistant organisms

scabies or infestation in institutions

waterborne disease

travel-related infections

The clinician must ask:

Is isolation needed?

Are contacts at risk?

Is reporting required?

Is public health advice needed?

Are household members symptomatic?

Is there workplace or school risk?

Is vaccination relevant?

Is antimicrobial resistance relevant?

Defense is personal and communal.

27. Discharge Safety in Defense Problems

Before discharge, ask:

Is the patient clinically stable?

Is oxygenation safe?

Is blood pressure stable?

Is mental state safe?

Is fever improving or explained?

Is the infection source controlled?

Is oral intake adequate?

Is kidney function safe?

Is glucose safe?

Are antibiotics or anti-inflammatory medicines clear?

Are cultures or pending results assigned?

Is wound care feasible?

Can the patient obtain medicines?

Are warning signs understood?

Is follow-up arranged?

Is isolation or public health advice needed?

Is mobility safe?

Is caregiver support adequate?

A patient is not safe simply because temperature is lower.

Defense repair must be stable, functional, and followable.

28. Worked Case 1: Pneumonia With Sepsis Risk

A 78-year-old man presents with fever, cough, sputum, tachypnea, mild hypoxia, confusion, and reduced urine output.

Danger

Pneumonia with possible sepsis, hypoxia, delirium, AKI risk.

Defense Pattern

Respiratory infection with systemic defense failure.

Capacity Failure

Defense, oxygenation, cognition, circulation risk, clearance.

Coupling Conditions

Age, frailty, diabetes or CKD if present, poor intake, baseline function, medicines, home support.

Wise Perturbation

Assess severity, oxygenation, sepsis, renal function, glucose, hydration, and chest source. Treat according to local pneumonia and sepsis guidance. Monitor respiratory rate, oxygenation, blood pressure, mental state, urine output, renal function, and mobility.

Repair Trajectory

Fever settles, breathing improves, oxygenation stabilizes, confusion clears, urine output improves, appetite returns, mobility recovers.

29. Worked Case 2: Diabetic Foot Infection

A 62-year-old man with diabetes and neuropathy presents with a foot ulcer, spreading redness, swelling, foul drainage, and high glucose.

Danger

Deep infection, osteomyelitis, sepsis, limb threat, poor wound healing.

Defense Pattern

Barrier failure with impaired local defense and repair.

Capacity Failure

Skin integrity, defense, repair, glucose regulation, mobility, perfusion risk.

Coupling Conditions

Diabetes, neuropathy, possible vascular disease, footwear, work demands, glucose control, kidney function, wound care access.

Wise Perturbation

Assess depth, perfusion, systemic illness, glucose, renal function, imaging need, wound care, offloading, and surgical or specialist input where needed. Treat infection according to local guidance and address pressure and perfusion.

Repair Trajectory

Redness stops spreading, pain and drainage improve, glucose safer, wound begins healing, offloading feasible, perfusion addressed, recurrence prevention planned.

30. Worked Case 3: Fever on Steroids

A 70-year-old woman taking long-term steroids for inflammatory disease presents with weakness, mild fever, cough, high glucose, and confusion.

Danger

Infection with muted inflammatory response, steroid-related immune suppression, hyperglycemia, delirium, adrenal considerations.

Defense Pattern

Possible respiratory infection in immune-modified host.

Capacity Failure

Defense, glucose regulation, cognition, oxygenation risk, stress response.

Coupling Conditions

Long-term steroids, diabetes risk, frailty, immune suppression, adrenal suppression risk, medicines, poor intake.

Wise Perturbation

Assess oxygenation, infection source, glucose, renal function, medication list, steroid history, and severity. Treat suspected infection according to local guidance and manage steroid/glucose issues according to local pathway.

Repair Trajectory

Cough and fever improve, glucose stabilizes, confusion clears, oxygenation safe, steroid plan clarified, infection complications avoided.

31. Worked Case 4: Hot Swollen Joint

A 64-year-old man presents with acute severe pain, swelling, warmth, and reduced movement in one knee. He has fever.

Danger

Septic arthritis until excluded, with gout or inflammatory arthritis also possible.

Defense Pattern

Acute joint inflammation with possible infection.

Capacity Failure

Joint integrity, mobility, defense, pain control, systemic stability.

Coupling Conditions

Diabetes, immune suppression, prosthetic joint, prior gout, skin infection, recent procedure, anticoagulation, kidney disease.

Wise Perturbation

Urgent assessment. Joint aspiration pathway where indicated, cultures, blood tests, imaging where needed, and antimicrobial pathway if septic arthritis suspected. Avoid assuming gout without considering infection.

Repair Trajectory

Pain improves, fever settles, joint movement improves, infection excluded or treated, mobility returns, recurrence prevention addressed.

32. Worked Case 5: Anaphylaxis

A 45-year-old patient develops sudden wheeze, lip swelling, urticaria, vomiting, dizziness, and low blood pressure after a medication exposure.

Danger

Anaphylaxis.

Defense Pattern

Severe hypersensitivity reaction causing airway, breathing, and circulation danger.

Capacity Failure

Tolerance, airway, oxygenation, vascular tone, circulation.

Coupling Conditions

Medication exposure, allergy history, asthma, access to emergency care, future avoidance and documentation.

Wise Perturbation

Treat immediately according to local anaphylaxis pathway. Monitor airway, breathing, circulation, recurrence risk, and identify trigger.

Repair Trajectory

Airway swelling improves, wheeze settles, blood pressure stabilizes, rash improves, observation completed as appropriate, allergy documented, future emergency plan clear.

33. Worked Case 6: Chronic Fever and Weight Loss

A 59-year-old man presents with six weeks of fever, night sweats, weight loss, cough, and occasional blood-streaked sputum.

Danger

Tuberculosis, malignancy, chronic infection, inflammatory disease, public health risk.

Defense Pattern

Chronic systemic inflammatory or infectious pattern.

Capacity Failure

Defense, lung integrity, nutrition, energy, public health safety.

Coupling Conditions

TB exposure, smoking, immune status, HIV risk where appropriate, occupational exposure, housing, family contacts, access to imaging and testing.

Wise Perturbation

Assess oxygenation, chest imaging, sputum/TB pathway according to local guidance, malignancy risk, immune status, weight loss, and public health needs. Ensure follow-up.

Repair Trajectory

Diagnosis clarified, transmission risk addressed where relevant, treatment pathway begins, cough and fever improve, weight stabilizes, family/contact safety considered.

34. Common Student Pitfalls

Pitfall 1: Assuming Fever Always Means Bacterial Infection

Fever can be infectious, inflammatory, malignant, drug-related, thrombotic, endocrine, or environmental.

Pitfall 2: Assuming No Fever Means No Infection

Older, frail, immunosuppressed, or severely ill patients may have little or no fever.

Pitfall 3: Treating Sepsis as Only Infection

Sepsis is infection with organ dysfunction. Look for circulation, cognition, oxygenation, and clearance failure.

Pitfall 4: Forgetting Source Control

Abscesses, obstructed bile ducts, infected kidneys, necrotic tissue, and infected devices may not repair with antibiotics alone.

Pitfall 5: Missing Immune Suppression

Steroids, chemotherapy, biologics, diabetes, CKD, liver disease, malnutrition, and frailty change infection risk and presentation.

Pitfall 6: Giving Anti-Inflammatories Without Considering Infection

Suppressing inflammation can worsen infection if the diagnosis is wrong.

Pitfall 7: Ignoring Wound Coupling Conditions

A wound will not heal if pressure, poor perfusion, high glucose, infection, nutrition, and footwear are not addressed.

Pitfall 8: Forgetting Public Health

Some infections require isolation, reporting, contact tracing, or community protection.

35. Clinical Practice Box

When assessing defense and tolerance, complete this structure:

Main syndrome:
Fever, wound, rash, joint swelling, cough, sepsis, allergy, chronic inflammation?

Danger signs:
Confusion, hypotension, tachypnea, hypoxia, reduced urine output, meningitis features, anaphylaxis, rapidly spreading infection?

Defense pattern:
Local infection, systemic infection, immune suppression, autoimmune inflammation, allergy, chronic wound, public health risk?

Tolerance problem:
Excess inflammation, autoimmunity, allergy, unresolved inflammation, steroid effect?

Capacity failures:
Defense, oxygenation, circulation, cognition, clearance, repair, barrier integrity?

Coupling conditions:
Frailty, diabetes, CKD, liver disease, steroids, immune medicines, devices, wounds, malnutrition, social exposure?

Likely source or trigger:

Investigations:
Vitals, glucose, FBC, renal/liver function, cultures where indicated, imaging, urinalysis, wound/joint/sputum testing, autoimmune tests where appropriate?

Wise perturbation:
Antibiotics, source control, oxygen/circulation support, anti-inflammatory treatment, allergy pathway, wound care, glucose support, public health action?

Repair trajectory:
What should improve, and what would make you reconsider?

36. Mini-Case for Practice

An 82-year-old woman with diabetes, CKD, mild dementia, and chronic leg edema presents with two days of weakness, poor appetite, confusion, and a fall. She has a mildly elevated temperature, rapid breathing, low-normal blood pressure, redness spreading from a small leg wound, and reduced urine output.

Apply the defense and tolerance approach.

Danger
Possible cellulitis with systemic infection or sepsis, delirium, AKI risk, falls, dehydration, frailty-related collapse.

Syndrome
Acute functional and cognitive decline with spreading skin infection and systemic stress.

Defense Pattern
Barrier failure from leg wound with spreading infection and possible systemic defense failure.

Capacity Failure
Defense, cognition, circulation risk, clearance, hydration, mobility, skin integrity.

Coupling Conditions
Diabetes, CKD, dementia, chronic edema, leg wound, frailty, poor intake, fall risk, possible medicine accumulation, home support.

Wise Perturbation
Assess sepsis severity, oxygenation, blood pressure, renal function, glucose, urine output, wound extent, pain, and mobility. Treat infection according to local guidance. Elevate and care for the limb where appropriate, review medicines, support hydration carefully, monitor renal function and delirium, and involve family/team for mobility and wound care.

Repair Trajectory
Redness stops spreading, fever settles, respiratory rate improves, confusion clears, urine output improves, kidney function stabilizes, appetite returns, mobility improves, wound plan is feasible, recurrence risk addressed through edema and skin care.

37. Student Takeaway

Defense and tolerance become easier when the clinician asks:

Is the body under-defending, over-defending, misdirecting defense, or failing to resolve?
Is there infection, inflammation, allergy, immune suppression, wound failure, or sepsis?
Is the patient systemically unsafe?
What barrier failed?
What source must be controlled?
What host vulnerabilities matter?
Will antibiotics, anti-inflammatory treatment, drainage, support, or public health action restore safety?
What harm could treatment cause?
What repair trajectory should follow?

Defense is not simply fever.

Tolerance is not simply weakness.

Together, defense and tolerance allow the body to recognize danger, respond proportionately, contain harm, resolve inflammation, and repair.

The safe clinician treats infection urgently when dangerous, avoids reflex antibiotics when the pattern does not fit, respects immune suppression, controls sources, balances inflammation, protects function, and follows the patient toward safe resolution.

Chapter 47. Repair and Remodeling Made Easy

Repair is the body's ability to restore structure and function after injury, illness, inflammation, infection, or stress.

Remodeling is the body's longer-term adaptation after damage or repeated stress.

Patients do not usually say:

"My repair and remodeling systems are failing."

They say:

"This wound is not healing."
"I still feel weak after the infection."
"My ankle is still swollen."
"I cannot get back to walking."
"My breathing never returned to normal."
"My heart is enlarged."
"My scar is painful."
"My joints are stiff."
"I keep relapsing."
"I never fully recovered."

Repair and remodeling are central to Internal Medicine because illness does not end when the acute danger passes.

After pneumonia, the lungs must clear inflammation and restore function.
After myocardial infarction, the heart remodels.
After AKI, the kidneys may recover or progress toward chronic damage.
After stroke, the brain and body must adapt.
After infection, frail patients must regain strength.
After inflammation, tissue must resolve without scarring or fibrosis.
After injury, wounds must close and remain functional.

The first task is not simply to ask:

"Is the patient alive and stable?"

The deeper question is:

"Is the patient repairing, adapting, or drifting into chronic damage?"

Repair and remodeling become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Repair?

Repair is the process by which the body restores what has been injured.

It includes:

- stopping bleeding
- controlling infection
- removing damaged tissue
- reducing inflammation
- rebuilding barriers
- restoring circulation

- restoring oxygenation
- healing wounds
- regenerating tissue where possible
- forming scar where regeneration is not possible
- restoring strength
- restoring function
- adapting behavior and support
- preventing recurrence

Repair is not one event.

It is a sequence.

For example, after pneumonia:

- Infection must be controlled.
- Inflammation must resolve.
- Oxygenation must improve.
- Secretions must clear.
- Appetite must return.
- Strength must recover.
- Mobility must return.
- Sleep and confidence must improve.
- Recurrence risks must be addressed.

A patient may be medically improved but not yet repaired.

2. What Is Remodeling?

Remodeling is the body's longer-term restructuring after stress, injury, or repeated load.

Remodeling can be helpful or harmful.

Helpful Remodeling

Examples:

- muscle strengthening after rehabilitation
- bone adaptation after appropriate loading
- collateral circulation formation in some chronic vascular disease
- improved breathing mechanics after pulmonary rehabilitation
- scar strengthening after wound healing
- neurological adaptation after stroke rehabilitation

Helpful remodeling supports function.

Harmful Remodeling

Examples:

- heart enlargement after chronic hypertension or myocardial injury
- airway remodeling in chronic asthma

lung fibrosis after repeated injury

kidney scarring after repeated AKI or chronic damage

liver fibrosis after chronic inflammation

vascular stiffening after chronic hypertension

joint deformity after uncontrolled inflammatory arthritis

pressure injury after prolonged immobility

muscle wasting after bed rest

frailty progression after repeated illness

Harmful remodeling locks the body into a less flexible state.

The clinical question is:

Is adaptation restoring capacity or reducing future reserve?

3. Repair Is a Capacity, Not a Calendar Date

Time passing does not guarantee healing.

A wound present for weeks may not be repairing.

A patient discharged from hospital may not be recovering.

A fever may settle while weakness deepens.

A fracture may unite but the patient may still be unable to walk safely.

A creatinine may improve but never return to baseline.

A heart may survive an infarct but remodel into heart failure.

Therefore, ask:

What should be healing?

What should be resolving?

What function should be returning?

What is preventing repair?

Is remodeling helpful or harmful?

What support is needed to guide repair?

Repair must be observed, not assumed.

4. The First Question: Is Repair Failure Dangerous Now?

Repair failure becomes dangerous when tissue breakdown, infection, loss of function, or maladaptive remodeling threatens life, limb, organ function, or independence.

Urgent assessment is needed when there is:

wound infection spreading rapidly

diabetic foot ulcer with deep infection

pressure injury with sepsis risk

non-healing wound with poor perfusion

acute limb ischemia

severe cellulitis

fever after surgery

chest pain after myocardial infarction

worsening breathlessness after pneumonia or heart failure

recurrent AKI after recent injury

stroke patient with aspiration, immobility, or pressure injury

worsening weakness after hospitalization

severe malnutrition

failure to thrive in frailty

new inability to walk

weight loss with poor healing

chronic inflammation causing organ damage

progressive fibrosis or scarring

uncontrolled pain preventing movement

repeated falls after acute illness

The danger-first question is:

Is failed repair creating new danger or permanent loss of capacity?

5. Immediate Red Flags in Repair and Remodeling Failure

Red flags include:

spreading redness around a wound

wound pain worsening rather than improving

black tissue or necrosis

foul drainage

fever with wound breakdown

exposed bone or tendon

diabetic foot wound with systemic illness

severe pain out of proportion

limb coldness, pallor, or loss of pulses

pressure injury in frailty

sudden worsening breathlessness after apparent recovery

recurrent fever after treatment

worsening oxygenation

reduced urine output after AKI

confusion after discharge

inability to eat or drink

- new inability to walk
- rapid weight loss
- severe weakness after hospitalization
- progressive edema
- bleeding or bruising with liver disease
- severe uncontrolled pain
- caregiver unable to manage at home

Repair failure can be quiet, but its consequences can be severe.

6. The Repair Pathway Made Easy

Repair depends on several linked steps.

Step 1: Stop Ongoing Injury

The body cannot repair if harm continues.

Examples:

- ongoing infection
- ongoing pressure on a wound
- continued smoking
- uncontrolled glucose
- continued alcohol toxicity
- repeated aspiration
- persistent hypoxia
- untreated ischemia
- ongoing autoimmune inflammation
- continued NSAID use in AKI
- uncontrolled hypertension damaging vessels
- recurrent falls
- poor medication fit

The first repair question is:

What is still injuring the patient?

Step 2: Restore Perfusion and Oxygenation

Tissue needs blood flow and oxygen to heal.

Repair fails when there is:

- poor arterial supply
- venous congestion
- edema
- heart failure
- anemia

- hypoxia
- shock
- microvascular disease
- smoking-related vascular injury

A wound without perfusion cannot heal.

A brain without oxygen cannot recover.

A kidney without perfusion cannot repair.

Step 3: Control Infection and Inflammation

Repair requires defense, but defense must resolve.

Too little defense allows infection to spread.

Too much inflammation damages tissue and causes fibrosis.

Repair asks:

Has infection been controlled?
Has harmful inflammation been reduced?
Is the immune response resolving?

Step 4: Provide Substrate

Repair needs:

- protein
- calories
- micronutrients
- hydration
- oxygen
- sleep
- hormones
- circulation
- safe glucose
- emotional stability
- reduced stress burden

A malnourished patient cannot repair effectively.

Step 5: Restore Movement and Load

Tissues remodel according to use.

Too much load damages tissue.

Too little load causes wasting.

Examples:

- prolonged bed rest causes sarcopenia
- early safe mobilization protects function
- pressure relief allows wounds to heal
- rehabilitation guides neurological recovery

- graded strengthening improves frailty and deconditioning

Repair requires the right amount of stress at the right time.

Step 6: Rebuild Function

Repair is incomplete until function returns or is supported.

Function includes:

- walking
- breathing comfortably
- eating
- toileting
- thinking
- sleeping
- communicating
- self-care
- work
- family participation
- dignity

The final repair question is:

Can the patient live safely with the recovered or supported capacity?

7. Common Repair Failure Patterns

Non-Healing Wound Pattern

Features:

- wound remains open
- drainage persists
- tissue looks unhealthy
- pain persists or worsens
- surrounding skin breaks down
- infection recurs
- wound enlarges

Common causes:

- infection
- poor perfusion
- diabetes
- pressure
- edema
- malnutrition
- smoking
- immune suppression

- poor wound care access
- repeated trauma
- foreign body
- malignancy in selected chronic wounds

Capacity failure:

barrier repair, tissue perfusion, defense, nutrition, pressure control

Post-Acute Weakness Pattern

Features:

- illness has improved but patient remains weak
- difficulty standing
- poor endurance
- falls
- low appetite
- sleep disruption
- low mood
- muscle wasting
- dependence in activities of daily living

Common causes:

- bed rest
- inflammation
- malnutrition
- anemia
- deconditioning
- frailty
- medication effects
- depression
- unresolved organ dysfunction

Capacity failure:

muscle repair, energy transformation, mobility, participation

Fibrosis Pattern

Features:

- organ becomes stiff or scarred
- function declines gradually
- symptoms progress
- repeated injury history may be present

Examples:

- liver fibrosis
- pulmonary fibrosis

- kidney scarring
- cardiac remodeling
- vascular stiffness

Capacity failure:

structural flexibility, reserve, organ function

Maladaptive Cardiac Remodeling Pattern

Features:

- breathlessness
- reduced exercise tolerance
- edema
- arrhythmia
- enlarged heart
- reduced or stiff cardiac function
- recurrent admissions

Common causes:

- hypertension
- myocardial infarction
- valve disease
- cardiomyopathy
- chronic tachyarrhythmia

Capacity failure:

circulation, fluid balance, exercise reserve, rhythm stability

Airway Remodeling Pattern

Features:

- recurrent wheeze
- chronic cough
- persistent airflow limitation
- frequent exacerbations
- reduced response to usual therapy in some cases

Common causes:

- chronic asthma inflammation
- smoking
- occupational exposure
- recurrent infection
- poor treatment access

Capacity failure:

airway flexibility, ventilation, oxygenation, airway tolerance

Frailty Remodeling Pattern

Features:

- repeated illness leads to lower baseline
- slower gait
- weight loss
- weakness
- exhaustion
- low activity
- falls
- social withdrawal

Capacity failure:

reserve, mobility, energy, repair, agency

Frailty can be understood as harmful remodeling of the whole person after repeated stress without adequate repair.

8. Repair and Inflammation

Inflammation begins repair, but unresolved inflammation blocks repair.

Inflammation is helpful when it:

- brings immune cells
- clears microbes
- removes damaged tissue
- signals rebuilding
- protects the injured area

Inflammation becomes harmful when it:

- persists too long
- attacks healthy tissue
- causes fibrosis
- destroys joints
- scars organs
- drives cachexia
- causes chronic pain
- prevents normal function

Examples:

- uncontrolled rheumatoid arthritis damages joints
- chronic hepatitis scars the liver
- repeated lung inflammation causes fibrosis or airway remodeling
- chronic kidney inflammation causes scarring
- chronic wounds remain stuck in inflammatory phase

The clinical question is:

Has inflammation moved from defense into damage?

9. Repair and Fibrosis

Fibrosis is scar formation.

Scar can be necessary.

But excessive scar reduces organ flexibility and function.

Examples:

Liver Fibrosis

Repeated injury from alcohol, viral hepatitis, fatty liver disease, autoimmune disease, toxins, or cholestasis may lead to cirrhosis.

Capacity failures:

- transformation
- clotting
- albumin synthesis
- portal circulation
- detoxification
- glucose regulation

Lung Fibrosis

Repeated or severe lung injury may cause stiff lungs.

Capacity failures:

- oxygenation
- breathing reserve
- exercise tolerance

Kidney Fibrosis

Repeated AKI, diabetes, hypertension, glomerular disease, or chronic obstruction may scar kidneys.

Capacity failures:

- clearance
- blood pressure regulation
- potassium regulation
- fluid balance

Cardiac Fibrosis

Hypertension, infarction, valve disease, or cardiomyopathy may stiffen or weaken the heart.

Capacity failures:

- circulation
- rhythm stability
- fluid balance

Fibrosis is the body’s emergency repair becoming long-term limitation.

10. Repair and Perfusion

No tissue heals well without blood supply.

Poor perfusion may appear as:

- cold feet
- weak pulses
- delayed capillary refill
- pain on walking
- rest pain
- non-healing ulcers
- black tissue
- poor wound granulation
- recurrent infection
- kidney injury
- cognitive decline in low-flow states

Perfusion repair may require:

- treating heart failure
- improving circulation
- controlling diabetes
- stopping smoking
- vascular assessment
- offloading wounds
- treating anemia
- avoiding hypotension
- reviewing medicines
- managing edema

Before blaming a wound for not healing, ask:

Can blood reach the tissue?

11. Repair and Nutrition

Repair requires substrate.

Important repair substrates include:

- protein
- calories
- water
- iron
- B12

- folate
- vitamin C
- vitamin D
- zinc and other micronutrients where deficient
- essential fatty acids
- glucose used safely
- oxygen

Malnutrition causes:

- poor wound healing
- muscle wasting
- immune weakness
- pressure injury risk
- delayed rehabilitation
- falls
- fatigue
- poor surgical recovery
- higher infection risk

In repair failure, ask:

- Is the patient eating?
- Is swallowing safe?
- Is there nausea?
- Is there depression?
- Is there food access?
- Is there dental or oral disease?
- Is there malabsorption?
- Is protein intake adequate?
- Is weight falling?
- Is muscle mass declining?

Nutrition is not optional.

It is repair material.

12. Repair and Movement

Movement is a repair signal.

Too little movement causes:

- muscle wasting
- weakness
- constipation

- pressure injury
- venous thrombosis risk
- poor balance
- low mood
- reduced confidence
- slower discharge
- frailty progression

Too much movement too soon can worsen injury.

Wise movement is graded.

It asks:

- What tissue is healing?
- What movement is safe?
- What loading is beneficial?
- What loading is harmful?
- What support is needed?
- What pain control allows safe movement?
- What baseline function should we aim for?
- What rehabilitation plan is realistic?

Bed rest is sometimes necessary.

But prolonged bed rest is a powerful harmful perturbation.

13. Repair and Pain

Pain can protect injured tissue.

But persistent pain can block repair.

Pain may cause:

- immobility
- poor sleep
- poor appetite
- depression
- high stress physiology
- shallow breathing
- falls
- opioid complications
- fear avoidance

Pain management should support repair without causing new harm.

Ask:

- What is causing the pain?

Is there dangerous pathology?

Is pain preventing breathing, walking, eating, or sleeping?

What analgesia is safest for this patient?

Are NSAIDs risky because of kidney disease, bleeding, heart failure, or hypertension?

Are opioids causing constipation, sedation, or falls?

Is neuropathic pain present?

Is rehabilitation needed?

Is fear of movement worsening disability?

Pain relief is not only comfort.

It may be necessary for function and repair.

14. Repair and Sleep

Repair happens during sleep.

Poor sleep worsens:

- pain
- glucose regulation
- blood pressure
- immune function
- mood
- delirium
- fatigue
- appetite
- rehabilitation

Sleep may be disrupted by:

- pain
- cough
- breathlessness
- hospital noise
- nocturia
- anxiety
- depression
- medications
- sleep apnea
- restless legs
- delirium
- steroid therapy

Ask:

Can this patient sleep enough to repair?

Sedation is not the same as restorative sleep.

15. Repair and Medicines

Medicines can support repair or block it.

Medicines That May Support Repair

Examples:

- antibiotics when bacterial infection is likely
- diuretics when congestion blocks breathing
- insulin when glucose is dangerously high
- anticoagulation when clot threatens circulation
- anti-inflammatory medicines when harmful inflammation is present
- disease-modifying therapy in autoimmune disease
- analgesia that enables movement and sleep
- nutritional supplements where deficiency exists
- osteoporosis therapy where fracture prevention is needed

Medicines That May Block Repair

Examples:

- NSAIDs worsening AKI, bleeding, heart failure, or hypertension
- steroids impairing wound healing or glucose control when excessive or unavoidable without monitoring
- sedatives causing falls, delirium, immobility
- opioids causing constipation, sedation, and reduced mobility
- overly tight glucose treatment causing hypoglycemia
- polypharmacy overwhelming frail patients
- unnecessary antibiotics causing harm
- anticholinergics causing urinary retention or confusion

Medication review is repair work.

16. Repair and Chronic Disease Control

Long-term remodeling depends on chronic disease control.

Examples:

Hypertension

Uncontrolled hypertension causes:

- vascular remodeling
- heart enlargement
- kidney damage
- stroke risk

retinal damage

Repair goal:

reduce harmful vascular stress while avoiding hypotension and falls.

Diabetes

Uncontrolled diabetes causes:

poor wound healing

neuropathy

kidney disease

vascular disease

infection risk

Repair goal:

glucose stability that fits age, frailty, kidney function, and safety.

COPD

Ongoing smoking and exacerbations cause:

airway remodeling

respiratory muscle strain

hypoxia

deconditioning

Repair goal:

reduce exacerbations, improve inhaler use, support pulmonary rehabilitation, and protect function.

CKD

Repeated AKI and uncontrolled risk factors cause:

kidney scarring

electrolyte vulnerability

anemia

fluid overload

Repair goal:

prevent further injury and preserve remaining clearance.

Autoimmune Disease

Uncontrolled inflammation causes:

joint destruction

kidney injury

lung disease

vascular inflammation

Repair goal:

control inflammation while preserving defense.

Chronic disease control is remodeling guidance.

17. Repair and Frailty

Frailty changes repair.

A robust patient may return to baseline quickly.

A frail patient may have:

- slower repair
- incomplete recovery
- delirium
- malnutrition
- falls
- pressure injury
- fear of movement
- caregiver strain
- new dependency
- recurrent admissions

Repair in frailty requires:

- early mobilization where safe
- nutrition support
- medication simplification
- delirium prevention
- sleep support
- pain control
- bowel and bladder care
- skin protection
- family involvement
- realistic goals
- rehabilitation
- discharge planning from the start

Frailty repair asks:

What capacity can be restored, what capacity must be supported, and what decline can be prevented?

18. Repair and Psychological Meaning

Illness injures more than tissue.

It may injure confidence, identity, hope, and trust.

A patient after myocardial infarction may fear exercise.
A patient after stroke may grieve lost independence.
A patient with COPD may fear suffocation.
A patient with cancer may feel betrayed by the body.
A frail patient after a fall may stop walking from fear.
A patient with chronic pain may lose faith in recovery.

Repair must include emotional meaning.

Ask:

- What are you afraid will happen?
- What has this illness stopped you from doing?
- What matters most to regain?
- What would recovery look like to you?
- What support do you need?
- What do you understand about what happened?

Explanation and reassurance, when truthful, are part of repair.

19. Repair and Social Conditions

Repair happens at home, not only in hospital.

Social conditions that shape repair include:

- food access
- medication access
- transport
- housing
- stairs
- bathroom safety
- caregiver availability
- work demands
- financial stress
- ability to attend wound care
- ability to attend physiotherapy
- health literacy
- language
- culture
- social isolation

A wound plan fails if the patient cannot afford dressings.

A heart failure plan fails if the patient cannot obtain medicines or weigh themselves.

A rehabilitation plan fails if the patient cannot travel.

A diabetes plan fails if meals are irregular and glucose strips are unaffordable.

Repair requires feasible conditions.

20. Wise Perturbation in Repair Failure

Treatment depends on the blocked repair step.

If Ongoing Injury Continues

Stop or reduce the injury.

Examples:

- stop NSAIDs causing AKI
- stop pressure on wound
- stop smoking where possible
- stop recurrent aspiration where possible
- stop uncontrolled inflammation
- control infection source
- control glucose
- reduce harmful alcohol exposure
- reduce medication toxicity

If Perfusion Is Poor

Assess and improve circulation.

Examples:

- vascular assessment
- heart failure treatment
- anemia management
- edema control
- blood pressure optimization
- offloading
- smoking cessation support

If Infection Persists

Assess for:

- abscess
- foreign body
- osteomyelitis
- obstructed infection
- inadequate source control
- immune suppression
- poor antibiotic penetration
- uncontrolled diabetes

If Nutrition Is Poor

Address:

- appetite
- swallowing
- dentition
- nausea
- depression

- food access
- protein needs
- malabsorption
- micronutrient deficiency
- feeding assistance

If Immobility Persists

Address:

- pain
- fear
- weakness
- delirium
- orthostatic hypotension
- equipment
- physiotherapy
- home support

If Remodeling Is Harmful

Reduce the repeated stress.

Examples:

- treat hypertension
- prevent recurrent AKI
- control asthma inflammation
- reduce COPD exacerbations
- treat chronic hepatitis
- control autoimmune inflammation
- prevent falls
- support weight-bearing and strength

Wise perturbation guides the body toward helpful repair.

21. Repair Trajectory

Repair trajectory should be specific.

Ask:

- What should improve today?
- What should improve this week?
- What should improve over months?
- What might never fully return?
- What support is needed for the new baseline?
- What signs mean repair is failing?

Examples:

Wound Repair

Expected:

- pain decreases
- redness stops spreading
- drainage reduces
- healthy tissue appears
- wound size decreases
- pressure reduced
- glucose safer
- perfusion addressed

Pneumonia Repair

Expected:

- fever settles
- oxygenation improves
- cough improves
- appetite returns
- strength returns
- mobility improves

AKI Repair

Expected:

- urine output improves
- potassium safe
- creatinine stabilizes
- medicines clarified
- recurrence prevention in place

Stroke Repair

Expected:

- neurological stability
- swallowing safety
- early rehabilitation
- prevention of complications
- function improves or support arranged
- secondary prevention initiated

Heart Failure Remodeling

Expected:

- breathlessness improves
- edema improves
- medicines optimized where tolerated

- renal function monitored
- exercise tolerance supported
- recurrence plan in place

Repair trajectory is the story of recovery.

22. Monitoring Repair and Remodeling

Monitor what matters.

Wounds

- size
- depth
- drainage
- odor
- pain
- surrounding skin
- granulation
- perfusion
- pressure relief
- glucose
- nutrition

Functional Recovery

- walking distance
- transfers
- stairs
- toileting
- eating
- bathing
- cognition
- fatigue
- falls
- confidence

Organ Repair

- oxygenation
- creatinine
- urine output
- electrolytes
- liver tests and synthetic function
- heart failure symptoms
- blood pressure

glucose

inflammatory markers where useful

Remodeling

recurrence frequency

hospitalizations

exercise capacity

imaging or functional tests where indicated

long-term organ function

medication tolerance

quality of life

Monitoring should ask:

Is the patient restoring capacity or settling into avoidable decline?

23. Discharge Safety in Repair and Remodeling

Before discharge, ask:

Is the acute injury controlled?

Is infection controlled?

Is pain controlled enough for function?

Is oxygenation safe?

Is circulation stable?

Is kidney function safe?

Is glucose safe?

Is the patient eating?

Can the patient walk or transfer safely?

Is wound care feasible?

Is pressure relief arranged?

Are medicines adjusted?

Is rehabilitation arranged?

Is follow-up arranged?

Are warning signs understood?

Does the caregiver understand the plan?

Are supplies available?

Are pending results assigned?

Is recurrence prevention addressed?

Discharge should support the repair trajectory, not interrupt it.

24. Worked Case 1: Diabetic Foot Ulcer

A 64-year-old man with diabetes and neuropathy has a foot ulcer that has not healed for six weeks. He has poor vision, old shoes, high glucose, and difficulty attending wound clinic.

Repair Problem

Non-healing wound.

Capacity Failure

Barrier repair, defense, sensation, glucose regulation, mobility, possibly perfusion.

Coupling Conditions

Neuropathy, poor footwear, high glucose, possible vascular disease, poor vision, work demands, clinic access, dressing supplies.

Wise Perturbation

Assess infection, depth, perfusion, pressure, glucose, footwear, wound care feasibility, and need for imaging or specialist input. Treat infection if present, offload pressure, improve footwear, support glucose safety, and arrange feasible wound follow-up.

Repair Trajectory

Drainage reduces, redness settles, wound size decreases, pressure reduced, glucose safer, footwear improved, patient can attend care, recurrence prevention understood.

25. Worked Case 2: Post-Pneumonia Weakness

An 82-year-old woman's pneumonia has improved. She is afebrile and oxygenating well, but she remains weak, eating poorly, and unable to walk independently.

Repair Problem

Incomplete functional recovery after acute infection.

Capacity Failure

Energy, mobility, nutrition, muscle strength, confidence, frailty reserve.

Coupling Conditions

Frailty, bed rest, poor appetite, sleep disruption, possible anemia or AKI, medications, home support.

Wise Perturbation

Assess nutrition, hydration, anemia, renal function, pain, sleep, mood, medications, and mobility. Involve physiotherapy, nursing, family, and dietetic support where available. Avoid unsafe discharge before function is supported.

Repair Trajectory

Appetite improves, strength increases, walking returns toward baseline, sleep improves, medicines simplified, caregiver support arranged.

26. Worked Case 3: Heart Remodeling After MI

A 67-year-old man had a myocardial infarction. Weeks later he has breathlessness, reduced exercise tolerance, and ankle swelling.

Repair Problem

Possible maladaptive cardiac remodeling after myocardial injury.

Capacity Failure

Pump function, circulation, fluid balance, exercise capacity.

Coupling Conditions

Hypertension, diabetes, ischemic burden, medication adherence, renal function, smoking, rehabilitation access, fear of exertion.

Wise Perturbation

Assess heart failure symptoms, ECG, renal function, electrolytes, cardiac imaging where indicated, medication tolerance, rehabilitation, and risk factor control. Follow local post-MI and heart failure pathways.

Repair Trajectory

Breathlessness improves, edema reduces, exercise tolerance improves, renal function and potassium safe, medicines optimized, cardiac rehabilitation and follow-up active.

27. Worked Case 4: Pressure Injury in Frailty

An 88-year-old man with dementia and recent hospitalization develops a sacral pressure injury.

Repair Problem

Pressure-related tissue breakdown.

Capacity Failure

Skin integrity, mobility, nutrition, defense, cognition, dignity.

Coupling Conditions

Immobility, dementia, poor intake, incontinence, frailty, moisture, caregiver burden, mattress/support surface, pain.

Wise Perturbation

Relieve pressure, assess wound stage and infection, improve nutrition and hydration, manage incontinence, treat pain, mobilize where possible, involve nursing and caregivers, and arrange wound care supplies and support.

Repair Trajectory

Pressure relieved, wound stops worsening, pain improves, infection prevented, nutrition improves, mobility supported, caregiver can manage care.

28. Worked Case 5: Lung Remodeling in COPD

A 70-year-old smoker with COPD has frequent exacerbations, increasing breathlessness, weight loss, and reduced walking distance.

Repair Problem

Repeated airway injury and deconditioning with harmful remodeling.

Capacity Failure

Ventilation, oxygenation reserve, muscle energy, airway clearance, participation.

Coupling Conditions

Smoking, inhaler technique, air quality, infection exposure, poor nutrition, anxiety, pulmonary rehabilitation access, medication cost.

Wise Perturbation

Assess inhaler technique, exacerbation triggers, oxygenation, nutrition, weight loss, smoking support, vaccination status according to local guidance, pulmonary rehabilitation, anxiety, and comorbid heart disease.

Repair Trajectory

Exacerbations reduce, walking distance improves, weight stabilizes, inhaler use improves, breathlessness plan clear, function preserved.

29. Worked Case 6: Recurrent AKI and Kidney Remodeling

A 76-year-old man with CKD has had three AKI episodes in one year, each after dehydration and NSAID use for arthritis pain.

Repair Problem

Repeated kidney injury with risk of chronic scarring and progression.

Capacity Failure

Clearance reserve, potassium regulation, medication safety, pain management.

Coupling Conditions

CKD, dehydration episodes, NSAID reliance, arthritis pain, poor sick-day understanding, follow-up gaps.

Wise Perturbation

Create a safer pain plan, stop or avoid nephrotoxic exposure where possible, provide sick-day advice, arrange renal monitoring, manage blood pressure and diabetes if present, and ensure follow-up after each illness.

Repair Trajectory

No recurrent AKI, creatinine stabilizes, potassium safe, pain controlled without kidney harm, patient understands dehydration and medicine risks.

30. Common Student Pitfalls

Pitfall 1: Thinking Stability Equals Repair

A stable patient may still be weak, malnourished, immobile, or unsafe.

Pitfall 2: Ignoring Function

Repair must include walking, eating, toileting, thinking, sleeping, and participating.

Pitfall 3: Treating Wounds Without Asking Why They Are Not Healing

Always assess pressure, perfusion, infection, glucose, nutrition, edema, and feasibility.

Pitfall 4: Forgetting Harmful Remodeling

Repeated stress changes organs and reduces reserve.

Pitfall 5: Overprescribing Rest

Rest can help acute illness, but prolonged inactivity causes decline.

Pitfall 6: Missing Malnutrition

Poor intake blocks immune repair, muscle repair, and wound healing.

Pitfall 7: Ignoring Pain

Uncontrolled pain blocks breathing, mobility, sleep, and rehabilitation.

Pitfall 8: Planning Discharge Without Repair Support

A patient needs the conditions to continue healing after leaving care.

31. Clinical Practice Box

When assessing repair and remodeling, complete this structure:

What is supposed to be repairing?
Wound, lung, kidney, heart, brain, muscle, function, inflammation?

Is injury still ongoing?
Infection, pressure, ischemia, inflammation, toxin, medicine harm, poor glucose, smoking, aspiration?

What capacity is failing?
Barrier repair, perfusion, oxygenation, nutrition, mobility, cognition, clearance, defense?

Is remodeling helpful or harmful?
Strengthening, adaptation, fibrosis, scarring, deconditioning, organ enlargement, stiffness?

Coupling conditions:
Diabetes, CKD, heart failure, malnutrition, frailty, steroids, smoking, social support, access?

Repair substrates:
Food, protein, oxygen, blood flow, sleep, hydration, pain control, movement?

Wise perturbation:
Stop injury, control infection, improve perfusion, support nutrition, mobilize, treat pain, adjust medicines, arrange rehabilitation?

Repair trajectory:
What should improve today, this week, and later?

Failure signs:
What would mean repair is not occurring?

Discharge support:
What must be arranged so repair continues?

32. Mini-Case for Practice

A 79-year-old woman with diabetes, CKD, mild dementia, and osteoarthritis is recovering from cellulitis of the leg. The redness has improved, but she remains weak, has poor appetite, persistent leg edema, a small open wound, pain on walking, and her daughter says she is not safe at home yet.

Apply the repair and remodeling approach.

Repair Problem

Incomplete recovery after skin infection with wound, edema, pain, poor intake, and functional decline.

Capacity Failure

Skin repair, defense resolution, mobility, nutrition, pain control, edema clearance, caregiver-supported participation.

Coupling Conditions

Diabetes, CKD, chronic edema, osteoarthritis, mild dementia, frailty risk, poor appetite, home safety, caregiver capacity, medication burden.

Wise Perturbation

Confirm infection is resolving. Assess wound, perfusion, edema, glucose, renal function, nutrition, pain, mobility, falls risk, and home support. Provide wound care plan, edema management where appropriate, safe pain strategy, nutrition support, physiotherapy or mobility plan, and caregiver instructions.

Repair Trajectory

Wound begins closing, edema reduces or is supported, pain improves enough for walking, appetite returns, glucose remains safe, mobility returns toward baseline, daughter can support care, follow-up arranged, recurrence prevention explained.

33. Student Takeaway

Repair and remodeling become easier when the clinician asks:

What has been injured?
What is supposed to heal?
What is still causing harm?
Is blood flow adequate?
Is oxygenation adequate?
Is infection controlled?
Is inflammation resolving?
Is nutrition sufficient?
Is movement helping or harming?
Is pain blocking recovery?
Is remodeling restoring capacity or reducing reserve?
What support is needed for repair to continue after discharge?

Repair is not simply the disappearance of acute danger.

Remodeling is not automatically recovery.

The safe clinician follows the patient beyond stabilization, removes ongoing injury, supports perfusion, nutrition, movement, sleep, and dignity, prevents maladaptive remodeling, and guides the patient toward restored or supported life-capacity.

Chapter 48. Regulation and Coordination Made Easy

Regulation is the body's ability to keep internal conditions within a safe range.

Coordination is the body's ability to make different systems work together at the right time, in the right amount, for the right purpose.

Patients do not usually say:

"My regulation and coordination systems are failing."

They say:

"My sugar is too high."
"My sugar keeps dropping."
"My blood pressure is all over the place."
"I feel dizzy when I stand."
"My heart races."
"I am too hot."
"I am always cold."
"I feel shaky."
"I keep passing urine."
"I am thirsty all the time."
"My periods have changed."
"I feel anxious in my body."
"My sleep is broken."
"My body will not settle."

Regulation and coordination are central to Internal Medicine because the body is not a collection of separate parts.

The heart, lungs, kidneys, liver, brain, hormones, immune system, blood vessels, muscles, gut, and autonomic nervous system must constantly coordinate.

Blood pressure must rise when standing.
Glucose must remain safe between meals.
Temperature must respond to infection without overheating.
Sodium and water must remain balanced.
Potassium must remain safe for the heart.
Breathing must match oxygen, carbon dioxide, and acid-base needs.
The stress response must activate in danger and settle after threat passes.
Sleep and wakefulness must cycle.
The immune system must defend without destroying.

When regulation fails, the patient may not have one obvious organ problem.

They may have instability.

The first task is not simply to correct one abnormal number.

The deeper question is:

What system is failing to regulate, and what coordination has broken down?

Regulation and coordination become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Are Regulation and Coordination?

Regulation means keeping internal variables within a safe working range.

Important regulated variables include:

- glucose
- blood pressure
- heart rate
- temperature
- sodium
- potassium
- calcium
- water balance
- acid-base balance
- oxygen and carbon dioxide
- clotting and bleeding
- inflammation
- sleep-wake rhythm
- appetite and satiety
- stress response
- consciousness
- vascular tone
- bowel and bladder function

Coordination means making systems work together.

For example:

When a person stands, the body must coordinate:

- blood vessels tightening
- heart rate adjustment
- venous return
- muscle tone
- brain perfusion
- kidney and hormone signals

If this coordination fails, the patient feels dizzy, falls, or faints.

When a person develops infection, the body must coordinate:

- immune response
- fever
- heart rate
- breathing
- blood pressure
- glucose
- kidney perfusion

clotting

appetite

sleep

energy use

If this coordination becomes excessive or disorganized, sepsis may develop.

Regulation and coordination are the hidden architecture of stability.

2. Regulation Is a Capacity, Not a Number

A sodium value, glucose value, blood pressure reading, or heart rate is only a snapshot.

Regulation is the ability to keep that variable safe over time and under stress.

For example:

A patient may have a normal glucose in clinic but recurrent hypoglycemia at home.

A patient may have normal blood pressure lying down but dangerous drops when standing.

A patient may have a normal sodium today but worsening confusion from rapid sodium change.

A patient may have a normal heart rate at rest but dangerous tachycardia with minimal exertion.

A patient may have normal temperature but serious infection because frailty or immunosuppression blunts fever.

The clinician should ask:

Is this variable stable, appropriate, and safe in context?

Not just:

Is this number normal?

3. The First Question: Is Dysregulation Dangerous Now?

Regulation failure becomes dangerous when instability threatens the brain, heart, circulation, breathing, kidneys, or consciousness.

Urgent assessment is needed when there is:

hypoglycemia

severe hyperglycemia with dehydration, ketones, vomiting, or confusion

severe hyperkalemia

severe hyponatremia or rapid sodium change

severe hypernatremia

severe hypocalcemia or hypercalcemia with symptoms

severe acidosis or alkalosis

shock

severe hypertension with acute organ damage

severe hypotension

dangerous arrhythmia

syncope with high-risk features

- thyroid storm
- myxedema coma
- adrenal crisis
- anaphylaxis
- sepsis
- heat stroke
- hypothermia
- seizure with metabolic disturbance
- delirium from metabolic, infectious, or drug causes
- uncontrolled bleeding or clotting disorder
- severe autonomic failure with falls or syncope

The danger-first question is:

Is regulation failing in a way that threatens life or organ function now?

4. Immediate Red Flags in Regulation and Coordination Failure

Red flags include:

- confusion
- seizure
- collapse
- syncope
- severe dizziness
- chest pain
- severe breathlessness
- hypotension
- very high blood pressure with neurological, cardiac, kidney, or eye symptoms
- very fast or very slow heart rate with symptoms
- low glucose symptoms
- vomiting with high glucose
- rapid deep breathing
- severe dehydration
- reduced urine output
- severe weakness
- palpitations with instability
- fever with confusion or hypotension
- hypothermia with drowsiness
- heat exposure with confusion
- severe tremor, agitation, fever, and tachycardia in hyperthyroid context

- steroid withdrawal with hypotension and vomiting
- severe electrolyte disturbance
- bleeding with abnormal clotting or anticoagulant use

These are signs that coordination has moved from discomfort to danger.

5. The Main Regulatory Systems

Glucose Regulation

The body must keep glucose safe for the brain and tissues.

Too low causes immediate brain energy failure.

Too high, especially with dehydration, ketones, or hyperosmolarity, causes metabolic danger.

Key organs and signals:

- pancreas
- liver
- muscle
- fat
- kidneys
- adrenal hormones
- meals
- medicines
- infection
- stress
- exercise

Failure appears as:

- hypoglycemia
- hyperglycemia
- diabetic ketoacidosis
- hyperosmolar hyperglycemic state
- recurrent glucose swings
- steroid-induced hyperglycemia
- poor intake with medicine mismatch

Blood Pressure Regulation

The body must maintain pressure high enough for perfusion but not so high that vessels and organs are damaged.

Key organs and signals:

- heart
- blood vessels
- kidneys
- brain

- autonomic nervous system
- adrenal hormones
- salt and water balance

Failure appears as:

- hypotension
- orthostatic hypotension
- syncope
- shock
- severe hypertension
- labile blood pressure
- medication-related dizziness
- autonomic dysfunction

Temperature Regulation

The body must produce, conserve, and dissipate heat.

Failure appears as:

- fever
- hypothermia
- heat stroke
- thyroid crisis
- sepsis-related temperature instability
- drug-related temperature syndromes
- frailty with low temperature in infection

Sodium and Water Regulation

The body must balance water and sodium to protect brain function, circulation, and cells.

Failure appears as:

- hyponatremia
- hypernatremia
- dehydration
- fluid overload
- confusion
- seizures
- edema
- thirst
- polyuria

Potassium Regulation

The body must keep potassium safe for electrical stability.

Failure appears as:

- hyperkalemia

- hypokalemia
- weakness
- paralysis in severe cases
- palpitations
- arrhythmia
- ECG changes

Calcium Regulation

The body must keep calcium safe for nerves, muscles, bones, kidneys, and rhythm.

Failure appears as:

- weakness
- confusion
- constipation
- kidney stones
- bone pain
- tetany
- cramps
- arrhythmia risk
- seizures in severe cases

Acid-Base Regulation

The body must keep pH within a narrow range.

Failure appears as:

- rapid deep breathing
- confusion
- shock
- DKA
- kidney failure
- sepsis
- poisoning
- severe vomiting or diarrhea
- respiratory failure

Autonomic Coordination

The autonomic nervous system coordinates heart rate, blood pressure, sweating, gut function, bladder function, pupils, and stress response.

Failure appears as:

- orthostatic dizziness
- syncope
- resting tachycardia
- gastroparesis

- bladder dysfunction
- sweating abnormalities
- heat intolerance
- exercise intolerance

Circadian and Sleep-Wake Regulation

The body must coordinate sleep, hormones, temperature, alertness, appetite, and repair.

Failure appears as:

- insomnia
- excessive sleepiness
- delirium
- fatigue
- mood instability
- poor glucose and blood pressure control
- hospital-related sleep disruption

These systems overlap continuously.

6. Glucose Regulation Made Easy

Glucose regulation asks:

Is the brain receiving safe fuel, and is the body using glucose appropriately?

Hypoglycemia Pattern

Features:

- sweating
- tremor
- hunger
- palpitations
- anxiety
- confusion
- weakness
- blurred vision
- seizure or collapse in severe cases

Common coupling conditions:

- insulin
- sulfonylureas or other glucose-lowering medicines
- missed meals
- poor intake
- CKD
- alcohol
- frailty

- infection
- medication error
- tight targets inappropriate for patient context

Capacity failure:

brain energy, cognition, safety

Wise perturbation:

Correct glucose urgently according to local guidance, then prevent recurrence.

Repair trajectory:

Mental state clears, glucose remains stable, patient eats safely, medicines are adjusted to intake and kidney function.

Hyperglycemia Pattern

Features:

- thirst
- polyuria
- fatigue
- blurred vision
- weight loss
- dehydration
- infection worsening
- vomiting or ketones if severe
- confusion if hyperosmolar or acidotic

Common coupling conditions:

- diabetes
- infection
- steroids
- missed insulin
- poor access to medicines
- dehydration
- stress illness
- poor intake with inappropriate medicine use

Capacity failure:

glucose regulation, hydration, energy transformation

Wise perturbation:

Assess severity, hydration, ketones/acidosis where indicated, infection, medicines, kidney function, and treat according to local guidance.

Repair trajectory:

Glucose stabilizes safely, dehydration improves, ketones or acidosis resolve where relevant, trigger treated, recurrence plan clear.

7. Blood Pressure Regulation Made Easy

Blood pressure regulation asks:

Is pressure appropriate for organ perfusion and vascular safety?

Low Blood Pressure Pattern

Features:

- dizziness
- syncope
- weakness
- confusion
- reduced urine output
- cold peripheries
- tachycardia
- shock signs

Common causes:

- dehydration
- bleeding
- sepsis
- anaphylaxis
- adrenal crisis
- heart failure
- arrhythmia
- medication effect
- autonomic failure

Capacity failure:

circulation, brain perfusion, kidney perfusion

Wise perturbation:

Identify volume, pump, rhythm, tone, obstruction, bleeding, or medication cause. Treat according to pattern.

Repair trajectory:

Dizziness resolves, blood pressure and perfusion stabilize, urine output improves, cause corrected.

High Blood Pressure Pattern

High blood pressure is common, but urgency depends on organ involvement.

Ask:

- Is there chest pain?
- Is there breathlessness or pulmonary edema?
- Is there neurological deficit?
- Is there confusion?
- Is there visual disturbance?

Is there AKI?

Is there pregnancy context where relevant?

Is there aortic dissection concern?

Is the elevation chronic or acute?

Capacity failure may involve:

vascular stress

brain safety

coronary circulation

kidney injury

heart failure

Wise perturbation:

Do not treat the number alone. Follow local pathways based on presence or absence of acute organ damage.

Repair trajectory:

Blood pressure becomes safer, symptoms improve, organ injury treated, long-term plan is feasible.

8. Orthostatic Regulation Made Easy

Orthostatic regulation is the body's ability to maintain brain perfusion when standing.

Failure causes:

dizziness

lightheadedness

blurred vision

weakness

falls

syncope

Common coupling conditions:

dehydration

diuretics

antihypertensives

autonomic neuropathy

diabetes

Parkinsonism

prolonged bed rest

frailty

anemia

infection

alcohol

sedatives

- poor intake

Assessment includes:

- story of symptoms on standing
- blood pressure and pulse lying/sitting/standing where safe
- medication review
- hydration
- anemia
- rhythm assessment
- neurological context
- falls risk

Wise perturbation:

Treat the cause, adjust medicines where appropriate, improve hydration and salt strategy where appropriate, use compression or physical countermeasures where suitable, and reduce falls risk.

Repair trajectory:

Standing symptoms improve, falls stop, mobility confidence returns, medicines fit the patient's physiology.

9. Temperature Regulation Made Easy

Temperature regulation asks:

Is the body responding appropriately to heat, cold, infection, inflammation, or endocrine stress?

Fever Pattern

Possible causes:

- infection
- inflammation
- malignancy
- drug fever
- heat illness
- endocrine crisis
- thrombosis
- tissue injury

Danger rises when fever is associated with:

- confusion
- hypotension
- tachypnea
- hypoxia
- reduced urine output
- immune suppression
- severe headache
- rash

- abdominal pain
- jaundice
- frailty collapse

Hypothermia Pattern

Possible causes:

- cold exposure
- sepsis
- endocrine failure
- frailty
- intoxication
- hypoglycemia
- malnutrition
- hypothyroidism
- adrenal insufficiency

Danger signs:

- drowsiness
- bradycardia
- confusion
- arrhythmia
- shock

Heat Illness Pattern

Features:

- heat exposure
- weakness
- dizziness
- confusion
- high body temperature
- dehydration
- collapse
- rhabdomyolysis risk
- kidney injury

Temperature is a regulatory sign, not only an infection sign.

10. Sodium and Water Regulation Made Easy

Sodium and water regulate brain cell volume, circulation, and fluid balance.

Hyponatremia Pattern

Symptoms may include:

- nausea

- headache
- confusion
- weakness
- falls
- seizures in severe cases
- drowsiness

Common coupling conditions:

- diuretics
- heart failure
- kidney disease
- liver disease
- vomiting
- diarrhea
- excessive water intake
- SIADH physiology
- adrenal insufficiency
- hypothyroidism
- medications
- malignancy
- pulmonary or CNS disease

The key questions are:

- Is it acute or chronic?
- Is it severe?
- Is the patient symptomatic?
- Is the patient dry, overloaded, or euvolemic?
- What medicines contribute?

Wise perturbation:

Follow local hyponatremia guidance. Avoid overly rapid correction.

Repair trajectory:

Symptoms improve, sodium corrects safely, cause identified, recurrence prevention planned.

Hypernatremia Pattern

Symptoms may include:

- thirst
- confusion
- weakness
- lethargy
- seizures in severe cases

dehydration

Common coupling conditions:

poor access to water

dementia

frailty

fever

diarrhea

osmotic diuresis

diabetes insipidus in selected contexts

impaired thirst

institutional care

Wise perturbation:

Restore water balance carefully according to local guidance and correct the access problem that caused it.

Repair trajectory:

Mental state improves, hydration improves, sodium corrects safely, drinking/support plan arranged.

11. Potassium Regulation Made Easy

Potassium is central to electrical stability.

Hyperkalemia Pattern

Possible features:

weakness

palpitations

bradycardia or arrhythmia

ECG changes

sometimes no symptoms until dangerous

Common coupling conditions:

AKI

CKD

ACE inhibitors or ARBs

potassium-sparing diuretics

tissue breakdown

acidosis

adrenal insufficiency

high potassium intake in vulnerable patients

lab artifact in selected cases

Capacity failure:

electrical stability, kidney clearance, regulation

Wise perturbation:

Assess ECG and severity. Treat according to local hyperkalemia pathway when dangerous. Identify and repair cause.

Repair trajectory:

Potassium becomes safe, ECG stabilizes, kidney function and medicines reviewed, recurrence prevented.

Hypokalemia Pattern

Possible features:

- weakness
- cramps
- constipation
- palpitations
- arrhythmia risk
- paralysis in severe cases

Common coupling conditions:

- diuretics
- vomiting
- diarrhea
- insulin shifts
- beta agonists
- poor intake
- hyperaldosteronism in selected contexts
- magnesium deficiency

Wise perturbation:

Replace according to local guidance, identify cause, review medicines, and monitor ECG risk when severe.

Repair trajectory:

Strength improves, potassium stabilizes, cause addressed.

12. Calcium Regulation Made Easy

Calcium affects nerves, muscles, bones, kidneys, and rhythm.

Hypercalcemia Pattern

Features:

- thirst
- polyuria
- dehydration
- constipation
- abdominal pain
- weakness
- confusion

- kidney stones
- bone pain
- arrhythmia risk in severe cases

Common causes:

- malignancy
- hyperparathyroidism
- vitamin D excess
- granulomatous disease in selected contexts
- medications
- immobility

Capacity failure:

mineral regulation, kidney concentration, cognition, gut motility

Wise perturbation:

Assess severity, hydration, ECG where relevant, kidney function, cause, and treat according to local guidance.

Repair trajectory:

Calcium falls safely, hydration improves, cognition and constipation improve, cause identified.

Hypocalcemia Pattern

Features:

- tingling
- cramps
- tetany
- seizures
- prolonged QT in some cases
- arrhythmia risk
- muscle spasms

Common causes:

- hypoparathyroidism
- vitamin D deficiency
- CKD
- pancreatitis
- severe illness
- medication effects
- low magnesium

Wise perturbation:

Assess severity and ECG risk. Replace and investigate according to local guidance.

Repair trajectory:

Symptoms settle, calcium stabilizes, underlying cause treated.

13. Acid-Base Coordination Made Easy

Acid-base balance is coordinated by lungs, kidneys, circulation, metabolism, and buffers.

Metabolic Acidosis Pattern

Features:

- deep rapid breathing
- confusion
- weakness
- shock
- vomiting
- dehydration

Common causes:

- DKA
- lactic acidosis from sepsis or shock
- kidney failure
- diarrhea
- toxins in selected contexts

Capacity failure:

metabolic regulation, breathing compensation, circulation, clearance

Wise perturbation:

Treat the cause. Do not suppress compensatory breathing without understanding why it is present.

Respiratory Acidosis Pattern

Features:

- drowsiness
- headache
- confusion
- shallow breathing
- COPD or sedative context
- neuromuscular weakness

Cause:

- failure to clear carbon dioxide

Wise perturbation:

Support ventilation and treat cause according to local pathway.

Metabolic Alkalosis Pattern

Possible causes:

- vomiting
- diuretics
- volume depletion

- mineralocorticoid excess in selected contexts

Symptoms may include:

- weakness
- cramps
- arrhythmia risk when potassium is low

Acid-base disturbances are coordination problems.

They tell us several systems are interacting.

14. Autonomic Coordination Made Easy

The autonomic nervous system regulates automatic body functions.

Problems may appear as:

- orthostatic dizziness
- syncope
- resting tachycardia
- palpitations
- heat intolerance
- sweating changes
- bowel dysmotility
- bladder dysfunction
- erectile dysfunction
- gastroparesis
- exercise intolerance

Common coupling conditions:

- diabetes
- Parkinsonism
- neuropathy
- medications
- alcohol
- dehydration
- prolonged bed rest
- aging and frailty
- post-viral states in selected contexts
- anxiety and stress physiology

Autonomic symptoms are real.

The clinician should assess danger, rhythm, volume, medicines, endocrine causes, and functional impact before dismissing them.

15. Coordination in Acute Illness

Acute illness disrupts many regulatory systems at once.

Example: pneumonia may cause:

- fever
- high glucose
- tachycardia
- tachypnea
- low oxygen
- low blood pressure if sepsis
- AKI
- low sodium in some contexts
- delirium
- poor intake
- medication accumulation

The diagnosis is pneumonia.

The regulatory failure is multisystem.

A safe clinician monitors:

- oxygenation
- circulation
- glucose
- renal function
- sodium
- potassium
- mental state
- fluid balance
- medicines
- mobility

Acute illness is a stress test of coordination.

16. Coordination in Chronic Disease

Chronic disease often means chronic regulatory strain.

Diabetes

Glucose, kidneys, nerves, vessels, wounds, heart, and infection risk interact.

Heart Failure

Fluid balance, kidney function, blood pressure, sodium, potassium, rhythm, oxygenation, and exercise tolerance interact.

CKD

Potassium, acid-base, fluid, blood pressure, anemia, bone-mineral metabolism, and medication clearance interact.

Liver Disease

Glucose, clotting, albumin, fluid, ammonia, infection risk, and drug metabolism interact.

Frailty

Nutrition, mobility, cognition, sleep, medicines, defense, repair, and social support interact.

Chronic care is coordination care.

The question is:

Which regulatory loops are unstable, and how can the plan make them safer together?

17. Medicines and Dysregulation

Medicines often alter regulation.

Examples:

Diuretics

Can improve fluid overload but cause:

- dehydration
- low sodium
- low potassium
- kidney injury
- dizziness

ACE Inhibitors and ARBs

Can protect heart and kidneys in some contexts but contribute to:

- high potassium
- kidney function change during acute illness
- low blood pressure in vulnerable patients

Insulin and Diabetes Medicines

Can improve glucose but cause:

- hypoglycemia
- weight change
- mismatch during poor intake

Steroids

Can reduce inflammation but cause:

- hyperglycemia
- hypertension
- fluid retention
- mood and sleep disturbance
- infection risk
- adrenal suppression

Beta Blockers and Rate-Limiting Drugs

Can help rhythm and heart disease but cause:

- bradycardia
- fatigue
- hypotension
- falls in some contexts

Sedatives

Can help short-term distress or sleep but cause:

- delirium
- falls
- respiratory depression
- loss of coordination
- constipation

Medication review is regulation review.

18. Regulation and Frailty

Frailty means regulation is less resilient.

A frail patient may develop major instability from small insults.

Examples:

- mild infection causes delirium
- small fluid loss causes AKI
- usual insulin causes hypoglycemia after poor intake
- diuretic dose causes falls
- sedative causes prolonged confusion
- bed rest causes severe weakness
- constipation causes delirium and urinary retention

In frailty, regulatory goals may need adjustment.

For example:

- glucose goals may prioritize avoiding hypoglycemia
- blood pressure goals may prioritize preventing falls
- medication regimens may need simplification
- rehabilitation may need pacing
- nutrition may need active support
- delirium prevention may be central

The goal is stable capacity, not perfect numbers.

19. Regulation and Psychological Stress

Stress affects regulation through the autonomic nervous system and hormonal pathways.

It may contribute to:

- palpitations
- high blood pressure
- sleep disturbance
- glucose elevation
- appetite change
- gut symptoms
- muscle tension
- breathlessness sensation
- fatigue
- pain amplification

But stress should not be used as a premature explanation.

Before attributing symptoms to stress, consider:

- arrhythmia
- thyroid disease
- hypoglycemia
- anemia
- PE
- asthma
- heart failure
- infection
- medication effects
- substance use
- endocrine disease

Once danger is considered, stress physiology can be addressed respectfully.

Explanation itself can help regulate.

20. Wise Perturbation in Dysregulation

Treatment depends on the regulatory loop.

If Glucose Is Unsafe

Correct immediate danger. Then adjust the plan to meals, kidney function, medicines, illness, and patient capacity.

If Blood Pressure Is Unsafe

Determine whether this is shock, orthostatic hypotension, chronic hypertension, or hypertensive emergency. Treat based on organ risk, not the number alone.

If Sodium Is Unsafe

Assess symptoms, severity, chronicity, volume status, and cause. Avoid rapid correction unless local emergency pathway indicates.

If Potassium Is Unsafe

Assess ECG and severity. Treat urgent danger and identify kidney, medicine, acid-base, or tissue breakdown cause.

If Temperature Is Unsafe

Treat the cause: infection, heat illness, endocrine crisis, exposure, drug reaction, or inflammatory disease.

If Rhythm Is Unsafe

Assess ECG, hemodynamic stability, electrolytes, thyroid status, medicines, ischemia, infection, and follow local arrhythmia pathway.

If Autonomic Coordination Is Failing

Treat volume, medicines, anemia, endocrine issues, neuropathy, mobility, and falls risk. Support function.

Wise perturbation asks:

Which loop is unstable, what danger does it create, and how can we restore stability without destabilizing another loop?

21. Repair Trajectory in Regulation and Coordination

Repair is shown by:

- glucose stabilizes without hypoglycemia
- blood pressure becomes safe without dizziness or organ injury
- standing symptoms improve
- pulse and rhythm become safer
- sodium corrects safely
- potassium becomes stable
- calcium symptoms resolve
- acid-base balance improves
- temperature normalizes or becomes appropriate
- mental state clears
- urine output improves
- medicines are adjusted
- patient can eat, drink, stand, walk, sleep, and participate
- monitoring plan is clear
- recurrence triggers are addressed

Repair is not just normal numbers.

Repair means the body can maintain stability under real-life conditions.

22. Monitoring Regulation

Monitoring should match the unstable variable.

Glucose

Monitor:

- glucose pattern

- meals
- medicines
- renal function
- infection
- hypoglycemia symptoms
- ketones/acidosis where indicated

Blood Pressure

Monitor:

- sitting/standing symptoms
- pulse
- renal function
- electrolytes
- dizziness
- falls
- home readings where useful
- organ symptoms

Sodium

Monitor:

- mental state
- sodium trend
- fluid status
- urine output
- correction rate
- cause

Potassium

Monitor:

- ECG if severe or symptomatic
- potassium trend
- renal function
- medicines
- acid-base status
- intake and tissue breakdown

Temperature

Monitor:

- fever trend
- source
- hemodynamics
- mental state

- oxygenation
- hydration
- response to treatment

Rhythm

Monitor:

- pulse
- ECG
- symptoms
- electrolytes
- thyroid where relevant
- medicines
- hemodynamic stability

Monitoring is regulation feedback.

23. Discharge Safety in Regulation Problems

Before discharge, ask:

- Is glucose safe with the patient's actual eating pattern?
- Are hypoglycemia risks addressed?
- Is blood pressure safe sitting and standing where relevant?
- Is dizziness or syncope resolved or explained?
- Are sodium, potassium, calcium, and renal function stable enough?
- Are medicines adjusted and understood?
- Are repeat labs arranged?
- Can the patient monitor at home if needed?
- Are warning signs clear?
- Is follow-up arranged?
- Does the patient have food, fluids, medicines, and support?
- Can the patient walk safely?
- Are caregiver instructions clear?
- Are pending results assigned?

A patient is not safe if the numbers are temporarily better but the home regulatory loop is still fragile.

24. Worked Case 1: Recurrent Hypoglycemia

An 82-year-old woman with type 2 diabetes, CKD, and mild dementia has repeated early morning confusion and falls. She takes glucose-lowering tablets and often eats little dinner.

Regulation Problem

Glucose regulation failure with recurrent hypoglycemia.

Capacity Failure

Brain energy, cognition, mobility safety, medicine safety, nutrition.

Coupling Conditions

CKD, frailty, poor intake, dementia, diabetes medicines, living alone, overly tight targets.

Wise Perturbation

Treat acute hypoglycemia. Review diabetes targets, medicines, renal function, meals, caregiver support, and monitoring plan according to local guidance.

Repair Trajectory

No recurrent morning lows, confusion improves, falls reduce, glucose plan fits intake, caregiver understands warning signs.

25. Worked Case 2: Orthostatic Hypotension

A 76-year-old man feels dizzy when standing and has fallen twice. He recently had diarrhea and continues diuretics, antihypertensives, and a sedative.

Regulation Problem

Blood pressure coordination failure on standing.

Capacity Failure

Brain perfusion, mobility safety, hydration, medicine safety.

Coupling Conditions

Fluid loss, diuretics, antihypertensives, sedative, age, falls risk, possible autonomic dysfunction.

Wise Perturbation

Assess standing blood pressure where safe, hydration, renal function, electrolytes, ECG if indicated, injuries, and medicines. Adjust contributing medicines and support hydration/mobility according to clinical context.

Repair Trajectory

Dizziness improves, standing safer, falls stop, renal function stable, medicines simplified, confidence returns.

26. Worked Case 3: Hyponatremia With Confusion

An 84-year-old woman presents with confusion, weakness, and falls. Sodium is low. She recently started a diuretic and has poor oral intake.

Regulation Problem

Sodium-water imbalance affecting brain function.

Capacity Failure

Cellular water balance, cognition, mobility safety, medicine safety.

Coupling Conditions

Age, diuretic, poor intake, possible dehydration or other volume state, kidney function, frailty.

Wise Perturbation

Assess symptoms, severity, chronicity, volume status, medicines, renal function, and follow local hyponatremia guidance. Avoid unsafe rapid correction.

Repair Trajectory

Mental state improves, sodium corrects safely, falls risk decreases, medicine cause addressed, follow-up arranged.

27. Worked Case 4: Hyperkalemia in AKI

A 70-year-old man with CKD presents with weakness, reduced urine output, rising creatinine, and high potassium after taking NSAIDs during a vomiting illness.

Regulation Problem
Potassium regulation failure from AKI and medicine injury.

Capacity Failure
Electrical stability, kidney clearance, hydration, medicine safety.

Coupling Conditions
CKD, vomiting, poor intake, NSAIDs, possible ACE inhibitor or ARB use, dehydration.

Wise Perturbation
Assess ECG and potassium severity. Treat according to local hyperkalemia pathway if dangerous. Stop harmful medicines where appropriate, restore kidney perfusion carefully, monitor potassium and renal function.

Repair Trajectory
Potassium safe, ECG stable, urine output improves, creatinine stabilizes, medicine plan clear, recurrence prevention understood.

28. Worked Case 5: Hyperthyroidism With Atrial Fibrillation

A 62-year-old woman presents with weight loss, heat intolerance, tremor, palpitations, diarrhea, and new atrial fibrillation.

Regulation Problem
Excess thyroid-driven metabolic and rhythm dysregulation.

Capacity Failure
Metabolic rate regulation, rhythm coordination, circulation, muscle strength.

Coupling Conditions
Age, cardiac risk, dehydration from diarrhea, anxiety symptoms, access to thyroid treatment, anticoagulation decision if indicated.

Wise Perturbation
Assess ECG, pulse, blood pressure, thyroid function, electrolytes, hydration, cardiac status, and treat according to local thyroid and atrial fibrillation guidance.

Repair Trajectory
Heart rate safer, tremor and heat intolerance improve, weight stabilizes, diarrhea resolves, rhythm and stroke-risk plan clear.

29. Worked Case 6: Fever, Confusion, and Labile Glucose

A 79-year-old man with diabetes and CKD presents with pneumonia, fever, confusion, poor intake, high glucose, and reduced urine output.

Regulation Problem
Acute illness disrupting glucose, temperature, cognition, kidney clearance, and fluid balance.

Capacity Failure
Defense, glucose regulation, cognition, hydration, clearance, oxygenation.

Coupling Conditions
Diabetes, CKD, infection, poor intake, usual diabetes medicines, frailty risk, possible dehydration.

Wise Perturbation

Treat pneumonia according to local guidance, monitor glucose carefully, assess ketones/acidosis if clinically indicated, protect hydration and kidney function, adjust medicines to intake and renal function, monitor mental state and oxygenation.

Repair Trajectory

Fever settles, oxygenation improves, mental state clears, glucose stabilizes without hypoglycemia, urine output improves, creatinine and potassium safe, appetite returns.

30. Common Student Pitfalls

Pitfall 1: Treating Numbers Without Context

A number is meaningful only in relation to symptoms, baseline, trend, and capacity failure.

Pitfall 2: Forgetting Glucose in Confusion

Always check glucose early in confusion, collapse, sweating, weakness, or seizure.

Pitfall 3: Correcting Sodium Too Fast

Sodium disorders require respect for chronicity and safe correction pathways.

Pitfall 4: Missing Orthostatic Hypotension

A lying blood pressure may look normal while standing perfusion fails.

Pitfall 5: Missing Medicine Causes

Diuretics, insulin, steroids, antihypertensives, sedatives, NSAIDs, ACE inhibitors, ARBs, and rate-limiting drugs commonly disturb regulation.

Pitfall 6: Calling Palpitations Anxiety Too Early

Check rhythm, thyroid, anemia, glucose, medicines, stimulants, and cardiac risk.

Pitfall 7: Pursuing Perfect Numbers in Frailty

In frailty, safety, function, and avoidance of harm often matter more than strict numerical targets.

Pitfall 8: Ignoring the Home Loop

A patient's regulation must remain safe after discharge with their real meals, medicines, water access, cognition, and support.

31. Clinical Practice Box

When assessing regulation and coordination, complete this structure:

What variable is unstable?
Glucose, blood pressure, heart rate, temperature, sodium, potassium, calcium, acid-base, sleep-wake rhythm, autonomic function?

Is there danger now?
Confusion, seizure, syncope, shock, arrhythmia, severe dehydration, organ damage, endocrine crisis?

Capacity failure:
Brain energy, perfusion, electrical stability, water balance, metabolic regulation, cognition, mobility, clearance?

Time course:
Acute, chronic, recurrent, postural, episodic, medication-related, illness-related?

Coupling conditions:
CKD, diabetes, frailty, infection, poor intake, medicines, endocrine disease, dehydration, heart failure, social access?

Initial investigations:
Glucose, ECG, renal function, electrolytes, acid-base, ketones where indicated, thyroid/adrenal assessment where suggested, infection assessment?

Wise perturbation:
Correct danger, treat cause, adjust medicines, restore volume, manage endocrine disease, prevent recurrence?

Monitoring:
Trend, symptoms, ECG where needed, mental state, urine output, meals, renal function, correction rate?

Repair trajectory:
What should stabilize, and what would make you reconsider or escalate?

Discharge safety:
Can this regulation remain safe at home?

32. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, hypertension, and mild cognitive impairment presents after a fall. She is dizzy on standing, has eaten poorly for two days, took her usual diabetes and blood pressure medicines, and is mildly confused. Her glucose is low, sodium is mildly low, creatinine is above baseline, and her blood pressure drops when she stands.

Apply the regulation and coordination approach.

Danger

Hypoglycemia, orthostatic hypotension, AKI, falls, delirium, medicine mismatch.

Syndrome

Multisystem dysregulation after poor intake in a vulnerable patient on glucose-lowering and blood pressure medicines.

Capacity Failure

Brain energy, brain perfusion, kidney clearance, sodium-water balance, cognition, mobility safety, medicine safety.

Coupling Conditions

Diabetes, CKD, hypertension, cognitive impairment, poor intake, usual medicines continued during illness, dehydration, frailty risk, home support.

Wise Perturbation

Correct hypoglycemia according to local guidance. Assess hydration, renal function, electrolytes, injuries, infection trigger, and medication list. Adjust diabetes and blood pressure medicines to current intake and kidney function according to local practice. Support oral intake and safe mobilization. Involve caregiver for medicine and meal supervision.

Repair Trajectory

Glucose remains stable, confusion clears, standing dizziness improves, creatinine stabilizes, sodium remains safe, falls risk decreases, medicines are simplified, caregiver understands sick-day and warning signs.

33. Student Takeaway

Regulation and coordination become easier when the clinician asks:

What variable is unstable?
Is this instability dangerous now?
Is the problem glucose, pressure, rhythm, temperature, sodium, potassium, calcium, acid-base, autonomic function, or sleep-wake rhythm?
What organ systems normally coordinate this variable?
What coupling conditions disrupted the loop?
Which medicines are helping or harming regulation?
What intervention restores stability without destabilizing another system?
How will we know the regulation is safe in real life, not only on today's blood test?

Regulation is not just normal numbers.

Coordination is not just absence of crisis.

Together, they allow the body to remain steady through meals, sleep, standing, infection, stress, medicines, movement, and recovery.

The safe clinician treats dangerous dysregulation quickly, identifies the broken loop, adjusts treatment to context, avoids overcorrection, monitors the trajectory, and helps the patient return to stable, functional self-regulation.

Chapter 49. Participation and Agency Made Easy

Participation is the person's ability to take part in life.

Agency is the person's ability to understand, choose, act, adapt, and remain meaningfully involved in their own care and future.

Patients do not usually say:

"My participation and agency capacities are failing."

They say:

"I cannot manage my medicines."
"I do not understand what is happening."
"I cannot afford this treatment."
"I cannot get to clinic."
"I am too tired to keep doing this."
"I am afraid."
"I do not want to be a burden."
"I cannot walk to the bathroom."
"I cannot work anymore."
"I cannot care for my family."
"I do not feel like myself."

Participation and agency are central to Internal Medicine because the goal of medicine is not only to correct biology.

The goal is to help the person live.

A patient may have improved oxygenation but still be unable to walk.
A patient may have stable glucose but no food security.
A patient may have correct prescriptions but no understanding of how to use them.
A patient may have treated pneumonia but remain too weak to bathe.
A patient may have controlled blood pressure but feel dizzy, frightened, and unable to function.
A patient may have advanced illness where cure is no longer possible, but dignity, comfort, meaning, and choice remain deeply important.

The first task is not simply to ask:

"Is the disease controlled?"

The deeper question is:

"Can this person participate in life, and do they have enough agency to continue repair safely?"

Participation and agency become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Participation?

Participation means the ability to take part in meaningful life activities.

These may include:

- walking
- eating
- bathing
- dressing

toileting

communicating

working

learning

parenting

worshipping

socializing

caring for others

making decisions

managing medicines

attending appointments

enjoying hobbies

maintaining relationships

living with dignity

Participation is not a luxury.

It is one of the main outcomes of health.

A patient may survive illness but lose participation.

For example:

A patient after heart failure admission may no longer climb stairs.
A patient after delirium may no longer manage medicines safely.
A patient after a fall may become afraid to walk.
A patient with chronic pain may stop working and socializing.
A patient with COPD may avoid leaving home because of breathlessness.
A patient with diabetes may avoid treatment because of fear of hypoglycemia.

Participation shows whether medicine has restored life-capacity.

2. What Is Agency?

Agency means the ability to understand, choose, act, and influence one's own life.

In clinical care, agency includes:

understanding the diagnosis

understanding treatment options

expressing values and goals

asking questions

consenting or refusing with understanding

managing medicines

recognizing warning signs

attending follow-up

adapting daily routines

seeking help when needed

participating in rehabilitation

making advance care plans where relevant

Agency is not the same as independence.

A person may need help and still have agency.

A person with disability, frailty, dementia, or advanced illness may still express preferences, values, comfort needs, fears, and priorities.

Agency is preserved when care is explained, respectful, realistic, and aligned with the person's life.

Agency is damaged when care is confusing, coercive, dismissive, fragmented, or impossible to carry out.

3. Participation Is a Capacity, Not an Afterthought

Students often focus on diagnosis and treatment.

But the patient asks:

"Can I go home?"
"Can I walk?"
"Can I sleep?"
"Can I eat?"
"Can I take care of myself?"
"Can I return to work?"
"Can I live with this?"

Participation should be assessed as carefully as oxygenation, circulation, glucose, or kidney function.

Ask:

What could the patient do before?

What can the patient do now?

What has been lost?

What matters most to regain?

What support is available?

What barriers make participation difficult?

What is realistic?

What risks must be managed?

What would safe function look like?

A medically stable patient may still have severe participation failure.

4. Agency Is a Capacity, Not a Personality Trait

When a patient does not follow a plan, the clinician should not jump to blame.

Instead of asking:

"Why is this patient non-compliant?"

ask:

"What is blocking agency?"

Possible barriers include:

- poor understanding
- cognitive impairment
- depression
- fear
- side effects
- cost
- transport
- language barriers
- low health literacy
- complex regimen
- lack of family support
- cultural concerns
- mistrust
- previous trauma
- poor coordination of care
- pain
- fatigue
- addiction
- unstable housing
- food insecurity
- medication access
- lack of confidence

A patient cannot carry out a plan that they do not understand, cannot afford, cannot access, or cannot fit into life.

Agency is not simply willpower.

It is a supported capacity.

5. The First Question: Is Participation Failure Dangerous Now?

Participation failure becomes dangerous when the person cannot maintain basic life functions safely.

Urgent assessment is needed when the patient cannot:

- breathe safely
- eat or drink
- swallow safely
- stand or walk safely
- toilet safely
- protect themselves from falls
- understand danger

take essential medicines safely

recognize hypoglycemia or other urgent symptoms

manage insulin, anticoagulants, oxygen, inhalers, or diuretics safely

access urgent care

live safely at home

receive adequate caregiving

communicate symptoms

avoid self-neglect

avoid harm due to confusion, delirium, dementia, depression, abuse, or neglect

Danger is not only biological.

Unsafe discharge, medication confusion, inability to eat, inability to walk, caregiver collapse, and inability to understand warning signs can all cause serious harm.

The danger-first question is:

Can this person safely continue repair in their current setting?

6. Immediate Red Flags in Participation and Agency Failure

Red flags include:

new inability to walk

recurrent falls

delirium

severe cognitive impairment without support

inability to eat or drink

unsafe swallowing

medication mismanagement

repeated hypoglycemia

inability to use inhalers or insulin correctly

inability to obtain essential medicines

no safe home support after major illness

caregiver exhaustion or collapse

severe depression with self-neglect

suicidal thoughts or self-harm risk

suspected abuse or neglect

unsafe housing for current disability

inability to attend urgent follow-up

severe pain preventing mobility or sleep

advanced illness with uncontrolled distress

treatment refusal without understanding of consequences

- severe health literacy barrier in high-risk treatment

Participation failure can be as dangerous as an abnormal blood test.

7. The Participation Pathway Made Easy

Participation depends on several linked capacities.

Step 1: Biological Stability

The person must have enough physiological stability to function.

This includes:

- oxygenation
- circulation
- glucose safety
- kidney clearance
- cognition
- pain control
- hydration
- nutrition
- sleep
- medication safety

If these are unstable, participation suffers.

Step 2: Functional Ability

The person must be able to perform essential tasks.

These include:

- sitting
- standing
- transferring
- walking
- toileting
- bathing
- dressing
- eating
- swallowing
- communicating
- using medicines
- managing devices

Step 3: Cognitive and Emotional Capacity

The person must be able to:

- understand
- remember

- decide
- plan
- attend
- cope
- ask for help
- manage fear
- sustain motivation

Delirium, dementia, depression, anxiety, pain, sleep deprivation, and trauma can all reduce participation.

Step 4: Social Support

Participation often requires others.

This may include:

- family
- caregivers
- community
- home nursing
- transport
- pharmacy access
- rehabilitation
- social services
- workplace support
- school support
- faith or community networks

Step 5: Environmental Fit

The environment must fit the person's capacities.

Ask:

- Are there stairs?
- Is the bathroom accessible?
- Is the home safe?
- Is food available?
- Is water available?
- Is electricity reliable if refrigeration or equipment is needed?
- Are medicines obtainable?
- Is transport possible?
- Is the workplace safe?
- Is there heat, mold, smoke, or crowding?

Step 6: Meaning and Goals

Participation must be connected to what matters.

For one patient, the key goal is returning to work.
For another, it is walking to church.
For another, it is bathing independently.
For another, it is being comfortable at home with family.
For another, it is living long enough to attend a family event.
For another, it is avoiding hospital.

The clinician should ask:

What does recovery mean to this person?

8. Agency Pathway Made Easy

Agency depends on several linked capacities.

Step 1: Understanding

The patient must understand:

- what is wrong
- what is uncertain
- what treatment is for
- what benefits are expected
- what harms are possible
- what warning signs matter
- what follow-up is needed

Step 2: Choice

The patient must be able to express preferences.

Ask:

- What matters most to you?
- What are you hoping this treatment will do?
- What are you worried about?
- What treatment burden feels acceptable?
- What would you not want?
- Who helps you make decisions?

Step 3: Practical Ability

The patient must be able to carry out the plan.

Ask:

- Can you afford the medicine?
- Can you get to the pharmacy?
- Can you read the label?
- Can you remember doses?
- Can you open the container?
- Can you inject insulin?
- Can you use the inhaler?

Can you monitor glucose?

Can you attend follow-up?

Can you call for help?

Step 4: Confidence

The patient must feel capable enough to act.

Fear can block agency.

Examples:

fear of hypoglycemia

fear of breathlessness

fear of falling

fear of pain

fear of addiction

fear of bad news

fear of being a burden

fear of hospitals

fear of death

Confidence is built through explanation, practice, support, and realistic plans.

Step 5: Support

Agency may be shared.

A patient with cognitive impairment may need family support for medicines.

A patient with frailty may need help with transport.

A patient with low literacy may need simplified instructions.

A patient with advanced illness may need caregiver-led symptom plans.

Agency is not destroyed by needing help.

Agency is protected when help is respectful and aligned with the person's wishes.

9. Common Participation Failure Patterns

Mobility Collapse Pattern

Features:

new inability to walk

falls

fear of standing

weakness

pain

dizziness

deconditioning

need for assistance

Common causes:

- acute illness
- stroke
- frailty
- dehydration
- orthostatic hypotension
- medication effects
- arthritis
- neuropathy
- delirium
- hospitalization
- pain

Capacity failure:

mobility, safety, independence, confidence

Medication Management Failure Pattern

Features:

- missed doses
- duplicate doses
- wrong timing
- confusion about changes
- recurrent hypoglycemia
- uncontrolled disease
- adverse effects
- repeated admissions

Common causes:

- cognitive impairment
- polypharmacy
- poor eyesight
- low literacy
- complex regimen
- cost
- side effects
- lack of caregiver support
- fragmented prescribing

Capacity failure:

agency, medicine safety, self-management

Health Access Failure Pattern

Features:

- missed appointments

- delayed presentation
- inability to get tests
- inability to obtain medicines
- repeated emergency visits
- worsening chronic disease

Common causes:

- transport
- cost
- work demands
- caregiving burden
- geography
- disability
- system delays
- poor communication
- fear or mistrust

Capacity failure:

care access, continuity, repair support

Self-Care Exhaustion Pattern

Features:

- patient knows the plan but cannot sustain it
- chronic illness burden
- burnout
- depression
- low motivation
- treatment fatigue
- emotional distress
- missed monitoring
- dietary or medication fatigue

Common causes:

- multimorbidity
- complex regimens
- chronic pain
- depression
- caregiver burden
- financial stress
- repeated failure experiences

Capacity failure:

agency endurance, emotional reserve, participation

Unsafe Discharge Pattern

Features:

- medically improved but cannot walk
- confused about medicines
- no caregiver
- poor intake
- unsafe home
- pending critical follow-up
- lack of transport
- high falls risk
- complex treatment without support

Capacity failure:

continuity of repair, home safety, agency, function

10. Participation in Acute Illness

Acute illness often causes sudden participation loss.

A patient with pneumonia may lose:

- ability to breathe comfortably
- ability to eat
- ability to walk
- ability to think clearly
- ability to sleep
- ability to care for self

A patient with AKI may lose:

- medicine safety
- energy
- appetite
- confidence
- ability to manage chronic treatment

A patient with delirium may lose:

- decision-making
- safe mobility
- communication
- dignity
- trust

The clinician should ask early:

What has this illness stopped the patient from doing?

This helps define severity and repair goals.

11. Participation in Chronic Illness

Chronic illness slowly reshapes participation.

Examples:

Heart Failure

May limit:

- walking
- sleeping flat
- work
- travel
- sexual activity
- social life
- confidence

COPD

May limit:

- leaving home
- climbing stairs
- bathing
- sleep
- speech during breathlessness
- social participation

Diabetes

May limit:

- eating freedom
- work routines
- travel
- sleep
- confidence
- finances
- foot safety

CKD

May limit:

- diet
- energy
- medicine options
- travel

- work
- dialysis planning where relevant
- future certainty

Chronic Pain

May limit:

- movement
- sleep
- mood
- work
- relationships
- trust in the body

Dementia

May limit:

- medication management
- finances
- cooking
- driving
- decision-making
- safety
- identity

Chronic care should not only ask:

“Are the numbers controlled?”

It should ask:

“How is this illness shaping the patient’s life?”

12. Agency and Shared Decision-Making

Shared decision-making protects agency.

It is especially important when:

- there is more than one reasonable option
- treatment has major burdens
- benefits are uncertain
- risks are serious
- the patient is frail
- the illness is advanced
- goals of care matter
- long-term adherence is needed
- the treatment affects daily life

Shared decision-making includes:

explaining the situation clearly

naming uncertainty

presenting options

explaining likely benefits and harms

asking what matters to the patient

checking understanding

making a plan together

documenting preferences

A good shared decision question is:

“Given what we know, what are you hoping this treatment will help you do?”

13. Agency and Capacity to Decide

Decision-making capacity is decision-specific.

A patient may be able to decide one thing but not another.

Capacity usually requires the ability to:

understand relevant information

retain it long enough to decide

weigh benefits and harms

communicate a choice

Capacity may be affected by:

delirium

dementia

psychosis

severe depression

intoxication

hypoxia

hypoglycemia

sepsis

severe pain

medication effects

language barriers

hearing or vision impairment

Before deciding a patient lacks capacity, improve conditions:

treat delirium triggers

correct glucose

provide glasses or hearing aids

use interpreter support where needed

reduce pain

allow time

involve trusted family where appropriate

explain simply

check understanding

Capacity assessment protects autonomy and safety.

14. Agency and Health Literacy

Health literacy is the ability to understand and use health information.

Low health literacy is common and often hidden.

Clues include:

missed appointments

medication errors

vague understanding

inability to name medicines

difficulty following written instructions

poor chronic disease control

repeated admissions

embarrassment or silence during explanations

Do not ask:

“Do you understand?”

Most patients will say yes.

Instead ask:

“Just so I know I explained it clearly, can you tell me how you will take this medicine when you get home?”

This is teach-back.

Teach-back protects agency.

15. Participation and Medicines

Medicines can restore participation or reduce it.

A good medicine plan should ask:

Is the medicine necessary?

Does it improve symptoms, survival, function, or prevention?

Is it safe with kidney and liver function?

Is it affordable?

Is the schedule realistic?

Can the patient open the bottle?

Can the patient read the label?

Can the patient remember doses?

Does it cause dizziness, falls, fatigue, confusion, or sexual dysfunction?

Does it fit meals and work?

Is the patient willing to take it?

Does the patient know when to stop or seek help?

A pharmacologically correct prescription may be participation-incoherent if it cannot be used safely in real life.

16. Participation and Rehabilitation

Rehabilitation restores participation.

It may include:

physiotherapy

occupational therapy

speech and swallowing therapy

pulmonary rehabilitation

cardiac rehabilitation

stroke rehabilitation

falls prevention

strength training

balance training

energy conservation

adaptive equipment

home modification

pain management

confidence rebuilding

Rehabilitation should begin as early as safely possible.

Ask:

What was baseline?

What is the current limitation?

What is the realistic goal?

What support is needed?

What would make discharge unsafe?

What does the patient want to regain?

Rehabilitation is not an optional extra.

It is repair directed toward participation.

17. Participation and Caregivers

Caregivers are part of the patient's life-support system.

They may help with:

- medicines
- meals
- transport
- bathing
- dressing
- wound care
- appointments
- monitoring symptoms
- decision-making
- emotional support
- finances
- safety

But caregivers can also become exhausted.

Caregiver strain may appear as:

- missed care
- anger
- guilt
- depression
- sleep loss
- financial stress
- neglect risk
- inability to continue home care
- repeated admissions

Ask caregivers:

- What are you doing for the patient now?
- What is hardest?
- What worries you about home?
- Are you sleeping?
- Do you have help?
- What training do you need?
- What would make care unsafe?

Supporting the caregiver protects the patient.

18. Participation and Environment

Environment can enable or disable recovery.

Ask:

Are there stairs?

Is the bedroom upstairs?

Is the bathroom accessible?

Is there running water?

Is there electricity?

Is the home crowded?

Is there mold, smoke, or heat exposure?

Is food available?

Is there refrigeration for insulin if needed?

Is there a safe place to store medicines?

Is there a chair, bed, or toilet aid needed?

Is the patient at risk of falls?

Can oxygen equipment be used safely where relevant?

Can dressings be kept clean?

Can the patient reach help in an emergency?

A plan must fit the environment.

If the environment cannot change, the plan must adapt.

19. Participation and Work

Work affects health and treatment.

Ask:

What work do you do?

Can you take medicines at work?

Can you eat regularly?

Can you attend appointments?

Are you exposed to dust, heat, chemicals, smoke, noise, violence, or heavy lifting?

Does work worsen symptoms?

Can work be modified?

Is time off needed?

Does illness threaten income?

Are caregiving duties part of daily work?

Treatment plans fail when they ignore work reality.

For example:

A diuretic plan may fail if the patient cannot access toilets at work.
An insulin plan may fail if meals are unpredictable.
An asthma plan may fail if dust exposure continues.
A back pain plan may fail if heavy lifting is unavoidable.
A wound plan may fail if standing all day continues.

Participation includes economic life.

20. Participation and Mental Health

Mental health strongly shapes agency and participation.

Depression may reduce:

- motivation
- appetite
- sleep
- energy
- medication adherence
- appointment attendance
- hope
- rehabilitation effort

Anxiety may increase:

- symptom fear
- avoidance
- breathlessness panic
- palpitations
- insomnia
- emergency visits
- mistrust of reassurance

Trauma may affect:

- trust
- examination tolerance
- medication fears
- hospital avoidance
- communication

Demoralization may appear when patients feel treatment is endless and meaningless.

Ask:

- How are you coping?
- What feels hardest?
- What are you afraid of?
- What gives you strength?
- Have you lost interest or hope?
- Do you feel safe?
- Have you had thoughts of harming yourself?

Mental health is not separate from Internal Medicine.

It is part of agency.

21. Participation and Culture

Culture shapes illness meaning, treatment preferences, diet, family roles, spirituality, modesty, decision-making, and trust.

Ask respectfully:

- Are there beliefs or practices we should know about to care for you well?
- Are there foods, medicines, or treatments you avoid?
- Who should be involved in decisions?
- Is faith or spirituality important in coping?
- Are there healing practices you use?
- How do you understand this illness?

Cultural respect supports agency.

It does not mean abandoning medical safety.

It means building a plan that can be understood and trusted.

22. Participation and Advanced Illness

In advanced illness, participation and agency become central.

When cure is unlikely, ask:

- What matters most now?
- What symptoms are most distressing?
- Where would you prefer to be cared for?
- What level of hospital care would you want?
- What would you consider too burdensome?
- Who should speak for you if you cannot?
- What are you hoping for?
- What are you afraid of?
- What would a good day look like?

Participation may shift from work and independence to:

- comfort
- family presence
- spiritual peace
- dignity
- meaningful conversation
- pain relief
- breathlessness relief
- avoiding unwanted hospitalization

- dying in preferred place where possible

Agency includes the right to define what repair means.

23. Participation and Documentation

Clinical notes should include participation and agency when relevant.

Weak note:

“Discharge home.”

Stronger note:

“Medically improving after pneumonia, but still below baseline mobility. Able to transfer with assistance, eating small amounts, cognition near baseline. Daughter able to supervise medicines and meals. Physiotherapy plan arranged. Warning signs explained using teach-back. Repeat renal function scheduled. Discharge appropriate with family support and follow-up.”

This note shows:

- function
- cognition
- support
- safety
- agency
- follow-up

Good documentation protects the repair trajectory.

24. Participation and Handover

A safe handover includes:

- diagnosis
- capacity failures
- what the patient can and cannot do
- cognition and decision-making status
- caregiver support
- medicine understanding
- mobility status
- swallowing status
- discharge barriers
- goals of care where relevant
- escalation preferences where relevant

Weak handover:

“Pneumonia, improving.”

Stronger handover:

“Pneumonia improving clinically, oxygenation now stable. Main issues are persistent weakness, poor intake, and unsafe mobility compared with baseline. Mild delirium has mostly cleared. Daughter is available but worried about falls. Needs physiotherapy review, medicine teaching, and repeat renal function before discharge.”

This is life-coherent handover.

25. Discharge Safety and Agency

Before discharge, ask:

Understanding

- Does the patient know the diagnosis?
- Does the patient know what changed?
- Does the patient know warning signs?
- Does the patient know follow-up?

Medicines

- Are medicines reconciled?
- Does the patient know what to start, stop, change, or restart?
- Can the patient obtain them?
- Can the patient take them correctly?
- Are high-risk medicines explained?

Function

- Can the patient walk or transfer?
- Can the patient toilet?
- Can the patient eat and drink?
- Can the patient use stairs if needed?
- Can the patient manage personal care?
- Is swallowing safe?

Support

- Is there a caregiver?
- Is the caregiver able and willing?
- Are supplies available?
- Is transport arranged?
- Is home safe?
- Are community supports needed?

Follow-Up

- Are repeat labs arranged?
- Are pending results assigned?
- Is clinic review scheduled?
- Does the patient know who to contact?

Discharge is not an event.

It is a transfer of repair responsibility.

Agency must be strong enough for that transfer.

26. Wise Perturbation for Participation and Agency Failure

Treatment depends on the barrier.

If Understanding Is the Barrier

Use:

- plain language
- diagrams
- teach-back
- written instructions
- medication schedule
- interpreter support
- family involvement with consent

If Function Is the Barrier

Use:

- physiotherapy
- occupational therapy
- mobility aids
- home modifications
- falls prevention
- pain control
- rehabilitation
- nutrition support

If Medicines Are the Barrier

Use:

- simplification
- deprescribing
- blister packs or pill organizers
- caregiver support
- pharmacy review
- affordability planning
- side effect management

If Access Is the Barrier

Use:

- social work
- transport planning

- community nursing
- telehealth where appropriate
- local clinic coordination
- medicine supply planning
- follow-up ownership

If Fear Is the Barrier

Use:

- explanation
- reassurance after danger assessed
- graded exposure
- symptom action plan
- family support
- mental health support
- rehabilitation confidence building

If Goals Are the Barrier

Use:

- shared decision-making
- goals-of-care discussion
- palliative care involvement where appropriate
- treatment burden review
- values clarification

The intervention should restore agency, not simply instruct the patient.

27. Repair Trajectory in Participation and Agency

Repair is shown by:

- patient understands the condition
- patient can describe the medicine plan
- caregiver understands support role
- mobility improves
- eating and drinking improve
- sleep improves
- pain becomes manageable
- fear decreases
- appointments are attended
- medicines are obtained
- glucose, blood pressure, or other monitoring is feasible
- warning signs are recognized

- patient regains valued activities
- caregiver strain reduces
- goals of care are clarified
- patient feels heard and respected

Repair is not only biological.

Repair includes restored capacity to live, choose, and continue healing.

28. Monitoring Participation and Agency

Monitor participation by asking:

- What can you do now that you could not do last week?
- What still feels impossible?
- Have you fallen?
- Are you eating?
- Are you sleeping?
- Are you taking medicines as planned?
- Any side effects?
- Can you afford the medicines?
- Did you attend follow-up?
- Do you understand the next step?
- What worries you most?
- Is the caregiver coping?
- What activity matters most to regain?

Monitor agency by asking:

- Can you explain your condition in your own words?
- How will you take this medicine?
- What will you do if symptoms worsen?
- Who will help you?
- What might stop you from following the plan?
- What would make the plan easier?

These questions reveal whether repair is real.

29. Worked Case 1: Pneumonia and Unsafe Discharge

An 83-year-old woman has improved from pneumonia. Fever has settled and oxygenation is safe. However, she remains weak, is eating poorly, and cannot walk to the bathroom without help. She lives alone.

Participation Problem

Biological improvement without functional readiness.

Capacity Failure

Mobility, nutrition, self-care, home safety, agency.

Coupling Conditions

Frailty, living alone, poor intake, recent infection, deconditioning, falls risk, possible delirium.

Wise Perturbation

Delay unsafe discharge or arrange appropriate support. Assess mobility, nutrition, cognition, medicines, falls risk, and home environment. Involve physiotherapy, nursing, family, social support, and follow-up planning.

Repair Trajectory

Eating improves, strength returns, bathroom transfers become safe or supported, medicines understood, home support arranged, readmission risk reduced.

30. Worked Case 2: Recurrent Hypoglycemia and Agency Failure

A 76-year-old man with diabetes and CKD has repeated hypoglycemia. He takes his tablets correctly but often skips lunch because of work. He does not understand that his kidney disease changes medicine safety.

Participation Problem

Treatment plan does not fit meals, work, or kidney function.

Capacity Failure

Glucose regulation, brain energy, work participation, agency, medicine safety.

Coupling Conditions

CKD, irregular meals, work demands, diabetes medicines, low understanding of hypoglycemia risk.

Wise Perturbation

Treat immediate hypoglycemia. Review medicines and targets according to local guidance. Explain kidney and meal effects using teach-back. Create a work-compatible plan and safety-net.

Repair Trajectory

No further hypoglycemia, patient understands warning signs, treatment fits work meals, kidney function considered, follow-up arranged.

31. Worked Case 3: Heart Failure and Work Reality

A 58-year-old man with heart failure keeps missing diuretics because he drives a bus and cannot stop frequently to urinate. He is readmitted with edema and breathlessness.

Participation Problem

Treatment conflicts with work participation.

Capacity Failure

Fluid balance, oxygenation, work capacity, agency, medicine feasibility.

Coupling Conditions

Heart failure, diuretic timing, job constraints, income needs, limited bathroom access, possible low understanding of early warning signs.

Wise Perturbation

Treat congestion. Discuss diuretic timing and work schedule. Explore feasible dosing schedule according to clinical guidance, workplace accommodations if possible, home weight or symptom monitoring, and early review plan.

Repair Trajectory

Breathlessness improves, edema reduces, diuretic plan becomes feasible, missed doses reduce, work participation preserved where possible, readmission risk decreases.

32. Worked Case 4: COPD and Fear of Breathlessness

A 69-year-old woman with COPD avoids walking because she fears breathlessness. Her muscles weaken, and she becomes more short of breath with less activity.

Participation Problem

Fear-avoidance cycle with deconditioning.

Capacity Failure

Ventilation reserve, muscle strength, confidence, mobility, participation.

Coupling Conditions

COPD, previous frightening exacerbation, poor inhaler technique, anxiety, lack of pulmonary rehabilitation, social isolation.

Wise Perturbation

Assess oxygenation, inhaler technique, exacerbation risk, anxiety, and exercise tolerance. Provide breathlessness education, rescue plan, pulmonary rehabilitation where available, graded activity, and support.

Repair Trajectory

Confidence improves, walking distance increases, dyspnea becomes more manageable, exacerbation plan understood, social participation improves.

33. Worked Case 5: Dementia and Medication Safety

An 80-year-old woman with mild dementia is admitted with uncontrolled blood pressure and AKI. Her family discovers she has been taking old and new tablets together.

Participation Problem

Medication management failure due to cognitive impairment and regimen complexity.

Capacity Failure

Agency, medicine safety, cognition, kidney clearance, blood pressure regulation.

Coupling Conditions

Dementia, polypharmacy, poor medication reconciliation, old medicines at home, limited supervision, low understanding.

Wise Perturbation

Simplify medicines, remove discontinued medicines from home where possible, involve family, pharmacy, and primary care. Use pill organizer or blister pack if available. Explain plan using teach-back with caregiver.

Repair Trajectory

Blood pressure safer, kidney function stable, no duplicate medicines, family understands plan, medication errors reduce.

34. Worked Case 6: Advanced Illness and Agency

A 72-year-old man with advanced heart failure has repeated admissions. He says he is tired of hospital and wants to spend more time at home with family.

Participation Problem

Treatment burden may no longer match patient goals.

Capacity Failure

Circulation, oxygenation, energy, agency, dignity, family participation.

Coupling Conditions

Advanced disease, repeated admissions, caregiver capacity, symptom burden, fear, prognosis, unclear goals.

Wise Perturbation

Have a goals-of-care conversation. Explore what matters most, acceptable treatment burden, preferred place of care, symptom priorities, emergency plans, and family support. Involve palliative care where appropriate.

Repair Trajectory

Symptoms better controlled, care plan aligns with goals, family understands what to do, unwanted interventions reduced, time at home supported where feasible.

35. Common Student Pitfalls

Pitfall 1: Thinking Participation Is "Social" and Not Medical

Walking, eating, toileting, understanding, and accessing care are medical safety issues.

Pitfall 2: Assuming Understanding Because the Patient Nods

Use teach-back.

Pitfall 3: Blaming Non-Compliance Too Quickly

Non-adherence is a finding. The cause must be diagnosed.

Pitfall 4: Ignoring Cost and Access

A medicine the patient cannot obtain is not a treatment.

Pitfall 5: Discharging Without Functional Assessment

A stable patient may still be unable to live safely.

Pitfall 6: Ignoring Caregiver Capacity

A caregiver who cannot cope can become a safety risk for both patient and caregiver.

Pitfall 7: Forgetting Work and Daily Life

Treatment must fit the patient's real routines.

Pitfall 8: Treating Advanced Illness Without Asking Goals

When disease is advanced, agency and meaning become central clinical priorities.

36. Clinical Practice Box

When assessing participation and agency, complete this structure:

What has the illness stopped the patient from doing?

Baseline function:
Walking, toileting, bathing, eating, cognition, work, caregiving, social participation.

Current function:
What can the patient do now?

Agency capacity:
Can the patient understand, decide, remember, act, and seek help?

Medicine management:
Can the patient obtain, understand, and take medicines safely?

Support:
Who helps? Is the caregiver coping?

Environment:
Home safety, stairs, bathroom, food, water, transport, electricity, equipment.

Barriers:
Cost, access, literacy, fear, depression, pain, culture, work, disability, mistrust.

Goals:
What matters most to the patient?

Wise perturbation:
Education, simplification, rehabilitation, social support, caregiver training, goals-of-care discussion, palliative support?

Repair trajectory:
What participation should improve, and how will agency be supported?

37. Mini-Case for Practice

A 74-year-old woman with diabetes, CKD, hypertension, osteoarthritis, and mild cognitive impairment is recovering from AKI caused by dehydration and NSAID use. Her blood tests are improving, but she is weak, afraid of falling, confused about which medicines were stopped, cannot read small labels, and lives with a daughter who works full-time.

Apply the participation and agency approach.

Participation Problem

Biological improvement with unsafe self-management and functional vulnerability.

Capacity Failure

Medicine agency, mobility, confidence, kidney safety, pain management, caregiver-supported repair.

Coupling Conditions

CKD, recent AKI, NSAID harm, osteoarthritis pain, mild cognitive impairment, poor vision, daughter's work schedule, falls fear, polypharmacy.

Wise Perturbation

Clarify medicine stop/restart plan in large print. Use teach-back with patient and daughter. Remove or label old medicines where possible. Create safer pain plan avoiding kidney harm where appropriate. Assess mobility and falls risk. Arrange follow-up renal tests. Consider pill organizer or pharmacy support. Provide sick-day advice.

Repair Trajectory

Patient and daughter can explain medicine plan, no NSAID re-exposure, kidney function remains stable, pain controlled safely, walking confidence improves, falls avoided, follow-up labs completed.

38. Student Takeaway

Participation and agency become easier when the clinician asks:

Can this person live safely with the current plan?
What has illness stopped them from doing?
What was baseline, and what is different now?
Can they understand the diagnosis and treatment?
Can they obtain and take medicines safely?
Can they eat, walk, toilet, sleep, and attend follow-up?
Who helps them, and is that person able to cope?
Does the plan fit money, transport, work, culture, cognition, home, and fear?
What matters most to the patient?
What repair trajectory would restore meaningful life-capacity?

Participation is not optional.

Agency is not decoration.

Together, they are the human purpose of Internal Medicine.

The safe clinician does not stop when numbers improve. The safe clinician helps the patient understand, choose, act, recover, and return as much as possible to a life that is safe, meaningful, and their own.

Part V. Integrative Internal Medicine in Real Patients

This part brings the framework into real patient complexity: multimorbidity, polypharmacy, frailty, falls, delirium, dementia, depression, pain, dependence, palliative care, and dying.

Chapter 50. Multimorbidity Made Easy

Multimorbidity means that a patient is living with more than one long-term condition at the same time.

Patients do not usually say:

“I have multimorbidity.”

They say:

“I have diabetes, pressure, kidney problems, heart problems, and arthritis.”
“Every doctor gives me another tablet.”
“I do not know which illness is causing what.”
“I feel tired all the time.”
“When one thing improves, another gets worse.”
“I cannot manage all these appointments.”
“I am afraid to stop anything.”
“I am tired of being a patient.”

Multimorbidity is one of the central realities of Internal Medicine.

Most real patients do not arrive with one clean diagnosis.

They arrive with overlapping conditions:

- diabetes
- hypertension
- CKD
- heart failure
- COPD
- arthritis
- anemia
- obesity
- frailty
- depression
- chronic pain
- dementia
- liver disease
- vascular disease
- previous stroke
- cancer history
- medication burden
- social stress

The clinical challenge is not simply to treat each disease separately.

The deeper task is to ask:

How do these conditions interact in this person, and what plan protects life-capacity as a whole?

Multimorbidity becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Multimorbidity?

Multimorbidity means that several illnesses coexist and interact.

It is not just a list of diagnoses.

A patient with diabetes, CKD, heart failure, osteoarthritis, and depression does not have five separate problems sitting side by side.

The conditions interact.

Diabetes affects kidneys, nerves, blood vessels, wounds, infection risk, and glucose safety.
CKD affects medicine clearance, potassium, anemia, fluid balance, and blood pressure.
Heart failure affects breathlessness, kidneys, exercise tolerance, sleep, and diuretic needs.
Osteoarthritis affects walking, pain, weight, falls, and NSAID use.
Depression affects appetite, sleep, energy, adherence, motivation, and participation.

The clinical question is:

What is the interaction pattern?

2. Why Multimorbidity Feels Difficult

Multimorbidity feels difficult because single-disease thinking breaks down.

In single-disease thinking:

each disease has its guideline

each guideline has its medicines

each medicine has its target

each target seems important

But real patients have trade-offs.

For example:

A patient with heart failure may need diuresis, but too much diuresis may worsen AKI.

A patient with diabetes may need glucose control, but aggressive treatment may cause hypoglycemia in frailty or CKD.

A patient with arthritis may need pain relief, but NSAIDs may worsen blood pressure, kidney function, heart failure, and bleeding risk.

A patient with atrial fibrillation may benefit from anticoagulation, but falls, bleeding risk, renal function, and goals of care matter.

A patient with COPD may need steroids during an exacerbation, but steroids may worsen glucose, mood, sleep, infection risk, and muscle weakness.

Multimorbidity requires judgment.

The goal is not maximum treatment of every disease.

The goal is coherent treatment of the whole person.

3. The First Question: Is There Immediate Danger?

Even in multimorbidity, danger comes first.

Ask:

- Is airway safe?
- Is breathing safe?
- Is oxygenation safe?
- Is circulation safe?
- Is glucose safe?
- Is potassium safe?
- Is mental state safe?
- Is there sepsis?
- Is there bleeding?
- Is there stroke or acute coronary syndrome?
- Is there severe AKI?
- Is there pulmonary edema?
- Is there medication toxicity?
- Is there delirium?
- Is there unsafe mobility or falls risk?

Multimorbidity should not distract from immediate danger.

A patient may have many chronic diseases, but today's danger may be:

- hypoglycemia
- hyperkalemia
- pneumonia
- heart failure
- sepsis
- pulmonary embolism
- GI bleeding
- drug toxicity
- delirium
- AKI

Treat danger first.

Then integrate the whole pattern.

4. Multimorbidity Is Capacity Overlap

Each disease affects one or more capacities.

For example:

Diabetes

Can affect:

- glucose regulation

- vascular integrity
- kidney clearance
- nerve function
- wound repair
- infection defense
- vision
- participation

CKD

Can affect:

- clearance
- potassium regulation
- fluid balance
- acid-base balance
- blood pressure
- anemia
- medicine safety
- bone-mineral balance

Heart Failure

Can affect:

- circulation
- oxygenation
- fluid balance
- exercise tolerance
- sleep
- kidney perfusion
- rhythm stability

COPD

Can affect:

- ventilation
- oxygenation
- airway clearance
- sleep
- muscle energy
- anxiety
- participation

Arthritis

Can affect:

- mobility

- pain
- sleep
- falls risk
- weight
- mood
- medicine safety

Depression

Can affect:

- agency
- sleep
- appetite
- motivation
- pain
- adherence
- participation

A multimorbid patient is best understood as a map of overlapping capacity failures.

The question becomes:

Which capacities are most threatened now?

5. Avoid the Disease List Trap

A disease list is useful, but it is not enough.

Weak summary:

“Diabetes, hypertension, CKD, heart failure, osteoarthritis, depression.”

Better summary:

“A 76-year-old woman with diabetes, CKD, heart failure, osteoarthritis, and depression, whose main current problems are breathlessness, worsening kidney function, poor mobility, pain, recurrent hypoglycemia, and difficulty managing medicines at home.”

The second summary is more clinically useful because it shows:

- active symptoms
- capacity failures
- treatment conflicts
- home safety
- agency issues

Multimorbidity care begins when the disease list becomes a living problem map.

6. The Multimorbidity Problem Map

A useful multimorbidity map includes:

Active Dangers

What could harm the patient now?

Examples:

- hypoglycemia
- AKI
- hyperkalemia
- falls
- delirium
- bleeding
- sepsis
- pulmonary edema

Active Symptoms

What is troubling the patient?

Examples:

- breathlessness
- pain
- dizziness
- fatigue
- poor sleep
- swelling
- confusion
- low mood

Capacity Failures

Which capacities are impaired?

Examples:

- oxygenation
- circulation
- clearance
- regulation
- mobility
- cognition
- repair
- agency

Treatment Conflicts

Which treatments help one condition but harm another?

Examples:

- diuretics help congestion but may worsen kidney function
- NSAIDs help pain but worsen kidneys, heart failure, blood pressure, and bleeding risk
- steroids help inflammation but worsen glucose, infection risk, sleep, and muscles

- anticoagulants reduce clot risk but increase bleeding risk
- sedatives help sleep but worsen falls and delirium

Coupling Conditions

What context shapes care?

Examples:

- frailty
- cognition
- caregiver support
- finances
- transport
- food access
- health literacy
- work
- culture
- goals

Repair Priorities

What outcome matters most now?

Examples:

- breathing safely
- avoiding hospitalization
- walking to bathroom
- preventing hypoglycemia
- protecting kidney function
- relieving pain
- staying at home
- reducing pill burden
- preserving dignity

This map makes complexity manageable.

7. The Main Types of Multimorbidity Interaction

Additive Burden

Several conditions create cumulative burden.

Example:

COPD, anemia, heart failure, and deconditioning all contribute to breathlessness.

No single diagnosis explains everything.

Treatment Conflict

Treatment for one disease worsens another.

Example:

NSAIDs relieve arthritis pain but worsen CKD, hypertension, heart failure, and GI bleeding risk.

Diagnostic Masking

One condition hides another.

Example:

A diabetic patient may have atypical symptoms of myocardial ischemia.

An older frail patient may have sepsis without fever.

A patient with dementia may not report pain clearly.

Shared Cause

Several conditions arise from common drivers.

Example:

Obesity, sleep apnea, hypertension, diabetes, fatty liver disease, and osteoarthritis may reinforce each other.

Cascade

One condition causes another.

Example:

Heart failure leads to diuretic use, dehydration, AKI, hyperkalemia, confusion, falls, and admission.

Fragmentation

Different specialists treat separate diseases without a shared whole-person plan.

Example:

One medicine improves one guideline target while worsening another symptom, and no one sees the full burden.

The clinician's task is to identify the interaction type.

8. Multimorbidity and Polypharmacy

Multimorbidity often leads to polypharmacy.

Polypharmacy is not automatically wrong.

Some patients need several medicines.

But polypharmacy becomes dangerous when:

- medicines are duplicated
- indications are unclear
- doses are no longer appropriate
- kidney or liver function changes
- side effects mimic disease
- patient cannot manage the regimen
- medicines conflict
- preventive medicines outweigh current goals
- no one knows which medicines matter most
- old medicines continue after circumstances change

Common medicine problems in multimorbidity include:

- dizziness
- falls
- confusion
- constipation
- AKI
- hyperkalemia
- hypoglycemia
- bleeding
- fatigue
- poor appetite
- sleep disruption
- sexual dysfunction
- low mood
- medication fear

In multimorbidity, every new symptom should prompt:

Could this be disease, medicine, or both?

9. Multimorbidity and Frailty

Frailty changes everything.

A robust patient with five conditions may tolerate treatment well.

A frail patient with the same five conditions may be destabilized by small changes.

Frailty increases risk of:

- falls
- delirium
- hypoglycemia
- drug toxicity
- AKI
- pressure injury
- immobility
- malnutrition
- caregiver strain
- hospitalization harm
- slow recovery
- loss of independence

In frailty, treatment priorities often shift toward:

- safety
- function

- comfort
- avoidance of hypoglycemia
- avoidance of falls
- medication simplification
- mobility preservation
- caregiver support
- realistic goals
- advance care planning

Frailty does not mean “do less care.”

It means do more careful care.

10. Multimorbidity and Diagnostic Reasoning

Multimorbidity can make diagnosis harder because symptoms overlap.

Breathlessness

May be due to:

- heart failure
- COPD
- pneumonia
- anemia
- PE
- obesity
- deconditioning
- anxiety
- metabolic acidosis

Often more than one is present.

Fatigue

May be due to:

- anemia
- CKD
- heart failure
- depression
- sleep apnea
- hypothyroidism
- medications
- chronic inflammation
- cancer
- poor nutrition
- frailty

Confusion

May be due to:

- delirium
- dementia
- infection
- hypoglycemia
- hypoxia
- medication toxicity
- hyponatremia
- stroke
- pain
- retention
- constipation

Dizziness

May be due to:

- orthostatic hypotension
- arrhythmia
- hypoglycemia
- anemia
- medication effect
- dehydration
- vestibular disease
- anxiety
- stroke in selected contexts

The clinician should not force one diagnosis too early.

Ask:

What combination of conditions best explains the current syndrome?

11. Multimorbidity and Prioritization

In multimorbidity, not everything can be addressed at once.

Prioritize in layers.

First: Immediate Danger

Examples:

- hypoxia
- shock
- severe glucose abnormality
- hyperkalemia
- sepsis

- ACS
- stroke
- bleeding
- delirium

Second: Active Capacity Failure

Examples:

- poor mobility
- worsening kidney function
- fluid overload
- uncontrolled pain
- recurrent falls
- poor intake
- unsafe cognition

Third: Treatment Harm

Examples:

- hypoglycemia from diabetes medicines
- AKI from NSAIDs
- dizziness from antihypertensives
- constipation from opioids
- delirium from sedatives
- bleeding from anticoagulants

Fourth: Patient Goals

Examples:

- remain at home
- walk independently
- reduce pain
- avoid hospitalization
- live long enough for an event
- reduce pill burden
- maintain work
- preserve dignity

Fifth: Long-Term Prevention

Examples:

- vascular risk reduction
- kidney protection
- fracture prevention
- vaccination according to local guidance
- lifestyle support

rehabilitation

screening where appropriate

Prioritization prevents care from becoming a checklist.

12. Multimorbidity and Goals of Care

Goals of care matter in all multimorbidity, not only at the end of life.

Ask:

What matters most to you right now?

What is the biggest burden of your health?

What are you most afraid of?

What would you most like to be able to do again?

Which treatments feel helpful?

Which treatments feel too burdensome?

What would make life better this month?

What do you understand about your illnesses?

Who helps you make decisions?

A patient may value:

pain relief over a perfect blood pressure

avoiding hypoglycemia over tight glucose control

walking safely over aggressive diuresis

fewer tablets over marginal preventive benefit

staying home over repeated hospitalization

clarity and dignity over invasive testing

The best plan is not the most disease-complete plan.

It is the most life-coherent plan.

13. Multimorbidity and Guidelines

Guidelines are useful.

They summarize evidence.

They prevent neglect of important treatments.

They support quality and safety.

But guidelines are usually organized by disease.

Patients are organized by life.

When applying guidelines in multimorbidity, ask:

Does this recommendation apply to this patient?

What benefit is expected?

Over what time horizon?

What harm is possible?

Does kidney or liver function change safety?

Does frailty change the balance?

Does the patient have capacity to follow the plan?

Does this conflict with another condition?

Does it match the patient's goals?

What should be prioritized now?

Guidelines inform judgment.

They do not replace judgment.

14. Multimorbidity and Time Horizon

Time horizon matters.

Some treatments help quickly.

Others help over years.

For example:

Immediate Benefit

glucose correction for hypoglycemia

bronchodilator for asthma/COPD exacerbation

antibiotics for severe bacterial infection

diuresis for pulmonary edema

pain relief enabling mobility

stopping a sedative causing delirium

Medium-Term Benefit

rehabilitation after illness

heart failure optimization

anemia treatment

wound care

depression treatment

diabetes regimen simplification

falls prevention

Long-Term Benefit

cardiovascular prevention

osteoporosis prevention

kidney protection

smoking cessation

weight management

vaccination according to local guidance

cancer screening where appropriate

In advanced illness or severe frailty, long-term preventive treatment may need review if burdens exceed likely benefit.

Time horizon helps prioritize.

15. Multimorbidity and Treatment Burden

Treatment burden is the work of being a patient.

It includes:

- taking medicines
- monitoring glucose or blood pressure
- attending appointments
- paying for care
- arranging transport
- changing diet
- exercising despite pain
- managing side effects
- coordinating specialists
- understanding instructions
- handling insurance or paperwork
- repeating blood tests
- living with uncertainty

Treatment burden can become overwhelming.

Ask:

- How many appointments do you have?
- How many medicines do you take?
- What is hardest to manage?
- What do you sometimes skip?
- Which treatment bothers you most?
- What does this cost you?
- Who helps?
- What would make the plan simpler?

A plan that overwhelms the patient may fail even if medically correct.

16. Multimorbidity and Social Coupling

Social conditions shape multimorbidity.

Examples:

Food Access

A diabetes plan fails if the patient cannot obtain regular meals.

Transport

A CKD follow-up plan fails if the patient cannot reach lab testing.

Money

A heart failure plan fails if medicines cannot be purchased.

Housing

A COPD plan fails if the patient lives with smoke, mold, or poor ventilation.

Work

A diuretic plan fails if bathroom access is impossible.

Caregiving

A dementia medicine plan fails if no one supervises dosing.

Health Literacy

A complex medication schedule fails if labels and changes are unclear.

Social coupling is not separate from medicine.

It determines whether care can happen.

17. The Multimorbidity Review

A multimorbidity review should be structured.

Step 1: Ask the Patient's Main Concern

Start with:

"Of all your health problems, what is bothering you most right now?"

This reveals the patient's priority.

Step 2: Identify Current Danger

Check for urgent symptoms, unstable signs, and high-risk medicines.

Step 3: Map Active Conditions

List conditions, but mark which are active, stable, uncertain, or historical.

Step 4: Map Capacity Failures

Ask which capacities are impaired:

- oxygenation
- circulation
- energy
- clearance
- defense
- repair
- regulation
- mobility
- cognition
- agency

Step 5: Review Medicines

For each medicine, ask:

What is it for?

Is it still needed?

Is it working?

Is it causing harm?

Is the dose safe?

Can the patient take it?

Does it match goals?

Step 6: Identify Conflicts

Ask:

Which treatments clash?

Which conditions worsen each other?

Which targets may be unsafe?

Which medicines should be simplified?

Step 7: Agree Priorities

Choose a manageable number of priorities.

Examples:

prevent hypoglycemia

relieve breathlessness

protect kidney function

reduce falls

control pain safely

improve sleep

simplify medicines

support caregiver

Step 8: Define Repair Trajectory

Ask:

What should improve?

How will we monitor?

When will we review?

What warning signs matter?

Who is responsible?

This turns complexity into a plan.

18. Multimorbidity and Communication

Patients with multimorbidity often feel fragmented.

They may hear:

“Your sugar is high.”

“Your kidney function is worse.”

“Your heart is weak.”

“Your blood pressure needs control.”

“Lose weight.”

“Exercise.”

“Avoid salt.”

“Avoid NSAIDs.”

“Take these tablets.”

“Come back for more tests.”

But they may not understand how it fits together.

Use integrated explanation.

Example:

“Your kidney function, heart failure, diabetes, and pain medicines are interacting. The diarrhea made you dehydrated. The dehydration stressed the kidneys. The NSAID pain tablets made the kidneys more vulnerable. The kidney stress raised potassium and made some medicines less safe. Our plan is to make potassium safe, restore fluid balance carefully because of your heart, stop the kidney-harming pain tablets, and create a safer pain plan.”

This explanation restores agency.

19. Multimorbidity and Documentation

Good documentation should show integration.

Weak note:

“Multiple comorbidities. Continue meds.”

Stronger note:

“Multimorbidity with diabetes, CKD, heart failure, osteoarthritis, and frailty. Current priority is AKI with hyperkalemia after diarrhea and NSAID use, complicated by chronic edema and pain. Plan: treat potassium according to local pathway, review kidney-sensitive medicines, assess volume carefully because heart failure present, avoid NSAIDs, create safer pain plan, monitor urine output, creatinine, potassium, oxygenation, and mobility. Discussed with daughter; follow-up labs required.”

This note makes the clinical logic visible.

20. Multimorbidity and Handover

A safe handover includes:

the main active problem

important chronic conditions

treatment conflicts

current capacity failures

high-risk medicines

what has improved

what remains unsafe

what to monitor

escalation triggers

patient goals or discharge barriers

Weak handover:

“Elderly patient with many problems, AKI improving.”

Stronger handover:

“Mrs. James has diabetes, CKD, heart failure, osteoarthritis, and frailty. She developed AKI and hyperkalemia after diarrhea while taking NSAIDs and diuretics. Potassium is now safer, but creatinine remains above baseline and she is still weak. Avoid NSAIDs, monitor urine output, potassium, creatinine, oxygenation because of heart failure, and mobility. Daughter worried about medication confusion at home.”

This handover protects continuity.

21. Multimorbidity and Discharge

Discharge in multimorbidity is high-risk.

Before discharge, ask:

What diagnosis or syndrome brought the patient in?

Which chronic conditions changed the risk?

What medicines were stopped, started, or changed?

What should be restarted later?

Are repeat labs needed?

Is renal function stable enough?

Is glucose safe with current intake?

Is blood pressure safe sitting and standing?

Is heart failure congestion controlled?

Is pain controlled without harmful medicines?

Can the patient walk and toilet?

Is cognition at baseline?

Can the patient manage medicines?

Does caregiver understand the plan?

Are warning signs explained?

Is follow-up arranged?

Are pending results assigned?

Discharge is where fragmented plans often fail.

Multimorbidity discharge must be simple, clear, and owned.

22. Worked Case 1: Diabetes, CKD, Heart Failure, and AKI

A 78-year-old woman with diabetes, CKD, heart failure, and osteoarthritis presents after diarrhea, poor intake, reduced urine output, dizziness, leg swelling, and rising creatinine. She has been taking NSAIDs for knee pain and continued her usual diuretic and blood pressure medicines.

Danger

AKI, hyperkalemia risk, dehydration, heart failure fluid balance, medication harm, falls.

Multimorbidity Pattern

Treatment conflict and cascade.

Pain led to NSAID use.
Diarrhea and poor intake reduced kidney perfusion.
NSAIDs increased kidney vulnerability.
Diuretics and blood pressure medicines complicated volume and perfusion.
Heart failure makes fluids risky.
CKD makes potassium and medicine clearance risky.

Capacity Failure

Clearance, potassium regulation, circulation-to-kidney balance, fluid balance, pain control, mobility safety.

Coupling Conditions

Diabetes, CKD, heart failure, osteoarthritis, NSAID access, poor sick-day understanding, frailty risk, home support.

Wise Perturbation

Treat potassium if dangerous according to local pathway. Stop kidney-harming medicines where appropriate. Assess volume carefully. Restore perfusion without worsening pulmonary edema. Create safer pain plan. Monitor renal function, urine output, potassium, oxygenation, edema, dizziness, and mobility.

Repair Trajectory

Potassium safe, urine output improves, creatinine stabilizes, dizziness resolves, breathlessness does not worsen, pain controlled without NSAID harm, medicine restart plan clear, follow-up labs arranged.

23. Worked Case 2: COPD, Heart Failure, and Anemia

A 72-year-old man has worsening breathlessness. He has COPD, heart failure, CKD, and chronic anemia. He reports wheeze, ankle swelling, fatigue, and reduced walking distance.

Danger

Hypoxia, pulmonary edema, severe anemia, arrhythmia, infection, PE depending on context.

Multimorbidity Pattern

Additive burden.

Breathlessness may come from airflow obstruction, fluid overload, anemia, kidney disease, deconditioning, or infection.

Capacity Failure

Oxygenation, ventilation, circulation, oxygen carrying capacity, energy, mobility.

Coupling Conditions

COPD, heart failure, CKD, anemia, inhaler technique, diuretic use, renal function, exercise tolerance, smoking history, medication adherence.

Wise Perturbation

Do not assume one cause. Assess oxygenation, chest findings, edema, ECG, hemoglobin, renal function, infection signs, inhaler use, and volume status. Treat the dominant unsafe capacity while avoiding harm to kidneys and circulation.

Repair Trajectory

Breathing improves, oxygenation safe, edema improves if overloaded, wheeze improves if bronchospasm, hemoglobin cause addressed, renal function stable, walking tolerance improves.

24. Worked Case 3: Diabetes, Dementia, and Hypoglycemia

An 84-year-old woman with diabetes, mild dementia, CKD, and frailty has recurrent morning confusion and falls. Her glucose is low during episodes. She often forgets meals but takes her tablets from a pillbox.

Danger

Recurrent hypoglycemia, falls, delirium, injury, medication harm.

Multimorbidity Pattern

Treatment target no longer fits cognition, intake, kidney function, or frailty.

Capacity Failure

Glucose regulation, cognition, mobility safety, agency, medicine safety.

Coupling Conditions

Dementia, CKD, frailty, irregular meals, diabetes medicines, caregiver availability, health literacy.

Wise Perturbation

Treat acute hypoglycemia. Review diabetes regimen and targets according to local guidance. Simplify medicines, align treatment with meals and kidney function, involve caregiver, and create a clear hypoglycemia plan.

Repair Trajectory

No recurrent lows, confusion improves, falls reduce, caregiver understands plan, glucose remains safe without excessive treatment burden.

25. Worked Case 4: Arthritis Pain and Kidney-Heart Risk

A 69-year-old man with osteoarthritis, hypertension, CKD, and heart failure takes over-the-counter NSAIDs daily because pain prevents walking. He now has worsening blood pressure, edema, and kidney function.

Danger

AKI, fluid overload, hypertension, heart failure worsening, pain-related immobility.

Multimorbidity Pattern

Treatment conflict.

NSAIDs relieve pain but worsen kidney, heart, and blood pressure capacity.

Capacity Failure

Pain control, mobility, kidney clearance, fluid balance, blood pressure regulation.

Coupling Conditions

Osteoarthritis, CKD, heart failure, hypertension, medication access, patient belief that OTC means safe, need for mobility.

Wise Perturbation

Explain NSAID risk clearly. Stop or avoid kidney/heart-harming pain strategy where appropriate. Create safer pain plan, assess mobility, consider physiotherapy, weight and joint support, topical/local options where appropriate, and monitor kidney function and fluid status.

Repair Trajectory

Pain controlled enough for movement, edema improves, blood pressure safer, kidney function stabilizes, patient understands which medicines to avoid.

26. Worked Case 5: Depression and Multimorbidity Burden

A 60-year-old woman with diabetes, hypertension, obesity, chronic pain, and CKD misses appointments and often stops medicines. She says she is exhausted and hopeless.

Danger

Depression, self-neglect, uncontrolled chronic disease, possible suicidal ideation, treatment burden.

Multimorbidity Pattern

Self-care exhaustion and agency failure.

Capacity Failure

Agency, mood, energy, pain control, chronic disease regulation, participation.

Coupling Conditions

Pain, obesity, financial stress, polypharmacy, appointment burden, depression, low motivation, possible poor support.

Wise Perturbation

Assess depression severity and safety. Validate burden. Simplify the plan. Prioritize one or two high-value changes. Address pain, sleep, and mood. Use team support where available. Agree realistic follow-up.

Repair Trajectory

Patient feels heard, safety assessed, medicine plan simplified, follow-up improves, mood support begins, glucose and blood pressure plan becomes feasible.

27. Worked Case 6: Advanced Multimorbidity

An 88-year-old man has advanced heart failure, CKD, dementia, recurrent falls, anemia, and repeated admissions. He now presents with breathlessness and poor intake. His daughter asks whether repeated hospital treatment is still helping.

Danger

Breathlessness, heart failure, renal vulnerability, frailty, caregiver distress, goals-of-care uncertainty.

Multimorbidity Pattern

Advanced multimorbidity with limited reserve and high treatment burden.

Capacity Failure

Circulation, oxygenation, clearance, cognition, mobility, nutrition, agency, caregiver-supported participation.

Coupling Conditions

Advanced disease, dementia, frailty, recurrent hospitalization, caregiver strain, unclear goals, medication burden.

Wise Perturbation

Treat distress and reversible danger where appropriate. Have an honest goals-of-care conversation. Clarify whether the priority is life prolongation, comfort, home time, hospitalization avoidance, or specific functional goals. Involve palliative care where appropriate.

Repair Trajectory

Breathlessness relieved, daughter supported, care plan aligned with goals, avoidable burdens reduced, medicines reviewed, future crisis plan documented.

28. Common Student Pitfalls

Pitfall 1: Treating Each Disease Separately

Separate disease plans can collide inside one patient.

Pitfall 2: Forgetting the Patient's Main Concern

The patient's priority may differ from the clinician's checklist.

Pitfall 3: Ignoring Treatment Burden

A plan can fail because it is too complex to live with.

Pitfall 4: Pursuing Perfect Numbers

Perfect glucose or blood pressure may be unsafe in frailty, CKD, falls risk, or poor intake.

Pitfall 5: Missing Medication Harm

Symptoms may be caused by treatment, not disease progression.

Pitfall 6: Not Reviewing Time Horizon

Long-term prevention may be less important than immediate safety, function, or comfort in advanced illness.

Pitfall 7: Discharging Without Simplifying

Hospital changes can create dangerous confusion at home.

Pitfall 8: Avoiding Goals-of-Care Conversations

Multimorbidity requires asking what the patient wants medicine to achieve.

29. Clinical Practice Box

When reviewing multimorbidity, complete this structure:

Patient's main concern:

Current danger:
Hypoxia, shock, glucose, potassium, sepsis, bleeding, delirium, falls, AKI, medication toxicity?

Active conditions:
Which diagnoses are active, stable, historical, uncertain, or interacting?

Capacity failures:
Oxygenation, circulation, energy, clearance, defense, repair, regulation, cognition, mobility, agency?

Treatment conflicts:
Which treatment helps one condition but harms another?

Medication risks:
Hypoglycemia, AKI, bleeding, falls, delirium, constipation, dizziness, fluid overload?

Coupling conditions:
Frailty, cognition, caregiver support, food, money, transport, work, home, culture, health literacy?

Patient goals:
What matters most now?

Priorities for today:
Choose a manageable number.

Wise perturbation:
What action best improves whole-person capacity?

Repair trajectory:
What should improve, who follows it, and when?

30. Mini-Case for Practice

A 77-year-old woman with diabetes, CKD, hypertension, heart failure, osteoarthritis, mild dementia, and depression presents after a fall. She has poor appetite, dizziness on standing, swollen ankles, knee pain, confusion, rising creatinine, and low glucose. Her daughter says she takes many tablets but is unsure which are current.

Apply the multimorbidity approach.

Danger

Hypoglycemia, fall injury, delirium, AKI, orthostatic hypotension, heart failure fluid balance, medication mismanagement.

Multimorbidity Pattern

Cascade plus treatment conflict plus agency failure.

Poor intake and diabetes medicines caused hypoglycemia.
Diuretics and antihypertensives may contribute to dizziness and AKI.
Heart failure complicates fluid decisions.
Arthritis pain may drive NSAID use or immobility.
Dementia and polypharmacy create medicine errors.
Depression reduces appetite, motivation, and agency.

Capacity Failure

Glucose regulation, cognition, mobility safety, kidney clearance, circulation on standing, fluid balance, pain control, agency.

Coupling Conditions

Diabetes, CKD, heart failure, hypertension, osteoarthritis, dementia, depression, poor intake, polypharmacy, daughter support, unclear medicines, frailty risk.

Wise Perturbation

Correct hypoglycemia. Assess injury, delirium causes, hydration, renal function, potassium, volume status, medicines, orthostatic blood pressure where safe, heart failure signs, pain, mood, and home support. Simplify medicines. Adjust diabetes and blood pressure plans to current intake, kidney function, and falls risk according to local guidance. Avoid kidney-harming pain strategies. Involve daughter, pharmacy, physiotherapy, and follow-up planning.

Repair Trajectory

Glucose remains safe, confusion clears, dizziness improves, creatinine stabilizes, edema does not worsen, pain controlled safely, walking safer, medication list clarified, daughter understands plan, follow-up labs arranged.

31. Student Takeaway

Multimorbidity becomes easier when the clinician asks:

What matters most to the patient?
What is dangerous today?
Which conditions are active and interacting?
Which capacities are failing?
Which treatments conflict?
Which medicines may now be harmful?
How do frailty, cognition, money, food, transport, work, and caregivers shape the plan?
What is the patient's time horizon and goal?
What is the simplest plan that protects the most life-capacity?
What repair trajectory will show that the whole person is improving?

Multimorbidity is not just many diseases.

It is many interacting vulnerabilities within one life.

The safe clinician does not treat the list. The safe clinician treats the living pattern, protects danger, reduces conflict, simplifies burden, honors goals, and guides the patient toward the best possible capacity, function, and dignity.

Chapter 51. Polypharmacy Made Easy

Polypharmacy means that a patient is taking many medicines.

Patients do not usually say:

“I have polypharmacy.”

They say:

“I take too many tablets.”
“I do not know what all these medicines are for.”
“One doctor started this and another doctor added that.”
“I feel dizzy.”
“I keep falling.”
“I am sleepy all the time.”
“My stomach is upset.”
“My kidneys are worse.”
“My sugar keeps dropping.”
“I am afraid to stop anything.”

Polypharmacy is one of the most common and most important problems in Internal Medicine.

Medicines can save life, relieve symptoms, prevent stroke, protect kidneys, control infection, reduce inflammation, and restore function.

But medicines can also cause harm.

They can cause dizziness, falls, confusion, bleeding, kidney injury, constipation, low glucose, high potassium, drowsiness, low blood pressure, poor appetite, sexual dysfunction, electrolyte disturbance, and hospital admission.

The clinical task is not simply to count tablets.

The deeper task is to ask:

Is each medicine still helping this patient more than it is harming them?

Polypharmacy becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Polypharmacy?

Polypharmacy usually means the use of multiple medicines.

But clinically, the problem is not only the number.

A patient may take many medicines appropriately and safely.

Another patient may take only three medicines, but one is dangerous in their current situation.

The key issue is medicine fit.

Ask:

- Is the medicine needed?
- Is it still indicated?
- Is it effective?
- Is it safe now?
- Is the dose appropriate?

Is it duplicated?

Is it interacting?

Is it causing symptoms?

Can the patient take it correctly?

Does it fit the patient's goals?

Does the benefit still outweigh the burden?

Polypharmacy is not automatically bad.

Unreviewed, unsafe, unnecessary, confusing, or burdensome polypharmacy is the problem.

2. Polypharmacy Is a Capacity Problem

Medicines affect capacities.

They may support capacity or impair capacity.

For example:

Medicines Supporting Capacity

diuretics may relieve congestion and improve oxygenation

insulin may correct dangerous hyperglycemia

antibiotics may support defense against bacterial infection

anticoagulants may prevent stroke or treat clot

bronchodilators may improve ventilation

analgesia may allow sleep and mobility

antihypertensives may reduce vascular injury

thyroid replacement may restore energy regulation

antidepressants may improve mood and agency

Medicines Impairing Capacity

sedatives may impair cognition, breathing, and mobility

NSAIDs may impair kidney clearance, blood pressure, heart failure, and bleeding safety

diabetes medicines may cause hypoglycemia

anticoagulants may cause bleeding

diuretics may cause dehydration, AKI, and falls

antihypertensives may cause orthostatic hypotension

opioids may cause constipation, drowsiness, falls, and respiratory depression

anticholinergics may cause confusion, urinary retention, constipation, and dry mouth

steroids may worsen glucose, infection risk, sleep, bones, muscles, and mood

The question is:

What capacity is this medicine supporting, and what capacity might it be harming?

3. The First Question: Is There Medicine Danger Now?

Medication harm can be immediately dangerous.

Urgent assessment is needed when there is:

- severe hypoglycemia
- severe hyperkalemia
- bleeding
- black stools or vomiting blood
- suspected overdose
- severe sedation
- respiratory depression
- delirium
- recurrent falls
- syncope
- severe hypotension
- bradycardia
- dangerous arrhythmia
- acute kidney injury
- severe allergic reaction
- anaphylaxis
- severe rash or mucosal involvement
- severe liver injury
- serotonin toxicity concern
- neuroleptic malignant syndrome concern
- adrenal crisis after steroid withdrawal
- opioid toxicity
- anticoagulant-related bleeding
- medication error involving high-risk drugs

The danger-first question is:

Could a medicine be causing or worsening the patient's current danger?

4. Immediate Red Flags of Medication Harm

Red flags include:

- new confusion after a medication change
- fall after starting sedative, antihypertensive, diuretic, or opioid
- low glucose in a patient on diabetes medicines
- high potassium in a patient on kidney-affecting medicines
- AKI after NSAID use, dehydration, ACE inhibitor, ARB, diuretic, or contrast exposure
- bleeding in a patient on anticoagulants or antiplatelets
- drowsiness in a patient on opioids, sedatives, or kidney-cleared medicines

- bradycardia in a patient on rate-limiting medicines
- dizziness on standing after blood pressure treatment
- constipation or urinary retention after opioids or anticholinergics
- severe rash after a new medicine
- swelling of lips, tongue, or airway after medicine exposure
- sudden weakness or collapse after treatment change
- severe diarrhea after antibiotics
- steroid withdrawal symptoms after abrupt stopping
- worsening heart failure after NSAIDs or some other medicines
- worsening cognition after polypharmacy escalation

Whenever a symptom begins after a medication change, the medicine must be considered as a possible cause.

5. Polypharmacy Is Not Only Prescriptions

A medication review must include:

- prescription medicines
- over-the-counter medicines
- herbal products
- supplements
- vitamins
- traditional remedies
- borrowed medicines
- old medicines still kept at home
- medicines prescribed by another doctor
- hospital discharge medicines
- eye drops
- inhalers
- creams and patches
- injections
- insulin
- anticoagulants
- pain medicines
- sleep medicines
- laxatives
- alcohol and recreational substances where relevant

Many patients do not think of over-the-counter medicines as “real medicines.”

But they can cause real harm.

NSAIDs, cold medicines, sedating antihistamines, supplements, and herbal products may interact with prescribed treatment.

Always ask specifically.

6. The Medicine History Made Easy

A good medicine history asks:

- What medicines are you taking?
- What are they for?
- How do you take them?
- What do you actually take on a usual day?
- Which medicines do you skip?
- Which medicines do you take only when needed?
- Did anything change recently?
- Did you start anything new?
- Did you stop anything?
- Did the dose change?
- Do you take pain tablets?
- Do you take sleeping tablets?
- Do you take herbal or traditional medicines?
- Do you take vitamins or supplements?
- Do you use inhalers?
- Do you use insulin?
- Do you use eye drops?
- Do you buy anything from the pharmacy without prescription?
- Do you have old medicines at home?
- Can you afford your medicines?
- Do you have side effects?
- Do you know which medicines are most important?

The most important word is **actually**.

The prescribed list and the actual list are often different.

7. Medication Reconciliation

Medication reconciliation means comparing all medicine sources and creating one accurate list.

Sources may include:

- patient report
- medicine bottles
- pill packs

- pharmacy records
- clinic notes
- hospital discharge summary
- family or caregiver report
- previous prescriptions
- specialist letters
- nursing home records

Medication reconciliation asks:

- What was the patient taking before admission?
- What was stopped?
- What was started?
- What was changed?
- What should continue?
- What should restart later?
- What should never restart?
- What is duplicated?
- What is unclear?
- Who will explain the final list?

Medication reconciliation is not clerical.

It is clinical safety work.

8. High-Risk Medicine Groups

Some medicines require special caution because harm can be serious.

Anticoagulants

Risks:

- bleeding
- anemia
- intracranial bleeding after falls
- drug interactions
- renal dosing issues

Watch for:

- black stools
- vomiting blood
- bruising
- hematuria
- falls
- low hemoglobin

- kidney function changes

Antiplatelets

Risks:

- bleeding
- bruising
- gastrointestinal harm in some patients
- interaction with other bleeding-risk medicines

Diabetes Medicines

Risks:

- hypoglycemia
- dehydration in selected medicines
- mismatch with meals
- renal function concerns

Watch for:

- sweating
- tremor
- confusion
- falls
- poor intake
- CKD
- illness

Diuretics

Risks:

- dehydration
- AKI
- low sodium
- low potassium
- dizziness
- falls
- gout flares in some patients

ACE Inhibitors and ARBs

Risks:

- hyperkalemia
- kidney function changes during acute illness
- low blood pressure in vulnerable patients

Benefits may be important, but safety changes during acute illness.

NSAIDs

Risks:

- AKI
- worsening hypertension
- worsening heart failure
- gastrointestinal bleeding
- fluid retention
- interaction with anticoagulants and antiplatelets

Opioids

Risks:

- constipation
- drowsiness
- falls
- respiratory depression
- nausea
- dependence
- delirium

Sedatives and Hypnotics

Risks:

- falls
- delirium
- drowsiness
- impaired driving
- respiratory depression
- dependence
- memory problems

Anticholinergic Medicines

Risks:

- confusion
- constipation
- urinary retention
- dry mouth
- blurred vision
- falls
- worsening cognition

Steroids

Risks:

- hyperglycemia
- infection risk
- muscle weakness

- osteoporosis
- mood change
- insomnia
- weight gain
- skin thinning
- adrenal suppression

High-risk medicines are not forbidden.

They require purpose, monitoring, and review.

9. The Prescribing Cascade

A prescribing cascade occurs when a medicine causes a symptom, and another medicine is added to treat that symptom instead of recognizing the original cause.

Examples:

- a blood pressure medicine causes ankle swelling, then a diuretic is added
- a sedative causes falls, then pain medicines are added after injury
- an anticholinergic causes constipation, then laxatives are added
- an opioid causes constipation, then multiple bowel medicines are added without reviewing opioid need
- a diabetes medicine causes hypoglycemia, then investigations are ordered for confusion without reviewing the medicine
- NSAIDs worsen blood pressure, then more antihypertensives are added
- steroids worsen glucose, then diabetes medicines are intensified without reviewing steroid plan
- diuretics cause gout, then long-term pain medicines are added

The key question is:

Is this new symptom actually a side effect?

Before adding a medicine, consider whether stopping or adjusting another medicine would be wiser.

10. Medicines and Kidney Function

Kidney function changes medicine safety.

AKI and CKD can cause medicines to accumulate or become harmful.

In kidney vulnerability, review:

- diabetes medicines
- anticoagulants
- antibiotics
- opioids
- sedatives
- NSAIDs
- ACE inhibitors
- ARBs

- diuretics
- potassium supplements
- digoxin where used
- contrast exposure
- herbal remedies

Ask:

- Is the dose appropriate for kidney function?
- Is the medicine still safe during acute illness?
- Is potassium affected?
- Is fluid balance affected?
- Is hypoglycemia risk increased?
- Is sedation risk increased?
- Is bleeding risk increased?
- Is follow-up blood testing arranged?

Kidney function is a medication safety vital sign.

11. Medicines and Liver Function

The liver transforms many medicines.

Liver disease can increase risk of:

- sedation
- bleeding
- hypoglycemia
- drug accumulation
- worsening encephalopathy
- fluid retention
- kidney injury
- poor metabolism of toxins

In liver disease, review:

- sedatives
- opioids
- anticoagulants
- NSAIDs
- acetaminophen/paracetamol exposure
- antibiotics
- antiepileptics
- herbal products
- alcohol

- diuretics
- medicines affecting mental state

Ask:

- Is there cirrhosis?
- Is synthetic function impaired?
- Is INR elevated?
- Is albumin low?
- Is ascites present?
- Is encephalopathy present?
- Is renal function also impaired?
- Is bleeding risk increased?
- Is the medicine necessary?

Liver disease makes medication review essential.

12. Medicines and Frailty

Frailty changes medication tolerance.

A standard medicine may cause major harm.

Frailty increases risk of:

- falls
- delirium
- orthostatic hypotension
- hypoglycemia
- kidney injury
- constipation
- urinary retention
- sedation
- poor appetite
- weight loss
- functional decline

In frailty, ask:

- Does this medicine improve current function or comfort?
- Is this medicine for long-term prevention beyond the patient's likely time horizon?
- Is the dose too high for body size and reserve?
- Is the regimen too complex?
- Is the medicine causing dizziness, confusion, or falls?
- Can the patient manage it?
- Does it match goals of care?

Frailty does not mean stopping everything.

It means every medicine must justify itself.

13. Medicines and Cognition

Medicines commonly affect cognition.

They may cause or worsen:

- delirium
- drowsiness
- memory problems
- attention problems
- hallucinations
- agitation
- falls
- poor adherence

Common contributors include:

- sedatives
- opioids
- anticholinergics
- some antihistamines
- some bladder medicines
- some anti-nausea medicines
- some antidepressants
- steroids
- polypharmacy interactions
- medicine accumulation in AKI or liver disease

In new confusion, always ask:

What medicines could be clouding the brain?

Do not diagnose dementia progression without reviewing medicines and delirium triggers.

14. Medicines and Falls

Falls are often medication-related.

Common medicine contributors include:

- sedatives
- sleeping tablets
- opioids
- antihypertensives
- diuretics

- rate-limiting heart medicines
- anticholinergics
- antipsychotics
- antidepressants in some contexts
- diabetes medicines causing hypoglycemia
- alcohol
- polypharmacy burden

A fall should trigger a medicine review.

Ask:

- Did the fall happen after a new medicine?
- Was the patient dizzy?
- Was there hypoglycemia?
- Was there low blood pressure on standing?
- Was the patient sedated?
- Was there nocturia from diuretics?
- Was there urgency to reach the bathroom?
- Was pain medicine causing unsteadiness?
- Was vision blurred?

Falls are often the body's protest against an unsafe regimen.

15. Medicines and Symptoms

Many symptoms can be medication-related.

Dizziness

Possible medicine causes:

- antihypertensives
- diuretics
- sedatives
- opioids
- rate-limiting drugs
- hypoglycemia from diabetes medicines

Fatigue

Possible medicine causes:

- beta blockers
- sedatives
- opioids
- antihistamines
- some antidepressants
- polypharmacy burden

- overtreatment of blood pressure or glucose

Constipation

Possible medicine causes:

- opioids
- anticholinergics
- iron
- calcium supplements
- some anti-nausea medicines

Nausea

Possible medicine causes:

- antibiotics
- opioids
- metformin in some patients
- iron
- digoxin where used
- many others

Confusion

Possible medicine causes:

- sedatives
- opioids
- anticholinergics
- steroids
- drug accumulation
- hypoglycemia
- electrolyte disturbance from medicines

Bleeding

Possible medicine causes:

- anticoagulants
- antiplatelets
- NSAIDs
- steroids with other bleeding risks
- herbal interactions in some contexts

A symptom is not fully assessed until medicines are reviewed.

16. Medicines and Goals of Care

The value of a medicine depends partly on the patient's goals.

For a robust patient with long life expectancy, long-term prevention may be very important.

For a frail patient with advanced illness, immediate comfort, function, and safety may matter more.

Ask:

- What is this medicine trying to achieve?
- Is the benefit symptom relief, disease control, prevention, or life prolongation?
- How soon is benefit expected?
- What is the burden now?
- What is the harm now?
- Does the medicine support the patient's goals?
- Would stopping it improve comfort, safety, or function?
- Would stopping it cause withdrawal, rebound, or deterioration?

Goals of care guide medication priorities.

17. Deprescribing Made Easy

Deprescribing means planned, supervised reduction or stopping of medicines when harms or burdens outweigh benefits.

Deprescribing is not abandonment.

It is active care.

A medicine may be deprescribed because:

- it is no longer indicated
- it is duplicated
- it is causing harm
- the dose is too high
- the patient's kidney or liver function changed
- goals of care changed
- benefit is unlikely within the patient's time horizon
- it worsens falls, cognition, or appetite
- the patient cannot manage the regimen
- safer alternatives exist
- the original problem resolved

Deprescribing asks:

What can we safely stop so the patient can function better?

18. Deprescribing Requires a Plan

Do not stop medicines randomly.

For each medicine, ask:

- Can it be stopped abruptly?
- Does it need tapering?
- Could stopping cause withdrawal?

- Could stopping cause rebound symptoms?
- What should be monitored?
- Who will follow up?
- What should the patient watch for?
- What will we do if symptoms return?
- Is the patient comfortable with the plan?
- Is the caregiver informed?

Examples where tapering or caution may be needed include:

- steroids
- benzodiazepines
- some antidepressants
- beta blockers in selected contexts
- opioids
- some anti-seizure medicines
- proton pump inhibitors in selected patients with rebound symptoms
- medicines used for serious disease control

Deprescribing is safest when it is deliberate and documented.

19. The Medication Review Framework

A practical medication review can use seven questions.

1. What Is It For?

Every medicine should have a clear indication.

If no one knows why it is being taken, review it.

2. Is It Still Needed?

The original reason may have resolved.

3. Is It Helping?

Is there symptom benefit, lab benefit, prevention benefit, or disease-control benefit?

4. Is It Harming?

Look for dizziness, falls, confusion, bleeding, AKI, constipation, sedation, hypoglycemia, edema, cough, rash, and patient burden.

5. Is It Safe in This Patient Now?

Consider:

- kidney function
- liver function
- age
- frailty
- pregnancy context where relevant

- interactions
- allergies
- cognition
- goals
- acute illness

6. Can the Patient Take It Correctly?

Consider:

- cost
- schedule
- label reading
- swallowing
- inhaler technique
- injections
- memory
- caregiver support
- cultural beliefs
- side effects

7. What Is the Exit Plan?

Every medicine should have review, monitoring, or stopping criteria.

20. Medicine Prioritization

When there are many medicines, prioritize.

Highest Priority

Medicines that prevent immediate serious harm or treat active disease.

Examples:

- insulin needed to prevent DKA in type 1 diabetes
- anticoagulation for acute clot when indicated
- antibiotics for serious bacterial infection
- bronchodilators for severe airway disease
- heart failure medicines relieving congestion
- anti-seizure medicines where needed
- steroid replacement where adrenal insufficiency exists

Medium Priority

Medicines that improve current symptoms or prevent near-term deterioration.

Examples:

- pain medicines that enable mobility
- diuretics for fluid control

inhalers preventing exacerbations

medicines controlling severe blood pressure with symptoms or organ risk

depression treatment improving function

Lower Priority for Review

Medicines mainly for long-term prevention when burden is high, goals have changed, or time horizon is limited.

These should not be stopped automatically.

They should be reviewed thoughtfully.

Prioritization protects what matters most.

21. Polypharmacy and Discharge

Hospital discharge is a high-risk medication moment.

Problems include:

new medicines added

old medicines accidentally continued

important medicines accidentally stopped

doses changed without explanation

duplicate prescriptions

unclear restart plan

patient using old tablets at home

pharmacy supply gaps

follow-up labs not arranged

caregiver not informed

high-risk medicines not explained

Before discharge, ask:

Is the medication list reconciled?

What was stopped?

What was started?

What dose changed?

What should restart later?

What should not be restarted?

Are high-risk medicines explained?

Are blood tests needed?

Can the patient obtain medicines?

Can the patient take them correctly?

Are old medicines removed or clearly separated?

Does the caregiver understand?

Was teach-back used?

Discharge medication confusion can undo the entire admission.

22. Polypharmacy and Communication

Patients need simple explanations.

Instead of saying:

“We are optimizing your pharmacotherapy.”

Say:

“Some of your medicines are helping, but some may now be unsafe because your kidneys were stressed and you were not eating well. We are keeping the medicines that protect you now, stopping the ones that may harm your kidneys or cause falls, and arranging blood tests before deciding what to restart.”

Good medication communication includes:

- medicine name
- purpose
- dose timing
- what changed
- why it changed
- side effects to watch for
- what to do if ill
- follow-up plan
- who to call

The patient should leave knowing what to take and why.

23. Polypharmacy and Teach-Back

Teach-back is essential.

Ask:

“Just so I know I explained it clearly, can you show me how you will take these medicines tomorrow?”

Or:

“Can you tell me which medicines we stopped because of your kidneys?”

Or:

“What will you do if you are vomiting and cannot eat?”

Teach-back reveals confusion before harm occurs.

It is not a test of the patient.

It is a test of the explanation.

24. Wise Perturbation in Polypharmacy

The wise intervention may be:

- start a necessary medicine
- stop a harmful medicine

- reduce a dose
- simplify timing
- switch to safer option
- treat side effect by removing the cause
- monitor labs
- arrange pharmacy review
- educate patient and caregiver
- create sick-day plan
- improve adherence support
- align medicines with goals
- deprescribe gradually
- avoid adding medicine when non-drug intervention is better

The wise question is:

What medication change will improve whole-person capacity with the least harm and burden?

25. Repair Trajectory After Medication Review

Repair after medication review may include:

- fewer falls
- less dizziness
- clearer thinking
- safer glucose
- stable kidney function
- safer potassium
- reduced bleeding risk
- improved appetite
- less constipation
- better sleep
- less daytime drowsiness
- better pain control
- improved mobility
- better adherence
- reduced pill burden
- improved confidence
- caregiver understands plan
- fewer admissions

Repair is not simply fewer tablets.

Repair means a safer, clearer, more effective treatment plan.

26. Monitoring After Medication Changes

Monitoring depends on the medicine.

Examples:

After Diuretic Change

Monitor:

- breathlessness
- edema
- weight where useful
- blood pressure
- dizziness
- kidney function
- electrolytes
- urine output

After Diabetes Medicine Change

Monitor:

- glucose pattern
- hypoglycemia
- meals
- kidney function
- symptoms
- caregiver concerns

After Anticoagulant Change

Monitor:

- bleeding
- bruising
- hemoglobin if indicated
- kidney function
- adherence
- interactions

After Sedative Reduction

Monitor:

- sleep
- anxiety
- withdrawal symptoms
- falls
- cognition
- daytime function

After Pain Medicine Change

Monitor:

- pain
- walking
- sleep
- constipation
- drowsiness
- kidney function where relevant
- mood

Medication change without monitoring is incomplete care.

27. Worked Case 1: AKI and NSAID Use

A 74-year-old man with CKD, hypertension, heart failure, and knee osteoarthritis presents with AKI, high potassium, edema, and breathlessness. He has been taking over-the-counter NSAIDs daily for knee pain.

Medication Problem

NSAID-related kidney, heart failure, blood pressure, and potassium harm in a high-risk patient.

Capacity Failure

Clearance, potassium regulation, fluid balance, oxygenation, pain control, mobility.

Coupling Conditions

CKD, heart failure, hypertension, osteoarthritis, pain, OTC access, belief that non-prescription means safe.

Wise Perturbation

Stop NSAID where appropriate. Treat potassium if dangerous according to local pathway. Assess volume status and heart failure. Create safer pain and mobility plan. Explain why NSAIDs are risky for this patient. Arrange renal and potassium follow-up.

Repair Trajectory

Potassium becomes safe, kidney function stabilizes, breathlessness improves, pain managed safely, patient avoids NSAID re-exposure.

28. Worked Case 2: Falls and Sedatives

An 82-year-old woman has three falls in one month. She takes a sleeping tablet, an opioid for back pain, two blood pressure medicines, and a bladder anticholinergic. She feels drowsy in the morning and constipated.

Medication Problem

Sedation, orthostatic risk, anticholinergic burden, opioid constipation, falls.

Capacity Failure

Mobility safety, cognition, bowel clearance, blood pressure regulation, pain control, sleep.

Coupling Conditions

Frailty, chronic pain, insomnia, polypharmacy, fear of stopping medicines, home fall risk.

Wise Perturbation

Assess injuries, orthostatic symptoms, cognition, pain source, sleep pattern, bowel function, and medicine timing. Gradually deprescribe or reduce high-risk medicines where appropriate and safe. Create non-sedating sleep and pain strategies. Address constipation and falls prevention.

Repair Trajectory

Morning drowsiness improves, falls reduce, constipation improves, pain remains controlled, sleep plan safer, mobility confidence improves.

29. Worked Case 3: Hypoglycemia and CKD

A 79-year-old woman with type 2 diabetes and CKD has recurrent early morning confusion. Her glucose is low during episodes. She recently lost weight and eats less.

Medication Problem

Diabetes treatment now too strong for intake, weight, kidney function, and frailty risk.

Capacity Failure

Glucose regulation, brain energy, cognition, mobility safety, medicine safety.

Coupling Conditions

CKD, poor intake, weight loss, possible frailty, diabetes medicines, living situation.

Wise Perturbation

Treat acute hypoglycemia. Review diabetes regimen and targets according to local guidance. Simplify and reduce hypoglycemia risk. Involve caregiver if needed. Provide clear hypoglycemia plan.

Repair Trajectory

No recurrent lows, mental state stable, falls avoided, glucose plan fits intake, follow-up arranged.

30. Worked Case 4: Anticoagulant and Bleeding

A 76-year-old man taking an anticoagulant for atrial fibrillation presents with black stools, dizziness, and anemia. He also takes NSAIDs for arthritis.

Medication Problem

Bleeding risk from anticoagulation plus NSAID exposure and possible GI source.

Capacity Failure

Oxygen carrying capacity, circulation, clotting balance, pain control, medicine safety.

Coupling Conditions

Atrial fibrillation, arthritis pain, NSAID use, age, kidney function, stroke risk, bleeding risk.

Wise Perturbation

Assess hemodynamic stability, hemoglobin, renal function, anticoagulant use, NSAID exposure, and GI bleeding pathway according to local guidance. Stop NSAID. Balance bleeding and stroke risk with senior input where needed. Create safer pain plan.

Repair Trajectory

Bleeding controlled, hemoglobin stabilizes, anticoagulation plan clarified, NSAID avoided, pain managed safely.

31. Worked Case 5: Steroid Burden

A 68-year-old woman on long-term steroids for inflammatory disease has diabetes, weight gain, insomnia, muscle weakness, recurrent infections, and osteoporosis risk.

Medication Problem

Steroid benefit may be accompanied by multisystem harm.

Capacity Failure

Defense, glucose regulation, muscle strength, sleep, bone integrity, repair.

Coupling Conditions

Inflammatory disease activity, diabetes, infection history, frailty risk, bone health, need for tapering or steroid-sparing strategy.

Wise Perturbation

Assess whether steroid dose is still needed, disease activity, infection risk, glucose, bone health, muscle weakness, and adrenal suppression risk. Consider specialist review and safe tapering or steroid-sparing plan where appropriate.

Repair Trajectory

Inflammation controlled with less steroid burden where possible, glucose safer, sleep improves, strength improves, infection risk reduced, bone protection addressed.

32. Worked Case 6: Medication Confusion After Discharge

An 80-year-old woman returns one week after discharge with dizziness and low blood pressure. She has been taking both her old and new blood pressure tablets because the discharge changes were unclear.

Medication Problem

Medication reconciliation and communication failure.

Capacity Failure

Blood pressure regulation, brain perfusion, mobility safety, agency.

Coupling Conditions

Cognitive vulnerability, poor vision, old medicines at home, unclear discharge summary, no caregiver teaching.

Wise Perturbation

Reconcile all medicines using bottles and records. Stop duplicates. Create a clear current list. Use large print and teach-back. Involve caregiver and pharmacy. Arrange follow-up blood pressure and renal function checks.

Repair Trajectory

Dizziness resolves, blood pressure safe, duplicate medicines removed, patient and caregiver understand plan, readmission avoided.

33. Common Student Pitfalls

Pitfall 1: Counting Medicines Instead of Reviewing Fit

The number matters less than indication, benefit, harm, feasibility, and goals.

Pitfall 2: Adding Medicines for Side Effects

Always consider a prescribing cascade.

Pitfall 3: Forgetting Over-the-Counter Medicines

NSAIDs, sleep aids, cold medicines, supplements, and herbal products can be harmful.

Pitfall 4: Not Checking Kidney Function

Kidney function changes medication safety quickly.

Pitfall 5: Not Asking What the Patient Actually Takes

The prescribed list may be wrong.

Pitfall 6: Stopping Medicines Abruptly Without a Plan

Some medicines require tapering or careful monitoring.

Pitfall 7: Ignoring Patient Capacity

A regimen the patient cannot understand, afford, or remember is unsafe.

Pitfall 8: Failing to Explain Discharge Changes

Unclear medication changes are a common source of harm.

34. Clinical Practice Box

When assessing polypharmacy, complete this structure:

Current medication list:
Include prescriptions, OTC medicines, herbal products, supplements, inhalers, drops, injections, and old medicines.

What does the patient actually take?

Current danger:
Hypoglycemia, bleeding, AKI, hyperkalemia, delirium, falls, sedation, hypotension, allergy, overdose?

High-risk medicines:
Anticoagulants, diabetes medicines, diuretics, NSAIDs, opioids, sedatives, anticholinergics, steroids, rate-limiting drugs?

For each medicine:
What is it for? Is it needed? Is it helping? Is it harming? Is it safe now? Can the patient take it?

Kidney and liver fit:

Frailty and cognition fit:

Treatment conflicts or prescribing cascades:

Deprescribing opportunities:

Monitoring needed:
Labs, symptoms, blood pressure, glucose, bleeding, cognition, falls, renal function?

Patient/caregiver understanding:
Use teach-back.

Repair trajectory:
What should improve after medication review?

35. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, hypertension, heart failure, osteoarthritis, insomnia, and mild cognitive impairment presents with dizziness, two falls, constipation, confusion, leg swelling, and rising creatinine. She takes ten prescribed medicines, a sleeping tablet, over-the-counter NSAIDs, and a herbal supplement. Her daughter says she sometimes mixes old and new tablets.

Apply the polypharmacy approach.

Medicine Dangers

Falls, delirium, AKI, fluid overload, constipation, hypoglycemia risk, medication duplication, NSAID harm, sedative harm.

Capacity Failure

Clearance, cognition, mobility safety, fluid balance, bowel clearance, blood pressure regulation, pain control, agency.

Coupling Conditions

CKD, heart failure, diabetes, cognitive impairment, osteoarthritis pain, insomnia, old medicines at home, caregiver concern, polypharmacy burden.

Wise Perturbation

Perform full medication reconciliation using bottles, pharmacy records, and daughter's report. Check glucose, renal function, potassium, blood pressure including standing where safe, fluid status, bowel status, and cognition. Stop or avoid kidney-harming NSAIDs where appropriate. Review sedative and anticholinergic burden. Simplify regimen. Create safer pain and sleep plans. Provide large-print medication list and teach-back with daughter. Arrange follow-up labs.

Repair Trajectory

Dizziness improves, falls stop, confusion clears, constipation improves, creatinine and potassium stabilize, edema improves or is managed, pain controlled safely, sleep plan safer, patient and daughter understand current medicines.

36. Student Takeaway

Polypharmacy becomes easier when the clinician asks:

What is the patient actually taking?
What is each medicine for?
Is each medicine still needed?
Is it helping?
Is it harming?
Is it safe with current kidney, liver, frailty, cognition, and goals?
Could a symptom be a side effect?
Is there a prescribing cascade?
Can the patient afford, understand, remember, and take the regimen?
What can be simplified, stopped, reduced, or monitored?
What repair trajectory should follow?

Polypharmacy is not simply too many medicines.

It is the risk that treatment becomes disconnected from the living person.

The safe clinician respects medicines as powerful perturbations, keeps what truly helps, removes what harms, simplifies what overwhelms, explains what changes, and follows the patient toward safer capacity, clearer agency, and better life.

Chapter 52. Frailty Made Easy

Frailty is a state of reduced reserve.

It means the person has less ability to withstand illness, injury, stress, medication changes, hospitalization, surgery, dehydration, infection, poor sleep, or emotional shock.

Patients do not usually say:

“I am frail.”

They say:

“I do not bounce back anymore.”
“A small illness knocks me down.”
“I feel weak.”
“I am walking slower.”
“I have lost weight.”
“I am afraid of falling.”
“I cannot do what I used to do.”
“I am tired all the time.”
“I need help now.”
“I was fine before the hospital, but I never recovered.”

Frailty is central to Internal Medicine because it changes everything.

It changes how disease presents.
It changes how dangerous illness becomes.
It changes how medicines behave.
It changes how quickly function is lost.
It changes discharge planning.
It changes goals of care.
It changes what “recovery” means.

The first task is not to label the patient as old.

Age is not the same as frailty.

The deeper question is:

How much reserve does this person have, and what will happen if stress exceeds that reserve?

Frailty becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Frailty?

Frailty is reduced physiological reserve across multiple systems.

These systems may include:

- muscle
- brain
- immune system
- heart
- lungs
- kidneys

- nutrition
- hormones
- balance
- bone
- sleep
- mood
- cognition
- social support

A robust person may lose reserve in one system but compensate with others.

A frail person has fewer backups.

A mild infection may cause delirium.
A missed meal may cause hypoglycemia.
A small fluid loss may cause AKI.
A sedative may cause a fall.
A short hospital stay may cause major weakness.
A change in routine may cause confusion.
A new medicine may cause collapse.

Frailty is not one disease.

It is a whole-person vulnerability state.

2. Frailty Is Not the Same as Age

Some older adults are robust, active, independent, and resilient.

Some younger adults may be frail because of chronic illness, disability, malnutrition, advanced organ disease, cancer, severe inflammatory disease, neurological disease, or social deprivation.

Age increases the risk of frailty, but age does not define frailty.

The clinician should not assume:

“Old means frail.”

The clinician should ask:

- How does the person function?
- How fast do they walk?
- Have they lost weight?
- Are they exhausted?
- Are they weak?
- Have they fallen?
- Can they recover after illness?
- Are they cognitively safe?
- Are they socially supported?
- What was their baseline?

Frailty is measured by reserve and function, not by birthday alone.

3. Frailty Is a Capacity Problem

Frailty affects many capacities at once.

Energy Capacity

The person has less fuel reserve, muscle reserve, and recovery reserve.

Mobility Capacity

Walking slows, balance worsens, falls increase, and strength declines.

Cognitive Capacity

The brain becomes more vulnerable to delirium, medication effects, infection, sleep disruption, and metabolic stress.

Defense Capacity

Infection may present subtly, and recovery may be slower.

Repair Capacity

Wounds, muscles, and function repair more slowly.

Regulation Capacity

Glucose, blood pressure, temperature, sodium, hydration, and medicines become less stable.

Agency Capacity

The person may struggle to manage medicines, appointments, food, transport, and decision-making.

Frailty is best understood as a multisystem reserve failure.

4. The First Question: Is Frailty Creating Immediate Danger?

Frailty becomes dangerous when reduced reserve makes the current situation unsafe.

Urgent assessment is needed when there is:

- delirium
- fall with injury or inability to rise
- inability to walk
- inability to eat or drink
- dehydration
- reduced urine output
- infection with weakness or confusion
- hypoglycemia
- medication toxicity
- severe pain
- pressure injury
- unsafe swallowing
- recurrent falls
- severe weight loss
- caregiver breakdown
- unsafe home situation

- self-neglect
- new incontinence
- new immobility
- acute functional collapse
- breathlessness with low reserve
- AKI after mild illness
- discharge being considered before function is safe

The danger-first question is:

Can this frail person survive and recover safely in the current state and setting?

5. Immediate Red Flags in Frailty

Red flags include:

- sudden confusion
- new inability to stand or walk
- repeated falls
- lying on the floor for a prolonged period
- poor intake
- dehydration
- reduced urine output
- fever or low temperature with weakness
- low oxygen saturation
- low blood pressure or postural dizziness
- severe pain
- new pressure injury
- new swallowing difficulty
- choking or aspiration
- recurrent hypoglycemia
- medication mismanagement
- new urinary retention or constipation with delirium
- rapid weight loss
- caregiver unable to cope
- unsafe discharge plan
- suspected abuse or neglect
- suicidal thoughts or severe demoralization

In frailty, a “small” symptom can be the visible tip of a large capacity collapse.

6. Frailty Presentations Are Often Atypical

Frail patients often do not present with textbook symptoms.

Pneumonia May Present As

- confusion
- falls
- weakness
- poor intake
- functional decline
- mild cough or no cough
- low oxygen saturation
- rapid breathing

UTI or Sepsis May Present As

- delirium
- immobility
- incontinence
- weakness
- low temperature
- poor appetite
- reduced urine output

Myocardial Infarction May Present As

- breathlessness
- weakness
- confusion
- nausea
- collapse
- no typical chest pain

Hypoglycemia May Present As

- confusion
- fall
- drowsiness
- seizure
- unusual behavior

AKI May Present As

- nausea
- confusion
- reduced intake
- drowsiness
- falls
- high potassium

- medicine toxicity

Pain May Present As

- agitation
- immobility
- delirium
- poor sleep
- refusal to eat

The clinician must ask:

What has changed from baseline?

In frailty, change from baseline is often the diagnosis clue.

7. Baseline Function Is Essential

Frailty cannot be understood without baseline.

Ask:

- Could the patient walk before?
- Did they use a stick, walker, or wheelchair?
- Could they climb stairs?
- Could they bathe and dress?
- Could they toilet independently?
- Could they cook?
- Could they shop?
- Could they manage money?
- Could they manage medicines?
- Could they attend appointments?
- Was cognition normal?
- Was there dementia?
- Was there delirium before?
- Was there recent weight loss?
- Were there falls?
- Who helps at home?

A patient who normally walks independently but now cannot stand has a major acute decline.

A patient with mild dementia who is now inattentive and agitated has delirium until proven otherwise.

A patient who usually eats well but now refuses meals may be severely ill.

Baseline turns frailty from a vague impression into clinical reasoning.

8. Frailty and Delirium

Delirium is one of the most important frailty complications.

A frail brain can decompensate with:

- infection
- hypoxia
- hypoglycemia
- dehydration
- pain
- constipation
- urinary retention
- medication toxicity
- sleep disruption
- unfamiliar environment
- sensory deprivation
- alcohol or sedative withdrawal
- electrolyte disturbance
- surgery
- hospitalization

Delirium may appear as:

- confusion
- agitation
- drowsiness
- hallucinations
- inattention
- reversed sleep cycle
- pulling lines
- refusing care
- falls

The key point:

Delirium is acute brain failure, not simply “old age.”

Wise care requires finding and treating triggers while protecting dignity, sleep, mobility, hydration, nutrition, and family connection.

9. Frailty and Falls

Falls are often a sign of system failure.

A fall may reflect:

- orthostatic hypotension
- hypoglycemia
- arrhythmia

- infection
- stroke
- medication harm
- poor vision
- neuropathy
- weakness
- pain
- unsafe footwear
- environmental hazards
- urgency to toilet
- delirium
- dementia
- dehydration
- alcohol
- fear and deconditioning

A fall should not be treated only as trauma.

Ask:

Why did the person fall, and what capacity failed?

Falls are so important that they deserve their own chapter next.

10. Frailty and Medicines

Frail patients are highly sensitive to medicines.

Medicines that are usually tolerated may cause:

- delirium
- falls
- dizziness
- dehydration
- constipation
- urinary retention
- hypoglycemia
- AKI
- bleeding
- drowsiness
- poor appetite
- low blood pressure
- functional decline

High-risk medicines include:

- sedatives
- opioids
- anticholinergics
- antihypertensives
- diuretics
- diabetes medicines
- anticoagulants
- NSAIDs
- steroids
- rate-limiting heart medicines

In frailty, ask:

- Is this medicine still needed?
- Is the dose too strong?
- Is the medicine causing falls or confusion?
- Is the medicine still aligned with goals?
- Can the patient take it correctly?
- Is kidney or liver function changing safety?
- Is the benefit immediate, medium-term, or long-term?
- Is the patient's time horizon relevant?
- Can the regimen be simplified?

Medication review is frailty care.

11. Frailty and Nutrition

Frailty and malnutrition often reinforce each other.

Poor nutrition causes:

- muscle loss
- weakness
- immune vulnerability
- poor wound healing
- pressure injury risk
- falls
- fatigue
- depression
- slow recovery

Frailty worsens nutrition through:

- poor appetite
- dental problems

- dysphagia
- depression
- dementia
- isolation
- poverty
- difficulty cooking
- nausea
- constipation
- medication side effects
- chronic inflammation
- taste changes
- fatigue

Ask:

- Has weight changed?
- Is appetite reduced?
- Can the patient chew and swallow?
- Are dentures available?
- Can the patient shop and cook?
- Is food available?
- Is nausea present?
- Is constipation present?
- Is depression present?
- Does the patient need help eating?
- Is protein intake adequate?

Nutrition is not an optional extra.

It is the material of repair.

12. Frailty and Sarcopenia

Sarcopenia means loss of muscle mass and strength.

It is a major driver of frailty.

It may appear as:

- slow walking
- weak grip
- difficulty rising from a chair
- falls
- fatigue
- reduced balance

- reduced walking distance
- difficulty carrying groceries
- inability to climb stairs

Causes include:

- aging
- inactivity
- malnutrition
- chronic inflammation
- hospitalization
- bed rest
- steroids
- endocrine disease
- neurological disease
- chronic heart, lung, kidney, or liver disease

Sarcopenia is not repaired by rest alone.

It requires:

- adequate nutrition
- safe resistance activity
- mobility practice
- treatment of pain
- treatment of inflammation
- sleep
- confidence
- rehabilitation support

Muscle is medicine for frailty.

13. Frailty and Hospitalization

Hospitalization can save life.

It can also harm frail patients.

Hospital risks include:

- delirium
- sleep disruption
- immobility
- pressure injury
- falls
- hospital-acquired infection
- poor nutrition

- medication changes
- catheter complications
- deconditioning
- loss of confidence
- loss of independence

A frail patient can lose significant muscle strength after only a short period of bed rest.

In hospital, protect frailty by asking daily:

- Is the patient oriented?
- Are glasses and hearing aids available?
- Is sleep protected?
- Is pain controlled?
- Is the patient eating?
- Is constipation prevented?
- Is urinary retention avoided?
- Is the patient mobilizing?
- Are lines and catheters necessary?
- Are medicines simplified?
- Is discharge planning active?
- Is family involved?

Hospital care should treat disease while protecting function.

14. Frailty and Acute Illness

Acute illness consumes reserve.

A frail patient with pneumonia may develop:

- hypoxia
- delirium
- dehydration
- AKI
- poor intake
- falls
- pressure injury
- hyperglycemia
- muscle loss
- unsafe swallowing
- caregiver strain

The diagnosis may be pneumonia, but the care plan must protect multiple capacities.

Ask:

Is oxygenation safe?

Is circulation safe?

Is glucose safe?

Is kidney function safe?

Is cognition safe?

Is the patient eating?

Is the patient walking?

Is the patient sleeping?

Are medicines safe?

Is discharge realistic?

Frailty turns one illness into many risks.

15. Frailty and Chronic Disease

Frailty changes chronic disease management.

Diabetes

In frailty, avoiding hypoglycemia may be more important than strict glucose targets.

Hypertension

Avoiding dizziness and falls may be as important as long-term vascular prevention.

Heart Failure

Diuresis must relieve congestion without causing collapse, AKI, or falls.

CKD

Medicine safety, potassium, hydration, and avoidance of AKI become central.

COPD

Breathlessness, muscle wasting, anxiety, inhaler technique, and rehabilitation matter.

Arthritis

Pain control must preserve mobility without kidney, heart, bleeding, or cognitive harm.

Dementia

Medication simplicity, caregiver support, and safety become essential.

Frailty asks:

What chronic disease plan best preserves function and dignity now?

16. Frailty and Goals of Care

Frailty makes goals of care clinically important.

Ask:

What matters most to you now?

What are you hoping to regain?

What are you afraid of losing?

What level of independence matters most?

What treatment burdens feel acceptable?

- Would you want hospitalization again if this worsens?
- Who should speak for you if you cannot?
- What would a good day look like?
- What would be too much?

Goals of care should not be delayed until the final days of life.

Frailty is often a signal that the patient's reserve and values must guide decisions more explicitly.

17. Frailty and Resilience

Frailty is reduced reserve, but not hopelessness.

Some reserve can be rebuilt.

Resilience can improve through:

- strength training
- nutrition
- mobility
- sleep
- pain control
- medication simplification
- treating depression
- reducing isolation
- vision and hearing support
- falls prevention
- chronic disease optimization
- rehabilitation
- caregiver support
- meaningful activity

The goal is not to make every frail patient robust.

The goal is to restore what can be restored, support what cannot, and prevent avoidable decline.

Frailty care is hopeful when it is realistic.

18. Comprehensive Frailty Assessment

A frailty assessment should include:

Medical

- active diagnoses
- recent acute illness
- chronic disease burden
- pain
- falls

- dizziness
- weight loss
- appetite
- sleep
- wounds
- continence
- swallowing
- sensory impairment

Functional

- walking
- transfers
- bathing
- dressing
- toileting
- feeding
- stairs
- shopping
- cooking
- cleaning
- transportation

Cognitive

- memory
- attention
- delirium
- dementia
- decision-making
- medication management

Psychological

- mood
- anxiety
- grief
- loneliness
- fear of falling
- demoralization

Medication

- number of medicines
- high-risk medicines
- recent changes

- adherence
- side effects
- kidney and liver fit
- patient understanding

Social

- caregiver support
- living situation
- finances
- food access
- transport
- home safety
- community resources

Goals

- patient priorities
- acceptable trade-offs
- advance care planning
- preferred place of care if illness worsens

Frailty assessment is whole-person medicine.

19. Wise Perturbation in Frailty

Treatment in frailty should be active but careful.

Wise perturbation asks:

- What danger must be treated now?
- What treatment may restore capacity?
- What treatment may harm reserve?
- What is the least burdensome effective plan?
- What must be monitored?
- What function must be protected?
- What matters most to the patient?

Treat Danger

Do not undertreat serious illness because the patient is frail.

Treat:

- sepsis
- hypoxia
- hypoglycemia
- pain
- delirium triggers
- AKI

- bleeding
- fractures
- stroke symptoms
- heart failure
- dangerous arrhythmias

Avoid Harm

Avoid:

- unnecessary sedatives
- excessive bed rest
- unnecessary catheters
- confusing medication changes
- overtight glucose control
- overly aggressive blood pressure lowering
- unnecessary hospitalization when safe alternatives exist
- discharge without support

Protect Function

Include:

- early safe mobilization
- nutrition
- hydration
- sleep
- orientation
- hearing and vision aids
- bowel and bladder care
- pain control
- family involvement
- rehabilitation
- medication simplification

Frailty treatment must restore physiology and protect personhood.

20. Repair Trajectory in Frailty

Repair in frailty is slower and more fragile.

Expected repair may include:

- infection improves
- oxygenation stabilizes
- delirium clears
- appetite returns
- hydration improves

- kidney function stabilizes
- pain improves
- walking returns toward baseline
- sleep improves
- bowels open
- medicines simplified
- caregiver support arranged
- falls risk reduced
- pressure injuries prevented or healed
- patient regains confidence

Repair may not mean complete return to previous function.

Sometimes the repair trajectory is:

- stabilize acute illness
- prevent further decline
- support a new baseline
- reduce distress
- align care with goals
- avoid repeated harmful cycles

The question is:

What is the best attainable recovery for this person?

21. Monitoring Frailty Repair

Monitor:

- walking distance
- transfers
- falls
- appetite
- weight
- fluid intake
- sleep
- cognition
- delirium signs
- pain
- bowel function
- urinary retention or incontinence
- pressure areas
- mood

- medicine side effects
- caregiver strain
- follow-up attendance
- readmission risk

Vital signs and labs are not enough.

In frailty, function is a vital sign.

22. Discharge Safety in Frailty

Before discharge, ask:

- Is the acute illness stable?
- Is cognition at baseline or safely supported?
- Can the patient walk or transfer safely?
- Can the patient toilet?
- Can the patient eat and drink?
- Is swallowing safe?
- Is pain controlled?
- Are bowels and bladder safe?
- Is medication list simple and understood?
- Are high-risk medicines reviewed?
- Is renal function and glucose safe?
- Is home support adequate?
- Is caregiver able and informed?
- Is transport available?
- Is home environment safe?
- Are follow-up labs and visits arranged?
- Are warning signs understood?
- Is rehabilitation arranged if needed?
- Are goals of care documented if relevant?

A frail patient is not discharge-ready simply because the infection is improving.

They are discharge-ready when repair can continue safely.

23. Worked Case 1: Pneumonia in Frailty

An 84-year-old woman with mild dementia and CKD presents with weakness, poor appetite, confusion, and a fall. She has mild fever, tachypnea, low oxygen saturation, and right basal crackles.

Danger

Pneumonia with hypoxia, delirium, AKI risk, fall injury, poor intake.

Frailty Pattern

Atypical infection presentation with functional collapse.

Capacity Failure

Defense, oxygenation, cognition, hydration, mobility, clearance.

Coupling Conditions

Mild dementia, CKD, frailty, poor intake, fall risk, possible medication accumulation, home support.

Wise Perturbation

Support oxygenation. Treat pneumonia according to local guidance. Assess delirium triggers, hydration, renal function, glucose, pain, injury, medicines, nutrition, and mobility. Involve family and rehabilitation early.

Repair Trajectory

Breathing improves, oxygenation stabilizes, confusion clears, appetite returns, kidney function stable, walking improves, discharge support arranged.

24. Worked Case 2: Frailty and Medication Harm

An 87-year-old man becomes drowsy and falls after starting a sleeping tablet. He has CKD, constipation, and mild cognitive impairment.

Danger

Medication-induced sedation, falls, delirium, constipation, injury.

Frailty Pattern

Low reserve with high medicine sensitivity.

Capacity Failure

Cognition, mobility safety, bowel clearance, medicine clearance, agency.

Coupling Conditions

CKD, cognitive impairment, insomnia, new sedative, constipation, frailty, possible home hazards.

Wise Perturbation

Assess injury, delirium, hydration, renal function, constipation, pain, and full medication list. Stop or reduce sedative according to safe practice. Use safer sleep measures. Treat constipation and support mobility.

Repair Trajectory

Drowsiness improves, falls stop, bowels open, sleep plan safer, cognition returns toward baseline, medicines simplified.

25. Worked Case 3: Frailty and Hypoglycemia

An 82-year-old woman with diabetes and CKD has recurrent morning confusion and falls. She has lost weight and often skips dinner.

Danger

Hypoglycemia, falls, brain injury risk, medication mismatch.

Frailty Pattern

Glucose treatment too strong for current reserve, intake, and kidney function.

Capacity Failure

Glucose regulation, brain energy, cognition, mobility, nutrition.

Coupling Conditions

CKD, weight loss, poor intake, frailty, diabetes medicines, possible cognitive impairment, caregiver support.

Wise Perturbation

Treat acute hypoglycemia. Review diabetes medicines and targets according to local guidance. Prioritize avoiding lows. Address nutrition and caregiver monitoring.

Repair Trajectory

No recurrent hypoglycemia, confusion resolves, falls reduce, eating improves, glucose plan safer and simpler.

26. Worked Case 4: Hospital Deconditioning

An 80-year-old man admitted with heart failure is now medically improved, but after five days in bed he cannot stand without two people.

Danger

Hospital-associated deconditioning, falls, unsafe discharge, loss of independence.

Frailty Pattern

Functional collapse after bed rest and acute illness.

Capacity Failure

Mobility, muscle strength, confidence, participation, discharge safety.

Coupling Conditions

Heart failure, bed rest, age, poor nutrition, sleep disruption, fear of falling, possible over-diuresis or hypotension.

Wise Perturbation

Assess orthostatic symptoms, pain, nutrition, electrolytes, renal function, cognition, and heart failure status. Begin rehabilitation and mobilization. Avoid discharge until function is safe or support is arranged.

Repair Trajectory

Transfers improve, standing tolerance returns, walking distance increases, confidence improves, home support and rehabilitation arranged.

27. Worked Case 5: Frailty and Caregiver Breakdown

A 90-year-old woman with dementia, recurrent falls, and incontinence lives with her daughter. The daughter reports exhaustion and says she can no longer safely manage care at home.

Danger

Caregiver collapse, unsafe home care, neglect risk, falls, caregiver illness.

Frailty Pattern

Advanced functional dependence with insufficient support.

Capacity Failure

Agency, cognition, mobility, continence, caregiver-supported participation, safety.

Coupling Conditions

Dementia, recurrent falls, incontinence, caregiver burden, home environment, limited respite, emotional strain.

Wise Perturbation

Assess patient safety, caregiver capacity, falls, continence, medicines, pain, infection triggers, and available supports. Involve social work, community services, respite, rehabilitation, or long-term care planning where appropriate. Discuss goals of care.

Repair Trajectory

Care plan becomes safe, caregiver strain reduced, falls risk addressed, support increased, patient dignity protected.

28. Worked Case 6: Frailty and Goals of Care

An 88-year-old man with advanced heart failure, CKD, dementia, and repeated admissions now has poor intake, weakness, and breathlessness. His family asks whether more hospital treatment will restore him.

Danger

Breathlessness, dehydration, kidney vulnerability, advanced frailty, unclear goals, treatment burden.

Frailty Pattern

Advanced multisystem reserve failure with limited recovery potential.

Capacity Failure

Circulation, oxygenation, clearance, cognition, nutrition, mobility, dignity, agency.

Coupling Conditions

Advanced heart failure, CKD, dementia, repeated admissions, family uncertainty, caregiver burden.

Wise Perturbation

Treat distress and reversible problems where appropriate. Discuss goals honestly. Clarify likely repair trajectory, burdens of treatment, comfort priorities, preferred place of care, and escalation wishes. Involve palliative care where appropriate.

Repair Trajectory

Breathlessness relieved, family understands prognosis and options, care aligns with patient values, avoidable burdens reduced, dignity preserved.

29. Common Student Pitfalls

Pitfall 1: Equating Frailty With Age

Frailty is about reserve and function, not age alone.

Pitfall 2: Missing Atypical Presentations

Frailty often presents as falls, confusion, poor intake, or weakness.

Pitfall 3: Treating the Disease but Losing the Person

Infection may improve while mobility, cognition, nutrition, and independence collapse.

Pitfall 4: Overlooking Medicines

Medication harm is common and preventable.

Pitfall 5: Prescribing Bed Rest

Prolonged immobility can be dangerous.

Pitfall 6: Discharging Before Function Is Safe

Stable labs do not equal safe home recovery.

Pitfall 7: Ignoring Caregivers

Caregiver capacity is part of the treatment plan.

Pitfall 8: Avoiding Goals-of-Care Conversations

Frailty requires honest discussion of recovery, burden, and what matters most.

30. Clinical Practice Box

When assessing frailty, complete this structure:

Baseline function:
Walking, transfers, bathing, dressing, toileting, cooking, medicines, cognition, work/social role.

Current change:
What has been lost suddenly or gradually?

Frailty features:
Weight loss, exhaustion, weakness, slow walking, low activity, falls, poor recovery.

Danger now:
Delirium, falls, hypoxia, dehydration, AKI, hypoglycemia, pressure injury, poor intake, unsafe discharge?

Capacity failures:
Mobility, cognition, energy, nutrition, regulation, clearance, defense, repair, agency?

Coupling conditions:
Medicines, CKD, diabetes, heart failure, dementia, pain, depression, home support, caregiver strain.

Wise perturbation:
Treat danger, review medicines, mobilize, nourish, hydrate, orient, relieve pain, protect sleep, involve family/team.

Repair trajectory:
What should improve, and what is the realistic best outcome?

Discharge safety:
Can repair continue safely at home or another setting?

Goals of care:
What matters most to the patient and family?

31. Mini-Case for Practice

An 85-year-old woman with diabetes, CKD, osteoarthritis, mild dementia, and recurrent falls is admitted with fever, confusion, poor intake, and weakness. She is diagnosed with pneumonia and treated. Three days later her fever has settled and oxygenation is safe, but she is still confused at night, constipated, eating little, and unable to walk to the bathroom without assistance. Her daughter is worried about taking her home.

Apply the frailty approach.

Danger

Persistent delirium, malnutrition, dehydration, constipation, falls, unsafe mobility, caregiver concern, incomplete recovery.

Frailty Pattern

Acute infection triggered multisystem functional collapse.

Capacity Failure

Cognition, nutrition, mobility, bowel clearance, repair, agency, caregiver-supported safety.

Coupling Conditions

Diabetes, CKD, osteoarthritis pain, mild dementia, recurrent falls, poor intake, constipation, hospital sleep disruption, daughter support.

Wise Perturbation

Do not discharge based only on settled fever. Assess delirium triggers, constipation, pain, hydration, renal function, glucose, medicines, sleep, mobility, and nutrition. Involve daughter, nursing, physiotherapy, and dietetic support where available. Simplify medicines and create a safe mobility and follow-up plan.

Repair Trajectory

Confusion improves, bowels open, appetite returns, glucose and kidneys remain safe, walking improves or support is arranged, daughter understands the plan, discharge setting is safe.

32. Student Takeaway

Frailty becomes easier when the clinician asks:

What was the patient's baseline?
What has changed?
How much reserve remains?
Is there delirium, fall risk, poor intake, dehydration, AKI, hypoglycemia, medication harm, or unsafe mobility?
Which capacities are failing together?
What treatment will restore capacity without overwhelming reserve?
What function must be protected during care?
Can repair continue safely after discharge?
What matters most to the patient and caregiver?

Frailty is not simply old age.

It is reduced reserve across the living system.

The safe clinician recognizes subtle danger, treats illness actively, avoids avoidable harm, protects mobility and cognition, simplifies medicines, nourishes repair, supports caregivers, and follows the patient toward the best attainable function, dignity, and safety.

Chapter 53. Falls Made Easy

A fall is an unexpected event in which a person comes to rest on the ground, floor, or lower level.

Patients do not usually say:

“I experienced a multifactorial fall syndrome.”

They say:

“I fell.”
“My legs gave way.”
“I blacked out.”
“I tripped.”
“I felt dizzy.”
“I lost my balance.”
“I do not know what happened.”
“I am afraid to walk now.”
“I cannot get up from the floor.”
“I keep falling.”

Falls are central to Internal Medicine because a fall is rarely just a mechanical event.

A fall may reveal:

- syncope
- arrhythmia
- stroke
- hypoglycemia
- infection
- delirium
- medication harm
- orthostatic hypotension
- dehydration
- anemia
- Parkinsonism
- neuropathy
- vestibular disease
- frailty
- poor vision
- pain
- environmental hazard
- alcohol or sedative use
- unsafe footwear
- functional decline

The first task is not simply to treat the bruise or fracture.

The deeper question is:

Why did this person fall, what was injured, and what capacity failed?

Falls become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Fall Clinically?

Clinically, a fall is a signal.

It may signal failure of:

- balance
- strength
- vision
- sensation
- cognition
- circulation
- rhythm
- glucose regulation
- medication safety
- environment fit
- mobility confidence
- caregiver support

A young healthy person may trip while running and recover easily.

A frail older adult may fall after a small blood pressure drop, become injured, develop fear, stop walking, lose muscle, and enter a cycle of decline.

The same event can mean very different things depending on reserve.

The clinical question is:

Was this fall accidental, syncopal, neurological, metabolic, medication-related, environmental, frailty-related, or mixed?

2. Falls Are Symptoms, Not Diagnoses

A fall is like dyspnea or confusion.

It is a presentation that needs explanation.

Do not stop at:

"Mechanical fall."

That phrase can be dangerous if it prevents deeper reasoning.

Instead ask:

- What was the person doing?
- What happened before the fall?
- Was there dizziness?
- Was there loss of consciousness?
- Was there chest pain?

Were there palpitations?

Was there weakness?

Was there confusion?

Was there hypoglycemia?

Was there infection?

Were medicines changed?

Was alcohol involved?

Was the environment unsafe?

What injury occurred?

Could the person get up?

How long were they on the floor?

Have they fallen before?

The fall itself is the doorway.

The cause is behind it.

3. The First Question: Is There Danger Now?

After a fall, danger comes first.

Urgent assessment is needed when there is:

head injury

loss of consciousness

anticoagulant use

new confusion

seizure

stroke symptoms

chest pain

palpitations

syncope

shortness of breath

severe pain

hip pain or inability to weight-bear

suspected fracture

spinal pain or neurological signs

prolonged time on floor

hypothermia

dehydration

rhabdomyolysis risk

bleeding

- hypoglycemia
- infection or sepsis signs
- low blood pressure
- very fast or very slow pulse
- recurrent falls
- suspected abuse or neglect
- unsafe home situation

The danger-first question is:

Has the fall caused serious injury, or was the fall caused by serious illness?

Both must be considered.

4. Immediate Red Flags After a Fall

Red flags include:

- head strike
- anticoagulant or antiplatelet use with head injury
- persistent headache
- vomiting
- drowsiness
- confusion
- seizure
- focal neurological weakness
- speech difficulty
- visual change
- neck or back pain
- new numbness or weakness
- hip pain
- inability to stand or walk
- limb deformity
- severe chest pain
- breathlessness
- palpitations before fall
- true loss of consciousness
- black stools or anemia symptoms
- low glucose symptoms
- fever or systemic illness
- lying on floor for hours
- dark urine after prolonged immobility

- new severe pain out of proportion
- recurrent unexplained falls

A fall with red flags should be treated as a possible emergency presentation, not just an accident.

5. The Fall Pathway Made Easy

Falls occur when the person's ability to stay upright is overwhelmed.

Standing and walking require coordination of:

- brain
- eyes
- inner ear
- muscles
- joints
- nerves
- blood pressure
- heart rhythm
- glucose
- cognition
- attention
- environment
- footwear
- confidence

A fall happens when one or more of these systems fail at the wrong moment.

Balance

Balance depends on:

- vision
- vestibular system
- proprioception
- cerebellum
- muscle response
- attention

Strength

Strength depends on:

- muscle mass
- nutrition
- nerves
- pain control
- activity
- energy

- hormones
- chronic disease burden

Circulation

The brain needs continuous blood flow.

Falls may occur with:

- orthostatic hypotension
- arrhythmia
- dehydration
- bleeding
- heart failure
- syncope
- medication-related hypotension

Cognition

Walking requires attention.

Falls increase with:

- delirium
- dementia
- distraction
- sedatives
- sleep deprivation
- unfamiliar surroundings

Environment

The safest person can fall in an unsafe environment.

Hazards include:

- loose rugs
- poor lighting
- wet floors
- stairs
- clutter
- uneven ground
- no handrails
- unsafe bathroom
- inappropriate footwear
- rushing to toilet

The fall question is:

Which upright-control systems failed?

6. Types of Falls

Trip or Slip Fall

Features:

- clear environmental trigger
- no loss of consciousness
- patient remembers falling
- obstacle, wet surface, uneven ground, footwear issue

But still ask why the person could not recover balance.

Was there weakness, poor vision, neuropathy, or slow reaction?

Collapse Fall

Features:

- sudden drop
- legs “gave way”
- possible syncope, arrhythmia, hypotension, stroke, seizure, or hypoglycemia
- may not remember details

This requires careful medical assessment.

Dizzy Fall

Features:

- lightheadedness
- standing trigger
- postural symptoms
- medication or dehydration context
- may indicate orthostatic hypotension or arrhythmia

Balance Fall

Features:

- unsteadiness
- veering
- neuropathy
- Parkinsonism
- vestibular disease
- cerebellar signs
- poor vision
- recurrent falls

Frailty Fall

Features:

- slow gait
- weakness
- weight loss
- exhaustion

low activity

poor recovery

often multiple contributors

Delirium Fall

Features:

confusion

agitation

night-time wandering

infection, medication, pain, constipation, urinary retention, or sleep disruption trigger

Medication Fall

Features:

new medicine or dose change

sedative, antihypertensive, diuretic, opioid, anticholinergic, or diabetes medicine risk

dizziness, drowsiness, low glucose, or low blood pressure

Most falls are mixed.

7. Fall History Made Easy

A good fall history answers five questions.

1. What Happened Before the Fall?

Ask:

Were you standing, walking, turning, reaching, climbing stairs, or getting out of bed?

Did you feel dizzy?

Did you feel lightheaded?

Did the room spin?

Did you have chest pain?

Did your heart race?

Did you feel short of breath?

Did you feel weak?

Did you feel sweaty or shaky?

Did you trip?

Did your leg give way?

Were you rushing to the toilet?

Had you eaten?

Had you taken medicines?

Had you drunk alcohol?

2. What Happened During the Fall?

Ask:

- Did you black out?
- Do you remember falling?
- Did anyone see it?
- Did you shake or have seizure-like movements?
- Did you bite your tongue?
- Did you lose urine?
- Did you hit your head?
- Which part of the body hit first?

3. What Happened After the Fall?

Ask:

- Could you get up?
- How long were you on the floor?
- Were you confused?
- Were you weak on one side?
- Did you have pain?
- Could you walk after?
- Did you pass urine afterward?
- Was your urine dark?
- Did anyone help you?

4. Has This Happened Before?

Ask:

- How many falls in the last year?
- Are falls increasing?
- Are you afraid of falling?
- Have you reduced activity because of fear?
- Have you had fractures?
- Do you use a walking aid?
- Do you fall indoors or outdoors?
- Do you fall at night?

5. What Is the Baseline?

Ask:

- How did you walk before?
- Did you need a stick or walker?
- Could you climb stairs?
- Could you bathe and toilet?
- Did you manage medicines?
- Was cognition normal?

- Who lives with you?
- Is home safe?

The history often reveals the cause.

8. Examination After a Fall

The examination has two goals:

- Find injury.
- Find cause.

Injury Examination

Assess:

- head injury
- scalp wounds
- bruising
- neck and spine tenderness
- hip pain
- limb deformity
- joint swelling
- ability to weight-bear
- chest wall injury
- abdominal tenderness
- skin tears
- pressure areas if long lie
- neurological deficits

Cause Examination

Assess:

- mental state
- attention and delirium
- pulse rate and rhythm
- blood pressure
- standing blood pressure where safe
- oxygen saturation
- temperature
- glucose
- hydration
- cardiac examination
- neurological examination
- gait and balance
- vision and hearing clues

- feet and footwear
- pain-limited movement
- signs of infection
- medication effects
- evidence of neglect or unsafe care

A fall examination should not stop at the painful part.

9. Initial Investigations

Investigations depend on the story, injury, and risk.

Possible investigations include:

- glucose
- ECG
- full blood count
- renal function and electrolytes
- potassium
- sodium
- calcium where relevant
- creatine kinase if prolonged time on floor or muscle injury risk
- urinalysis where infection or dehydration context suggests
- infection workup where clinically indicated
- troponin where cardiac ischemia suspected
- imaging of painful or injured areas
- head imaging pathway where head injury risk is significant
- orthostatic blood pressure assessment where safe
- medication review
- vision assessment where relevant
- gait and balance assessment
- cognitive assessment where delirium or dementia is possible

Testing should answer:

- Was there serious injury?
- Was there syncope?
- Was there arrhythmia?
- Was glucose unsafe?
- Was sodium or potassium unsafe?
- Was infection present?
- Was there anemia or bleeding?
- Was there AKI or dehydration?

- Was prolonged immobility harmful?
- Are medicines contributing?

10. Syncope Versus Fall

Syncope means transient loss of consciousness due to reduced brain perfusion.

It can be mistaken for a fall.

Clues suggesting syncope:

- sudden collapse
- loss of consciousness
- little or no memory of falling
- lightheadedness before fall
- palpitations
- chest pain
- standing trigger
- exertional event
- recovery after lying down
- pallor or sweating
- witnessed brief loss of tone

High-risk syncope features include:

- exertional syncope
- syncope while lying down
- chest pain
- palpitations before syncope
- known structural heart disease
- abnormal ECG
- family history of sudden death where relevant
- severe anemia or bleeding
- persistent hypotension
- neurological deficits after event

If syncope is possible, do not label the event as a simple mechanical fall.

11. Seizure Versus Fall

A seizure can present as a fall.

Clues suggesting seizure:

- witnessed rhythmic movements
- tongue bite
- prolonged confusion afterward

- urinary incontinence in context
- aura
- known epilepsy
- head turning or focal features
- unexplained injury
- no clear trip or slip

But syncope can also cause brief jerking.

The clinical task is to reconstruct the event carefully.

Ask witnesses whenever possible.

12. Stroke and Neurological Causes

Falls may be caused by neurological problems.

Consider stroke or TIA when there is:

- new one-sided weakness
- facial droop
- speech disturbance
- visual loss
- severe new imbalance
- new coordination problem
- acute dizziness with neurological signs
- altered consciousness
- new severe headache in selected contexts

Consider Parkinsonism when there is:

- shuffling gait
- freezing
- slow movement
- rigidity
- reduced arm swing
- postural instability
- falls when turning

Consider peripheral neuropathy when there is:

- numb feet
- reduced vibration or position sense
- diabetes
- alcohol history
- B12 deficiency risk
- unsteady walking in the dark

Neurological falls need pattern recognition.

13. Orthostatic Hypotension and Falls

Orthostatic hypotension is a common cause of falls.

Symptoms include:

- dizziness on standing
- blurred vision
- weakness
- near-fainting
- falls after getting up
- worse after meals, heat, dehydration, or alcohol

Common causes:

- dehydration
- diuretics
- antihypertensives
- autonomic neuropathy
- diabetes
- Parkinsonism
- prolonged bed rest
- frailty
- anemia
- infection
- adrenal insufficiency in selected contexts

Assess standing blood pressure where safe.

Wise perturbation may include:

- treating dehydration
- reviewing medicines
- slow position changes
- mobility aids
- compression strategies where appropriate
- strengthening
- falls prevention
- treating underlying disease

The goal is not only a better blood pressure number.

The goal is safe standing and walking.

14. Medication-Related Falls

Medicines are among the most common reversible fall risks.

High-risk medicines include:

- sedatives
- sleeping tablets
- opioids
- antihypertensives
- diuretics
- rate-limiting cardiac medicines
- anticholinergics
- antipsychotics
- antidepressants in some contexts
- diabetes medicines causing hypoglycemia
- alcohol
- muscle relaxants
- some antihistamines

Medication-related falls may occur through:

- sedation
- dizziness
- low blood pressure
- bradycardia
- hypoglycemia
- blurred vision
- confusion
- impaired reaction time
- dehydration
- nocturia
- urgency to toilet
- constipation and discomfort
- electrolyte disturbance

Every fall requires medication review.

Ask:

Which medicine could have pushed this patient beyond their balance reserve?

15. Falls and Hypoglycemia

Hypoglycemia is a dangerous and treatable cause of falls.

It may present as:

- sweating

- tremor
- confusion
- weakness
- odd behavior
- drowsiness
- seizure
- fall
- morning confusion
- injury

Risk increases with:

- insulin
- some diabetes tablets
- missed meals
- poor intake
- CKD
- frailty
- weight loss
- alcohol
- cognitive impairment
- medication error

Check glucose early in falls with confusion, sweating, weakness, diabetes, or unclear cause.

Repair requires preventing recurrence, not only correcting one episode.

16. Falls and Infection

In frail patients, infection may present as a fall.

Possible infection clues:

- fever or low temperature
- cough
- tachypnea
- low oxygen saturation
- urinary symptoms
- new incontinence
- abdominal pain
- skin redness
- wound
- confusion
- poor intake

reduced urine output

weakness

A fall may be the first sign of pneumonia, UTI with systemic illness, cellulitis, sepsis, or other infection.

Do not wait for classic symptoms in frailty.

Ask:

What acute illness reduced this patient's reserve enough to fall?

17. Falls and Pain

Pain can cause falls.

Examples:

knee osteoarthritis causing buckling

hip pain causing instability

back pain limiting posture

neuropathic pain altering gait

foot pain reducing balance

acute fracture causing further collapse

abdominal or chest pain causing weakness or faintness

Pain treatment can also cause falls.

Opioids, sedatives, and some muscle relaxants may worsen balance.

Wise care treats pain in a way that improves mobility without increasing falls.

18. Falls and Fear

After a fall, many patients develop fear of falling.

Fear can cause:

reduced walking

muscle wasting

slower gait

social withdrawal

loss of confidence

increased dependence

depression

more falls

Fear is understandable.

But avoiding movement completely can worsen risk.

Repair requires graded confidence.

Ask:

Are you afraid to walk?

What activity are you avoiding?

Do you feel safe at home?

Would supervised rehabilitation help?

Do you need a walking aid?

What would help you feel confident again?

A fall injures confidence as well as tissue.

19. Environmental Assessment

Environmental hazards commonly contribute to falls.

Ask about:

loose rugs

clutter

poor lighting

stairs

lack of handrails

slippery bathroom

low toilet seat

unsafe footwear

pets

electrical cords

uneven pathways

wet floors

outdoor steps

poor night lighting

rushing to bathroom

bed height

chair height

Hospital environments can also cause falls:

unfamiliar layout

lines and tubes

alarms

poor sleep

delirium

wet floors

rushing without assistance

sedatives

bed rails used improperly

- poor access to call bell
- inappropriate footwear

Falls prevention includes environment fit.

20. Falls and Bone Health

Falls are dangerous partly because bones may fracture.

Assess fracture risk when there is:

- older age
- previous fragility fracture
- osteoporosis
- long-term steroids
- low body weight
- menopause-related bone loss
- CKD-mineral bone disease
- vitamin D deficiency
- alcohol excess
- smoking
- poor nutrition
- recurrent falls

Common serious injuries include:

- hip fracture
- wrist fracture
- vertebral fracture
- humerus fracture
- pelvic fracture
- head injury

After a fall, ask:

Why did the person fall, and why did the body break?

Falls prevention and bone protection belong together.

21. Falls and Long Lie

A long lie means the person remained on the floor for a prolonged period after falling.

This is dangerous.

Risks include:

- dehydration
- hypothermia
- pressure injury

- rhabdomyolysis
- AKI
- fear and trauma
- pneumonia
- delirium
- loss of confidence

Ask:

- How long were you on the floor?
- Could you call for help?
- Did you pass urine?
- Is the urine dark?
- Are muscles painful?
- Were you cold?
- Were you injured?
- Why could you not get up?

A long lie reveals agency and safety failure.

It may require urgent medical assessment and home support planning.

22. Falls and Abuse or Neglect

Most falls are not abuse.

But clinicians must stay alert.

Consider abuse or neglect when:

- injury explanation does not fit findings
- repeated injuries occur
- delay in seeking care
- patient appears fearful
- caregiver story changes
- poor hygiene or malnutrition
- pressure injuries with inadequate care
- medication withholding or over-sedation
- financial or emotional control
- unsafe home despite available help
- bruising in unusual locations

Approach carefully, respectfully, and according to local safeguarding procedures.

Safety includes protection from harm by others.

23. Wise Perturbation After a Fall

Treatment depends on the cause and consequences.

If Injury Is Present

Treat injury according to severity:

- head injury pathway
- fracture pathway
- wound care
- pain control
- mobility support
- rehabilitation
- bone health review

If Syncope Is Possible

Assess:

- ECG
- orthostatic blood pressure where safe
- cardiac symptoms
- rhythm risk
- anemia or bleeding
- dehydration
- medicines
- need for monitoring or referral

If Medication Harm Is Likely

Review and adjust:

- sedatives
- opioids
- antihypertensives
- diuretics
- diabetes medicines
- anticholinergics
- alcohol
- high-risk combinations

If Frailty or Weakness Is Present

Support:

- strength
- nutrition
- hydration
- rehabilitation
- walking aid
- pain control

- confidence
- caregiver support

If Environment Is Unsafe

Modify:

- lighting
- rugs
- handrails
- bathroom safety
- footwear
- walking aids
- bed/chair height
- emergency call access

If Fear Is Present

Use:

- explanation
- supervised mobilization
- graded activity
- physiotherapy
- confidence rebuilding
- family support

Wise fall care is not one intervention.

It is removing the combination that made upright life unsafe.

24. Repair Trajectory After a Fall

Repair is shown by:

- pain improves
- injury treated
- no new neurological symptoms
- dizziness resolves
- glucose safe
- blood pressure stable sitting and standing
- rhythm safe
- infection treated if present
- medicines simplified
- constipation or urinary urgency addressed
- walking improves
- balance improves
- fear decreases

- home hazards reduced
- caregiver support arranged
- bone health addressed where relevant
- patient knows what to do if they fall again
- emergency access improved

Repair after a fall means safer movement, not just healed bruises.

25. Monitoring After a Fall

Monitor:

- recurrent falls
- near falls
- dizziness
- standing symptoms
- glucose episodes
- blood pressure
- pulse and rhythm symptoms
- pain
- walking distance
- gait confidence
- medication side effects
- cognition
- sleep
- nutrition
- hydration
- home safety changes
- caregiver concerns
- adherence to mobility aid
- fear of falling

Ask at follow-up:

- Have you fallen again?
- Have you nearly fallen?
- Are you afraid to walk?
- Are you using your walking aid?
- Are you dizzy when standing?
- Are you eating and drinking?
- Any new medicines?
- Any low sugars?

Any blackouts?

Can you get help if you fall?

Falls prevention is ongoing care.

26. Discharge Safety After a Fall

Before discharge, ask:

Has serious injury been excluded or treated?

Is head injury risk addressed?

Can the patient stand and walk safely?

Is pain controlled enough for movement?

Is cognition safe?

Is delirium resolved or supported?

Is glucose safe?

Is blood pressure safe standing where relevant?

Is rhythm concern addressed?

Are medicines reviewed?

Is infection treated if present?

Is home support adequate?

Is the environment safe enough?

Is a walking aid needed?

Is rehabilitation arranged?

Is caregiver informed?

Is follow-up arranged?

Is the patient able to call for help?

Has fear of falling been addressed?

Are warning signs understood?

A patient who cannot safely mobilize should not be discharged simply because no fracture was found.

27. Worked Case 1: Fall From Orthostatic Hypotension

An 82-year-old man falls after standing up quickly from bed. He felt lightheaded and had blurred vision. He recently had diarrhea and continued diuretics and antihypertensives.

Danger

Fall injury, dehydration, AKI, orthostatic hypotension, medication harm.

Fall Pattern

Dizzy fall due to standing blood pressure failure.

Capacity Failure

Brain perfusion, hydration, circulation regulation, medicine safety, mobility.

Coupling Conditions

Diarrhea, diuretics, antihypertensives, age, possible frailty, poor intake.

Wise Perturbation

Assess injury, standing blood pressure where safe, renal function, electrolytes, hydration, and medicines. Adjust contributing medicines according to clinical context. Support hydration and safe mobilization.

Repair Trajectory

Dizziness improves, standing safer, renal function stable, medicines clarified, no recurrent falls.

28. Worked Case 2: Fall From Hypoglycemia

A 78-year-old woman with diabetes and CKD falls in the morning. She was confused and sweaty. Glucose is low. She skipped dinner but took her usual diabetes medicine.

Danger

Hypoglycemia, fall injury, brain energy failure, recurrence risk.

Fall Pattern

Metabolic fall due to glucose regulation failure.

Capacity Failure

Brain energy, cognition, mobility safety, medicine safety, nutrition.

Coupling Conditions

CKD, poor intake, diabetes medicines, frailty risk, meal inconsistency, possible cognitive impairment.

Wise Perturbation

Correct glucose according to local guidance. Review diabetes regimen, kidney function, meal pattern, and support. Adjust plan to reduce hypoglycemia risk.

Repair Trajectory

Glucose remains safe, confusion clears, no recurrent morning lows, meals and medicines aligned, falls stop.

29. Worked Case 3: Fall With Possible Syncope

A 68-year-old man collapses while walking. He remembers palpitations just before falling and briefly lost consciousness. He has a history of heart disease.

Danger

Cardiac syncope, arrhythmia, injury, sudden death risk.

Fall Pattern

Collapse fall suspicious for syncope.

Capacity Failure

Rhythm coordination, circulation, brain perfusion, mobility safety.

Coupling Conditions

Heart disease, possible electrolyte disturbance, medicines, exertion, cardiac risk.

Wise Perturbation

Assess injury, ECG, vital signs, rhythm risk, electrolytes, ischemic symptoms, and need for monitoring or specialist pathway according to local guidance.

Repair Trajectory

Rhythm risk clarified, treatment pathway initiated, no recurrent syncope, walking safety restored.

30. Worked Case 4: Frailty Fall With Long Lie

An 89-year-old woman living alone falls at night while going to the bathroom. She lies on the floor until morning. She is cold, weak, dehydrated, and has hip pain.

Danger

Hip fracture, hypothermia, dehydration, rhabdomyolysis, AKI, pressure injury, unsafe home.

Fall Pattern

Frailty and environmental fall with long lie.

Capacity Failure

Mobility, agency, hydration, temperature regulation, muscle integrity, home safety.

Coupling Conditions

Living alone, nocturia, poor lighting, frailty, possible medication effects, lack of emergency call system.

Wise Perturbation

Assess injury including hip, temperature, hydration, renal function, CK, pain, cognition, and home safety. Treat medical complications. Involve rehabilitation, family, and social support. Consider emergency alert plan.

Repair Trajectory

Pain treated, fracture excluded or managed, hydration improves, kidney function safe, mobility supported, home safety improved, help access arranged.

31. Worked Case 5: Fall in Hospital Delirium

An 84-year-old man admitted with pneumonia becomes confused at night, tries to get out of bed, and falls. He is constipated, sleep-deprived, and taking a sedative.

Danger

Hospital fall, delirium, injury, medication harm, pneumonia complications.

Fall Pattern

Delirium fall.

Capacity Failure

Cognition, mobility safety, sleep regulation, bowel clearance, medicine safety, oxygenation.

Coupling Conditions

Pneumonia, older age, constipation, sedative, unfamiliar environment, poor sleep, possible hypoxia.

Wise Perturbation

Assess injury. Treat delirium triggers: oxygenation, infection, constipation, pain, urinary retention, medicines, hydration, sleep, orientation. Reduce sedative burden where appropriate. Increase supervised mobility and safety.

Repair Trajectory

Delirium clears, constipation resolves, sleep improves, mobility supervised, no recurrent falls.

32. Worked Case 6: Fear After Fall

A 74-year-old woman tripped outside her home and fractured her wrist. The fracture healed, but she now avoids walking, has become weaker, and no longer attends church.

Danger

Fear-avoidance, deconditioning, social isolation, future falls.

Fall Pattern

Post-fall participation decline.

Capacity Failure

Confidence, mobility, muscle strength, participation, emotional recovery.

Coupling Conditions

Pain memory, fear, reduced activity, possible poor balance, social withdrawal, lack of rehabilitation.

Wise Perturbation

Assess balance, vision, footwear, pain, home hazards, mood, and strength. Encourage supervised graded mobility, rehabilitation, walking aid if needed, and confidence rebuilding. Address bone health and social goals.

Repair Trajectory

Walking confidence improves, activity increases, strength returns, social participation resumes, fear reduces.

33. Common Student Pitfalls

Pitfall 1: Writing "Mechanical Fall" Too Quickly

Most falls have multiple contributors. Always ask why balance failed.

Pitfall 2: Missing Syncope

A collapse may be cardiac, orthostatic, or neurological.

Pitfall 3: Forgetting Glucose

Hypoglycemia can present as a fall, confusion, or seizure.

Pitfall 4: Ignoring Medicines

Sedatives, antihypertensives, diuretics, opioids, anticholinergics, diabetes medicines, and alcohol are common contributors.

Pitfall 5: Treating the Injury Only

A repaired fracture without fall prevention is incomplete care.

Pitfall 6: Ignoring Fear of Falling

Fear causes inactivity, weakness, isolation, and more falls.

Pitfall 7: Discharging Without Testing Mobility

No fracture does not mean safe walking.

Pitfall 8: Forgetting the Long Lie

Time on the floor can cause dehydration, rhabdomyolysis, pressure injury, hypothermia, and trauma.

34. Clinical Practice Box

When assessing a fall, complete this structure:

What happened before the fall?
Dizziness, trip, palpitations, chest pain, breathlessness, weakness, hypoglycemia symptoms, toilet urgency?

Was consciousness lost?
Memory of event, witness account, seizure features, recovery time.

What injury occurred?
Head, hip, spine, limb, wound, pain, ability to weight-bear.

How long was the patient on the floor?
Risk of hypothermia, dehydration, rhabdomyolysis, pressure injury.

Current danger:
Head injury, anticoagulation, fracture, syncope, stroke, sepsis, hypoglycemia, arrhythmia, AKI?

Capacity failures:
Balance, strength, cognition, circulation, glucose regulation, vision, sensation, mobility, agency?

Medication review:
Sedatives, opioids, antihypertensives, diuretics, diabetes medicines, anticholinergics, alcohol.

Coupling conditions:
Frailty, dementia, CKD, diabetes, neuropathy, pain, environment, footwear, caregiver support.

Wise perturbation:
Treat injury, correct cause, simplify medicines, mobilize safely, modify environment, rehabilitate, address fear.

Repair trajectory:
Safer standing, fewer falls, better walking, less fear, safer home, clearer medicines.

35. Mini-Case for Practice

An 86-year-old woman with diabetes, CKD, mild dementia, hypertension, osteoarthritis, and recurrent falls is brought in after falling at night while going to the bathroom. She was on the floor for six hours. She is confused, dehydrated, has hip pain, low glucose, rising creatinine, and takes a sleeping tablet, diuretic, blood pressure medicines, and diabetes tablets.

Apply the falls approach.

Danger

Hip fracture, head injury risk, hypoglycemia, AKI, dehydration, long lie complications, delirium, medication harm, unsafe home.

Fall Pattern

Mixed fall: nocturnal toilet-related fall, hypoglycemia, medication effects, frailty, dehydration, possible orthostatic hypotension, environmental risk.

Capacity Failure

Brain energy, cognition, mobility, kidney clearance, hydration, balance, medicine safety, home safety, agency.

Coupling Conditions

Diabetes, CKD, dementia, hypertension, osteoarthritis, sleeping tablet, diuretic, diabetes medicines, nocturia, poor lighting, living situation, recurrent falls.

Wise Perturbation

Treat hypoglycemia and assess injury urgently. Evaluate hip pain and head injury risk. Check renal function, potassium, CK if long lie concern, hydration, infection, oxygenation, and delirium triggers. Review medicines, especially sleeping tablet, diuretic, blood pressure medicines, and diabetes treatment. Assess standing blood pressure when safe. Involve family, physiotherapy, and discharge planning. Address night-time toileting, lighting, walking aid, and emergency call access.

Repair Trajectory

Glucose remains safe, confusion clears, hydration and kidney function improve, hip injury treated or excluded, medicines simplified, walking safer, night toileting plan created, home support arranged, falls risk reduced.

36. Student Takeaway

Falls become easier when the clinician asks:

Was there injury?
Was there loss of consciousness?
Was this syncope, seizure, stroke, hypoglycemia, infection, medication harm, frailty, environment, or mixed?
What changed from baseline?
What medicines could have contributed?
Was there a long lie?
Can the patient stand and walk safely now?
What fear or confidence loss followed the fall?
What must change so this person can move safely again?

A fall is not just an accident.

It is a clinical signal that upright life became unsafe.

The safe clinician treats injury, identifies the cause, reviews medicines, protects mobility, addresses fear, modifies the environment, supports caregivers, and follows the patient toward safer movement, confidence, and participation.

Chapter 54. Delirium Made Easy

Delirium is acute brain failure.

It is a sudden disturbance in attention, awareness, thinking, sleep-wake rhythm, and behavior caused by illness, injury, medicine, metabolic disturbance, environmental stress, or withdrawal.

Patients do not usually say:

“I have delirium.”

They may say:

“I feel confused.”
“I do not know where I am.”
“I am seeing things.”
“I cannot sleep.”
“I feel frightened.”
“Something is wrong.”

Families may say:

“This is not like him.”
“She was fine yesterday.”
“He is talking nonsense.”
“She is pulling at lines.”
“He is sleeping all day and awake all night.”
“She is suddenly worse.”

Delirium is central to Internal Medicine because it is common, dangerous, distressing, and often missed.

It may be the first sign of:

- infection
- hypoxia
- hypoglycemia
- dehydration
- AKI
- medication toxicity
- stroke
- pain
- urinary retention
- constipation
- alcohol or sedative withdrawal
- electrolyte disturbance
- sepsis
- heart failure
- liver failure
- carbon dioxide retention

The first task is not to assume the patient is “demented,” “difficult,” “anxious,” or “not cooperating.”

The deeper question is:

Why is the brain failing now?

Delirium becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Delirium?

Delirium is an acute change in brain function.

It usually involves:

- reduced attention
- altered awareness
- disorganized thinking
- fluctuating symptoms
- sleep-wake disturbance
- altered perception
- agitation or withdrawal
- emotional distress
- reduced ability to cooperate with care

The most important word is **acute**.

Delirium develops over hours to days.

It fluctuates.

The patient may seem clearer in the morning and confused at night.

They may be agitated one hour and drowsy the next.

They may answer simple questions but be unable to sustain attention.

Delirium is not a personality problem.

It is not normal aging.

It is not simply dementia.

It is a sign that the brain is under stress.

2. Delirium Is a Capacity Failure

The brain normally coordinates:

- attention
- orientation
- memory
- perception
- sleep-wake rhythm
- emotional regulation
- movement
- communication

decision-making

safety awareness

In delirium, these capacities become unstable.

The patient may not know where they are.
They may not understand why they are in hospital.
They may misinterpret staff as threats.
They may remove oxygen, IV lines, or catheters.
They may try to climb out of bed.
They may refuse medicine or food.
They may become frightened, suspicious, or withdrawn.
They may be unable to describe pain, breathlessness, or urinary symptoms.

Delirium is dangerous because the patient loses the ability to protect themselves.

The clinical question is:

What has overwhelmed the brain's capacity to remain organized?

3. Delirium Is Not the Same as Dementia

Dementia is usually chronic and progressive.

Delirium is acute and fluctuating.

A person with dementia can develop delirium.

In fact, dementia is one of the strongest vulnerability factors for delirium.

The comparison is useful:

Dementia

gradual onset

months to years

memory often affected early

attention may be relatively preserved early

consciousness usually clear until late

symptoms more stable day to day

Delirium

sudden onset

hours to days

attention impaired

awareness altered

fluctuates during the day

sleep-wake cycle disturbed

often caused by acute illness or medicine

The most useful question is:

Is this patient different from baseline?

If the answer is yes, assume delirium until proven otherwise.

4. The First Question: Is Delirium Dangerous Now?

Delirium is dangerous when it signals serious illness or creates immediate safety risk.

Urgent assessment is needed when delirium occurs with:

- low oxygen saturation
- respiratory distress
- fever or low temperature
- low blood pressure
- sepsis features
- hypoglycemia
- severe hyperglycemia
- severe electrolyte disturbance
- reduced urine output
- severe pain
- head injury
- fall
- new neurological deficit
- seizure
- severe headache
- neck stiffness
- chest pain
- carbon dioxide retention risk
- liver failure
- kidney failure
- alcohol or sedative withdrawal
- overdose or poisoning
- severe agitation risking harm
- profound drowsiness
- inability to swallow safely
- inability to protect airway
- suicidal or violent behavior in context of acute confusion

The danger-first question is:

Is this delirium caused by a life-threatening condition, or is the delirium itself creating immediate danger?

5. Immediate Red Flags in Delirium

Red flags include:

- sudden severe confusion
- reduced consciousness

- new seizure
- new focal neurological signs
- head injury
- severe headache
- neck stiffness
- fever with confusion
- hypotension
- hypoxia
- rapid breathing
- very high or low glucose
- severe dehydration
- reduced urine output
- severe agitation
- violent behavior due to confusion
- hallucinations with unsafe behavior
- alcohol withdrawal features
- sedative withdrawal features
- suspected overdose
- severe pain
- urinary retention
- no bowel movement with agitation or discomfort
- recent medication change
- immunosuppression
- jaundice with confusion
- drowsiness in COPD or opioid/sedative exposure

A confused patient should not be dismissed.

Confusion is often the brain's alarm bell.

6. Types of Delirium

Delirium can look different in different patients.

Hyperactive Delirium

The patient may be:

- restless
- agitated
- frightened
- shouting
- pulling at lines

- trying to leave
- hallucinating
- suspicious
- unable to sleep

This type is more obvious.

It is often recognized because it disrupts care.

Hypoactive Delirium

The patient may be:

- quiet
- withdrawn
- sleepy
- slow to respond
- eating poorly
- not asking for help
- less mobile
- inattentive
- mistaken for depression or fatigue

This type is commonly missed.

It is dangerous because the patient may deteriorate silently.

Mixed Delirium

The patient fluctuates between agitation and drowsiness.

They may be restless at night and sleepy during the day.

Mixed delirium is common.

The clinician must look for fluctuation, not one fixed behavior.

7. The Delirium Pathway Made Easy

Delirium happens when vulnerability meets stress.

Vulnerability

Some brains are more vulnerable.

Risk factors include:

- dementia
- older age
- frailty
- previous delirium
- stroke history
- Parkinsonism
- sensory impairment
- poor vision

- poor hearing
- malnutrition
- dehydration
- severe illness
- multiple comorbidities
- polypharmacy
- alcohol use
- depression
- sleep deprivation
- social isolation

Stressors

Acute stressors trigger delirium.

Common triggers include:

- infection
- hypoxia
- shock
- dehydration
- hypoglycemia
- hyperglycemia
- AKI
- liver failure
- electrolyte disturbance
- pain
- constipation
- urinary retention
- medication toxicity
- sedatives
- opioids
- anticholinergics
- steroids
- withdrawal from alcohol or sedatives
- surgery
- trauma
- unfamiliar environment
- sleep disruption
- restraints
- catheters and lines

- immobility

The same stressor may not cause delirium in a robust person but may cause severe delirium in a frail patient.

The question is:

What vulnerability and what trigger combined to overwhelm this brain?

8. Common Delirium Triggers

Infection

Common sources include:

- pneumonia
- urinary infection with systemic illness
- sepsis
- cellulitis
- infected wounds
- abdominal infection
- cholangitis
- meningitis or encephalitis in selected patterns

In frailty, infection may present first as delirium.

Hypoxia

Causes include:

- pneumonia
- COPD exacerbation
- pulmonary edema
- pulmonary embolism
- asthma
- severe anemia
- carbon monoxide exposure

The brain needs oxygen continuously.

Glucose Problems

Both low and high glucose can cause confusion.

Hypoglycemia must be checked early.

Hyperglycemic crisis can also cause delirium through dehydration, osmolality, and acidosis.

Kidney Failure

AKI or advanced CKD may cause delirium through:

- toxin accumulation
- electrolyte disturbance
- acidosis
- fluid imbalance
- medicine accumulation

Liver Failure

Liver disease may cause encephalopathy, often worsened by:

- infection
- constipation
- bleeding
- dehydration
- sedatives
- kidney injury
- electrolyte disturbance

Medicines

Medicine causes are common.

High-risk medicines include:

- sedatives
- opioids
- anticholinergics
- antihistamines
- bladder medicines
- some anti-nausea medicines
- steroids
- polypharmacy combinations
- medicine accumulation in kidney or liver failure

Pain

Pain can cause delirium.

Undertreated pain and over-sedating pain treatment can both worsen delirium.

Constipation and Urinary Retention

These are common, reversible, and often missed.

A distended bladder or impacted stool can cause severe agitation.

Sleep Disruption

Hospital sleep deprivation can precipitate or worsen delirium.

Noise, lights, vital sign interruptions, pain, nocturia, anxiety, and unfamiliar surroundings all matter.

Withdrawal

Alcohol or sedative withdrawal can cause severe delirium.

Look for:

- tremor
- sweating
- agitation
- hallucinations
- high pulse
- high blood pressure

- seizures
- history of dependence

Withdrawal delirium can be life-threatening.

9. Delirium Assessment at the Bedside

A bedside delirium assessment should be simple and structured.

Step 1: Ask About Baseline

Ask family or caregivers:

- What is this person normally like?
- Is this confusion new?
- When did it start?
- Does it fluctuate?
- Does the patient have dementia?
- Can they usually walk?
- Can they usually manage medicines?
- What changed recently?

Baseline is essential.

Step 2: Assess Attention

Delirium is mainly an attention disorder.

Ask the patient to:

- name the days of the week backward
- count backward
- recite months backward
- follow a simple command
- stay focused during conversation

A delirious patient often cannot sustain attention.

Step 3: Assess Awareness and Orientation

Ask:

- What is your name?
- Where are you?
- What day or month is it?
- Why are you here?

Orientation can be impaired, but attention is more central.

Step 4: Assess Thinking

Look for:

- rambling speech
- illogical answers

- disorganized thoughts
- paranoid ideas
- hallucinations
- misinterpretations

Step 5: Assess Level of Arousal

Is the patient:

- alert
- hyperalert
- drowsy
- difficult to wake
- fluctuating

Reduced arousal is high-risk.

Step 6: Assess Safety

Ask:

- Can the patient swallow?
- Can they walk safely?
- Are they pulling lines?
- Are they trying to leave?
- Are they at risk of falling?
- Are they distressed?
- Are staff or family at risk?

Delirium assessment is both diagnostic and safety-focused.

10. Physical Examination in Delirium

Examination should search for triggers and complications.

Assess:

- airway and breathing
- oxygen saturation
- respiratory rate
- pulse
- blood pressure
- temperature
- glucose
- hydration
- pain
- pupils and focal neurological signs
- neck stiffness where relevant

- chest signs
- heart rhythm
- abdominal tenderness
- bladder distension
- constipation signs where relevant
- skin, wounds, cellulitis, pressure areas
- catheter or device infection
- medication patches
- evidence of trauma or fall
- tremor or withdrawal signs
- edema or heart failure signs
- jaundice or liver disease signs

A delirious patient may not report symptoms reliably.

The body must be examined carefully.

11. Initial Investigations

Investigations depend on the clinical picture.

Common initial investigations may include:

- glucose
- oxygen saturation
- ECG
- full blood count
- renal function and electrolytes
- sodium, potassium, calcium
- liver tests
- inflammatory markers where useful
- urinalysis where urinary symptoms or systemic infection context suggests
- cultures where infection is suspected
- chest imaging where respiratory infection, heart failure, or hypoxia is possible
- blood gas where carbon dioxide retention, severe sepsis, acidosis, or respiratory failure is possible
- medication levels where relevant and available
- toxicology where overdose or poisoning is suspected
- head imaging where head injury, focal signs, anticoagulation concern, or stroke concern exists
- lumbar puncture pathway where meningitis or encephalitis is suspected and safe according to local guidance
- bladder scan where retention is possible
- constipation assessment

- pain assessment
- withdrawal risk assessment

Testing should answer:

- Is oxygen safe?
- Is glucose safe?
- Is infection present?
- Are kidneys failing?
- Are electrolytes dangerous?
- Are medicines accumulating?
- Is there stroke, bleed, seizure, or head injury?
- Is pain, retention, constipation, or withdrawal driving delirium?

12. Medicines and Delirium

Medicines are a major cause of delirium.

Always review:

- new medicines
- dose changes
- stopped medicines
- over-the-counter medicines
- sedatives
- opioids
- anticholinergics
- antihistamines
- bladder medicines
- sleeping tablets
- anti-nausea medicines
- steroids
- antidepressants
- antipsychotics
- anti-seizure medicines
- Parkinson’s medicines
- alcohol
- herbal products

Ask:

- Did confusion begin after a medication change?
- Has kidney or liver function worsened?
- Is the patient taking old medicines too?

Are there duplicates?

Is there withdrawal?

Are medicines causing constipation or retention?

Is pain undertreated because sedatives were avoided?

Is pain overtreated with excessive opioid or sedative burden?

Medication review is delirium treatment.

13. Delirium and Pain

Pain is often missed in delirium.

A delirious patient may not say:

“I am in pain.”

They may:

moan

grimace

resist movement

become agitated

stop eating

stop walking

sleep poorly

strike out when touched

become withdrawn

Common pain sources include:

fracture

pressure injury

urinary retention

constipation

arthritis

infection

surgical wound

neuropathy

abdominal pathology

chest wall injury after fall

Pain should be treated.

But treatment must avoid over-sedation.

The wise question is:

What pain relief will allow comfort, breathing, sleep, and mobility without worsening delirium?

14. Delirium and Urinary Retention

Urinary retention is a classic reversible cause.

Clues include:

- agitation
- lower abdominal discomfort
- reduced urine output
- overflow incontinence
- recent surgery
- prostate disease
- constipation
- anticholinergic medicines
- opioids
- immobility
- catheter blockage

A full bladder can make a patient extremely distressed.

Check for retention.

Do not assume agitation is psychiatric before checking the bladder.

15. Delirium and Constipation

Constipation can worsen delirium.

Clues include:

- no bowel movement
- abdominal discomfort
- poor appetite
- nausea
- agitation
- overflow diarrhea
- opioid use
- immobility
- dehydration
- anticholinergic medicines

Constipation is common, treatable, and easy to miss.

A delirium plan should include bowel review.

16. Delirium and Sleep

Sleep-wake reversal is common in delirium.

Hospital can worsen this through:

- noise
- lights
- alarms
- frequent interruptions
- pain
- anxiety
- unfamiliar surroundings
- daytime inactivity
- nighttime vital signs
- steroids
- diuretics at inconvenient times
- caffeine
- withdrawal

Protect sleep by:

- reducing nighttime disturbance where safe
- orienting the patient
- encouraging daytime light and activity
- avoiding unnecessary daytime naps
- treating pain
- reducing noise
- ensuring glasses and hearing aids
- involving family
- avoiding sedatives unless clearly needed and safe

Sedation is not the same as sleep.

17. Delirium and Restraints

Physical restraint may worsen delirium.

Restraints can cause:

- fear
- agitation
- injury
- loss of trust
- immobility
- pressure injury
- humiliation
- worsening confusion

Sometimes immediate safety concerns require urgent action, but restraint should never replace diagnosis and care.

Before restraint, ask:

- Is the patient in pain?
- Are they hypoxic?
- Are they retaining urine?
- Are they constipated?
- Are they frightened?
- Do they need family presence?
- Can lines or catheters be removed?
- Can observation be increased?
- Can the environment be calmer?
- Is there a less restrictive option?

The goal is safety with dignity.

18. Non-Drug Treatment of Delirium

Non-drug care is central.

Important measures include:

Orientation

- clocks
- calendars
- repeated explanation
- familiar objects
- family presence
- clear staff introduction

Sensory Support

- glasses
- hearing aids
- dentures
- adequate lighting

Mobility

- early safe mobilization
- avoid unnecessary bed rest
- physiotherapy where needed
- prevent deconditioning

Hydration and Nutrition

- offer fluids
- assist feeding

- check swallowing
- treat nausea
- support meals

Sleep Protection

- reduce noise
- daytime light
- nighttime calm
- avoid unnecessary waking where safe

Pain Control

- assess regularly
- treat appropriately
- avoid excessive sedation

Bowel and Bladder Care

- prevent constipation
- check retention
- remove unnecessary catheters

Medication Review

- stop or reduce deliriogenic medicines where appropriate
- avoid unnecessary sedatives
- adjust doses for kidney and liver function

Family Involvement

Family can help orient, reassure, interpret baseline, and reduce fear.

Non-drug care is not “soft.”

It treats the conditions that allow the brain to reorganize.

19. When Are Medicines Used for Delirium?

Medicines may be needed when severe agitation or distress creates immediate danger.

Examples:

- patient is at risk of serious harm
- patient is pulling essential life-support treatment
- patient is severely distressed by hallucinations
- patient is violent because of confusion
- non-drug approaches have not been enough
- urgent investigation or treatment is impossible without calming the patient

But medicines should be used carefully.

Before using medication, ask:

- Is hypoxia corrected?
- Is glucose safe?

Is pain treated?

Is retention excluded?

Is constipation considered?

Are unnecessary lines removed?

Is family present?

Is the environment calm?

Is withdrawal being treated appropriately?

What medicine is safest for this patient?

What monitoring is needed?

What is the plan to stop it?

Sedating a delirious patient without treating the cause is not repair.

20. Delirium and Dementia

Dementia increases delirium risk.

Delirium also worsens dementia outcomes.

In a patient with dementia, delirium may appear as:

sudden worsening memory

increased agitation

new hallucinations

refusal of care

wandering

new incontinence

sleep reversal

reduced speech

drowsiness

sudden loss of walking

Ask family:

Is this their usual behavior?

What helps calm them?

What frightens them?

What routines matter?

Do they recognize family?

What is their baseline mobility?

What is their usual sleep pattern?

What medicines do they take?

Care should preserve familiarity and reduce threat.

A dementia patient with delirium is not “just dementia.”

They are acutely unwell until proven otherwise.

21. Delirium and Frailty

Frailty makes delirium more likely and more dangerous.

A frail patient with delirium is at risk of:

- falls
- aspiration
- dehydration
- malnutrition
- pressure injury
- immobility
- medication harm
- longer hospitalization
- functional decline
- caregiver distress
- institutionalization
- death

Frailty delirium care must protect:

- mobility
- nutrition
- hydration
- sleep
- skin
- dignity
- caregiver support
- discharge planning

The delirium may clear slowly.

Repair must be patient and structured.

22. Delirium and Communication

A delirious patient is often frightened.

They may not understand where they are or why care is happening.

Communication should be:

- calm
- slow
- simple
- repeated

non-threatening

respectful

reassuring

Useful phrases:

“You are in hospital. You are safe. You became confused because your body is unwell. We are treating the cause.”

“I know this feels frightening. I will explain before I touch you.”

“Your daughter is here. She knows you. We are helping you get better.”

Do not argue with hallucinations.

Do not shame the patient.

Do not speak as if they are not present.

Delirium is frightening from the inside.

23. Delirium and Family

Family members are essential.

They can provide:

baseline cognition

medication history

alcohol or sedative use history

usual routines

glasses, hearing aids, dentures

familiar voice

reassurance

translation of patient behavior

discharge support

Families need explanation.

Say:

“This sudden confusion is called delirium. It often happens when the brain is stressed by illness, medicines, pain, dehydration, infection, or hospitalization. We are looking for the causes and also trying to protect sleep, hydration, movement, and orientation.”

Families may fear the patient has permanently worsened.

Be honest:

delirium often improves

recovery can take days to weeks

some patients do not fully return to baseline

dementia or frailty increases risk

family support helps

Family reassurance is part of care.

24. Delirium Repair Trajectory

Repair is shown by:

- attention improves
- patient is more awake at appropriate times
- sleep-wake cycle stabilizes
- orientation improves
- hallucinations reduce
- agitation reduces
- drowsiness improves
- patient eats and drinks
- pain controlled
- bowels open
- bladder emptying safe
- oxygenation stable
- glucose stable
- infection improves
- kidney function stabilizes
- medicines simplified
- mobility improves
- family reports patient is closer to baseline
- patient can participate in decisions again

Repair may fluctuate.

A patient may improve during the day and worsen at night.

Do not declare failure too early.

But do reassess if delirium persists or worsens.

25. Monitoring Delirium

Monitor:

- attention
- orientation
- arousal
- sleep pattern
- agitation
- hallucinations
- distress
- oral intake

- hydration
- urine output
- bowel function
- pain
- mobility
- falls risk
- oxygenation
- glucose
- infection markers where useful
- renal function
- electrolytes
- medication changes
- family observations

Ask daily:

- Is the delirium better, worse, or fluctuating?
- What triggers have been found?
- What triggers remain untreated?
- Is the patient safer today?
- Is mobility protected?
- Is the patient eating?
- Is discharge safe?

Delirium monitoring is whole-person monitoring.

26. Discharge Safety After Delirium

Before discharge, ask:

- Has the cause been identified or reasonably addressed?
- Is the patient's mental state near baseline?
- If not, is support adequate?
- Can the patient eat and drink?
- Can the patient walk or transfer safely?
- Is swallowing safe?
- Are medicines simplified?
- Are deliriogenic medicines reduced where possible?
- Is sleep improving?
- Is pain controlled?
- Are bowels and bladder safe?
- Is caregiver informed?

Are warning signs explained?

Is follow-up arranged?

Is driving, cooking, or medication management safe?

Are pending results assigned?

Is home environment safe?

Does the family understand that recovery may take time?

A patient who is no longer agitated may still be unsafe if attention, mobility, or medicine management remain impaired.

27. Worked Case 1: Delirium From Pneumonia

An 83-year-old woman with mild dementia presents with new confusion, poor appetite, and a fall. She has tachypnea, mild hypoxia, and crackles at the right base.

Danger

Pneumonia, hypoxia, delirium, fall injury, dehydration, AKI risk.

Delirium Pattern

Acute confusion triggered by infection and oxygenation stress in vulnerable brain.

Capacity Failure

Cognition, oxygenation, defense, hydration, mobility, agency.

Coupling Conditions

Mild dementia, age, frailty, poor intake, fall risk, possible CKD, unfamiliar environment.

Wise Perturbation

Treat pneumonia according to local guidance. Support oxygenation, hydration, nutrition, mobility, sleep, orientation, and family presence. Review medicines. Assess for injury and delirium triggers.

Repair Trajectory

Breathing improves, oxygenation stabilizes, attention improves, appetite returns, mobility improves, family reports closer to baseline.

28. Worked Case 2: Delirium From Medicines

An 86-year-old man becomes confused and drowsy after starting an opioid for back pain and a sleeping tablet. He has CKD and constipation.

Danger

Medication toxicity, falls, respiratory depression risk, constipation, pain, AKI contribution.

Delirium Pattern

Medicine-related delirium with reduced clearance and sedative burden.

Capacity Failure

Cognition, breathing safety, bowel clearance, mobility, medicine safety, pain control.

Coupling Conditions

CKD, age, pain, opioid, sleeping tablet, constipation, possible dehydration.

Wise Perturbation

Review and reduce harmful medicines where appropriate. Treat constipation. Assess pain source and use safer pain strategy. Check oxygenation, glucose, renal function, electrolytes, and falls risk.

Repair Trajectory

Drowsiness improves, attention returns, bowels open, pain controlled without over-sedation, mobility safer.

29. Worked Case 3: Delirium From Urinary Retention

An 80-year-old man becomes agitated after surgery. He is restless, trying to climb out of bed, and has not passed urine. He is taking opioids.

Danger

Urinary retention, pain, delirium, falls, AKI risk.

Delirium Pattern

Agitated delirium from bladder distension, postoperative stress, opioids, and unfamiliar environment.

Capacity Failure

Cognition, bladder emptying, comfort, mobility safety, medicine safety.

Coupling Conditions

Surgery, opioids, immobility, prostate disease risk, sleep disruption, hospital environment.

Wise Perturbation

Assess bladder and relieve retention according to local pathway. Review opioids, pain, hydration, renal function, constipation, and infection risk. Reorient and mobilize safely.

Repair Trajectory

Agitation settles, bladder emptying safe, pain controlled, sleep improves, mobility resumes.

30. Worked Case 4: Hypoactive Delirium

A 79-year-old woman admitted with heart failure becomes quiet, sleepy, and eats very little. Staff think she is “just tired.” Her sodium is low, and she is constipated.

Danger

Hypoactive delirium, hyponatremia, poor intake, constipation, falls, worsening frailty.

Delirium Pattern

Quiet delirium with metabolic and bowel triggers.

Capacity Failure

Attention, arousal, nutrition, sodium-water regulation, bowel clearance, mobility.

Coupling Conditions

Heart failure, diuretics, older age, hospitalization, constipation, poor sleep.

Wise Perturbation

Recognize hypoactive delirium. Assess sodium severity and cause according to local guidance. Treat constipation, support nutrition, review medicines, protect sleep and mobility, involve family.

Repair Trajectory

Arousal improves, attention improves, sodium corrects safely, appetite returns, bowels open, mobility protected.

31. Worked Case 5: Alcohol Withdrawal Delirium

A 58-year-old man admitted after a fall becomes tremulous, sweating, agitated, and hallucinating two days later. He drinks alcohol daily but did not initially disclose this.

Danger

Alcohol withdrawal delirium, seizures, autonomic instability, injury, dehydration.

Delirium Pattern

Withdrawal delirium.

Capacity Failure

Brain regulation, autonomic stability, sleep, safety, hydration.

Coupling Conditions

Alcohol dependence, hospitalization, poor intake, injury, shame or underreporting, electrolyte disturbance.

Wise Perturbation

Treat according to local alcohol withdrawal pathway. Monitor vital signs, hydration, electrolytes, glucose, injury, and safety. Provide respectful, nonjudgmental care and plan for longer-term support.

Repair Trajectory

Tremor and agitation settle, hallucinations resolve, sleep improves, electrolytes stable, patient safe, alcohol support plan discussed.

32. Worked Case 6: Delirium and Unsafe Discharge

An 88-year-old woman treated for UTI and dehydration is less agitated but still inattentive, weak, eating poorly, and unable to manage medicines. She lives alone.

Danger

Incomplete delirium recovery, unsafe self-care, falls, medication error, dehydration recurrence.

Delirium Pattern

Partially improving delirium with persistent agency and function failure.

Capacity Failure

Attention, mobility, nutrition, medication agency, home safety.

Coupling Conditions

Age, frailty, living alone, recent infection, dehydration, poor intake, possible cognitive impairment.

Wise Perturbation

Do not discharge based only on reduced agitation. Assess baseline cognition, current attention, mobility, eating, medicines, caregiver support, home safety, and follow-up. Arrange support or alternative discharge setting as needed.

Repair Trajectory

Attention closer to baseline, eating improves, walking safe or supported, medicine plan supervised, home support arranged, family understands warning signs.

33. Common Student Pitfalls

Pitfall 1: Calling Delirium Dementia

Always ask whether the confusion is acute and different from baseline.

Pitfall 2: Missing Hypoactive Delirium

Quiet, sleepy delirium is common and dangerous.

Pitfall 3: Forgetting Glucose and Oxygen

Check both early.

Pitfall 4: Treating Agitation Without Finding the Cause

Sedation without diagnosis can worsen danger.

Pitfall 5: Forgetting Pain, Retention, and Constipation

These are common, reversible triggers.

Pitfall 6: Ignoring Medicines

Sedatives, opioids, anticholinergics, steroids, polypharmacy, and withdrawal are frequent causes.

Pitfall 7: Using Restraints Instead of Care

Restraints can worsen fear and delirium.

Pitfall 8: Discharging Before Agency Recovers

A patient may be calm but still unable to manage safely.

34. Clinical Practice Box

When assessing delirium, complete this structure:

Baseline:
What is the patient normally like? Dementia? Mobility? Medicines? Function?

Time course:
When did confusion begin? Does it fluctuate?

Delirium features:
Inattention, altered awareness, disorganized thinking, hallucinations, sleep-wake disturbance, agitation, drowsiness.

Immediate danger:
Hypoxia, hypoglycemia, sepsis, stroke, head injury, seizure, withdrawal, overdose, severe agitation, reduced consciousness?

Common triggers:
Infection, pain, dehydration, AKI, electrolytes, medicines, retention, constipation, sleep disruption, withdrawal.

Capacity failures:
Cognition, oxygenation, circulation, clearance, regulation, mobility, nutrition, agency.

Investigations:
Glucose, oxygenation, ECG, renal/electrolytes, FBC, infection assessment, imaging or blood gas where indicated, bladder/bowel review.

Wise perturbation:
Treat cause, review medicines, relieve pain/retention/constipation, orient, mobilize, hydrate, nourish, protect sleep, involve family.

Safety plan:
Falls, swallowing, lines, agitation, supervision, restraint avoidance, caregiver support.

Repair trajectory:
Attention, arousal, sleep, eating, mobility, family-recognized baseline, safe discharge.

35. Mini-Case for Practice

An 84-year-old man with mild dementia, diabetes, CKD, COPD, and osteoarthritis is admitted after a fall. He becomes more confused overnight, pulls at his oxygen tubing, and tries to climb out of bed. He is constipated, has not passed urine for many hours, recently received opioids for hip pain, and has a mild fever with cough.

Apply the delirium approach.

Danger

Delirium with fall risk, hypoxia risk, pneumonia or COPD exacerbation, urinary retention, constipation, opioid contribution, pain, AKI risk.

Delirium Pattern

Mixed delirium triggered by infection/respiratory illness, pain, opioid exposure, constipation, urinary retention, hospital environment, and baseline dementia.

Capacity Failure

Cognition, oxygenation, bladder emptying, bowel clearance, pain control, mobility safety, medicine safety, defense.

Coupling Conditions

Mild dementia, COPD, diabetes, CKD, osteoarthritis, fall, opioids, constipation, possible infection, unfamiliar ward, sleep disruption.

Wise Perturbation

Check oxygenation, respiratory status, glucose, vital signs, renal function, electrolytes, infection source, bladder retention, constipation, pain, and hip injury. Treat respiratory infection or COPD exacerbation according to local guidance. Relieve retention and constipation. Review opioids and other deliriogenic medicines. Provide orientation, family presence, glasses/hearing aids if needed, sleep protection, supervised mobility, and falls prevention.

Repair Trajectory

Oxygenation stabilizes, cough and fever improve, bladder and bowel problems resolve, pain controlled without over-sedation, attention improves, sleep-wake pattern settles, patient stops pulling oxygen, mobility becomes safer, family reports closer to baseline.

36. Student Takeaway

Delirium becomes easier when the clinician asks:

Is this an acute change from baseline?
Is attention impaired?
Is the patient hyperactive, hypoactive, or mixed?
What danger must be treated now?
Is oxygen low, glucose abnormal, infection present, kidney function worse, or medicine toxicity possible?
Is there pain, urinary retention, constipation, withdrawal, or sleep disruption?
What vulnerabilities made this brain susceptible?

What can we remove, restore, explain, reorient, simplify, mobilize, nourish, and protect?
How will we know the person is returning toward baseline?

Delirium is not bad behavior.

It is acute brain failure.

The safe clinician treats delirium as a medical emergency of meaning, attention, and safety: finding the cause, protecting the patient from harm, involving family, avoiding unnecessary sedation, and guiding the brain back toward coherence.

Chapter 55. Dementia Made Easy

Dementia is a progressive decline in cognition severe enough to interfere with daily life, independence, relationships, safety, or participation.

Patients may not say:

“I have dementia.”

They may say:

“My memory is not what it used to be.”
“I keep forgetting things.”
“I get lost.”
“I cannot manage my tablets.”
“I repeat myself.”
“I feel confused.”
“I am not myself.”

Families may say:

“She asks the same question again and again.”
“He is forgetting appointments.”
“She leaves the stove on.”
“He got lost driving.”
“She is not managing money anymore.”
“He is more suspicious.”
“She is awake all night.”
“We are worried about safety.”

Dementia is central to Internal Medicine because cognition shapes everything.

It shapes symptom reporting.
It shapes medication safety.
It shapes falls risk.
It shapes nutrition.
It shapes decision-making.
It shapes discharge planning.
It shapes diabetes control, blood pressure treatment, anticoagulation, pain assessment, delirium risk, and end-of-life care.

The first task is not simply to label the patient as forgetful.

The deeper question is:

What cognitive capacities are failing, what can still be supported, and what conditions make this person safe or unsafe?

Dementia becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Dementia?

Dementia is not one disease.

It is a syndrome.

It means that acquired cognitive decline is affecting daily life.

Cognition includes:

- memory
- attention
- language
- reasoning
- planning
- judgment
- visuospatial ability
- behavior
- emotional regulation
- social understanding
- ability to manage tasks

A person with dementia may struggle with:

- remembering appointments
- managing medicines
- paying bills
- cooking
- shopping
- driving
- finding words
- following conversations
- using appliances
- recognizing danger
- making decisions
- maintaining hygiene
- eating regularly
- navigating familiar places
- sleeping normally
- trusting others
- controlling emotions

Dementia is not simply “memory loss.”

It is a decline in the brain’s ability to organize life.

2. Dementia Is a Capacity Problem

Dementia affects many capacities.

Memory Capacity

The person may forget:

- recent conversations

- appointments
- medicine doses
- meals
- names
- events
- where objects are placed

Executive Capacity

The person may struggle to:

- plan
- sequence tasks
- solve problems
- manage money
- manage medicines
- follow instructions
- adapt to change

Language Capacity

The person may have difficulty:

- finding words
- understanding complex explanations
- following conversation
- naming objects
- expressing symptoms

Visuospatial Capacity

The person may struggle with:

- getting lost
- judging distance
- driving
- stairs
- recognizing objects
- navigating rooms

Emotional and Behavioral Regulation

The person may develop:

- anxiety
- irritability
- suspicion
- apathy
- agitation
- sleep disturbance

- disinhibition
- wandering
- distress

Agency Capacity

The person may lose ability to:

- understand illness
- consent to complex treatment
- manage medicines
- recognize danger
- seek help
- maintain nutrition
- attend appointments

Dementia is therefore not only a cognitive diagnosis.

It is a whole-person safety and participation diagnosis.

3. Dementia Is Not Delirium

This distinction is essential.

Dementia is usually gradual.

Delirium is acute.

A person with dementia can develop delirium on top of dementia.

This is common and dangerous.

Dementia

- develops over months to years
- usually progressive
- memory or other cognition declines gradually
- consciousness usually clear until late
- symptoms relatively stable day to day
- function declines slowly

Delirium

- develops over hours to days
- fluctuates during the day
- attention is impaired
- awareness is altered
- sleep-wake rhythm disrupted
- often caused by acute illness, medicine, metabolic disturbance, pain, constipation, retention, or withdrawal

The practical rule:

Any sudden worsening in a person with dementia is delirium until proven otherwise.

Do not say:

“That is just their dementia.”

Ask:

“What has changed, and what acute trigger is present?”

4. The First Question: Is There Danger Now?

Dementia becomes dangerous when cognition no longer supports basic safety.

Urgent assessment is needed when there is:

- sudden confusion or worsening cognition
- delirium
- fall
- head injury
- wandering into danger
- unsafe driving
- medication mismanagement
- recurrent hypoglycemia
- not eating or drinking
- weight loss
- dehydration
- self-neglect
- unsafe cooking
- suspected abuse or neglect
- severe agitation
- hallucinations with distress or unsafe behavior
- suicidal thoughts or severe depression
- caregiver collapse
- inability to live safely at home
- unsafe swallowing
- aspiration risk
- pressure injuries
- new incontinence with systemic illness
- fever, hypoxia, low glucose, AKI, or medication toxicity
- refusal of essential care without capacity to understand consequences

The danger-first question is:

Is the person safe, and is any acute illness worsening the dementia picture?

5. Immediate Red Flags in Dementia

Red flags include:

- rapid cognitive decline
- fluctuating confusion
- new drowsiness
- new agitation
- new hallucinations
- focal neurological signs
- new seizures
- repeated falls
- head injury
- fever or low temperature
- low oxygen saturation
- hypoglycemia
- dehydration
- reduced urine output
- severe weight loss
- inability to swallow
- aspiration episodes
- severe depression
- suicidal ideation
- violent behavior due to confusion
- wandering from home
- medication overdose or missed essential medicines
- caregiver unable to continue care
- signs of neglect or abuse
- unsafe discharge plan

These signs require urgent assessment.

The clinician must not assume that all change is simply progression.

6. Dementia Presentations

Dementia can present in different ways.

Memory-Predominant Presentation

Features:

- forgets recent events
- repeats questions
- misplaces objects
- forgets appointments

- forgets conversations
- relies increasingly on family

Common in Alzheimer-type patterns, though not exclusive.

Executive Dysfunction Presentation

Features:

- poor planning
- difficulty managing finances
- medication errors
- poor judgment
- difficulty cooking or organizing tasks
- inability to handle complex instructions

May be prominent in vascular, frontal, or mixed patterns.

Language Presentation

Features:

- word-finding difficulty
- trouble naming objects
- difficulty understanding speech
- reduced conversation
- frustration with communication

Visuospatial Presentation

Features:

- getting lost
- difficulty driving
- trouble judging steps
- misreaching for objects
- difficulty dressing
- falls related to perception

Behavioral Presentation

Features:

- personality change
- apathy
- disinhibition
- irritability
- poor social judgment
- compulsive behavior
- loss of empathy
- new impulsivity

Mixed Presentation

Many patients have overlapping features.

The question is:

Which cognitive capacities are failing first and most?

7. Common Dementia Syndromes

A textbook does not need students to diagnose every subtype immediately.

But recognizing broad patterns helps.

Alzheimer-Type Pattern

Often begins with:

- recent memory loss
- repetition
- misplacing items
- difficulty learning new information
- later language, visuospatial, and executive decline

Vascular Cognitive Impairment Pattern

Often associated with:

- stroke history
- stepwise decline
- slowed thinking
- executive dysfunction
- gait problems
- vascular risk factors
- mood changes

Lewy Body Pattern

May include:

- fluctuating cognition
- visual hallucinations
- Parkinsonism
- REM sleep behavior symptoms
- sensitivity to some antipsychotic medicines
- falls or syncope

Frontotemporal Pattern

May include:

- early personality change
- disinhibition
- apathy
- compulsive behavior
- loss of empathy

language changes

younger onset in some cases

Mixed Dementia

Many older patients have mixed pathology.

For example:

Alzheimer-type changes plus vascular disease

dementia plus Parkinsonism

dementia plus depression

dementia plus medication effects

dementia plus recurrent delirium

The practical point:

Subtype matters, but safety, function, triggers, caregiver support, and goals matter every day.

8. Dementia History Made Easy

A dementia history should include both patient and collateral history.

Collateral history is essential because insight may be reduced.

Ask family or caregiver:

Onset and Course

When did symptoms begin?

Was onset sudden or gradual?

Is decline steady, stepwise, or fluctuating?

Was there a stroke, fall, infection, hospitalization, or medication change?

Is this different from baseline?

Cognitive Symptoms

Memory problems?

Repeating questions?

Getting lost?

Word-finding difficulty?

Poor judgment?

Trouble with money?

Trouble with medicines?

Trouble cooking?

Leaving stove or water on?

Difficulty using phone or appliances?

Behavior and Mood

Depression?

Anxiety?

Irritability?

Suspicion?

Hallucinations?

Agitation?

Apathy?

Sleep disturbance?

Wandering?

Disinhibition?

Personality change?

Function

Bathing?

Dressing?

Toileting?

Eating?

Cooking?

Shopping?

Driving?

Finances?

Medicines?

Appointments?

Housework?

Safety

Falls?

Driving concerns?

Fire risk?

Wandering?

Medication errors?

Scams or financial exploitation?

Abuse or neglect?

Weapons or dangerous tools at home where relevant?

Living alone?

Emergency contact?

Medical Contributors

Stroke?

Diabetes?

CKD?

thyroid disease?

B12 deficiency risk?

alcohol?

depression?

sleep apnea?

hearing or vision problems?

head injury?

medications?

family history?

The key question is:

What has changed in cognition, function, behavior, and safety?

9. Bedside Assessment of Dementia

A bedside assessment should evaluate:

attention

orientation

memory

language

executive function

visuospatial function

mood

behavior

insight

function

safety

Attention

Attention helps separate delirium from dementia.

Ask the patient to:

repeat digits

spell a word backward

name months backward

follow a multi-step command

Poor attention with acute change suggests delirium.

Memory

Ask about:

recent events

recall of words after delay

medication use

meals

appointments

Language

Assess:

- naming
- fluency
- comprehension
- repetition
- ability to explain symptoms

Executive Function

Assess:

- clock drawing where used
- sequencing
- problem-solving
- ability to explain how they take medicines
- ability to plan a simple task

Visuospatial Ability

Assess:

- copying shapes where appropriate
- clock drawing
- navigation history
- dressing difficulty
- falls pattern

Mood

Screen for depression and anxiety.

Depression can mimic or worsen cognitive impairment.

Function

Ask what the patient can actually do.

Cognition matters because it affects life.

10. Reversible and Contributing Conditions

Some cognitive decline is caused or worsened by treatable factors.

Always consider:

- delirium
- depression
- medication effects
- hypothyroidism
- vitamin B12 deficiency
- folate deficiency in selected contexts
- anemia
- CKD or uremia

- liver disease
- sleep apnea
- alcohol-related cognitive impairment
- normal pressure hydrocephalus in selected patterns
- subdural hematoma after falls or anticoagulation
- brain tumor in selected patterns
- stroke or vascular disease
- syphilis or HIV where clinically appropriate
- sensory impairment
- severe grief
- poor sleep
- chronic pain
- social isolation

Dementia diagnosis should not be made without considering mimics and contributors.

The question is:

What can be treated, even if dementia is also present?

11. Medication Review in Dementia

Medicines can worsen cognition.

Review:

- sedatives
- sleeping tablets
- opioids
- anticholinergics
- bladder medicines
- antihistamines
- anti-nausea medicines
- some antidepressants
- antipsychotics
- steroids
- anti-seizure medicines
- polypharmacy interactions
- alcohol
- herbal products
- medicines accumulating in CKD or liver disease

Ask:

- Did cognition worsen after a medication change?

- Is the patient taking medicines correctly?
- Are old medicines still being used?
- Are there duplicates?
- Is there hypoglycemia?
- Is there hypotension?
- Is there constipation or urinary retention?
- Is the medicine still needed?
- Can the regimen be simplified?

Medication review is one of the highest-yield dementia interventions.

12. Dementia and Diabetes

Diabetes care becomes more dangerous when cognition declines.

Risks include:

- missed meals
- missed medicines
- double dosing
- insulin errors
- hypoglycemia
- hyperglycemia
- dehydration
- foot neglect
- inability to monitor glucose
- inability to respond to low sugar
- poor wound care

In dementia, diabetes treatment should prioritize:

- avoiding hypoglycemia
- simplifying regimens
- matching treatment to meals and support
- caregiver involvement
- foot care
- hydration
- realistic targets according to local guidance and patient context

A perfect glucose target is not useful if it causes falls, confusion, or fear.

13. Dementia and Hypertension

Blood pressure treatment in dementia requires balance.

Benefits may include:

- stroke prevention
- vascular protection
- kidney and heart protection in selected contexts

Harms may include:

- dizziness
- orthostatic hypotension
- falls
- syncope
- AKI
- poor perfusion
- medication complexity

Ask:

- Is blood pressure causing symptoms?
- Is there orthostatic hypotension?
- Has the patient fallen?
- Are medicines being taken correctly?
- Is the patient dehydrated?
- What is the patient's stage of dementia and frailty?
- What are the goals of care?

The goal is safe vascular regulation, not numbers alone.

14. Dementia and Falls

Dementia increases falls risk through:

- poor judgment
- wandering
- visuospatial impairment
- impulsivity
- poor attention
- medication errors
- slow reaction time
- parkinsonism
- neuropathy
- poor footwear
- environmental mismatch
- nighttime confusion
- sedating medicines

After a fall in dementia, assess:

- injury
- head trauma
- delirium
- infection
- glucose
- orthostatic hypotension
- medicines
- pain
- environment
- supervision
- walking aid use
- fear or agitation

A fall in dementia often reveals a mismatch between capacity and environment.

15. Dementia and Nutrition

Dementia may impair nutrition through:

- forgetting to eat
- inability to shop or cook
- loss of appetite
- depression
- swallowing difficulty
- poor dentition
- inability to use utensils
- wandering during meals
- altered taste
- suspicion about food
- caregiver burden
- advanced disease

Warning signs include:

- weight loss
- dehydration
- recurrent infections
- falls
- pressure injuries
- constipation
- weakness
- poor wound healing

Ask:

- Who prepares meals?
- Is the patient eating?
- Are meals supervised?
- Is swallowing safe?
- Are dentures available?
- Is weight falling?
- Does the patient cough while eating?
- Is feeding becoming prolonged or distressing?
- What are the goals of care?

Nutrition in dementia is about safety, dignity, and realistic support.

16. Dementia and Swallowing

Swallowing may become unsafe as dementia advances.

Signs include:

- coughing with meals
- choking
- wet voice
- recurrent pneumonia
- prolonged chewing
- pocketing food
- weight loss
- fear of eating
- drooling
- refusal of food
- aspiration events

Swallowing failure affects:

- nutrition
- hydration
- pneumonia risk
- comfort
- dignity
- medication administration

Wise care may include:

- swallowing assessment
- texture modification where appropriate
- feeding support

- positioning
- oral care
- medication review
- goals-of-care discussion

The question is not only:

“Can we get calories in?”

The question is:

“Can this person eat safely, comfortably, and with dignity?”

17. Dementia and Pain

Pain is often missed in dementia.

The patient may not describe pain clearly.

Pain may appear as:

- agitation
- aggression
- withdrawal
- poor sleep
- refusing care
- grimacing
- guarding
- reduced mobility
- poor appetite
- calling out
- worsening confusion

Common pain sources include:

- arthritis
- fractures
- pressure injuries
- urinary retention
- constipation
- neuropathy
- dental disease
- infection
- wounds

Pain should be assessed regularly.

Treat pain in ways that support function while avoiding excessive sedation.

18. Dementia and Behavior

Behavioral symptoms are communication.

Agitation, wandering, shouting, resistance, suspicion, or aggression often mean something is wrong.

Possible causes include:

- pain
- fear
- hunger
- thirst
- constipation
- urinary retention
- infection
- hypoxia
- medication effects
- noise
- overstimulation
- boredom
- sleep disruption
- unfamiliar environment
- need to toilet
- poor communication
- delusions or hallucinations
- caregiver stress

Before using sedating medication, ask:

What is the behavior trying to tell us?

Behavior care begins with interpretation.

19. Non-Drug Approaches to Behavioral Symptoms

Non-drug approaches are first-line in many situations.

Examples:

- calm communication
- familiar routine
- reduce noise
- improve lighting
- ensure glasses and hearing aids
- treat pain
- offer food and fluids
- check toileting needs

- treat constipation
- check urinary retention
- encourage daytime activity
- protect sleep
- use music, family voice, familiar objects
- avoid confrontation
- simplify choices
- redirect rather than argue
- provide safe walking space
- support caregiver training

The goal is not to control the person.

The goal is to reduce distress and restore safety.

20. When Medicines Are Used for Behavior

Sometimes behavior creates serious risk.

Medication may be considered when:

- severe distress persists
- risk of harm is high
- non-drug approaches have not worked
- psychosis is terrifying or dangerous
- aggression threatens safety
- urgent care is impossible otherwise

But sedating medicines can cause:

- falls
- stroke risk in some contexts
- worsening cognition
- drowsiness
- aspiration
- movement problems
- prolonged sedation
- loss of function

Before prescribing, ask:

- Is there delirium?
- Is there pain?
- Is there infection?
- Is there retention or constipation?
- Is there hypoxia?

- Are current medicines causing the behavior?
- What is the target symptom?
- How will benefit be measured?
- What is the review and stopping plan?
- Does the family understand risks and goals?

Medication for behavior should be cautious, purposeful, monitored, and reviewed.

21. Dementia and Decision-Making Capacity

Dementia does not automatically remove decision-making capacity.

Capacity is decision-specific.

A person may be unable to manage finances but still able to choose a meal, express comfort preferences, or participate in care decisions.

Assess whether the person can:

- understand relevant information
- retain it long enough to decide
- weigh benefits and harms
- communicate a choice

Support capacity by:

- using simple language
- reducing distractions
- using hearing aids and glasses
- involving trusted people
- allowing time
- treating delirium
- managing pain
- choosing the best time of day
- using written or visual aids

Respect remaining agency.

Even when a surrogate decision-maker is needed, the person's voice still matters.

22. Dementia and Driving

Driving requires memory, attention, judgment, vision, reaction time, and visuospatial skill.

Dementia can make driving unsafe.

Warning signs include:

- getting lost
- near misses
- new dents

- traffic violations
- slow reactions
- confusion at intersections
- family concern
- accidents
- difficulty parking
- road rage or poor judgment
- driving at inappropriate times or places

Driving conversations can be emotional because driving represents independence.

Approach respectfully:

“This is not about punishment. It is about safety — yours and others’. Dementia can affect reaction time, judgment, and navigation even when a person still feels confident.”

Follow local legal and reporting requirements.

23. Dementia and Home Safety

Home safety assessment should include:

- cooking safety
- stove use
- wandering risk
- locks and exits
- bathroom safety
- fall hazards
- medication storage
- sharp objects
- financial exploitation risk
- emergency contacts
- smoke alarms
- food availability
- water and hydration
- lighting
- stairs
- supervision
- caregiver availability

A person with dementia may be safe at home with support.

Another may be unsafe alone.

The question is:

Does the environment fit the person’s current cognitive and functional capacity?

24. Dementia and Caregivers

Caregivers are central in dementia care.

They may manage:

- medicines
- meals
- bathing
- dressing
- toileting
- finances
- appointments
- transportation
- safety
- behavior
- sleep disruption
- emotional support
- decisions

Caregiver burden may include:

- exhaustion
- depression
- anger
- guilt
- sleep deprivation
- financial strain
- social isolation
- physical injury
- inability to work
- grief
- fear of the future

Ask caregivers:

- What is hardest?
- Are you sleeping?
- Do you have help?
- Are you safe?
- Is the patient safe?
- What behaviors are most difficult?
- Do you understand the medicines?

What support would help most?

Are you nearing a breaking point?

Caregiver support is patient care.

25. Dementia and Abuse or Neglect

People with dementia are vulnerable to abuse and neglect.

Warning signs include:

unexplained bruises

fearfulness

poor hygiene

malnutrition

dehydration

pressure injuries

medication mismanagement

delayed presentation

caregiver hostility

financial exploitation

isolation

unsafe living conditions

patient reports mistreatment

inconsistent stories

Neglect may be intentional or due to overwhelmed caregivers.

Approach carefully and follow local safeguarding procedures.

Safety and dignity are core medical responsibilities.

26. Dementia and Advance Care Planning

Dementia is progressive.

Advance care planning should begin early, while the person can still participate.

Discuss:

preferred decision-maker

values

acceptable quality of life

hospitalization preferences

resuscitation preferences where appropriate

feeding decisions in advanced disease

comfort priorities

preferred place of care

- spiritual and cultural wishes
- what the person fears most
- what brings meaning

These conversations are not about giving up.

They are about preserving agency before capacity declines further.

27. Dementia and Advanced Disease

Advanced dementia may include:

- inability to recognize family
- inability to communicate clearly
- dependence for basic care
- swallowing difficulty
- recurrent infections
- weight loss
- immobility
- pressure injuries
- incontinence
- recurrent hospitalization
- distress with transfers or procedures

At this stage, ask:

- What is the goal of care?
- Is treatment restoring comfort or adding burden?
- Would hospitalization help or harm?
- How can symptoms be relieved?
- Is eating safe and comfortable?
- How can family be supported?
- Is palliative care appropriate?
- What would dignity look like now?

Repair may no longer mean restoring independence.

It may mean comfort, familiarity, relief of distress, and presence.

28. Initial Investigations in Cognitive Decline

Investigations depend on the pattern.

Common considerations include:

- medication review
- glucose
- full blood count

- renal function and electrolytes
- calcium
- liver tests
- thyroid function
- B12 and other nutritional tests where appropriate
- depression assessment
- alcohol history
- sleep assessment
- infection assessment if acute change
- brain imaging where indicated by local pathways, atypical features, focal signs, rapid decline, head injury, or diagnostic uncertainty
- cognitive screening tool where available
- hearing and vision assessment
- functional assessment
- collateral history

Testing should answer:

- Is this delirium?
- Is there a reversible contributor?
- Is there a dangerous neurological cause?
- What cognitive pattern is present?
- What safety risks need action?

29. Wise Perturbation in Dementia

Treatment depends on the main problem.

If Delirium Is Present

Treat delirium triggers urgently.

Dementia care cannot proceed safely until acute brain stress is addressed.

If Medicines Worsen Cognition

Simplify and deprescribe where appropriate.

If Function Is Declining

Assess supports, rehabilitation, nutrition, pain, mobility, sensory aids, and home safety.

If Behavior Is Distressing

Look for pain, infection, fear, constipation, retention, sleep disruption, environment, and caregiver stress.

If Safety Is Failing

Address driving, cooking, wandering, falls, medicines, finances, and supervision.

If Caregiver Is Overwhelmed

Support the caregiver, arrange services where available, consider respite, and reassess care setting.

If Advanced Dementia Is Present

Clarify goals, reduce burden, treat distress, and consider palliative care.

Wise dementia care protects cognition, function, safety, agency, and dignity.

30. Repair Trajectory in Dementia

Dementia is often progressive, so “repair” has a different meaning.

Repair may mean:

- delirium clears
- medication burden reduced
- falls decrease
- nutrition improves
- sleep improves
- pain controlled
- behavior less distressing
- caregiver supported
- home made safer
- decision-making support clarified
- driving risk addressed
- advance care plan completed
- unnecessary hospitalizations reduced
- patient remains engaged in meaningful activity
- distress relieved
- dignity preserved

Repair does not always mean reversing dementia.

It means improving the conditions in which the person lives with dementia.

31. Monitoring Dementia Care

Monitor:

- cognition trajectory
- function
- falls
- weight
- swallowing
- sleep
- behavior
- pain
- mood
- medicines
- glucose safety

- blood pressure symptoms
- infections
- wandering
- caregiver burden
- home safety
- financial vulnerability
- decision-making capacity
- goals of care

Ask at follow-up:

- What has changed?
- What is harder now?
- Any falls?
- Any wandering?
- Any medication mistakes?
- Is eating okay?
- Is swallowing safe?
- Is sleep disrupted?
- Any agitation or distress?
- Is the caregiver coping?
- What support is missing?

Dementia care is longitudinal care.

32. Discharge Safety in Dementia

Before discharge, ask:

- Is delirium excluded or treated?
- Is cognition at baseline or safely supported?
- Can the patient eat and drink?
- Is swallowing safe?
- Can the patient walk or transfer safely?
- Are falls risks addressed?
- Is medication plan simple and supervised?
- Are high-risk medicines reviewed?
- Is glucose plan safe?
- Is pain controlled?
- Are bowels and bladder safe?
- Is wandering risk addressed?
- Is caregiver available and informed?

Is home environment safe?

Are follow-up appointments realistic?

Are pending results assigned?

Are warning signs explained to caregiver?

Are goals of care documented where relevant?

A person with dementia may be medically stable but unsafe without support.

Discharge must be cognition-aware.

33. Worked Case 1: Dementia Versus Delirium

An 84-year-old woman with known mild dementia is brought in because she became suddenly more confused over two days. She is not eating, is sleeping during the day, and is awake at night. She has cough, low oxygen saturation, and mild fever.

Danger

Delirium due to pneumonia or respiratory illness, hypoxia, dehydration, falls risk.

Dementia Pattern

Baseline dementia with acute delirium superimposed.

Capacity Failure

Cognition, oxygenation, defense, hydration, sleep-wake regulation, agency.

Coupling Conditions

Dementia, age, frailty, poor intake, possible CKD, home support.

Wise Perturbation

Do not attribute sudden change to dementia. Treat respiratory illness according to local guidance. Support oxygenation, hydration, sleep, mobility, nutrition, orientation, and family presence. Review medicines.

Repair Trajectory

Oxygenation improves, fever settles, attention improves, sleep-wake rhythm stabilizes, appetite returns, family reports closer to baseline.

34. Worked Case 2: Medication Mismanagement

A 79-year-old man with early dementia, diabetes, hypertension, and CKD has recurrent hypoglycemia and dizziness. His daughter finds he has been taking some tablets twice and skipping meals.

Danger

Hypoglycemia, falls, AKI risk, medicine error.

Dementia Pattern

Executive dysfunction impairing medicine and meal management.

Capacity Failure

Agency, glucose regulation, brain energy, mobility safety, medicine safety.

Coupling Conditions

Dementia, diabetes medicines, CKD, irregular meals, poor supervision, complex regimen.

Wise Perturbation

Treat hypoglycemia. Simplify diabetes and blood pressure regimen according to local guidance. Involve daughter and pharmacy. Use pill organizer or supervised dosing. Align medicines with meals and kidney function.

Repair Trajectory

No recurrent lows, dizziness improves, medication errors reduce, daughter understands plan, glucose safer.

35. Worked Case 3: Agitation in Dementia

An 86-year-old woman with moderate dementia becomes agitated in the evening, shouting and trying to leave the house. She has arthritis, constipation, poor sleep, and recently started a bladder medicine.

Danger

Wandering, caregiver distress, medication side effect, pain, constipation, delirium risk.

Dementia Pattern

Behavioral distress with possible reversible triggers.

Capacity Failure

Emotional regulation, sleep, pain control, bowel clearance, safety, caregiver-supported participation.

Coupling Conditions

Dementia, evening confusion, arthritis pain, constipation, new anticholinergic-type medicine, caregiver fatigue, home environment.

Wise Perturbation

Assess for delirium, pain, constipation, urinary retention, infection, medication effects, sleep disruption, and environmental triggers. Review bladder medicine. Use calm routine, lighting, reassurance, toileting, pain control, bowel care, and caregiver support before sedating treatment.

Repair Trajectory

Evening distress reduces, bowels open, pain controlled, sleep improves, medication burden safer, caregiver feels supported.

36. Worked Case 4: Dementia and Falls

An 82-year-old man with dementia falls twice in one week. He wanders at night, takes a sedative, has poor vision, and has urinary urgency.

Danger

Injury, head trauma, medication harm, nocturnal wandering, unsafe toileting.

Dementia Pattern

Cognitive impairment with nighttime mobility and environmental mismatch.

Capacity Failure

Mobility safety, vision, sleep-wake regulation, bladder control, medicine safety, judgment.

Coupling Conditions

Dementia, sedative, poor lighting, urinary urgency, poor vision, possible home hazards, caregiver sleep disruption.

Wise Perturbation

Assess injuries, delirium, infection, glucose, orthostatic symptoms, medicines, vision, toileting pattern, and home safety. Reduce sedative risk where appropriate. Improve night lighting, toileting access, supervision, and walking safety.

Repair Trajectory

Falls reduce, nighttime safety improves, sedative burden reduced, urinary urgency plan clarified, caregiver sleep improves.

37. Worked Case 5: Caregiver Collapse

A 90-year-old woman with advanced dementia is dependent for bathing, dressing, toileting, feeding, and medicines. Her son is exhausted and says he cannot continue safely.

Danger

Caregiver collapse, neglect risk, patient safety risk, caregiver health risk.

Dementia Pattern

Advanced dementia with total care dependence and insufficient support.

Capacity Failure

Cognition, agency, mobility, continence, nutrition, caregiver-supported safety, dignity.

Coupling Conditions

Advanced disease, caregiver burden, limited respite, possible financial strain, sleep deprivation, social isolation.

Wise Perturbation

Assess patient needs, caregiver safety, home support, pressure injury, nutrition, swallowing, medicines, goals of care, and available services. Arrange respite, social support, community care, or alternative care setting where appropriate. Validate caregiver burden.

Repair Trajectory

Care becomes safer, caregiver strain reduced, patient hygiene/nutrition/comfort protected, future care plan clarified.

38. Worked Case 6: Advanced Dementia and Feeding

An 88-year-old woman with advanced dementia has recurrent aspiration pneumonia, weight loss, prolonged meals, and distress when fed.

Danger

Aspiration, malnutrition, distress, repeated hospitalization, goals-of-care uncertainty.

Dementia Pattern

Advanced dementia with swallowing and feeding difficulty.

Capacity Failure

Swallowing, nutrition, comfort, defense, agency, dignity.

Coupling Conditions

Advanced cognitive decline, recurrent pneumonia, caregiver grief, cultural beliefs about feeding, unclear goals.

Wise Perturbation

Assess swallowing, comfort, oral care, positioning, feeding technique, aspiration risk, and goals. Discuss realistic outcomes compassionately with family. Consider palliative approach where appropriate, focusing on comfort, dignity, and careful hand feeding if aligned with goals.

Repair Trajectory

Feeding becomes less distressing, aspiration risk understood, family supported, care plan aligns with values, comfort prioritized.

39. Common Student Pitfalls

Pitfall 1: Calling Acute Confusion Dementia

Sudden change is delirium until proven otherwise.

Pitfall 2: Ignoring Collateral History

Dementia assessment requires someone who knows the baseline.

Pitfall 3: Thinking Dementia Is Only Memory Loss

Executive function, safety, behavior, language, and visuospatial ability matter.

Pitfall 4: Missing Depression, Medicines, and Sensory Impairment

These can mimic or worsen dementia.

Pitfall 5: Failing to Assess Function

The diagnosis matters because daily life is affected.

Pitfall 6: Overlooking Caregiver Burden

Caregiver collapse is a clinical safety issue.

Pitfall 7: Using Sedation Before Looking for Causes of Behavior

Behavior often communicates pain, fear, constipation, retention, infection, or environmental distress.

Pitfall 8: Avoiding Advance Care Planning

Early planning preserves agency.

40. Clinical Practice Box

When assessing dementia, complete this structure:

Baseline and timeline:
Gradual, sudden, fluctuating, stepwise, progressive?

Is delirium present?
Acute change, inattention, altered awareness, infection, hypoxia, glucose, medicines, pain, retention, constipation?

Cognitive domains affected:
Memory, language, executive function, visuospatial ability, behavior, judgment.

Function affected:
Medicines, money, cooking, driving, bathing, dressing, toileting, shopping, appointments.

Safety risks:
Falls, wandering, driving, cooking, medicines, eating, swallowing, exploitation, living alone.

Reversible contributors:
Depression, medicines, thyroid, B12, anemia, CKD, liver disease, alcohol, sleep apnea, sensory impairment, subdural/stroke where relevant.

Medication review:
Sedatives, opioids, anticholinergics, hypoglycemia risk, polypharmacy, old medicines.

Caregiver situation:
Who helps? Is caregiver coping? What support is needed?

Goals and agency:
Capacity, decision-maker, advance care planning, what matters most.

Repair trajectory:
What can be improved, supported, simplified, made safer, or planned?

41. Mini-Case for Practice

An 83-year-old man with diabetes, CKD, hypertension, osteoarthritis, and suspected early dementia is brought by his daughter. Over one year he has become forgetful, repeats questions, misses bills, and sometimes forgets medicines. Over the last three days he became much more confused, slept poorly, fell once, and has been eating little. He recently started a sleeping tablet and complains vaguely of hip pain.

Apply the dementia approach.

Danger

Acute delirium superimposed on possible dementia, fall injury, medication harm, poor intake, hypoglycemia or hyperglycemia risk, AKI risk, pain.

Dementia Pattern

Gradual cognitive decline over one year suggests dementia or mild cognitive impairment, but sudden worsening over three days suggests delirium.

Capacity Failure

Cognition, agency, medicine safety, nutrition, mobility, pain reporting, sleep-wake regulation.

Coupling Conditions

Diabetes, CKD, hypertension, osteoarthritis, sleeping tablet, possible fall injury, poor intake, daughter support, medication mismanagement.

Wise Perturbation

Assess delirium first: glucose, oxygenation, infection, renal function, electrolytes, pain, hip injury, constipation, urinary retention, and medication effects. Review and stop or reduce deliriogenic medicines where appropriate. After acute issues improve, assess baseline cognition, function, medication management, finances, driving, home safety, and caregiver support. Simplify medicines and plan follow-up cognitive evaluation.

Repair Trajectory

Acute confusion improves, pain treated, eating returns, glucose and kidney function safe, sleeping tablet risk addressed, falls risk reduced, daughter understands medication plan, cognitive follow-up arranged, safety supports begin.

42. Student Takeaway

Dementia becomes easier when the clinician asks:

Is this gradual decline, acute delirium, or both?
What cognitive capacities are failing?
What daily functions are affected?
What safety risks exist?
What reversible contributors can be treated?
What medicines may be worsening cognition?
Can the patient manage diabetes, blood pressure, anticoagulants, meals, driving, money, and appointments?
Who is supporting the patient, and is that caregiver coping?
What agency remains, and how can it be protected?
What future decisions should be discussed while the person can still participate?

Dementia is not simply forgetfulness.

It is a progressive loss of cognitive capacity that reshapes safety, agency, relationships, and participation.

The safe clinician distinguishes dementia from delirium, treats reversible contributors, simplifies medicines, protects function, supports caregivers, plans ahead, and preserves dignity at every stage.

Chapter 56. Depression and Demoralization Made Easy

Depression is a clinical syndrome involving persistently low mood, loss of interest, reduced energy, disturbed sleep, changes in appetite, impaired concentration, guilt, hopelessness, slowed or agitated movement, and sometimes thoughts of death or self-harm.

Demoralization is the state of feeling defeated, trapped, helpless, or unable to cope when life, illness, pain, disability, or uncertainty exceeds the person's sense of meaning and agency.

Patients do not usually say:

"I have major depressive disorder."
"I am demoralized."

They say:

"I cannot cope anymore."
"I feel empty."
"I have no energy."
"Nothing gives me joy."
"I am tired of being sick."
"I feel like a burden."
"I do not see the point."
"I cannot sleep."
"I do not want to eat."
"I just want it all to stop."

Depression and demoralization are central to Internal Medicine because illness is not only biological.

Chronic disease can exhaust hope.
Pain can erode identity.
Cancer can disrupt future imagination.
Heart failure can create fear of breathlessness.
Kidney disease can create treatment fatigue.
Frailty can create fear of dependence.
Dementia can create grief before death.
Repeated admissions can make a patient feel trapped in medicine rather than helped by it.

The first task is not to dismiss sadness as "understandable" and move on.

The deeper question is:

Is this person's mood, meaning, agency, and will to participate in life failing — and is there danger now?

Depression and demoralization become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. Why Depression Matters in Internal Medicine

Depression affects the whole clinical picture.

It can worsen:

- fatigue
- pain
- sleep
- appetite
- medication adherence

- glucose control
- blood pressure control
- rehabilitation
- appointment attendance
- self-care
- social participation
- recovery after illness
- quality of life
- caregiver relationships
- survival in some serious illnesses

Depression can also mimic medical disease.

It may present as:

- low energy
- poor concentration
- weight change
- sleep disturbance
- body aches
- poor appetite
- constipation
- low libido
- slowed movement
- memory complaints

The clinical danger is two-sided.

If we ignore depression, the patient suffers unnecessarily.

If we label everything as depression too quickly, we may miss anemia, hypothyroidism, cancer, infection, CKD, heart failure, medication toxicity, sleep apnea, inflammatory disease, pain, or delirium.

The safe clinician asks:

What is biological, what is psychological, what is social, what is spiritual, and how are they interacting?

2. Depression Is a Capacity Failure

Depression affects capacities.

Energy Capacity

The patient may feel exhausted, slowed, heavy, or unable to start tasks.

Pleasure Capacity

The patient may lose interest in food, relationships, hobbies, work, worship, sexuality, or social life.

Sleep Capacity

The patient may sleep too little, wake early, sleep excessively, or never feel restored.

Appetite Capacity

The patient may eat too little or too much.

Cognitive Capacity

The patient may struggle with attention, memory, decisions, and concentration.

Agency Capacity

The patient may know what they should do but feel unable to act.

Meaning Capacity

The patient may feel worthless, guilty, hopeless, or like a burden.

Safety Capacity

The patient may think about death, self-harm, or suicide.

Depression is not simply sadness.

It can disable the person's ability to live, choose, heal, and participate.

3. What Is Demoralization?

Demoralization is different from depression, though they can overlap.

A demoralized patient may say:

"I cannot take this anymore."
"I do not know how to live with this illness."
"Everything is too much."
"I feel trapped."
"I have lost my place in life."

Demoralization often arises when the patient faces:

- chronic pain
- advanced illness
- disability
- repeated treatment failure
- financial stress
- loss of work
- loss of independence
- caregiver burden
- family conflict
- uncertain diagnosis
- medical trauma
- social isolation
- spiritual distress
- loss of identity

The demoralized patient may still experience pleasure in moments, but feels unable to cope with the overall situation.

Depression asks:

"Has mood and pleasure collapsed?"

Demoralization asks:

“Has meaning, confidence, and agency collapsed under burden?”

Both matter.

4. Depression Versus Demoralization

The distinction is clinically useful.

Depression

Often includes:

- persistent low mood
- loss of interest or pleasure
- sleep disturbance
- appetite change
- low energy
- guilt or worthlessness
- poor concentration
- psychomotor slowing or agitation
- suicidal thoughts
- symptoms across most situations

Demoralization

Often includes:

- helplessness
- feeling trapped
- loss of meaning
- inability to cope
- distress linked to a specific burden
- uncertainty about what to do
- preserved capacity for pleasure at times
- strong need for support, clarity, and agency restoration

They can coexist.

A patient with advanced heart failure may be demoralized by repeated admissions and also clinically depressed.

A patient with chronic pain may lose meaning and develop major depression.

A patient with cancer may be sad and afraid without meeting criteria for depression.

The clinical question is:

What kind of suffering is this, and what kind of help will restore safety, agency, meaning, and participation?

5. The First Question: Is There Danger Now?

Depression and demoralization become urgent when there is risk of self-harm, severe self-neglect, inability to function safely, psychosis, delirium, intoxication, withdrawal, or medical instability.

Urgent assessment is needed when there is:

- suicidal thoughts
- a plan for self-harm
- access to means
- previous suicide attempt
- severe hopelessness
- command hallucinations
- severe agitation
- psychosis
- severe depression with inability to eat or drink
- severe self-neglect
- inability to take essential medicines
- delirium or confusion
- intoxication or withdrawal
- severe insomnia with exhaustion
- severe anxiety or panic with unsafe behavior
- refusal of life-sustaining treatment without capacity assessment
- caregiver concern that the patient is unsafe
- statements such as “I do not want to live” or “my family would be better without me”

The danger-first question is:

Is this person at risk of harming themselves, being harmed by neglect, or being unable to remain safe?

6. Immediate Red Flags

Red flags include:

- active suicidal intent
- specific suicide plan
- access to lethal means
- recent self-harm
- severe hopelessness
- severe guilt or worthlessness
- psychotic symptoms
- command hallucinations
- severe agitation or impulsivity
- intoxication
- withdrawal

- severe insomnia
- refusal to eat or drink
- inability to care for self
- severe weight loss
- sudden withdrawal from family
- giving away possessions
- saying goodbye unexpectedly
- recent major loss
- severe uncontrolled pain
- advanced illness with uncontrolled distress
- caregiver alarm
- depression with delirium, dementia, or cognitive impairment
- domestic violence or abuse context

When these are present, do not simply reassure.

Assess safety, capacity, support, and urgent mental health needs according to local pathways.

7. Asking About Suicide

Many clinicians fear asking about suicide.

But asking clearly and compassionately does not create the idea.

It creates safety.

Useful questions include:

“When people feel this overwhelmed, they sometimes wish they would not wake up. Has that happened to you?”

“Have you had thoughts of harming yourself?”

“Have you thought about ending your life?”

“Have you made a plan?”

“Do you have access to what you would use?”

“Have you tried before?”

“What has stopped you from acting on these thoughts?”

“Who knows you are feeling this way?”

“Can we make a safety plan together right now?”

If suicide risk is present, the clinician must not leave the patient unsupported.

Safety comes before ordinary clinic flow.

8. Depression Can Present as the Body

Depression often appears through physical symptoms.

Common presentations include:

- fatigue
- pain
- headache
- abdominal discomfort
- poor appetite
- weight loss
- overeating
- insomnia
- hypersomnia
- low libido
- dizziness
- chest tightness
- breathlessness sensation
- slowed movement
- poor concentration
- memory complaints

But these symptoms also occur in medical disease.

Before concluding depression, consider:

- anemia
- hypothyroidism
- hyperthyroidism
- diabetes
- CKD
- liver disease
- heart failure
- COPD
- sleep apnea
- chronic infection
- malignancy
- inflammatory disease
- medication adverse effects
- alcohol or substance use
- pregnancy or postpartum context where relevant
- pain syndromes
- grief
- delirium
- dementia

The body and mind are not separate.

The question is:

Which biological and meaning systems are failing together?

9. Medical Conditions That Mimic or Worsen Depression

Important medical contributors include:

Endocrine

- hypothyroidism
- hyperthyroidism
- adrenal disorders
- diabetes and glucose swings
- menopause-related symptoms in relevant contexts

Hematologic

- anemia
- B12 deficiency
- iron deficiency
- chronic inflammatory anemia

Organ Failure

- CKD
- liver disease
- heart failure
- COPD
- chronic hypoxia

Neurological

- stroke
- Parkinsonism
- dementia
- traumatic brain injury
- epilepsy
- multiple sclerosis and other neurological disease

Inflammatory and Autoimmune

- rheumatoid arthritis
- lupus
- vasculitis
- inflammatory bowel disease
- chronic inflammatory pain
- chronic infection

Malignancy

Cancer may cause fatigue, weight loss, inflammation, pain, fear, and depression.

Sleep Disorders

- insomnia
- sleep apnea
- restless legs
- circadian disruption

Pain

Persistent pain is one of the strongest drivers of mood collapse.

Medical review does not invalidate depression.

It makes treatment safer and more complete.

10. Medicines That Can Affect Mood

Medication review is essential.

Medicines may contribute to:

- low mood
- anxiety
- insomnia
- agitation
- fatigue
- cognitive slowing
- emotional blunting
- nightmares
- irritability
- appetite change
- sexual dysfunction

Potential contributors can include:

- steroids
- sedatives
- opioids
- some beta blockers in selected patients
- some hormonal treatments
- some anti-seizure medicines
- some medicines affecting sleep
- alcohol
- recreational substances
- withdrawal from sedatives or alcohol
- polypharmacy burden

Do not assume medicine causation without reasoning.

But always ask:

Did mood, sleep, energy, or behavior change after a medicine was started, stopped, or increased?

11. Depression, Pain, and the Vicious Cycle

Pain and depression commonly reinforce each other.

Pain causes:

- poor sleep
- fatigue
- reduced movement
- fear
- isolation
- loss of work
- financial stress
- irritability
- hopelessness

Depression causes:

- pain amplification
- low activity
- poor sleep
- poor adherence
- lower coping reserve
- increased attention to bodily distress
- reduced motivation for rehabilitation

The patient becomes trapped:

Pain → poor sleep → low mood → reduced movement → deconditioning → more pain

Wise care treats the loop.

Not only the pain.

Not only the mood.

The repair plan should include:

- pain diagnosis
- safe analgesia
- movement restoration
- sleep repair
- mood support
- fear reduction
- social participation
- realistic goals

12. Depression and Chronic Disease

Chronic disease can produce depression and demoralization through repeated losses.

Heart Failure

Patients may fear breathlessness, dependency, and sudden deterioration.

COPD

Patients may fear suffocation and avoid movement, worsening deconditioning.

CKD

Patients may face fatigue, dietary restrictions, dialysis fears, and uncertainty.

Diabetes

Patients may experience treatment fatigue, shame, hypoglycemia fear, and dietary burden.

Cancer

Patients may face mortality, pain, treatment burden, body changes, and family worry.

Autoimmune Disease

Patients may experience unpredictable flares, steroids, fatigue, pain, and identity disruption.

Frailty

Patients may grieve lost independence and fear becoming a burden.

Chronic disease care should ask:

How is this illness affecting the patient's sense of self, future, agency, and belonging?

13. Depression and Frailty

Depression and frailty overlap.

Both may involve:

- low energy
- slow movement
- weight loss
- low activity
- poor sleep
- cognitive complaints
- falls
- social withdrawal

Depression can worsen frailty.

Frailty can worsen depression.

The clinician must ask:

- Is there low mood?
- Is there loss of pleasure?
- Is there hopelessness?
- Is there grief?
- Is there weight loss?
- Is there weakness?

- Is there pain?
- Is there cognitive impairment?
- Is there loneliness?
- Is there fear of falling?
- Is there medication harm?
- Is there reversible medical disease?

Treatment may require both mood care and frailty repair:

- nutrition
- mobilization
- pain control
- social connection
- medication review
- sleep support
- psychotherapy or counseling where available
- antidepressant treatment where appropriate
- caregiver support

14. Depression and Delirium or Dementia

Depression, delirium, and dementia can look similar.

Depression May Look Like Dementia

The patient may complain of poor memory, low concentration, and slowed thinking.

Dementia May Look Like Depression

The patient may become apathetic, withdrawn, or less engaged.

Delirium May Look Like Depression

Hypoactive delirium may look like sleepiness, withdrawal, or low motivation.

Key questions:

- Is onset acute?
- Does attention fluctuate?
- Is there altered awareness?
- Is there infection, hypoxia, glucose issue, AKI, medicine toxicity, pain, retention, or constipation?
- Is there a persistent low mood?
- Is pleasure lost?
- Is cognitive decline progressive?
- What does family report as baseline?

Do not diagnose depression without considering delirium.

Do not diagnose dementia without considering depression.

Do not miss suicide risk in any of them.

15. Depression and Sleep

Sleep disturbance is both symptom and driver.

Depression may cause:

- difficulty falling asleep
- early morning waking
- broken sleep
- excessive sleep
- non-restorative sleep
- nightmares

Poor sleep worsens:

- pain
- glucose control
- blood pressure
- mood
- cognition
- immune function
- appetite
- fatigue
- irritability

Assess sleep carefully:

- What time do you sleep?
- What wakes you?
- Do you nap?
- Do you snore?
- Do you wake choking?
- Do you have restless legs?
- Do you use alcohol or sedatives?
- Are pain, nocturia, cough, or breathlessness waking you?
- Is grief or worry waking you?

Sedatives are not always the answer.

Sleep repair often requires treating the cause.

16. Depression and Appetite

Depression may cause:

- reduced appetite
- weight loss

- overeating
- craving carbohydrates
- nausea
- loss of pleasure in food
- irregular meals

In chronic illness, appetite may also be affected by:

- cancer
- infection
- CKD
- liver disease
- heart failure
- medications
- constipation
- pain
- poor dentition
- dysphagia
- poverty
- social isolation

Ask:

- Are you eating?
- Has weight changed?
- Does food taste different?
- Do you have nausea?
- Are you constipated?
- Can you afford food?
- Do you eat alone?
- Who prepares meals?
- Are you too tired to cook?

Appetite is biological, emotional, and social.

17. Depression and Agency

Depression reduces agency.

The patient may know what to do but cannot initiate action.

They may miss medicines, appointments, glucose checks, exercise, wound care, or follow-up.

This may be misread as “non-compliance.”

Instead ask:

- What part of the plan feels impossible?

What do you understand about the plan?

What gets in the way?

Is it cost?

Is it side effects?

Is it hopelessness?

Is it fatigue?

Is it pain?

Is it memory?

Is it fear?

Is the plan too complicated?

Who can help?

Agency repair may require simplifying the plan, treating mood, supporting reminders, involving family, and choosing one manageable next step.

18. Assessment of Depression

A practical depression assessment includes:

Mood

low mood

sadness

emptiness

irritability

tearfulness

Pleasure

loss of interest

loss of enjoyment

social withdrawal

Body

sleep

appetite

weight

fatigue

pain

slowed movement or agitation

Mind

poor concentration

guilt

worthlessness

hopelessness

- negative thoughts
- memory complaints

Safety

- thoughts of death
- self-harm
- suicide plan
- access to means
- previous attempts
- protective factors

Context

- illness burden
- pain
- grief
- trauma
- loneliness
- finances
- work
- family
- caregiving
- spiritual distress

Medical Contributors

- anemia
- thyroid disease
- diabetes
- CKD
- liver disease
- heart/lung disease
- medications
- sleep disorders
- substance use
- delirium or dementia

Depression assessment is not only a checklist.

It is a map of suffering and safety.

19. Assessment of Demoralization

A practical demoralization assessment asks:

- What feels most unbearable?
- What have you lost?

- What feels out of control?
- What are you afraid of?
- What gives you strength?
- What still matters to you?
- What would make tomorrow slightly easier?
- Do you feel like a burden?
- Do you feel trapped?
- Do you understand what is happening medically?
- Do you have choices?
- Who supports you?
- Are your symptoms controlled?
- Are there practical problems we can help solve?
- Have you thought that life is not worth living?

Demoralization often improves when:

- symptoms are relieved
- uncertainty is explained
- choices are clarified
- support is mobilized
- goals are made realistic
- meaning is reconnected
- patient feels heard
- burdens are reduced

Demoralization care is agency repair.

20. Initial Investigations

Investigations depend on the presentation.

Common considerations include:

- glucose
- full blood count
- renal function and electrolytes
- liver tests
- thyroid function
- B12, folate, iron studies where indicated
- inflammatory markers where infection or inflammatory disease is suspected
- medication review
- alcohol and substance use assessment
- sleep apnea assessment where suggested

- pregnancy or postpartum context where relevant
- cognitive assessment where dementia or delirium is possible
- pain assessment
- cancer or chronic infection evaluation when red flags are present

Testing should answer:

- Is there medical danger?
- Is there a reversible contributor?
- Is depression primary, secondary, mixed, or medication-related?
- Is delirium present?
- Is the patient safe?

21. Wise Perturbation in Depression

Treatment depends on severity, cause, risk, patient preference, and available support.

Wise care may include:

Safety First

If suicide risk is present, create immediate safety through local urgent mental health pathways, family or caregiver support where appropriate, removal or restriction of lethal means where possible, and close supervision or emergency care when needed.

Explanation

Explain that depression is common, real, treatable, and not a moral failure.

Medical Repair

Treat contributors:

- pain
- insomnia
- anemia
- thyroid disease
- hypoglycemia
- medication effects
- alcohol use
- inflammatory disease
- chronic organ failure
- malnutrition

Psychological Support

This may include:

- counseling
- psychotherapy
- problem-solving therapy
- grief support
- trauma-informed care

- spiritual care
- peer support
- supportive clinical follow-up

Social Repair

Address:

- isolation
- finances
- food
- transport
- caregiver strain
- work stress
- family conflict
- housing insecurity

Medication Treatment

Antidepressant medicines may be appropriate depending on severity, duration, recurrence, patient preference, comorbidities, drug interactions, and local guidance.

They should be monitored for benefit, side effects, adherence, and safety.

Activation and Rehabilitation

Small steps matter:

- walking
- light exposure
- routine
- sleep rhythm
- nutrition
- social contact
- meaningful activity
- pain-limited movement
- achievable goals

Depression treatment is not one intervention.

It is restoring the conditions for life-capacity.

22. Wise Perturbation in Demoralization

Demoralization often requires a different emphasis.

The central task is to restore agency and meaning.

Helpful interventions include:

- listening without rushing
- naming the burden honestly
- clarifying the medical situation

- reducing uncontrolled symptoms
- identifying what matters most
- breaking overwhelming problems into smaller steps
- involving family or trusted supports
- reconnecting with valued roles
- spiritual or pastoral support where desired
- palliative care when illness is advanced
- practical help with finances, transport, medicines, or caregiving
- validating grief
- making a plan for the next day, not the whole future at once

A useful question is:

“Given everything you are facing, what would make life even a little more bearable this week?”

Demoralization repair begins with one possible step.

23. Depression Treatment and Medical Comorbidity

In Internal Medicine, treatment must fit comorbidity.

Before starting medication, consider:

- age
- frailty
- kidney function
- liver function
- cardiac disease
- bleeding risk
- hyponatremia risk
- falls risk
- drug interactions
- pregnancy or breastfeeding context where relevant
- bipolar history
- seizure history
- alcohol or substance use
- adherence capacity
- overdose risk
- patient preference

Monitor:

- mood
- sleep
- appetite

- anxiety
- energy
- suicidal thoughts
- side effects
- sodium in vulnerable patients where relevant
- bleeding or interaction risk where relevant
- adherence
- functional improvement

The goal is not only a lower symptom score.

The goal is safer participation and restored agency.

24. Depression and Bipolar Disorder

Before treating depression, consider bipolar disorder.

Clues include history of:

- periods of unusually elevated or irritable mood
- decreased need for sleep
- increased energy
- impulsive spending
- risky behavior
- pressured speech
- grandiosity
- racing thoughts
- hospitalization for mood
- family history of bipolar disorder

This matters because treatment choices differ.

If bipolar disorder is suspected, seek appropriate mental health input according to local pathways.

Do not treat all low mood as unipolar depression without asking about high-energy episodes.

25. Depression, Substance Use, and Withdrawal

Alcohol and substances can cause or worsen depression.

They can also be attempts to self-medicate pain, insomnia, trauma, anxiety, or hopelessness.

Ask respectfully:

- How much alcohol do you drink?
- Do you use anything to help you sleep, calm down, or manage pain?
- Have you tried to cut down?
- Do you feel shaky or unwell if you stop?
- Has use affected family, work, money, or health?

Are you using prescribed medicines differently than directed?

Substance withdrawal can cause anxiety, insomnia, agitation, hallucinations, seizures, and delirium.

Treat withdrawal risk according to local pathways.

Substance use should be approached without shame.

Shame worsens concealment and danger.

26. Depression and Serious Illness

In serious illness, sadness may be normal.

But depression and demoralization still deserve care.

Do not say:

“Of course you are depressed; you have cancer.”

Instead ask:

Are you able to experience any pleasure?

Are you mostly sad, afraid, angry, numb, or hopeless?

Are symptoms controlled?

Are you sleeping?

Are you eating?

Do you feel like a burden?

Do you wish life would end?

What matters most now?

What are you hoping for?

What are you afraid of?

What support do you want?

In serious illness, treatment may include:

symptom relief

palliative care

family meetings

spiritual support

depression treatment

practical planning

legacy work

goals-of-care conversations

reducing unwanted treatment burden

Hope may change form.

It may shift from cure to comfort, from longevity to presence, from control to meaning.

27. Depression and Communication

Words matter.

Avoid:

“It is all in your head.”
“You just need to be positive.”
“Other people have it worse.”
“There is nothing wrong with you.”
“You are non-compliant.”

Use:

“What you are feeling is real.”

“Depression can affect the body, energy, sleep, pain, appetite, and motivation.”

“We should look for medical contributors and also support your mood and coping.”

“You are not a burden for needing help.”

“We can take this one step at a time.”

“I am glad you told me.”

Good communication reduces shame and restores agency.

28. Repair Trajectory in Depression

Repair may be gradual.

Signs of repair include:

- patient feels safer
- suicidal thoughts reduce or are contained with a safety plan
- sleep improves
- appetite improves
- pain becomes more manageable
- energy improves
- concentration improves
- patient attends follow-up
- medicines are taken safely
- patient resumes small activities
- social contact increases
- hope becomes possible
- self-care improves
- glucose or blood pressure management becomes more feasible
- family communication improves
- patient can name warning signs
- patient has a plan for crisis moments

Repair is not instant happiness.

Repair means the person is less trapped and more able to live.

29. Monitoring Depression and Demoralization

Monitor:

- mood
- pleasure
- sleep
- appetite
- weight
- energy
- pain
- concentration
- anxiety
- function
- social contact
- medication adherence
- substance use
- suicidal thoughts
- self-harm risk
- treatment side effects
- medical contributors
- patient goals
- caregiver concerns

Ask at follow-up:

- What has changed since we last spoke?
- Are you sleeping?
- Are you eating?
- Are you enjoying anything at all?
- Are you feeling hopeless?
- Have you had thoughts of harming yourself?
- What feels most difficult right now?
- What helped even a little?
- What is one manageable next step?

Follow-up itself is therapeutic.

It tells the patient they have not been abandoned.

30. Discharge Safety in Depression

Before discharge, ask:

Has suicide risk been assessed?

Is the patient safe to leave?

Is there a safety plan if risk is present?

Does family or caregiver know what to watch for where appropriate?

Are medicines safe and supplied?

Is follow-up arranged?

Are medical contributors addressed?

Is pain controlled?

Is sleep plan safe?

Is substance withdrawal risk addressed?

Can the patient eat, drink, and take medicines?

Is self-neglect present?

Is the patient able to seek help?

Are crisis contacts or local urgent pathways clear?

Are goals and next steps documented?

A patient with normalized labs but active suicidal intent is not safe.

Mental safety is medical safety.

31. Worked Case 1: Depression Presenting as Fatigue

A 58-year-old woman with diabetes and hypertension presents with fatigue, poor sleep, low appetite, body aches, and poor concentration. She has stopped walking and rarely sees friends.

Danger

Possible depression, medical contributors, self-neglect, diabetes care decline, suicide risk must be assessed.

Syndrome

Fatigue and functional withdrawal with mood and sleep symptoms.

Capacity Failure

Energy, sleep, mood, agency, participation, chronic disease self-care.

Coupling Conditions

Diabetes, hypertension, inactivity, possible pain, social isolation, medication burden, possible anemia or thyroid disease.

Wise Perturbation

Assess depression symptoms and suicide risk. Check for medical contributors such as anemia, thyroid disease, glucose problems, renal function, medicines, pain, and sleep disorder. Begin supportive mood care, activity restoration, social reconnection, and treatment according to severity and local guidance.

Repair Trajectory

Sleep improves, appetite improves, walking resumes gradually, mood lifts, diabetes care becomes more consistent, follow-up maintained.

32. Worked Case 2: Demoralization in Heart Failure

A 76-year-old man with advanced heart failure has repeated admissions. He says, “I cannot keep living like this. I am tired of being a burden.”

Danger
Demoralization, possible depression, possible suicidal thoughts, advanced illness distress, caregiver burden.

Syndrome
Meaning and agency collapse under chronic illness burden.

Capacity Failure
Circulation, oxygenation, energy, agency, meaning, participation, family role.

Coupling Conditions
Advanced heart failure, repeated hospitalization, breathlessness, fear, dependence, family stress, uncertain prognosis.

Wise Perturbation
Ask directly about suicidal thoughts. Relieve breathlessness and other symptoms. Clarify goals of care. Explore what matters most. Involve family and palliative care where appropriate. Reduce treatment burden where possible and create a crisis plan.

Repair Trajectory
Patient feels heard, symptoms better controlled, goals clarified, family supported, hospital plan aligns with values, sense of burden reduces.

33. Worked Case 3: Depression and Chronic Pain

A 64-year-old woman with osteoarthritis and chronic back pain reports poor sleep, low mood, weight gain, loss of interest, and fear of movement.

Danger
Depression, worsening pain disability, falls risk, medication harm, possible opioid or sedative complications.

Syndrome
Pain-depression-deconditioning cycle.

Capacity Failure
Pain regulation, sleep, mobility, mood, energy, participation.

Coupling Conditions
Chronic pain, inactivity, weight gain, poor sleep, possible medication side effects, fear avoidance, social withdrawal.

Wise Perturbation
Assess depression and suicide risk. Review pain diagnosis and medicines. Avoid excessive sedation. Support graded movement, sleep repair, mood treatment, weight-sensitive mobility, and achievable goals. Consider physiotherapy or pain support where available.

Repair Trajectory
Sleep improves, pain becomes more manageable, walking increases, mood improves, medication harms reduce, confidence returns.

34. Worked Case 4: Depression Versus Delirium

An 82-year-old man admitted with infection becomes quiet, sleepy, eats little, and does not engage. Staff say he seems depressed. His sodium is low and he is inattentive.

Danger

Hypoactive delirium, hyponatremia, infection, poor intake, falls risk.

Syndrome
Acute withdrawal and reduced arousal due to delirium, not primary depression.

Capacity Failure
Attention, sodium-water regulation, defense, nutrition, cognition, mobility.

Coupling Conditions
Older age, infection, hospitalization, electrolyte disturbance, sleep disruption.

Wise Perturbation
Recognize delirium. Treat infection and sodium disorder according to local guidance. Review medicines, support hydration, nutrition, sleep, orientation, mobility, and family presence. Reassess mood after delirium improves.

Repair Trajectory
Attention improves, arousal normalizes, eating improves, sodium corrects safely, patient returns closer to baseline.

35. Worked Case 5: Steroid-Related Mood Change

A 55-year-old woman on high-dose steroids for inflammatory disease develops insomnia, irritability, anxiety, high glucose, and mood swings.

Danger
Medication-related mood disturbance, hyperglycemia, sleep failure, infection risk, possible severe agitation or psychosis depending on severity.

Syndrome
Steroid-related regulation and mood disturbance.

Capacity Failure
Sleep, mood regulation, glucose regulation, defense, agency.

Coupling Conditions
Inflammatory disease, steroid dose and duration, diabetes risk, family stress, sleep disruption.

Wise Perturbation
Assess severity, safety, glucose, infection, sleep, and psychiatric symptoms. Review steroid necessity and tapering possibilities with appropriate specialist input. Treat mood and sleep symptoms safely while preserving disease control.

Repair Trajectory
Sleep improves, mood stabilizes, glucose safer, steroid plan clarified, inflammatory disease remains controlled.

36. Worked Case 6: Depression and Self-Neglect

A 70-year-old widower with CKD and diabetes misses appointments, loses weight, stops checking glucose, and says life has no purpose since his spouse died.

Danger
Depression, grief, self-neglect, malnutrition, unsafe diabetes care, suicide risk.

Syndrome
Bereavement with depressive and demoralization features affecting self-care.

Capacity Failure

Meaning, agency, nutrition, glucose regulation, participation, appointment adherence.

Coupling Conditions

Bereavement, living alone, CKD, diabetes, social isolation, possible financial or transport barriers.

Wise Perturbation

Assess suicide risk directly. Distinguish grief, depression, and demoralization. Check glucose, renal function, nutrition, weight, medicines, and support. Involve family/community where appropriate. Arrange close follow-up, grief or mental health support, and simplified diabetes plan.

Repair Trajectory

Safety plan in place, eating improves, appointments resume, glucose safer, social support increases, patient identifies reasons to continue and next steps.

37. Common Student Pitfalls

Pitfall 1: Dismissing Depression as "Understandable"

Even understandable suffering deserves assessment and care.

Pitfall 2: Calling Medical Symptoms Depression Too Quickly

Fatigue, weight loss, pain, insomnia, and poor concentration may have medical contributors.

Pitfall 3: Avoiding Suicide Questions

Direct, compassionate questions improve safety.

Pitfall 4: Missing Demoralization

Some patients are not primarily anhedonic; they are overwhelmed, trapped, and without agency.

Pitfall 5: Confusing Hypoactive Delirium With Depression

Acute inattention and fluctuating awareness suggest delirium.

Pitfall 6: Ignoring Pain and Sleep

Pain and sleep disturbance can maintain depression.

Pitfall 7: Overlooking Medicines and Substances

Steroids, sedatives, opioids, alcohol, withdrawal, and polypharmacy may shape mood.

Pitfall 8: Treating Mood Without Restoring Agency

A plan that ignores finances, transport, caregiving, symptoms, and meaning will fail.

38. Clinical Practice Box

When assessing depression and demoralization, complete this structure:

Main concern:
Low mood, loss of interest, fatigue, hopelessness, distress, inability to cope, self-neglect?

Danger now:
Suicidal thoughts, plan, means, previous attempts, psychosis, severe self-neglect, inability to eat/drink, unsafe behavior?

Depression features:
Mood, pleasure, sleep, appetite, energy, concentration, guilt, psychomotor change, thoughts of death.

Demoralization features:
Helplessness, trapped feeling, loss of meaning, burden, uncertainty, loss of role, treatment fatigue.

Medical contributors:
Anemia, thyroid, glucose, CKD, liver disease, heart/lung disease, infection, pain, sleep disorder, cancer, inflammation.

Medication/substance contributors:
Steroids, sedatives, opioids, alcohol, withdrawal, polypharmacy, recent changes.

Capacity failures:
Energy, sleep, agency, self-care, nutrition, pain regulation, participation, safety.

Coupling conditions:
Grief, isolation, finances, work, caregiving, chronic illness, disability, spiritual distress.

Wise perturbation:
Safety plan, medical repair, symptom relief, counseling, medication where appropriate, social support, meaning and agency restoration.

Repair trajectory:
Safety, sleep, appetite, pain, activity, follow-up, hope, participation, self-care.

39. Mini-Case for Practice

A 68-year-old man with diabetes, CKD, chronic back pain, and heart failure presents with fatigue, poor sleep, poor appetite, missed medicines, and repeated missed clinic visits. He says, “I am tired of all of this. I feel like a burden.” He lives alone since his wife died and takes opioids for pain.

Apply the depression and demoralization approach.

Danger
Possible depression, demoralization, suicide risk, self-neglect, medication harm, poor diabetes and heart failure control, opioid side effects, malnutrition.

Syndrome
Chronic illness burden with grief, pain, poor sleep, reduced agency, and possible depressive syndrome.

Capacity Failure
Mood, meaning, sleep, pain regulation, nutrition, agency, medicine management, chronic disease self-care, participation.

Coupling Conditions
Diabetes, CKD, heart failure, chronic pain, opioid use, bereavement, living alone, missed appointments, possible financial or transport issues, social isolation.

Wise Perturbation

Ask directly about suicidal thoughts, plan, means, and protective factors. Assess medical contributors: glucose, renal function, electrolytes, anemia, heart failure status, medication effects, pain, sleep, nutrition, and substance use. Review opioid benefit and harm. Simplify the care plan. Address grief, isolation, pain, and sleep. Arrange close follow-up, mental health or counseling support where available, and involve trusted family/community support if appropriate.

Repair Trajectory

Patient is safe, follow-up is reliable, sleep improves, pain is managed with less harm, appetite returns, medicines are simplified, heart failure and diabetes care resume safely, patient identifies support and one meaningful next step.

40. Student Takeaway

Depression and demoralization become easier when the clinician asks:

Is the patient safe?
Are there thoughts of death, self-harm, or suicide?
Is this depression, demoralization, grief, delirium, dementia, substance use, medication effect, medical illness, or a mixture?
What has the patient lost?
What feels unbearable?
What symptoms are uncontrolled?
What medical contributors must be treated?
What medicines or substances may be worsening mood?
What agency has collapsed?
What support, meaning, and realistic next step can be restored?

Depression is not weakness.

Demoralization is not failure.

Both are signs that the person's capacity to suffer, cope, choose, and participate has been overwhelmed.

The safe clinician asks about danger, listens without shame, searches for medical contributors, treats symptoms, restores agency, mobilizes support, and helps the patient move from unbearable burden toward a life that can again be inhabited.

Chapter 57. Chronic Pain Made Easy

Chronic pain is pain that persists beyond the expected time of healing, or pain that continues because of ongoing disease, nervous system sensitization, structural injury, inflammation, emotional distress, or altered life conditions.

Patients do not usually say:

“I have chronic pain physiology.”

They say:

“I hurt all the time.”
“No one can find what is wrong.”
“The scans do not explain how bad it feels.”
“I cannot sleep.”
“I cannot work.”
“I am afraid to move.”
“Pain has taken over my life.”
“I feel like people do not believe me.”
“I just want relief.”

Chronic pain is central to Internal Medicine because it affects every capacity.

It affects sleep.
It affects mood.
It affects movement.
It affects appetite.
It affects relationships.
It affects work.
It affects medicines.
It affects blood pressure and glucose.
It affects frailty, falls, depression, and agency.

The first task is not to decide whether the pain is “real.”

Pain is real because the patient experiences it.

The deeper question is:

What kind of pain is this, what danger must not be missed, what capacities are failing, and what treatment can reduce suffering without creating new harm?

Chronic pain becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Chronic Pain?

Pain is normally a protective signal.

Acute pain says:

“Something may be injured. Pay attention.”

Chronic pain is different.

It may continue after tissue healing.
It may persist because disease is ongoing.
It may become amplified by the nervous system.

It may be worsened by fear, poor sleep, inflammation, stress, trauma, immobility, or social loss.
It may remain even when imaging does not show severe damage.

Chronic pain is not imaginary.

It is a disorder of the whole pain system.

This system includes:

- tissues
- nerves
- spinal cord
- brain
- immune signaling
- mood
- sleep
- movement
- meaning
- memory
- fear
- social context

The clinical question is:

What is generating, amplifying, or maintaining this pain?

2. Pain Is a Capacity Problem

Chronic pain affects capacities.

Mobility Capacity

Pain may reduce walking, bending, climbing stairs, working, exercising, bathing, or cooking.

Sleep Capacity

Pain often disrupts sleep, and poor sleep worsens pain sensitivity.

Mood Capacity

Pain may cause depression, anxiety, irritability, grief, and demoralization.

Energy Capacity

Pain consumes attention and energy, leaving the patient exhausted.

Agency Capacity

Pain may make the patient feel trapped, dependent, disbelieved, or unable to plan.

Participation Capacity

Pain may reduce work, family roles, worship, social life, sexuality, hobbies, and dignity.

Medicine Safety Capacity

Pain may lead to NSAID harm, opioid dependence, sedative use, constipation, falls, kidney injury, or polypharmacy.

Pain is not only a symptom.

It is a life-capacity disruptor.

3. The First Question: Is There Danger?

Chronic pain does not mean safe pain.

A patient with chronic pain can still develop new dangerous disease.

Urgent assessment is needed when pain is associated with:

- new neurological weakness
- loss of bowel or bladder control
- saddle anesthesia
- fever
- unexplained weight loss
- cancer history
- severe night pain
- trauma
- immunosuppression
- IV drug use
- severe headache of sudden onset
- chest pain
- severe abdominal pain
- limb ischemia symptoms
- hot swollen joint
- infection signs
- new confusion
- severe back pain with systemic illness
- new severe pain in older adult
- rapidly worsening pain
- pain with syncope or shock
- suicidal thoughts due to pain

The danger-first question is:

Is this chronic pain pattern hiding a new emergency, infection, fracture, cancer, vascular event, neurological compression, inflammatory disease, or self-harm risk?

4. Immediate Red Flags in Chronic Pain

Red flags include:

- sudden severe new pain
- new weakness
- new numbness in a dangerous pattern
- loss of bladder or bowel control

- fever with back pain or joint pain
- cancer history with new progressive pain
- unexplained weight loss
- night sweats
- severe trauma or minor trauma in osteoporosis risk
- long-term steroid use with new back or hip pain
- hot swollen joint
- limb coldness, pallor, or absent pulses
- severe abdominal pain with vomiting or shock signs
- chest pain or breathlessness
- headache with neurological signs
- pain with confusion or sepsis signs
- escalating opioid or sedative use
- suicidal thoughts related to pain
- inability to walk or care for self

A chronic pain label should never prevent reassessment.

5. Types of Pain Made Easy

Pain becomes easier when classified by mechanism.

Nociceptive Pain

This comes from tissue injury or mechanical stress.

Examples:

- osteoarthritis
- fracture
- muscle strain
- wound pain
- inflammatory tissue injury
- cancer invasion
- postoperative pain

Features may include:

- aching
- throbbing
- sharp with movement
- localized
- related to activity or position

Neuropathic Pain

This comes from nerve injury or nerve dysfunction.

Examples:

- diabetic neuropathy
- post-herpetic neuralgia
- radiculopathy
- nerve compression
- chemotherapy-induced neuropathy
- stroke-related pain
- spinal cord injury

Features may include:

- burning
- shooting
- electric shocks
- tingling
- numbness
- pins and needles
- allodynia, where light touch hurts

Inflammatory Pain

This comes from immune or inflammatory activity.

Examples:

- rheumatoid arthritis
- gout
- polymyalgia rheumatica
- inflammatory bowel disease-related pain
- vasculitis
- autoimmune disease

Features may include:

- morning stiffness
- swelling
- warmth
- systemic symptoms
- improvement with movement in some inflammatory conditions
- flares

Nociplastic or Central Sensitization Pain

This occurs when the nervous system becomes sensitized and amplifies pain.

Examples may include:

- fibromyalgia-like syndromes
- chronic widespread pain
- some chronic back or neck pain

- pain after repeated injury or stress
- pain with high sensitivity to touch, sound, fatigue, and poor sleep

Features may include:

- widespread pain
- fatigue
- poor sleep
- brain fog
- high sensitivity
- pain disproportionate to tissue findings
- flares after stress or exertion

These mechanisms can overlap.

A patient may have osteoarthritis, neuropathy, and central sensitization at the same time.

6. Pain Severity Is Not the Same as Tissue Damage

A common error is assuming:

More pain means more damage.

Sometimes this is true.

Severe pain may signal fracture, infection, ischemia, cancer, or acute inflammation.

But chronic pain can be severe even when tissue damage is not severe.

Why?

Because pain is produced by the nervous system, not directly by the scan.

Pain intensity is shaped by:

- tissue signals
- nerve sensitivity
- inflammation
- sleep
- fear
- stress
- trauma
- depression
- attention
- previous pain memories
- social threat
- uncertainty
- movement avoidance
- medication effects

The patient's pain can be severe even if imaging looks mild.

The clinician should not say:

“Your scan is normal, so nothing is wrong.”

A better explanation is:

“The scan does not show dangerous damage, which is good. But your pain system is still highly activated. We need to treat the pain system, improve function, and keep watching for any danger signs.”

This protects trust.

7. Chronic Pain History Made Easy

A good chronic pain history asks:

Location

Where is the pain?

Is it one site or many?

Does it spread?

Is it joint, muscle, nerve, bone, chest, abdomen, head, or pelvic?

Timing

When did it start?

Was there injury, infection, surgery, stress, or illness?

Is it constant or episodic?

Is it worsening?

Are there flares?

Quality

Aching?

Burning?

Shooting?

Stabbing?

Throbbing?

Electric?

Cramping?

Pressure?

Numbness?

Triggers and Relievers

Movement?

Rest?

Position?

Meals?

Stress?

Weather?

Sleep?

Touch?

Heat or cold?

Medicines?

Exercise?

Menstrual cycle where relevant?

Function

What can you no longer do?

How far can you walk?

Can you sleep?

Can you work?

Can you cook, bathe, dress, and toilet?

What have you stopped doing?

Mood and Meaning

How is pain affecting mood?

Do you feel hopeless?

Do you feel believed?

Are you afraid to move?

Are you worried this is dangerous?

Have you had thoughts of harming yourself?

Medicines and Coping

What have you tried?

What helped?

What harmed?

Are you using NSAIDs, opioids, sedatives, alcohol, or herbal remedies?

Are you taking more than prescribed?

Are you constipated, sleepy, dizzy, or falling?

The most important question is:

What has pain taken away from your life?

8. Examination in Chronic Pain

Examination should look for danger, mechanism, and function.

Assess:

general appearance

distress

weight loss

fever

posture

gait

- joint swelling
- joint range of motion
- muscle tenderness
- focal bony tenderness
- neurological weakness
- reflexes where relevant
- sensation
- allodynia
- pulses and perfusion
- skin changes
- wounds
- spine mobility
- hip and knee function
- foot sensation in diabetes
- signs of inflammatory disease
- signs of depression, fear, or guarding
- ability to stand from chair
- walking speed and balance

Do not examine only the painful part.

Observe the whole person moving.

Function is part of the examination.

9. Investigations in Chronic Pain

Investigations should be guided by red flags, mechanism, and clinical question.

Possible investigations include:

- blood count
- inflammatory markers where inflammatory disease, infection, or malignancy is considered
- renal and liver function before certain medicines
- glucose and diabetes assessment where neuropathy or poor healing is relevant
- thyroid or vitamin tests where clinically suggested
- imaging when fracture, malignancy, infection, inflammatory disease, neurological compression, or structural diagnosis is suspected
- nerve studies in selected neuropathic patterns
- joint aspiration where hot swollen joint is present
- specialist evaluation where diagnosis is unclear or danger is present

Avoid testing that is unlikely to change management.

Unnecessary imaging may reveal incidental findings that increase fear.

A scan should answer a question.

Examples:

- Is there fracture?
- Is there infection?
- Is there cancer?
- Is there nerve compression?
- Is there inflammatory joint damage?
- Is there dangerous structural disease?

Investigations should not replace careful explanation.

10. Chronic Pain and Sleep

Sleep and pain form a loop.

Pain disrupts sleep.

Poor sleep increases pain sensitivity.

The patient may enter a cycle:

Pain → poor sleep → fatigue → less movement → more sensitivity → more pain

Assess sleep:

- trouble falling asleep?
- waking from pain?
- early waking?
- nightmares?
- restless legs?
- sleep apnea symptoms?
- nocturia?
- anxiety?
- caffeine?
- alcohol?
- sedatives?
- hospital disruption?

Repairing sleep may reduce pain amplification.

Sedatives may sometimes worsen falls, cognition, breathing, dependence, and daytime function.

Sleep repair should be careful and cause-based.

11. Chronic Pain and Mood

Pain and mood are deeply linked.

Pain can cause:

- depression

- anxiety
- anger
- grief
- irritability
- shame
- demoralization
- social withdrawal

Mood distress can worsen pain by increasing:

- muscle tension
- sleep disruption
- threat perception
- attention to pain
- avoidance
- inflammation and stress physiology in some contexts

This does not mean the pain is “psychological.”

It means the nervous system, body, and life context are connected.

Ask:

- Are you feeling low?
- Have you lost interest in things?
- Are you anxious about pain?
- Are you afraid to move?
- Do you feel hopeless?
- Do you feel like a burden?
- Have you thought about harming yourself?

Pain care must include emotional safety.

12. Chronic Pain and Fear-Avoidance

Fear-avoidance is common.

It means the patient avoids movement because they fear pain means damage.

The cycle is:

Pain → fear → avoidance → deconditioning → stiffness → more pain → more fear

This can happen after:

- back pain
- falls
- injury
- arthritis flare
- surgery

breathlessness with pain

repeated medical uncertainty

Repair requires reassurance and graded activity.

The message should not be:

“Ignore the pain.”

The message should be:

“We will identify dangerous pain, then gradually rebuild safe movement so your body learns that movement can be safe again.”

13. Chronic Pain and Medicines

Medicines can help chronic pain.

They can also harm.

A good pain medicine plan asks:

What type of pain is this?

What is the goal?

Is the goal complete relief, better sleep, walking, work, or fewer flares?

What are the risks?

What comorbidities matter?

Is kidney function safe?

Is liver function safe?

Is falls risk high?

Is cognition affected?

Is constipation present?

Is there substance use risk?

How will benefit be measured?

What is the review plan?

Pain medicine should support function, not only reduce a number.

14. NSAIDs in Chronic Pain

NSAIDs can reduce inflammatory and musculoskeletal pain.

But they can cause harm, especially in vulnerable patients.

Risks include:

AKI

worsening CKD

worsening hypertension

worsening heart failure

fluid retention

- gastrointestinal bleeding
- interaction with anticoagulants or antiplatelets
- liver injury in selected contexts
- asthma worsening in sensitive patients

NSAID risk is higher with:

- CKD
- heart failure
- older age
- dehydration
- diuretics
- ACE inhibitors or ARBs
- anticoagulants
- prior ulcer or bleeding
- liver disease
- frailty

The question is not:

“Do NSAIDs work?”

They often do.

The question is:

“Are NSAIDs safe for this patient now?”

15. Opioids in Chronic Pain

Opioids may be useful in selected acute, cancer-related, palliative, or carefully selected chronic pain contexts.

But long-term opioid use for chronic non-cancer pain can cause significant harm.

Risks include:

- constipation
- nausea
- sedation
- falls
- confusion
- respiratory depression
- dependence
- tolerance
- opioid-induced hyperalgesia
- low hormones in some long-term use
- sleep-disordered breathing
- overdose

- interaction with alcohol, sedatives, or other depressants
- reduced function despite dose escalation

Before opioids, ask:

- What is the diagnosis?
- What is the functional goal?
- What has been tried?
- What risk factors exist?
- Is there substance use history?
- Is there depression or suicidality?
- Is sleep apnea present?
- Is the patient frail?
- Are sedatives also used?
- How will benefit and harm be monitored?
- What is the exit plan?

Opioids should not be used simply because the clinician feels helpless.

They are powerful perturbations requiring clear purpose and careful monitoring.

16. Neuropathic Pain Medicines

Neuropathic pain may respond poorly to ordinary analgesics.

Medicines used for neuropathic pain may help some patients, but they can cause:

- drowsiness
- dizziness
- falls
- weight gain
- edema
- dry mouth
- constipation
- cognitive slowing
- mood effects
- interactions

In frailty, CKD, falls risk, and polypharmacy, caution is essential.

The goal is not simply to prescribe a “nerve pain tablet.”

The goal is to reduce burning, shooting, or electric pain enough to improve sleep, movement, and function without worsening cognition or falls.

17. Steroids and Chronic Pain

Steroids may help inflammatory pain.

But they can cause:

- hyperglycemia
- infection risk
- osteoporosis
- muscle weakness
- weight gain
- mood change
- insomnia
- skin thinning
- adrenal suppression
- cataracts and other long-term harms

Steroids may be appropriate when inflammation is driving serious disease.

They are not general pain relievers.

Long-term steroid use requires a clear diagnosis, monitoring, and review.

18. Non-Medicine Pain Treatment

Non-medicine treatment is not “doing nothing.”

It may include:

- education
- reassurance after danger is excluded
- graded movement
- physiotherapy
- strengthening
- stretching
- pacing
- occupational therapy
- heat or cold strategies
- weight support where relevant
- sleep repair
- mood care
- relaxation or breathing practices
- cognitive behavioral approaches
- mindfulness-based approaches
- social reconnection
- workplace adaptation
- assistive devices
- footwear or orthotics where relevant

- interventional procedures in selected cases
- treatment of underlying inflammation or disease

Pain care should be multimodal.

No single treatment repairs a complex pain system.

19. Pacing Made Easy

Pacing means balancing activity and rest to avoid repeated crash cycles.

Many patients with chronic pain alternate between:

Overdoing on good days → flare → bed rest → deconditioning → more pain

Pacing teaches the patient to:

- identify baseline tolerance
- stay below flare threshold initially
- increase activity gradually
- break tasks into smaller parts
- rest before collapse
- avoid all-or-nothing activity
- celebrate consistency

Pacing is not giving up.

It is training the pain system and body to tolerate life again.

20. Movement as Treatment

Movement is often medicine.

But it must be safe, graded, and meaningful.

Benefits include:

- stronger muscles
- better joint support
- improved sleep
- improved mood
- reduced fear
- better balance
- improved glucose control
- improved circulation
- reduced stiffness
- improved confidence

The patient may fear movement.

Start with what is possible.

Examples:

- sitting exercises
- short walks
- water-based activity where available
- chair stands
- gentle stretching
- balance work
- supervised physiotherapy
- gradual return to valued activities

The goal is not athletic performance.

The goal is restored participation.

21. Chronic Pain and Frailty

In frailty, chronic pain is especially dangerous.

It can lead to:

- immobility
- falls
- poor sleep
- depression
- malnutrition
- opioid harm
- NSAID harm
- delirium
- caregiver burden
- loss of independence

Pain assessment in frailty may be difficult.

The patient may show pain through:

- grimacing
- agitation
- withdrawal
- refusing movement
- poor appetite
- sleep disturbance
- delirium
- calling out
- guarding

Pain treatment in frailty should prioritize:

- function

- falls prevention
- cognition
- bowel safety
- kidney safety
- sleep
- caregiver feasibility
- comfort
- dignity

22. Chronic Pain and Work

Pain can threaten work and income.

Ask:

- What work do you do?
- What movements worsen pain?
- Can duties be modified?
- Can you take breaks?
- Is lifting required?
- Is standing required?
- Is sitting prolonged?
- Are pain medicines affecting driving or machinery?
- Are you afraid of losing your job?
- Do you need documentation or workplace advice?

Work participation may be part of recovery.

A pain plan that ignores work reality may fail.

23. Chronic Pain and Family

Pain affects relationships.

Family may become:

- worried
- frustrated
- overprotective
- exhausted
- skeptical
- financially strained
- emotionally burdened

The patient may feel:

- guilty

- dependent
- misunderstood
- angry
- ashamed
- isolated

Ask:

- How has pain affected your family?
- Who helps you?
- Is anyone overwhelmed?
- Do people understand your pain?
- Are you avoiding family activities?
- What support would help?

Pain is personal, but it is not solitary.

24. Chronic Pain and Addiction Risk

Pain, opioids, sedatives, alcohol, and distress can interact.

Risk increases when:

- pain is severe and long-lasting
- sleep is poor
- mood is low
- trauma history exists
- opioids or sedatives are escalated
- alcohol is used for relief
- patient feels abandoned
- there is no functional plan
- prescriptions are fragmented

Signs of concern include:

- taking more than prescribed
- repeated early refills
- lost prescriptions
- sedation
- intoxication
- withdrawal symptoms
- doctor shopping
- worsening function despite escalating dose
- mixing opioids with sedatives or alcohol
- strong fear of dose reduction

- using medicine for emotional distress more than pain

Addiction risk should be handled with compassion and safety, not punishment.

Pain and dependence will be addressed more fully in the next chapter.

25. Wise Perturbation in Chronic Pain

Wise pain care asks:

- Is there danger?
- What pain mechanism is present?
- What capacity is failing most?
- What comorbidities shape treatment safety?
- What medicines are helping or harming?
- What does the patient most want to regain?
- What is the smallest useful next step?
- How will benefit be measured?
- What harm must be monitored?

Possible interventions include:

- treating underlying disease
- reducing inflammation where appropriate
- safer analgesia
- neuropathic pain strategy where indicated
- physiotherapy
- graded activity
- sleep repair
- mood support
- weight or joint support
- workplace adaptation
- assistive devices
- reducing harmful medicines
- addressing fear-avoidance
- palliative pain care where illness is advanced
- specialist pain support where available

The goal is not only pain reduction.

The goal is less suffering and more life.

26. Repair Trajectory in Chronic Pain

Repair may not mean pain disappears completely.

Repair may mean:

- fewer severe flares
- better sleep
- less fear
- improved walking
- better mood
- safer medicines
- less constipation or sedation
- fewer falls
- more confidence
- return to work or valued activity
- better pacing
- improved family participation
- reduced emergency visits
- clearer diagnosis
- better self-management
- no missed danger signs
- improved agency

Pain score matters.

But function, sleep, mood, and participation matter just as much.

A patient whose pain score decreases from 9 to 6 but who can now sleep, walk, and cook has repaired meaningfully.

27. Monitoring Chronic Pain

Monitor:

- pain intensity
- pain frequency
- flare pattern
- sleep
- mood
- suicidal thoughts
- walking and mobility
- work participation
- activities of daily living
- medication use
- side effects
- constipation
- sedation

falls

kidney and liver safety where relevant

opioid or sedative risk

fear of movement

exercise tolerance

patient goals

quality of life

Ask:

What can you do now that you could not do before?

What still stops you?

Are medicines helping enough to justify side effects?

Are you sleeping better?

Are you moving more?

Are you feeling safer?

Have you had thoughts that life is not worth living?

What is one goal for the next visit?

Pain care requires follow-up.

28. Discharge Safety in Chronic Pain

Before discharge or ending a visit, ask:

Is dangerous pain excluded or addressed?

Is the diagnosis or working explanation clear?

Are red flags explained?

Is pain controlled enough for sleep, breathing, eating, and movement?

Are medicines safe with kidney, liver, frailty, and falls risk?

Is constipation prevented if opioids are used?

Are sedatives and alcohol risks discussed?

Is there a functional plan?

Is follow-up arranged?

Is the patient at risk of self-harm?

Does the patient know when to seek urgent care?

Is there a plan if pain flares?

Are expectations realistic?

Does the patient feel believed?

A patient with chronic pain should not leave with only a prescription.

They should leave with a plan.

29. Worked Case 1: Osteoarthritis Pain and NSAID Harm

A 72-year-old woman with knee osteoarthritis, CKD, hypertension, and heart failure takes over-the-counter NSAIDs daily. Her pain improves, but she develops leg swelling, rising creatinine, and high blood pressure.

Danger

AKI, heart failure worsening, hypertension, medication harm.

Pain Pattern

Nociceptive joint pain with unsafe medicine coupling.

Capacity Failure

Mobility, pain control, kidney clearance, fluid balance, blood pressure regulation.

Coupling Conditions

Osteoarthritis, CKD, heart failure, hypertension, OTC NSAID use, need to walk, possible frailty.

Wise Perturbation

Stop or avoid NSAID where appropriate. Explain kidney and heart risk. Create safer pain plan with non-drug strategies, mobility support, topical/local options where appropriate, and review of joint function. Monitor renal function, blood pressure, and edema.

Repair Trajectory

Pain controlled enough for walking, kidney function stabilizes, edema improves, blood pressure safer, patient understands medicine risks.

30. Worked Case 2: Chronic Low Back Pain With Fear-Avoidance

A 45-year-old man has chronic low back pain after lifting injury. Imaging shows no dangerous structural disease. He avoids bending and walking because he fears paralysis. He is gaining weight and sleeping poorly.

Danger

No current red flags, but fear-avoidance, deconditioning, work disability, mood risk.

Pain Pattern

Mechanical/nociplastic overlap with fear amplification.

Capacity Failure

Mobility, sleep, confidence, work participation, agency.

Coupling Conditions

Fear of damage, poor sleep, reduced activity, weight gain, work stress, unclear explanation.

Wise Perturbation

Explain that pain is real but does not currently show dangerous damage. Begin graded movement, physiotherapy where available, pacing, sleep repair, and return-to-function goals. Monitor mood and work barriers.

Repair Trajectory

Fear reduces, walking improves, sleep improves, bending confidence returns gradually, work function improves.

31. Worked Case 3: Diabetic Neuropathy

A 66-year-old man with diabetes has burning pain, tingling, and numbness in both feet, worse at night. He sleeps poorly and has reduced foot sensation.

Danger

Neuropathic pain, foot injury risk, ulcer risk, sleep disruption, falls.

Pain Pattern
Peripheral neuropathic pain.

Capacity Failure
Sensation, sleep, mobility safety, foot protection, glucose regulation.

Coupling Conditions
Diabetes duration, foot care, footwear, kidney function, mood, sleep, medication safety.

Wise Perturbation
Assess feet, pulses, sensation, ulcers, glucose pattern, renal function, footwear, falls risk, and sleep. Consider neuropathic pain treatment according to local guidance while monitoring sedation and falls. Emphasize foot protection and follow-up.

Repair Trajectory
Burning pain reduced, sleep improves, no foot ulcers, safer walking, patient checks feet, medicines tolerated.

32. Worked Case 4: Chronic Widespread Pain
A 52-year-old woman has widespread pain, fatigue, poor sleep, brain fog, headaches, and sensitivity to touch. Blood tests and imaging have not shown inflammatory or dangerous disease.

Danger
Depression, demoralization, sleep failure, medication overuse, missed inflammatory or endocrine contributors if not assessed.

Pain Pattern
Nociplastic or central sensitization pattern.

Capacity Failure
Pain regulation, sleep, energy, cognition, mood, participation.

Coupling Conditions
Poor sleep, stress, previous illness, deconditioning, mood distress, uncertainty, feeling disbelieved.

Wise Perturbation
Validate symptoms. Explain sensitized pain system. Reassess for red flags and treatable contributors. Focus on sleep, pacing, graded activity, mood support, stress regulation, and avoiding harmful escalation of sedatives or opioids.

Repair Trajectory
Better understanding, less fear, improved sleep, fewer flares, increased activity tolerance, safer medicines, improved participation.

33. Worked Case 5: Pain in Frailty
An 88-year-old man with dementia and osteoarthritis becomes agitated at night and refuses to walk. He cannot clearly describe pain. He is constipated and taking opioids.

Danger
Undertreated pain, opioid harm, constipation, delirium, falls, immobility.

Pain Pattern
Likely musculoskeletal pain with communication impairment and medicine complications.

Capacity Failure
Comfort, cognition, mobility, bowel clearance, medicine safety, caregiver-supported participation.

Coupling Conditions

Dementia, frailty, arthritis, constipation, opioid use, poor sleep, caregiver strain.

Wise Perturbation

Assess pain behavior, joints, injury, constipation, urinary retention, delirium, and medicines. Treat pain safely while reducing over-sedation and bowel harm. Support mobility and caregiver understanding.

Repair Trajectory

Agitation reduces, bowels open, walking improves, sedation avoided, caregiver can recognize pain cues.

34. Worked Case 6: Chronic Pain and Suicidal Thoughts

A 60-year-old man with chronic back pain says, “I cannot live like this anymore.” He sleeps poorly, has stopped working, drinks alcohol nightly, and takes more opioid tablets than prescribed.

Danger

Suicide risk, opioid harm, alcohol interaction, dependence, depression, severe demoralization.

Pain Pattern

Chronic pain with mood, substance, and safety complications.

Capacity Failure

Safety, pain regulation, sleep, agency, work participation, emotional coping, medicine safety.

Coupling Conditions

Loss of work, poor sleep, alcohol use, opioid escalation, hopelessness, possible depression, social isolation.

Wise Perturbation

Ask directly about suicidal thoughts, plan, means, and immediate safety. Do not abandon the patient or abruptly punish. Assess opioid and alcohol risk, mood, sleep, pain diagnosis, and support. Use urgent mental health or crisis pathway if risk is present. Create a safer pain and substance plan with close follow-up and appropriate specialist support.

Repair Trajectory

Immediate safety secured, opioid/alcohol risk reduced, sleep and mood addressed, pain plan clarified, support mobilized, patient has crisis plan and follow-up.

35. Common Student Pitfalls

Pitfall 1: Assuming Chronic Pain Is Safe

New red flags can occur in a patient with chronic pain.

Pitfall 2: Saying “Nothing Is Wrong” Because Imaging Is Normal

Pain may be real without dangerous imaging findings.

Pitfall 3: Treating Pain Score Only

Function, sleep, mood, safety, and participation matter.

Pitfall 4: Ignoring Medicine Harm

NSAIDs, opioids, sedatives, and polypharmacy may create major complications.

Pitfall 5: Missing Depression and Suicide Risk

Chronic pain can become unbearable.

Pitfall 6: Encouraging Rest Without a Movement Plan

Prolonged rest worsens deconditioning and pain sensitivity.

Pitfall 7: Using Opioids Because the Clinician Feels Helpless

Opioids require clear goals, monitoring, and exit strategy.

Pitfall 8: Failing to Validate

Patients who feel disbelieved often become more distressed and less able to engage in repair.

36. Clinical Practice Box

When assessing chronic pain, complete this structure:

Pain location and pattern:
Where, when, quality, spread, triggers, relievers, flares.

Danger signs:
Neurological deficit, fever, weight loss, cancer history, trauma, night pain, hot joint, vascular signs, severe new pain, suicide risk.

Pain mechanism:
Nociceptive, neuropathic, inflammatory, nociplastic, mixed.

Capacity failures:
Sleep, mobility, mood, energy, work, self-care, agency, participation.

Coupling conditions:
CKD, heart failure, diabetes, frailty, depression, trauma, sleep disorder, work, family, finances, medicines.

Medication review:
NSAIDs, opioids, sedatives, alcohol, herbal products, side effects, constipation, falls, kidney/liver safety.

Patient goal:
What does the patient most want to regain?

Wise perturbation:
Disease treatment, safer analgesia, movement, pacing, sleep repair, mood support, education, rehabilitation, specialist input.

Repair trajectory:
Pain, sleep, walking, work, mood, medicine safety, flares, participation.

37. Mini-Case for Practice

A 67-year-old woman with diabetes, CKD, heart failure, osteoarthritis, depression, and chronic low back pain presents with worsening pain, poor sleep, constipation, falls, and low mood. She takes NSAIDs, opioids, and a sleeping tablet. She says she cannot go on like this.

Apply the chronic pain approach.

Danger

Suicide risk, medication harm, falls, constipation, AKI, heart failure worsening, depression, possible new pain red flags.

Pain Pattern

Mixed chronic pain: osteoarthritis and back pain with possible nociceptive, neuropathic, and central sensitization components, complicated by mood and medicine harm.

Capacity Failure

Pain regulation, sleep, mobility, mood, bowel clearance, kidney clearance, fluid balance, medicine safety, agency.

Coupling Conditions

Diabetes, CKD, heart failure, depression, NSAID risk, opioid constipation and falls risk, sedative risk, poor sleep, low activity, fear, possible frailty.

Wise Perturbation

Assess red flags and suicide risk immediately. Review kidney function, heart failure status, constipation, falls, glucose, mood, and full medication list. Stop or avoid NSAIDs where appropriate because of CKD and heart failure risk. Review opioid and sleeping tablet harms. Treat constipation. Create a safer pain plan focused on function, sleep, mood, graded movement, and close follow-up.

Repair Trajectory

Patient is safe, constipation improves, falls reduce, kidney and heart status stabilize, sleep improves, pain becomes more manageable, walking increases, mood support begins, medication burden becomes safer.

38. Student Takeaway

Chronic pain becomes easier when the clinician asks:

Is there danger or a new red flag?
What type of pain is this?
What is generating the pain, and what is amplifying it?
What has pain taken away from the patient's life?
How are sleep, mood, movement, work, family, and agency affected?
Which medicines are helping, and which are harming?
Is there NSAID, opioid, sedative, alcohol, or polypharmacy danger?
What does the patient most want to regain?
What repair trajectory would show less suffering and more life?

Chronic pain is not imaginary.

It is a real disturbance of tissue, nerves, brain, sleep, mood, movement, and meaning.

The safe clinician believes the patient, checks for danger, explains the pain system, avoids harmful medication escalation, restores movement and sleep, treats mood and suffering, and follows the patient toward safer function, dignity, and participation.

Chapter 58. Addiction and Dependence Made Easy

Addiction is a pattern of compulsive substance use or behavior that continues despite harm, craving, loss of control, and reduced ability to stop even when the person wants to.

Dependence means the body has adapted to a substance so that stopping suddenly may cause withdrawal. Dependence can occur with prescribed medicines, alcohol, opioids, sedatives, nicotine, or other substances.

Patients do not usually say:

“I have a substance use disorder.”
“I have physiological dependence.”

They say:

“I cannot stop.”
“I need it to function.”
“I get sick when I miss it.”
“I only use it to sleep.”
“I only drink to calm my nerves.”
“The pain tablets are the only thing that helps.”
“I am ashamed.”
“Please do not judge me.”
“I want help, but I am afraid.”

Addiction and dependence are central to Internal Medicine because they affect almost every system.

They affect the brain.
They affect the liver.
They affect the heart.
They affect breathing.
They affect sleep.
They affect pain.
They affect nutrition.
They affect infection risk.
They affect medication safety.
They affect pregnancy, family, work, housing, driving, violence risk, trauma, and mortality.
They affect trust between patient and clinician.

The first task is not to blame the patient.

The deeper question is:

What substance or behavior has become coupled to survival, relief, identity, or coping — and what danger must be treated now?

Addiction and dependence become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. Why Addiction Belongs in Internal Medicine

Addiction is not outside medicine.

It is often hidden inside common presentations:

- chest pain
- falls
- confusion

seizures

pancreatitis

liver disease

infections

overdose

withdrawal

insomnia

anxiety

depression

chronic pain

hypertension

arrhythmia

gastritis

malnutrition

trauma

recurrent admissions

poor medication adherence

unexplained symptoms

If clinicians avoid addiction, they miss a major driver of illness.

Addiction care is not only psychiatry.

It is whole-person medicine.

2. Addiction Is Not Moral Failure

Addiction is often misunderstood as weakness, selfishness, or bad character.

This is clinically harmful.

Shame makes patients hide use.
Hidden use makes diagnosis unsafe.
Unsafe diagnosis leads to dangerous prescribing, missed withdrawal, overdose, interactions, and failed discharge plans.

A better clinical frame is:

Addiction is a disorder of reward, relief, memory, stress, habit, social context, and agency.

The person may want to stop and still be unable to stop.

The person may understand harm and still return to use.

The person may lie, not because they are evil, but because fear, shame, withdrawal, craving, and survival pressure are powerful.

A nonjudgmental stance is not permissiveness.

It is the condition for truth, safety, and treatment.

3. Addiction Is a Capacity Failure

Addiction affects capacities.

Agency Capacity

The patient loses freedom to choose consistently.

They may intend to stop but return to use.

Regulation Capacity

The body becomes dependent on the substance to feel normal.

Stopping may cause withdrawal.

Reward Capacity

Normal pleasures may become less powerful than the substance.

Stress Capacity

The substance becomes the main coping tool for anxiety, trauma, pain, insomnia, loneliness, or grief.

Social Capacity

Relationships, work, finances, and trust may be damaged.

Safety Capacity

The patient may be at risk of overdose, withdrawal, infection, violence, accidents, self-harm, or medical deterioration.

Addiction is not simply “bad choices.”

It is impaired self-regulation under biological, psychological, and social pressure.

4. Dependence Is Not the Same as Addiction

This distinction matters.

Dependence

Dependence means the body has adapted to a substance.

Stopping suddenly may cause withdrawal.

A patient may be dependent on a prescribed medicine without compulsive misuse.

Examples:

- long-term opioids for pain
- benzodiazepines or sedatives for sleep or anxiety
- steroids causing adrenal suppression
- nicotine
- alcohol
- some antidepressants requiring careful discontinuation
- some anti-seizure medicines requiring careful management

Dependence asks:

Will stopping suddenly harm the patient?

Addiction

Addiction includes loss of control and continued use despite harm.

Features may include:

- craving
- using more than intended
- failed attempts to cut down
- time spent obtaining or recovering from use
- neglect of roles
- continued use despite harm
- tolerance
- withdrawal
- risky use
- social or occupational impairment

Addiction asks:

Has use become compulsive and harmful despite consequences?

A patient can have dependence without addiction.

A patient can have both.

5. The First Question: Is There Danger Now?

Substance-related presentations can be immediately dangerous.

Urgent assessment is needed when there is:

- overdose
- reduced consciousness
- respiratory depression
- severe intoxication
- severe withdrawal
- seizures
- delirium
- suicidal thoughts
- self-harm
- severe agitation
- chest pain
- arrhythmia
- stroke symptoms
- severe hypertension
- severe vomiting or dehydration
- GI bleeding
- pancreatitis
- severe liver disease
- jaundice with confusion

- fever or sepsis
- injection-related infection
- severe trauma
- pregnancy context with substance use
- unsafe driving or machinery use
- domestic violence or safeguarding concern
- polysubstance use
- mixing opioids, alcohol, and sedatives
- inability to care for self

The danger-first question is:

Is this person intoxicated, withdrawing, poisoned, infected, injured, suicidal, or medically unstable now?

6. Immediate Red Flags

Red flags include:

- slow or absent breathing
- blue lips or severe drowsiness
- unable to wake
- seizure
- severe confusion
- hallucinations with agitation
- tremor, sweating, high pulse, high blood pressure after stopping alcohol or sedatives
- fever with injection drug use
- new heart murmur with injection drug use
- severe headache or neurological deficit
- chest pain after stimulant use
- severe abdominal pain after alcohol use
- vomiting blood or black stools
- jaundice with drowsiness
- severe depression or suicidal thoughts
- overdose history
- escalating substance use
- using alone with overdose-risk substances
- combining sedatives, opioids, and alcohol
- repeated falls or injuries
- severe malnutrition
- pregnancy with substance dependence
- child or elder safeguarding concern

These require urgent, structured assessment.

7. The Addiction Pathway Made Easy

Addiction often develops through repeated coupling of a substance to relief.

The pathway may look like:

- distress, pain, insomnia, trauma, anxiety, loneliness, or social exposure
- substance produces relief, pleasure, numbness, energy, sleep, confidence, or escape
- brain learns the association
- tolerance develops
- more substance is needed for the same effect
- withdrawal or rebound occurs when substance wears off
- substance is used to avoid withdrawal
- consequences accumulate
- shame, secrecy, and isolation increase
- use becomes more compulsive
- agency narrows
- health, relationships, and safety deteriorate

The substance begins as a solution.

It becomes a trap.

The clinical task is to understand both:

What harm is the substance causing?
What suffering is the substance trying to treat?

8. Common Substance Patterns in Internal Medicine

Alcohol

Alcohol can contribute to:

- liver disease
- gastritis
- pancreatitis
- hypertension
- atrial fibrillation
- cardiomyopathy
- neuropathy
- falls
- trauma
- depression
- anxiety
- insomnia

- malnutrition
- dementia-like symptoms
- seizures
- withdrawal delirium
- medication interactions
- GI bleeding

Alcohol withdrawal can be life-threatening.

Opioids

Opioids may be prescribed or non-prescribed.

Risks include:

- respiratory depression
- overdose
- constipation
- nausea
- sedation
- falls
- dependence
- tolerance
- withdrawal
- opioid-induced hyperalgesia
- low mood
- sleep-disordered breathing
- interaction with alcohol and sedatives

Opioid use may begin with real pain.

Pain remains real even when opioid dependence develops.

Sedatives and Benzodiazepine-Type Medicines

Risks include:

- falls
- confusion
- dependence
- withdrawal
- memory impairment
- respiratory depression when combined with opioids or alcohol
- driving impairment
- delirium
- worsening sleep architecture over time in some patients

Withdrawal can be dangerous if abrupt.

Stimulants

Stimulants can contribute to:

- chest pain
- high blood pressure
- arrhythmias
- stroke
- agitation
- insomnia
- anxiety
- weight loss
- paranoia
- psychosis
- dental disease in some contexts
- risky behavior

Nicotine

Nicotine dependence contributes to ongoing tobacco exposure.

Tobacco use affects:

- COPD
- cardiovascular disease
- stroke
- cancer risk
- wound healing
- vascular disease
- pregnancy outcomes
- infection vulnerability

Nicotine dependence is powerful and deserves treatment, not scolding.

Cannabis and Other Substances

Cannabis and other substances may affect:

- cognition
- motivation
- anxiety
- psychosis risk in vulnerable people
- vomiting syndromes in selected patterns
- driving safety
- medication interactions
- respiratory health if smoked

The clinical task is not to moralize.

It is to understand pattern, harm, dependence, and readiness for change.

9. Polysubstance Use

Polysubstance use means more than one substance is used.

This is especially dangerous when depressants are combined.

High-risk combinations include:

- opioids plus alcohol
- opioids plus sedatives
- sedatives plus alcohol
- opioids plus sedatives plus alcohol
- stimulants plus alcohol
- stimulants plus sedatives
- multiple prescribed and non-prescribed substances

Polysubstance use increases risk of:

- overdose
- respiratory depression
- falls
- accidents
- delirium
- withdrawal complexity
- medication interactions
- poor adherence
- violence
- self-harm

Always ask about combinations.

A patient may report pain tablets but not alcohol.
They may report alcohol but not sedatives.
They may report prescribed medicines but not non-prescribed use.

Safety depends on the full pattern.

10. Taking a Substance Use History

Ask respectfully and specifically.

Begin with normalization:

“I ask everyone these questions because alcohol, tablets, and other substances can affect sleep, pain, blood pressure, liver, mood, and medicine safety.”

Then ask:

- Do you drink alcohol?
- How much on a usual day?
- How often?
- What is the most you drink in one day?

Have you tried to cut down?

Do you ever feel shaky, sweaty, anxious, or unwell when you stop?

Do you use anything to sleep, calm nerves, improve energy, or manage pain?

Do you take any tablets not prescribed to you?

Do you take more of any medicine than prescribed?

Do you use opioids, sedatives, stimulants, cannabis, or other substances?

Do you inject anything?

Do you smoke or vape?

Have you ever overdosed?

Have you had withdrawal?

Has use affected family, work, money, health, or safety?

Are you worried about your use?

Would you like help changing it?

The tone matters.

A patient who feels judged may conceal the truth.

11. Signs of Addiction or Harmful Use

Features may include:

craving

using more than intended

inability to cut down

withdrawal symptoms

tolerance

continued use despite harm

neglect of work, family, or health

risky use

secrecy

conflict with family

financial problems

repeated injuries

recurrent admissions

missed appointments

medication misuse

intoxication at visits

early refill requests

multiple prescribers

using to avoid withdrawal

- using alone despite overdose risk
- loss of interest in other activities

Do not diagnose based on one feature alone.

Look for a pattern.

The question is:

Has the substance taken control of the person's life-capacity?

12. Withdrawal Made Easy

Withdrawal occurs when a dependent body no longer receives the substance.

Withdrawal can be mild, severe, or life-threatening depending on the substance.

Alcohol Withdrawal

May include:

- tremor
- sweating
- anxiety
- nausea
- insomnia
- high pulse
- high blood pressure
- hallucinations
- seizures
- delirium

Severe alcohol withdrawal can be life-threatening.

Sedative Withdrawal

May include:

- anxiety
- insomnia
- tremor
- agitation
- perceptual disturbances
- seizures
- delirium

Abrupt stopping can be dangerous.

Opioid Withdrawal

May include:

- muscle aches
- abdominal cramps
- diarrhea

- vomiting
- sweating
- gooseflesh
- runny nose
- yawning
- dilated pupils
- anxiety
- insomnia
- intense craving

Opioid withdrawal is often extremely distressing, though usually less medically lethal than alcohol or sedative withdrawal unless complicated by dehydration, comorbidity, pregnancy, or unsafe return to use.

Nicotine Withdrawal

May include:

- craving
- irritability
- anxiety
- poor concentration
- increased appetite
- sleep disturbance

Withdrawal is a medical event, not bad behavior.

13. Intoxication Made Easy

Intoxication means the substance is currently affecting brain and body function.

It may appear as:

- drowsiness
- agitation
- euphoria
- slurred speech
- poor coordination
- confusion
- impaired judgment
- hallucinations
- paranoia
- vomiting
- respiratory depression
- high or low blood pressure
- fast or slow pulse
- falls

- injury
- unsafe driving
- aggression
- coma

Clinical assessment asks:

- What was taken?
- How much?
- When?
- Was it mixed with alcohol or other substances?
- Was it intentional or accidental?
- Is there self-harm risk?
- Is breathing safe?
- Is circulation safe?
- Is glucose safe?
- Is temperature safe?
- Is trauma present?
- Is withdrawal likely later?
- Is there a dependent pattern?

Intoxication is not only a social problem.

It can be a medical emergency.

14. Overdose Made Easy

Overdose means toxic exposure that overwhelms safe function.

Danger signs include:

- reduced consciousness
- slow breathing
- hypoxia
- low blood pressure
- arrhythmia
- seizures
- vomiting with aspiration risk
- severe agitation
- hyperthermia
- chest pain
- severe metabolic disturbance
- coma

Overdose assessment must include:

- airway
- breathing
- circulation
- glucose
- temperature
- pupils
- ECG where relevant
- trauma
- co-ingestions
- intentionality
- access to means
- psychiatric risk
- safeguarding
- observation for delayed toxicity where relevant

Overdose care is both medical and relational.

After survival, ask:

Was this accidental, compulsive, desperate, or suicidal?

The answer changes the repair plan.

15. Addiction and Mental Health

Addiction and mental health problems often reinforce each other.

Substances may be used to cope with:

- depression
- anxiety
- trauma
- insomnia
- grief
- chronic pain
- shame
- loneliness
- psychosis symptoms
- work stress
- family conflict

Substances may also cause or worsen:

- depression
- anxiety
- panic

- psychosis
- insomnia
- irritability
- cognitive impairment
- suicidal thoughts
- violence risk
- demoralization

Ask:

- What does the substance do for you?
- What happens emotionally when you do not use it?
- Have you had trauma?
- Are you depressed?
- Are you anxious?
- Do you hear or see things others do not?
- Have you thought about harming yourself?
- Do you feel safe at home?

Substance use is often pain management for pain that has not been named.

16. Addiction and Chronic Pain

Chronic pain and addiction can overlap.

Important truths:

- The pain may be real.
- The medication may have helped at first.
- Dependence may have developed.
- Tolerance may reduce benefit.
- Withdrawal may worsen pain.
- Opioids may sometimes increase pain sensitivity.
- Fear of abandonment may drive distress.
- Abrupt discontinuation may cause harm.
- Continuing unsafe prescribing may also cause harm.

The clinician should avoid two errors:

Error 1: “You are addicted, so your pain is not real.”

This is false and harmful.

Error 2: “You have pain, so addiction risk does not matter.”

This is also false and harmful.

Wise care asks:

How can we treat pain and dependence safely together?

17. Addiction and Liver Disease

Alcohol and other substances can contribute to liver injury.

Liver disease may present with:

- jaundice
- ascites
- edema
- confusion
- easy bruising
- GI bleeding
- muscle wasting
- infection vulnerability
- fatigue
- poor appetite

In liver disease, substance use affects:

- medication safety
- bleeding risk
- encephalopathy risk
- nutrition
- transplant eligibility in some systems
- family stress
- prognosis

Care requires honesty without humiliation.

A shamed patient may hide relapse.

A supported patient is more likely to engage in treatment.

18. Addiction and Infection

Substance use can increase infection risk.

Examples:

- injection-related skin infection
- abscess
- endocarditis
- hepatitis
- HIV risk
- pneumonia from aspiration
- tuberculosis risk in some settings
- wound infection

- sexually transmitted infections
- dental infection

Ask about:

- injection practices
- needle sharing
- skin wounds
- fever
- chills
- new murmur
- back pain with fever
- sexual risk
- housing instability
- access to clean supplies
- vaccination status according to local guidance

Infection treatment should be paired with addiction care.

Otherwise, the cycle repeats.

19. Addiction and Pregnancy

Pregnancy changes the risk-benefit balance.

Substance use in pregnancy can affect:

- mother
- fetus
- withdrawal risk
- nutrition
- infection risk
- violence risk
- mental health
- prenatal care
- neonatal outcomes

The clinician should respond with urgency and compassion, not shame.

Pregnant patients may avoid care if they fear punishment or humiliation.

Care should involve appropriate maternal, addiction, mental health, and social support according to local pathways.

20. Addiction and Stigma

Stigma kills.

Stigma causes:

- delayed care
- concealment
- unsafe use
- mistrust
- undertreatment of pain
- overtreatment with sedatives
- poor follow-up
- shame
- isolation
- clinician avoidance
- fragmented care

Use person-first language:

Instead of:

“Addict.”

Say:

“Person with opioid use disorder.”
“Person with alcohol dependence.”
“Person using substances.”

Instead of:

“Drug-seeking.”

Say:

“Patient with uncontrolled pain, withdrawal concern, dependence, or high-risk medication use requiring assessment.”

Language shapes care.

21. Readiness to Change

Not every patient is ready to stop immediately.

Readiness may include stages:

- not seeing use as a problem
- feeling ambivalent
- wanting change but afraid
- attempting reduction
- stopping
- relapsing
- restarting recovery
- maintaining change

Ask:

- What do you like about using?

What do you not like?

What worries you?

Have you tried to stop before?

What helped?

What made it hard?

On a scale from 0 to 10, how ready do you feel to change?

Why that number and not lower?

What would make change safer?

Ambivalence is normal.

Motivation is built, not demanded.

22. Brief Intervention Made Easy

A brief intervention can happen in ordinary clinical care.

It includes:

ask permission

provide clear feedback

connect substance use to health

ask what the patient thinks

support choice

offer help

agree on one step

Example:

“Would it be okay if I shared what concerns me? Your liver tests, sleep, blood pressure, and falls may all be linked to alcohol. I am not here to judge you. I am concerned because stopping suddenly could also be dangerous if your body is dependent. We can make a safe plan together. What do you think?”

This is firm and respectful.

23. Harm Reduction

Harm reduction means reducing danger even when the person is not ready or able to stop completely.

It may include:

avoiding mixing alcohol, opioids, and sedatives

not using alone where overdose risk exists

overdose education and rescue planning where available

safer injection education and sterile equipment access where available

infection screening and treatment

wound care

vaccination according to local guidance

contraception and pregnancy care where relevant

- safe storage of medicines
- avoiding driving or machinery while intoxicated
- reducing quantity or frequency
- planned medical withdrawal rather than abrupt unsafe stopping
- linking to support services
- treating pain, trauma, depression, and housing needs

Harm reduction is not approval of harm.

It is prevention of death and irreversible damage.

24. Treatment Pathways

Treatment depends on the substance, severity, risk, and patient goals.

Possible pathways include:

Medical Stabilization

Needed for:

- overdose
- severe withdrawal
- delirium
- seizures
- severe intoxication
- medical complications
- pregnancy with high-risk use
- suicidal risk
- severe comorbidity

Withdrawal Management

Some withdrawals require supervised medical care.

Alcohol and sedative withdrawal can be dangerous.

Do not advise abrupt cessation in dependent patients without assessing risk and arranging safe care.

Medication-Assisted Treatment

Some substance use disorders have effective medication-based treatments.

These should be considered according to local guidance, patient preference, comorbidity, pregnancy status where relevant, and availability.

Psychological Treatment

May include:

- counseling
- motivational interviewing
- relapse prevention
- cognitive behavioral approaches
- trauma-informed therapy

- family therapy
- peer support
- group support

Social Support

May include:

- housing support
- food support
- employment support
- legal support
- family support
- domestic violence support
- transport
- case management

Long-Term Recovery

Recovery may involve:

- fewer relapses
- safer use
- reduced harm
- abstinence where desired or needed
- improved relationships
- restored work
- improved health
- reduced shame
- meaning and community

Treatment should be active, realistic, and compassionate.

25. Relapse Made Easy

Relapse means return to use after a period of reduction or abstinence.

Relapse is common.

It does not mean treatment failed.

It means the care plan needs review.

Ask:

- What happened before the relapse?
- Was there withdrawal?
- Was there pain?
- Was there stress?
- Was there grief?
- Was there exposure to triggers?

Were medicines stopped?

Was support lost?

Was sleep poor?

Was shame involved?

What helped before?

What can we change now?

Avoid:

“You failed.”

Use:

“Let us understand the trigger and make the next plan safer.”

Relapse is information.

26. Family and Caregivers

Addiction affects families.

Families may feel:

fear

anger

guilt

exhaustion

shame

financial stress

mistrust

grief

danger

hopelessness

Family members may also unintentionally enable harm or become unsafe themselves.

Ask:

Who knows about the substance use?

Is anyone at home afraid?

Is there violence?

Are children, elders, or vulnerable people affected?

Who supports recovery?

Who may trigger relapse?

Does family need education?

Does caregiver need support?

Family involvement can help, but confidentiality and safety must be respected.

27. Addiction and Safeguarding

Substance use may create safeguarding concerns.

Consider risk to:

- children
- older adults
- dependent adults
- pregnant patients
- victims of domestic violence
- cognitively impaired patients
- patients with severe mental illness
- patients being exploited

Safeguarding concerns may include:

- neglect
- violence
- unsafe supervision
- financial exploitation
- coercion
- trafficking
- medication diversion
- unsafe home environment

Follow local safeguarding procedures.

The goal is protection, not punishment.

28. Discharge Safety

Before discharge, ask:

- Is intoxication resolved enough for safe decision-making?
- Is withdrawal risk assessed?
- Is overdose risk addressed?
- Is suicide risk assessed?
- Is the patient medically stable?
- Are respiratory, cardiac, liver, kidney, and infection risks addressed?
- Are high-risk medicine combinations reviewed?
- Is pain managed safely?
- Is there a plan for alcohol or sedative dependence?
- Is opioid risk addressed?
- Are follow-up and support arranged?
- Does the patient know when to return?

Is housing or home environment safe?

Are family or caregivers involved where appropriate?

Are safeguarding concerns addressed?

Are prescriptions safe in quantity and combination?

Is the patient leaving with dignity?

A discharge plan that ignores dependence may set up withdrawal, overdose, relapse, or readmission.

29. Repair Trajectory in Addiction and Dependence

Repair may look different for different patients.

Signs of repair include:

patient speaks honestly about use

withdrawal risk is safely managed

overdose risk reduced

dangerous combinations reduced

substance use decreases

abstinence begins where desired and safe

relapse plan exists

cravings become more manageable

sleep improves

pain plan becomes safer

mood improves

liver or other organ markers stabilize

infections treated

wounds heal

nutrition improves

family trust begins to repair

appointments are attended

shame reduces

patient has support

agency returns

Repair is not always immediate abstinence.

Repair is movement from danger and compulsion toward safety, choice, health, and participation.

30. Monitoring Addiction and Dependence

Monitor:

substance use pattern

cravings

- withdrawal symptoms
- overdose risk
- intoxication episodes
- medical complications
- mood
- suicidal thoughts
- sleep
- pain
- liver function where relevant
- kidney function where relevant
- infection risk
- medication interactions
- adherence
- family safety
- work and housing stability
- relapse triggers
- support attendance
- patient goals
- dignity and trust

Ask at follow-up:

- Since we last met, how much have you used?
- Any days without use?
- Any withdrawal?
- Any overdose or near-overdose?
- Any mixing with sedatives, opioids, or alcohol?
- Any cravings?
- Any triggers?
- What helped?
- What made it harder?
- Are you safe?
- What is one step you feel ready for now?

Monitoring should be honest, not punitive.

31. Worked Case 1: Alcohol Withdrawal Risk

A 56-year-old man admitted with pancreatitis drinks alcohol heavily every day. On day two, he becomes tremulous, sweaty, anxious, and tachycardic. He says he usually drinks in the morning to steady himself.

Danger

Alcohol withdrawal, seizures, delirium, pancreatitis, dehydration, electrolyte disturbance.

Syndrome
Dependence with acute withdrawal during hospitalization.

Capacity Failure
Brain regulation, autonomic stability, sleep, safety, hydration, metabolic regulation.

Coupling Conditions
Daily alcohol use, pancreatitis, poor intake, shame, underreporting, possible liver disease, electrolyte risk.

Wise Perturbation
Recognize withdrawal early. Treat according to local withdrawal pathway. Monitor vital signs, mental state, hydration, electrolytes, glucose, pain, and pancreatitis complications. Provide nonjudgmental discussion about alcohol treatment after stabilization.

Repair Trajectory
Tremor settles, seizures prevented, sleep improves, pancreatitis stabilizes, patient discusses alcohol support, discharge plan addresses relapse and withdrawal risk.

32. Worked Case 2: Opioids, Chronic Pain, and Dependence

A 62-year-old woman with chronic back pain has been taking opioids for years. She says they no longer help much, but when she misses doses she gets sweating, diarrhea, anxiety, and worse pain. She is constipated, sleepy, and has fallen twice.

Danger
Opioid dependence, falls, sedation, constipation, possible opioid-induced worsening pain sensitivity, depression risk.

Syndrome
Chronic pain with opioid dependence and medication harm.

Capacity Failure
Pain regulation, bowel clearance, cognition, mobility safety, agency, sleep.

Coupling Conditions
Chronic pain, long-term opioids, fear of withdrawal, poor sleep, falls, possible depression, limited alternatives.

Wise Perturbation
Validate pain and dependence. Do not abruptly stop opioids. Review pain diagnosis, function, opioid benefit and harm, constipation, falls, mood, and safety. Create a gradual, supported pain and dependence plan according to local guidance, with non-opioid strategies and close follow-up.

Repair Trajectory
Constipation improves, sedation reduces, falls stop, pain plan broadens, withdrawal avoided, function improves, patient feels supported rather than abandoned.

33. Worked Case 3: Sedative Dependence and Falls

An 80-year-old man has taken a sleeping tablet nightly for years. He now has memory problems, morning drowsiness, and recurrent falls. When he tries to stop, he cannot sleep and feels panicky.

Danger
Sedative dependence, falls, cognitive impairment, withdrawal risk, unsafe abrupt cessation.

Syndrome
Long-term sedative dependence with functional harm.

Capacity Failure

Sleep regulation, cognition, mobility safety, agency, medication safety.

Coupling Conditions

Age, insomnia, anxiety, long-term sedative use, fear of stopping, possible frailty, home fall hazards.

Wise Perturbation

Explain dependence respectfully. Avoid sudden stopping. Assess falls, cognition, sleep pattern, anxiety, alcohol use, other medicines, and home safety. Plan gradual reduction and safer sleep support according to local guidance.

Repair Trajectory

Morning drowsiness improves, falls reduce, sleep gradually stabilizes, anxiety managed, patient understands taper plan, cognition clearer.

34. Worked Case 4: Injection-Related Infection

A 38-year-old man who injects drugs presents with fever, chills, back pain, and a swollen painful arm injection site.

Danger

Sepsis, abscess, bloodstream infection, endocarditis, spinal infection, withdrawal during admission.

Syndrome

Substance use with serious infection risk.

Capacity Failure

Defense, circulation, pain control, agency, safety.

Coupling Conditions

Injection use, possible unstable housing, stigma, delayed care, withdrawal fear, limited support.

Wise Perturbation

Treat infection urgently according to local pathway. Assess for abscess, bloodstream infection, endocarditis, spinal infection, and withdrawal risk. Provide respectful care, pain control, harm reduction, and addiction treatment referral or initiation where available.

Repair Trajectory

Fever settles, infection controlled, pain improves, withdrawal prevented or treated, patient remains engaged in care, safer-use or treatment plan offered.

35. Worked Case 5: Alcohol and Depression

A 48-year-old woman with hypertension and insomnia drinks wine nightly to sleep. She has worsening low mood, morning fatigue, missed work, and says she feels ashamed and trapped.

Danger

Depression, alcohol dependence risk, worsening hypertension, sleep disruption, possible suicide risk.

Syndrome

Alcohol used as sleep and emotional coping, now worsening mood and function.

Capacity Failure

Sleep regulation, mood, agency, work participation, blood pressure regulation.

Coupling Conditions

Insomnia, stress, shame, possible depression, hypertension, social isolation.

Wise Perturbation

Ask about amount, withdrawal symptoms, depression, suicidal thoughts, and support. Explain the alcohol-sleep loop. Avoid recommending abrupt cessation if dependence risk exists without safety assessment. Offer sleep repair, mood care, alcohol reduction support, and follow-up.

Repair Trajectory

Patient speaks honestly, suicide risk addressed, sleep plan safer, alcohol use reduces or treatment begins safely, mood improves, blood pressure easier to manage.

36. Worked Case 6: Overdose After Relapse

A 34-year-old man with prior opioid use disorder is brought in after overdose. He survived after emergency treatment. He had recently left treatment, relapsed alone, and feels ashamed.

Danger

Recurrent overdose, respiratory depression, suicide risk, relapse, shame, loss of tolerance, unsafe use alone.

Syndrome

Opioid use disorder with relapse and overdose.

Capacity Failure

Breathing safety, agency, craving regulation, emotional coping, social support.

Coupling Conditions

Recent abstinence or reduced tolerance, relapse trigger, isolation, shame, possible depression, limited support.

Wise Perturbation

Stabilize medically. Assess intentionality and suicide risk. Provide nonjudgmental overdose education and rescue planning where available. Offer evidence-based addiction treatment pathway according to local resources. Address triggers, support, housing, pain, and mental health.

Repair Trajectory

Patient survives and remains engaged, overdose risk reduced, treatment linkage made, support plan created, shame reduced, relapse prevention plan started.

37. Common Student Pitfalls

Pitfall 1: Confusing Dependence With Addiction

Dependence is physiological adaptation. Addiction includes compulsive harmful use and loss of control.

Pitfall 2: Using Judgmental Language

Stigma reduces honesty and safety.

Pitfall 3: Advising Abrupt Stopping Without Assessing Withdrawal

Alcohol and sedative withdrawal can be dangerous.

Pitfall 4: Missing Polysubstance Risk

Opioids, alcohol, and sedatives together are especially dangerous.

Pitfall 5: Treating Overdose Without Assessing Suicide Risk

Overdose may be accidental, intentional, or mixed.

Pitfall 6: Ignoring Pain

Pain and addiction can coexist. Pain still requires care.

Pitfall 7: Discharging Without Withdrawal or Relapse Plan

The danger often returns after discharge.

Pitfall 8: Seeing Relapse as Failure

Relapse is clinical information and a chance to strengthen the plan.

38. Clinical Practice Box

When assessing addiction and dependence, complete this structure:

Substance or behavior:
Alcohol, opioids, sedatives, stimulants, nicotine, cannabis, other, gambling or behavioral pattern where relevant.

Pattern:
Amount, frequency, route, duration, last use, maximum use, using alone, combinations.

Immediate danger:
Overdose, intoxication, withdrawal, seizures, delirium, suicidality, trauma, infection, pregnancy, safeguarding.

Dependence features:
Tolerance, withdrawal, morning use, inability to stop abruptly, using to feel normal.

Addiction features:
Craving, loss of control, continued use despite harm, role impairment, risky use, failed attempts to cut down.

Medical complications:
Liver, heart, lungs, infections, pain, sleep, nutrition, injuries, mental health, medicines.

Coupling conditions:
Pain, trauma, insomnia, grief, depression, anxiety, housing, work, family, stigma, poverty, social network.

Readiness to change:
Not ready, ambivalent, ready, already changing, relapse, maintenance.

Wise perturbation:
Stabilize danger, manage withdrawal safely, reduce harm, treat comorbidities, offer treatment, support agency.

Repair trajectory:
Safety, reduced use or abstinence, withdrawal controlled, overdose risk reduced, follow-up, support, restored participation.

39. Mini-Case for Practice

A 59-year-old man with diabetes, hypertension, chronic back pain, insomnia, and depression presents after a fall. He smells of alcohol, takes prescribed opioids and sleeping tablets, and says he drinks nightly because he cannot sleep or tolerate pain. His wife says he has become forgetful, missed work, and sometimes takes extra tablets.

Apply the addiction and dependence approach.

Danger

Fall injury, alcohol intoxication, polysubstance respiratory depression risk, sedative and opioid harm, depression, suicide risk, dependence, medication misuse.

Syndrome

Pain-insomnia-depression-substance loop with alcohol, opioids, and sedatives interacting.

Capacity Failure

Sleep, pain regulation, cognition, mobility safety, agency, mood, breathing safety, work participation.

Coupling Conditions

Chronic pain, insomnia, depression, alcohol use, opioid exposure, sedative use, family concern, work stress, possible shame and dependence.

Wise Perturbation

Assess injury, consciousness, breathing, glucose, blood pressure, alcohol withdrawal risk, opioid and sedative use, depression, suicidal thoughts, and full medication list. Avoid abrupt unsafe discontinuation if dependence is present. Explain the danger of mixing alcohol, opioids, and sedatives. Create a safer pain, sleep, mood, and substance-use plan with close follow-up and appropriate referral according to local pathways.

Repair Trajectory

Falls stop, breathing safety improves, alcohol and sedative-opioid risk reduced, sleep plan safer, pain treated more broadly, mood support begins, wife involved with consent, work participation improves, patient has a clear follow-up and crisis plan.

40. Student Takeaway

Addiction and dependence become easier when the clinician asks:

What is the patient using, how much, how often, and why?
Is there intoxication, overdose, withdrawal, infection, injury, or suicide risk now?
Is this dependence, addiction, harmful use, or a mixture?
What suffering is the substance treating — pain, trauma, insomnia, anxiety, depression, loneliness, withdrawal, or shame?
What medical complications are present?
What dangerous combinations exist?
What is the patient ready to change?
How can we reduce harm today while supporting recovery tomorrow?
What repair trajectory would restore safety, agency, dignity, and participation?

Addiction is not moral failure.

Dependence is not weakness.

Both are patterns of biological adaptation, narrowed agency, and suffering coupled to relief.

The safe clinician treats danger, prevents withdrawal and overdose, speaks without stigma, manages pain and mood, reduces harm, supports readiness, involves appropriate services, and helps the patient move from compulsion toward safer freedom.

Chapter 59. Palliative Care Made Easy

Palliative care is care that relieves suffering, supports quality of life, clarifies goals, and helps patients and families live as well as possible with serious illness.

Patients do not usually say:

“I need palliative care.”

They say:

“I just want to be comfortable.”
“I am tired of being in hospital.”
“I cannot breathe.”
“I cannot sleep because of pain.”
“I am afraid of what is coming.”
“I do not understand what the doctors are trying to do.”
“I do not want to be a burden.”
“I want to be at home.”
“I want more time, but not like this.”
“What is the point of more treatment?”

Palliative care is central to Internal Medicine because many patients live with serious, progressive, life-limiting, or burdensome illness.

These illnesses may include:

- advanced cancer
- heart failure
- COPD
- pulmonary fibrosis
- advanced kidney disease
- advanced liver disease
- dementia
- frailty
- stroke with severe disability
- neurodegenerative disease
- recurrent sepsis
- advanced multimorbidity
- severe chronic pain
- end-stage organ failure

The first task is not to assume palliative care means “nothing more can be done.”

The deeper question is:

What suffering can still be relieved, what goals still matter, and what care best protects dignity, comfort, agency, and life-capacity now?

Palliative care becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Palliative Care?

Palliative care is active care.

It focuses on:

- pain relief
- breathlessness relief
- nausea control
- constipation relief
- anxiety reduction
- sleep support
- delirium prevention and treatment
- spiritual and emotional support
- communication
- goals of care
- decision-making
- caregiver support
- advance care planning
- dignity
- comfort
- quality of life
- preferred place of care where possible

Palliative care can be provided alongside disease-directed treatment.

A patient can receive chemotherapy and palliative care.
A patient can receive heart failure treatment and palliative care.
A patient can receive dialysis planning and palliative care.
A patient can receive antibiotics and palliative care.
A patient can receive rehabilitation and palliative care.

Palliative care does not mean abandonment.

It means suffering is treated as seriously as disease.

2. Palliative Care Is Not the Same as End-of-Life Care

End-of-life care is care in the final phase of life.

Palliative care is broader.

It may begin months or years before death.

A patient with advanced COPD may need palliative care for breathlessness while still living for years.
A patient with metastatic cancer may need symptom control while receiving active treatment.
A patient with heart failure may need goals-of-care discussions during repeated admissions.
A patient with dementia may need caregiver support long before the final days.
A patient with CKD may need help deciding whether dialysis fits their goals.

The practical rule:

Palliative care should begin when suffering, uncertainty, treatment burden, or serious illness threatens quality of life — not only when death is imminent.

3. Palliative Care Is a Capacity Approach

Serious illness affects multiple capacities.

Comfort Capacity

Pain, breathlessness, nausea, itching, anxiety, and agitation may overwhelm the patient.

Energy Capacity

The patient may have profound fatigue, weakness, cachexia, or poor appetite.

Regulation Capacity

Advanced illness may destabilize breathing, fluid balance, glucose, sodium, sleep, and cognition.

Repair Capacity

The body may no longer recover fully after each insult.

Agency Capacity

The patient may lose ability to understand options, make decisions, or carry out complex care plans.

Participation Capacity

The patient may no longer work, walk, eat normally, socialize, worship, travel, or live independently.

Meaning Capacity

The patient may struggle with fear, grief, guilt, unfinished business, or spiritual distress.

Palliative care asks:

Which capacities can still be restored, which must be supported, and which burdens should be reduced?

4. The First Question: Is There Immediate Suffering or Danger?

In palliative care, danger includes both biological crisis and unbearable suffering.

Urgent assessment is needed when there is:

- severe uncontrolled pain
- severe breathlessness
- airway obstruction
- spinal cord compression concern
- severe agitation or delirium
- suicidal thoughts
- massive bleeding
- seizure
- severe vomiting
- bowel obstruction symptoms
- urinary retention
- severe constipation
- uncontrolled terminal secretions causing distress
- sepsis where treatment is aligned with goals

- severe anxiety or panic
- family unable to manage care
- medication toxicity
- opioid toxicity
- unsafe swallowing
- dehydration with distress
- caregiver collapse
- unclear goals during acute deterioration

The danger-first question is:

What suffering or instability must be relieved now?

5. Immediate Red Flags in Serious Illness

Red flags include:

- new severe back pain with weakness or bladder symptoms
- severe headache or seizure in cancer or advanced illness context
- sudden severe breathlessness
- coughing or vomiting blood
- black stools with weakness or collapse
- uncontrolled pain despite usual medicines
- confusion after new medicines or infection
- severe constipation with vomiting
- inability to swallow medicines
- severe agitation at home
- family unable to provide safe care
- suicidal statements
- rapidly worsening drowsiness
- opioid over-sedation
- severe dehydration with distress
- uncontrolled terminal symptoms
- patient or family unsure whether to call emergency services

Palliative care does not ignore danger.

It defines danger in relation to goals, comfort, and dignity.

6. When Should Palliative Care Be Considered?

Consider palliative care when there is:

- serious illness with high symptom burden
- repeated hospital admissions

- progressive functional decline
- advanced organ failure
- metastatic or incurable cancer
- advanced dementia
- severe frailty
- poor recovery after acute illness
- treatment burden exceeding benefit
- uncertain goals
- family distress
- complex decision-making
- uncontrolled pain or breathlessness
- weight loss or cachexia
- patient asking about comfort, prognosis, or stopping treatment
- clinician would not be surprised if the patient deteriorated significantly in the coming months
- patient wants to focus on quality of life

The trigger is not “giving up.”

The trigger is serious suffering or serious uncertainty.

7. Common Palliative Symptoms

Palliative care commonly addresses:

- pain
- breathlessness
- fatigue
- nausea and vomiting
- constipation
- diarrhea
- poor appetite
- weight loss
- dry mouth
- anxiety
- depression
- insomnia
- delirium
- itching
- edema
- wounds
- pressure injuries

- secretions
- cough
- bleeding
- spiritual distress
- caregiver exhaustion

Each symptom should be assessed as a syndrome.

Ask:

- What is causing it?
- Is there reversible danger?
- What is the patient's goal?
- What treatment burden is acceptable?
- What relief is realistic?
- What monitoring is needed?

8. Pain in Palliative Care

Pain is one of the most feared symptoms.

Palliative pain may be due to:

- cancer invasion
- bone metastases
- nerve compression
- wounds
- pressure injuries
- arthritis
- ischemia
- organ distension
- infection
- procedures
- immobility
- muscle spasm
- neuropathy
- chronic pain conditions

Pain assessment includes:

- location
- quality
- severity
- timing
- triggers

- relieving factors
- neuropathic features
- inflammatory features
- functional effect
- sleep effect
- emotional effect
- current medicines
- side effects
- kidney and liver function
- goals of care

Treatment may include:

- treating reversible cause where aligned with goals
- non-opioid medicines where safe
- opioids where appropriate
- neuropathic pain strategies
- anti-inflammatory strategies where appropriate
- radiotherapy or procedures in selected cancer pain
- positioning
- pressure relief
- wound care
- heat, cold, massage, or gentle movement where helpful
- psychological and spiritual support

The goal is not only a lower pain score.

The goal is comfort, sleep, movement, and peace.

9. Breathlessness in Palliative Care

Breathlessness is frightening.

It may be caused by:

- COPD
- heart failure
- pneumonia
- pulmonary embolism
- pleural effusion
- lung cancer
- pulmonary fibrosis
- anemia
- anxiety

- ascites
- muscle weakness
- terminal decline

Assessment asks:

- Is oxygenation low?
- Is there treatable bronchospasm?
- Is there fluid overload?
- Is there infection?
- Is there pleural effusion?
- Is there anemia?
- Is anxiety amplifying distress?
- What does the patient fear most?
- What level of intervention fits goals?

Treatment may include:

- treating reversible causes where appropriate
- oxygen when hypoxemia is present or according to local practice
- bronchodilators where indicated
- diuretics where congestion is present
- antibiotics where infection treatment fits goals
- drainage of effusion in selected cases
- fan or airflow across the face where helpful
- positioning
- pacing
- breathing techniques
- opioids for refractory breathlessness according to local palliative guidance
- anxiety support
- family education

Breathlessness relief is urgent because breathlessness threatens the patient's sense of safety.

10. Nausea and Vomiting

Nausea may be caused by:

- medicines
- opioids
- bowel obstruction
- constipation
- gastric stasis
- liver disease

- kidney failure
- hypercalcemia
- raised intracranial pressure
- infection
- chemotherapy
- anxiety
- pain
- vestibular disease

Assessment asks:

- Is there obstruction?
- Is there constipation?
- Are medicines causing nausea?
- Is calcium high?
- Is kidney or liver failure present?
- Is vomiting causing dehydration?
- Can the patient keep medicines down?
- What route of medicine is needed?

Treatment depends on cause.

Do not use one anti-nausea approach for every patient.

Nausea control often restores eating, sleep, and dignity.

11. Constipation

Constipation is extremely common in palliative care.

Causes include:

- opioids
- immobility
- dehydration
- poor intake
- hypercalcemia
- bowel obstruction
- anticholinergic medicines
- neurological disease
- depression
- weakness
- privacy loss
- inability to toilet

Constipation can cause:

- pain
- nausea
- vomiting
- delirium
- urinary retention
- poor appetite
- agitation
- overflow diarrhea
- distress

In any patient on opioids, constipation prevention must be considered.

Ask:

- When was the last bowel movement?
- Is there abdominal pain?
- Is there vomiting?
- Is there overflow?
- Is obstruction possible?
- Is the patient drinking?
- Can the patient reach the toilet?
- Are laxatives needed or adjusted?

Bowel care is comfort care.

12. Fatigue and Weakness

Fatigue in serious illness may come from:

- cancer
- heart failure
- COPD
- anemia
- CKD
- liver disease
- infection
- inflammation
- cachexia
- poor sleep
- depression
- medicines
- pain
- dehydration

- malnutrition
- deconditioning

Fatigue may not be fully reversible.

But it can often be supported.

Care may include:

- treating reversible contributors
- simplifying medicines
- energy conservation
- prioritizing valued activities
- gentle movement where helpful
- nutrition support where appropriate
- sleep repair
- anemia management where aligned with goals
- emotional support

A key question is:

What activity matters enough to spend limited energy on?

Palliative care helps patients use energy for what matters most.

13. Poor Appetite and Weight Loss

Poor appetite and weight loss may be caused by:

- cancer cachexia
- advanced heart failure
- COPD
- CKD
- liver disease
- depression
- nausea
- constipation
- mouth problems
- swallowing difficulty
- medicines
- taste changes
- fatigue
- social isolation

Families often feel distressed when the patient eats little.

They may feel feeding equals love.

The clinician should explain gently:

“As serious illness advances, the body may not process food in the same way. We will treat causes we can, but forcing food can sometimes increase distress. The goal is comfort, enjoyment, and dignity.”

Care may include:

- treating nausea, constipation, mouth pain, or depression
- small preferred foods
- mouth care
- family education
- reducing pressure around meals
- swallowing assessment where needed
- goals-of-care discussion

Nutrition is important, but comfort and dignity matter.

14. Delirium in Palliative Care

Delirium is common in serious illness.

Causes include:

- infection
- hypoxia
- medicines
- opioids or sedatives
- dehydration
- kidney failure
- liver failure
- hypercalcemia
- constipation
- urinary retention
- pain
- brain disease
- terminal decline

Assessment asks:

- Is delirium reversible?
- Is the patient distressed?
- Is the family distressed?
- Are there treatable triggers?
- Are medicines contributing?
- Is this terminal delirium?
- What level of investigation fits goals?

Treatment may include:

- treating reversible triggers where appropriate
- reducing harmful medicines
- pain control
- bowel and bladder care
- hydration where helpful and aligned with goals
- calm environment
- family presence
- orientation
- symptom-directed medicines when distress or danger is severe according to local guidance

In terminal delirium, complete reversal may not be possible.

But distress can still be relieved.

15. Anxiety, Fear, and Panic

Serious illness often produces fear.

Patients may fear:

- pain
- suffocation
- dying alone
- being a burden
- losing dignity
- leaving family
- financial consequences
- spiritual judgment
- abandonment
- uncontrolled symptoms
- hospitals
- uncertainty

Anxiety may worsen:

- breathlessness
- pain
- insomnia
- nausea
- palpitations
- agitation
- family distress

Care includes:

- listening

- naming fear
- explaining what is happening
- creating symptom plans
- involving family
- spiritual support where desired
- breathing and grounding practices
- treating physical triggers
- medicine when needed and safe

A useful question is:

“What are you most afraid will happen?”

Fear often lessens when it is named and planned for.

16. Depression and Demoralization in Palliative Care

Sadness is common in serious illness.

But depression and demoralization still require care.

Ask:

- Are you able to enjoy anything?
- Do you feel hopeless?
- Do you feel like a burden?
- Do you wish you would not wake up?
- Have you thought about harming yourself?
- What still matters to you?
- What would make today more bearable?
- What unfinished business worries you?

Demoralization may improve with:

- symptom relief
- truthful communication
- achievable goals
- family support
- spiritual care
- practical planning
- reduced treatment burden
- legacy work
- palliative care support

The goal is not forced positivity.

The goal is to help the person inhabit life as fully as possible.

17. Spiritual and Existential Distress

Serious illness raises deep questions:

- Why is this happening?
- What was my life for?
- Am I forgiven?
- Will I be remembered?
- What happens after death?
- Have I failed my family?
- How do I say goodbye?
- Is there meaning in suffering?
- Where is God?
- What remains when I cannot do what I used to do?

Spiritual distress may appear as:

- anxiety
- anger
- despair
- silence
- guilt
- refusal of care
- family conflict
- fear of death
- desire for reconciliation

Ask respectfully:

- Is faith or spirituality important to you?
- Are there spiritual concerns you would like support with?
- Would you like to speak with a chaplain, priest, pastor, elder, imam, rabbi, spiritual advisor, or someone from your community?
- Are there rituals or practices that matter to you?
- Is there anyone you need to speak with?

Spiritual care is not separate from medical care when suffering is spiritual.

18. Communication in Palliative Care

Communication is one of the most powerful palliative interventions.

Patients and families need:

- clear information
- honesty
- compassion
- time

permission to ask questions

realistic hope

explanation of uncertainty

a plan

emotional support

Avoid phrases such as:

“There is nothing more we can do.”

Instead say:

“There are treatments that may no longer help in the way we hoped. But there is still much we can do for comfort, breathing, pain, anxiety, family support, and dignity.”

Avoid:

“Do you want everything done?”

Instead ask:

“Given what is happening, what are you hoping treatment will achieve?”

Good palliative communication does not remove hope.

It redirects hope toward what is still possible.

19. Goals-of-Care Conversations

Goals-of-care conversations clarify what treatment is trying to achieve.

They are needed when:

illness is serious

prognosis is uncertain or poor

treatment burden is high

repeated admissions occur

patient is declining

family is unsure

choices involve trade-offs

resuscitation or ICU decisions may arise

patient asks about stopping treatment

clinicians disagree about the plan

A useful structure:

1. Ask Understanding

“What is your understanding of what is happening?”

2. Share Information

Give clear, compassionate medical information.

3. Ask Values

“What matters most if time or strength is limited?”

4. Discuss Options

Explain what treatments can and cannot realistically do.

5. Recommend a Plan

Do not abandon the patient to choose alone.

6. Confirm and Document

Clarify decisions, uncertainty, and follow-up.

Goals-of-care conversations are treatment.

They align care with life.

20. Prognosis Conversations

Prognosis is difficult.

But avoiding it can leave patients unprepared.

Patients may ask:

“How long do I have?”

A helpful response includes:

- checking what they want to know
- acknowledging uncertainty
- giving a range when appropriate
- explaining best case, worst case, and most likely course
- asking what they are hoping for
- asking what they are worried about
- planning for uncertainty

Example:

“I wish I could give an exact answer. I cannot. I am worried that your illness is getting weaker despite treatment. It may be months, but if another serious infection or heart failure episode occurs, it could be shorter. I think we should plan for both hope and safety.”

Prognosis conversations help patients use time meaningfully.

21. Treatment Burden

Treatment burden is the work and suffering caused by care itself.

It includes:

- hospital visits
- blood tests
- scans
- procedures
- side effects
- travel
- cost

- waiting
- uncertainty
- family disruption
- time away from home
- confusion from many medicines
- repeated admissions
- loss of dignity

In serious illness, ask:

- Is this treatment helping enough?
- What is it costing the patient?
- Is the burden acceptable?
- Does it match goals?
- What would happen if we stopped?
- What would happen if we continued?
- Are we treating the patient or only treating the disease?

Sometimes the most healing act is to reduce burdens that no longer serve the person.

22. Advance Care Planning

Advance care planning helps patients express wishes before crisis.

It may include:

- preferred decision-maker
- values and priorities
- treatments the patient would or would not want
- preferred place of care
- resuscitation preferences where appropriate
- hospitalization preferences
- spiritual or cultural wishes
- family communication
- financial or legal planning where relevant
- funeral or legacy wishes if patient raises them

Advance care planning should be revisited.

Preferences can change.

The goal is not paperwork alone.

The goal is preserving agency when illness threatens communication.

23. Palliative Care and Families

Families often suffer too.

They may experience:

- fear
- exhaustion
- guilt
- grief
- conflict
- financial pressure
- sleep loss
- uncertainty
- anger
- spiritual distress
- anticipatory grief

Family meetings can help.

A family meeting should clarify:

- what is happening medically
- what the patient values
- what decisions are needed
- what symptoms need relief
- what support the family can provide
- what support the family needs
- what to expect next
- who to call in crisis

Caregivers need permission to rest.

Supporting the family supports the patient.

24. Palliative Care and Culture

Culture shapes how patients understand illness, death, family roles, decision-making, pain expression, food, spiritual rituals, and care preferences.

Ask respectfully:

- Who should be involved in decisions?
- Are there cultural or spiritual practices we should honor?
- How does your family usually handle serious illness?
- Are there treatments you would avoid?
- Are there rituals important near death?
- How much information would you like to receive directly?
- How should we include your family while respecting your wishes?

Cultural humility does not mean stereotyping.

It means asking, listening, and adapting care respectfully.

25. Palliative Care and Resuscitation Decisions

Resuscitation discussions are not just forms.

They ask whether CPR or intensive interventions would realistically achieve the patient's goals.

Poor framing:

"Do you want us to do everything?"

Better framing:

"If your heart were to stop because this illness is worsening, CPR would be very unlikely to bring you back to the kind of life you have told us matters to you. I recommend that we focus on treatments that can help your comfort and avoid CPR if your body reaches that point. How does that fit with what you understand and hope for?"

The clinician should provide guidance.

Patients and families should not be forced to make technical decisions without medical interpretation.

26. Palliative Care and Disease-Directed Treatment

Palliative care does not automatically stop disease treatment.

Ask:

- Is the treatment still helping?
- Is it relieving symptoms?
- Is it prolonging life in a way the patient values?
- Is the burden acceptable?
- Are side effects tolerable?
- Is the patient strong enough?
- Does the patient understand likely outcomes?
- Is there a point at which we should stop?

Examples:

- antibiotics may be used for comfort or life prolongation depending on goals
- diuretics may relieve breathlessness in heart failure
- transfusion may relieve symptoms in selected contexts
- dialysis may or may not fit goals depending on burden and benefit
- chemotherapy may be continued, changed, or stopped depending on response and patient priorities
- oxygen, opioids, and non-drug measures may all help breathlessness in different ways

Palliative care asks not "treat or do not treat," but:

What is this treatment for now?

27. Wise Perturbation in Palliative Care

Wise palliative care may include:

- relieving pain
- relieving breathlessness
- treating constipation
- treating nausea
- treating anxiety
- treating delirium triggers
- simplifying medicines
- stopping burdensome non-beneficial treatment
- supporting family
- discussing goals
- planning for crisis
- arranging home support
- involving spiritual care
- arranging palliative specialist support where available
- treating reversible problems aligned with goals
- supporting preferred place of care
- preparing for end-of-life when appropriate

The wise intervention is the one that best relieves suffering while respecting the patient's values.

28. Repair Trajectory in Palliative Care

Repair in palliative care may not mean cure.

Repair may mean:

- pain is controlled
- breathlessness is less frightening
- nausea settles
- bowels move
- sleep improves
- patient feels heard
- family understands the plan
- treatment burden reduces
- medicines are simplified
- patient returns home
- patient attends an important event
- spiritual distress is addressed
- conflict reduces
- goals are clear
- crisis plan exists

- dignity is protected
- dying process, when it comes, is less chaotic

Repair means the patient's remaining life is more livable.

29. Monitoring Palliative Care

Monitor:

- pain
- breathlessness
- nausea
- constipation
- appetite
- sleep
- anxiety
- delirium
- fatigue
- wounds
- hydration comfort
- medicine side effects
- family distress
- caregiver capacity
- patient goals
- treatment burden
- preferred place of care
- crisis events
- spiritual distress

Ask:

- What symptom is worst today?
- What are you afraid of?
- What matters most this week?
- Are the medicines helping or causing problems?
- Are you sleeping?
- Are your bowels moving?
- Is your family coping?
- Do you feel safe at home?
- Has your goal changed?

Palliative monitoring follows suffering and meaning, not only labs.

30. Discharge Safety in Palliative Care

Before discharge, ask:

- Are symptoms controlled enough for the setting?
- Are medicines available?
- Can the patient swallow medicines?
- Is an alternative route needed?
- Is bowel care planned?
- Is breathlessness plan clear?
- Is pain plan clear?
- Are side effects explained?
- Are caregivers trained?
- Is equipment needed?
- Is home nursing or community support arranged where available?
- Does family know who to call?
- Is there a crisis plan?
- Are goals documented?
- Are resuscitation or escalation preferences documented where appropriate?
- Are follow-up and prescription supplies arranged?
- Is preferred place of care realistic?
- Is caregiver capacity adequate?
- Are spiritual or cultural needs addressed?

Palliative discharge must prevent panic.

A good plan helps patients and families feel held.

31. Worked Case 1: Advanced Heart Failure

A 79-year-old man with advanced heart failure has repeated admissions for breathlessness and fluid overload. He says he wants to spend more time at home and less time in hospital.

Palliative Problem

Serious illness with repeated crisis, breathlessness, treatment burden, and changing goals.

Capacity Failure

Circulation, oxygenation, energy, sleep, agency, participation.

Coupling Conditions

Advanced heart failure, kidney vulnerability, frailty, family support, medication burden, fear of breathlessness.

Wise Perturbation

Optimize symptom-relieving heart failure care according to local guidance. Discuss goals, future admissions, home plan, breathlessness relief, medication simplification, and what to do during worsening symptoms. Involve palliative care or community support where available.

Repair Trajectory

Breathlessness less frightening, time at home increases, family knows crisis plan, medicines fit goals, hospital care aligns with patient wishes.

32. Worked Case 2: Metastatic Cancer Pain

A 62-year-old woman with metastatic cancer has severe back pain, poor sleep, constipation, and fear that the pain means she will be abandoned.

Palliative Problem

Severe pain with emotional distress and constipation.

Capacity Failure

Comfort, sleep, bowel clearance, mobility, meaning, trust.

Coupling Conditions

Metastatic cancer, possible bone or nerve pain, opioid use, constipation, fear, family worry.

Wise Perturbation

Assess red flags such as weakness or bladder symptoms. Treat pain according to local palliative guidance, prevent or treat constipation, consider disease-directed pain options where appropriate, explain the plan clearly, and reassure that comfort care is active care.

Repair Trajectory

Pain improves, sleep improves, bowels move, fear reduces, mobility and dignity improve, family understands plan.

33. Worked Case 3: COPD Breathlessness

A 74-year-old woman with severe COPD becomes panicked when breathless. She avoids walking, sleeps poorly, and fears suffocation.

Palliative Problem

Breathlessness with panic, deconditioning, and fear.

Capacity Failure

Ventilation, oxygenation reserve, mobility, sleep, emotional regulation, participation.

Coupling Conditions

Severe COPD, previous frightening exacerbations, anxiety, inhaler technique, social isolation, frailty risk.

Wise Perturbation

Assess reversible causes and optimize COPD care according to local guidance. Teach breathlessness strategies, positioning, pacing, fan or airflow measures where helpful, crisis plan, anxiety support, and consider palliative breathlessness medicines where appropriate.

Repair Trajectory

Breathlessness episodes feel more manageable, panic reduces, walking confidence improves, sleep improves, emergency visits reduce.

34. Worked Case 4: Advanced Dementia and Feeding

An 88-year-old woman with advanced dementia has recurrent aspiration pneumonia, weight loss, and distress during meals. Her family wants to know whether more feeding interventions will help.

Palliative Problem

Advanced dementia with swallowing failure, aspiration, family distress, and goals uncertainty.

Capacity Failure

Swallowing, nutrition, defense, comfort, agency, dignity.

Coupling Conditions

Advanced dementia, recurrent infections, caregiver grief, cultural meanings of feeding, uncertain expectations.

Wise Perturbation

Assess swallowing comfort, oral care, positioning, distress, and reversible causes. Discuss prognosis compassionately. Clarify goals: comfort, dignity, avoiding distress, family presence. Consider careful comfort feeding and palliative approach where aligned with values.

Repair Trajectory

Meals become less distressing, family understands illness stage, aspiration risk addressed realistically, comfort and dignity prioritized.

35. Worked Case 5: Kidney Failure Decision

An 81-year-old man with advanced CKD, frailty, heart failure, and poor mobility is offered dialysis planning. He asks whether dialysis will help him live better or just make life more medicalized.

Palliative Problem

Complex decision with treatment burden, prognosis, and values.

Capacity Failure

Clearance, mobility, energy, agency, participation, future planning.

Coupling Conditions

Advanced CKD, frailty, heart failure, transport, caregiver support, dialysis access, treatment burden, patient priorities.

Wise Perturbation

Clarify understanding and values. Discuss likely benefits, burdens, alternatives, conservative kidney care where appropriate, symptom management, and what matters most. Involve nephrology, family, and palliative care where available.

Repair Trajectory

Patient understands options, decision aligns with values, symptom plan exists, family understands, future care less chaotic.

36. Worked Case 6: Family Conflict

A 67-year-old woman with advanced cancer is deteriorating. She says she wants comfort at home, but one son insists that “everything” must be done.

Palliative Problem

Goal conflict between patient preference and family distress.

Capacity Failure

Agency threatened by family conflict, comfort, trust, emotional safety.

Coupling Conditions

Advanced cancer, family fear, grief, possible misunderstanding of prognosis, cultural expectations, guilt.

Wise Perturbation

Assess patient capacity and wishes. Hold family meeting with patient consent. Explain illness and treatment limits compassionately. Explore son’s fears. Reframe comfort care as active care. Document patient preferences and plan.

Repair Trajectory

Patient's wishes honored, family understands better, conflict reduces, comfort plan strengthened, crisis decisions clearer.

37. Common Student Pitfalls

Pitfall 1: Thinking Palliative Care Means Giving Up

Palliative care is active relief of suffering and support for living.

Pitfall 2: Waiting Too Long

Palliative care should not begin only in the final hours.

Pitfall 3: Treating Disease While Ignoring Suffering

A patient may receive correct treatment and still suffer severely.

Pitfall 4: Avoiding Prognosis Conversations

Avoidance can leave patients unprepared and families confused.

Pitfall 5: Asking "Do You Want Everything Done?"

This phrase creates fear and confusion. Ask what the patient hopes treatment will achieve.

Pitfall 6: Forgetting Constipation

Constipation is common, distressing, and often preventable.

Pitfall 7: Ignoring Caregiver Capacity

Home care fails if caregivers are unsupported.

Pitfall 8: Saying "Nothing More Can Be Done"

There is always something to do for comfort, dignity, support, and meaning.

38. Clinical Practice Box

When assessing palliative care needs, complete this structure:

Serious illness context:
Diagnosis, stage, trajectory, recent decline, admissions, treatment burden.

Worst symptoms:
Pain, breathlessness, nausea, constipation, fatigue, anxiety, delirium, poor appetite, spiritual distress.

Immediate danger or distress:
Uncontrolled pain, severe breathlessness, delirium, bleeding, obstruction, caregiver collapse, suicidal thoughts.

Capacity failures:
Comfort, breathing, energy, nutrition, cognition, mobility, agency, participation, meaning.

Current treatments:
What is helping? What is burdensome? What no longer fits goals?

Patient understanding:
What does the patient understand about the illness?

Patient goals:
What matters most now? More time, comfort, home, family, function, dignity, specific event?

Family/caregiver situation:
Who helps? Are they coping? What support is needed?

Wise perturbation:
Symptom relief, medication simplification, goals discussion, caregiver support, home plan, palliative referral.

Repair trajectory:
Less suffering, clearer goals, safer care plan, better support, dignity preserved.

39. Mini-Case for Practice

A 78-year-old woman with advanced COPD, heart failure, CKD, frailty, and recurrent admissions presents with breathlessness, anxiety, poor sleep, constipation, and exhaustion. She says, “I want to be at home, but I am scared I will suffocate.” Her daughter is exhausted and afraid to care for her alone.

Apply the palliative care approach.

Danger

Severe breathlessness, anxiety, possible heart failure or COPD exacerbation, constipation, caregiver collapse, unsafe home plan.

Palliative Syndrome

Advanced multimorbidity with high symptom burden, fear, repeated admissions, and home-care uncertainty.

Capacity Failure

Oxygenation reserve, circulation, comfort, sleep, bowel clearance, energy, agency, caregiver-supported participation.

Coupling Conditions

COPD, heart failure, CKD, frailty, medication burden, fear of suffocation, daughter exhaustion, repeated hospital experience, uncertain crisis plan.

Wise Perturbation

Assess reversible breathlessness causes and treat according to goals and local guidance. Relieve constipation. Review medicines. Create a breathlessness crisis plan, including positioning, pacing, inhaler or diuretic plan where appropriate, anxiety support, and palliative breathlessness measures where indicated. Discuss goals, home support, caregiver limits, and who to call in crisis. Arrange community or palliative support where available.

Repair Trajectory

Breathlessness becomes less frightening, sleep improves, bowels move, daughter feels supported, home plan becomes realistic, admissions align with patient wishes, dignity and comfort improve.

40. Student Takeaway

Palliative care becomes easier when the clinician asks:

What serious illness is shaping this person's life?
What suffering is worst today?
What can still be relieved?
What treatments are helping, and what treatments are now burdensome?
What does the patient understand?
What matters most now?
What is the family afraid of?
What plan will prevent panic during the next crisis?
What repair trajectory would bring comfort, dignity, agency, and peace?

Palliative care is not abandonment.

It is the active care of comfort, meaning, honesty, support, and dignity when illness threatens the whole person.

The safe clinician does not wait until the final hours. The safe clinician recognizes suffering early, treats symptoms carefully, speaks honestly, supports families, reduces burdens, honors values, and helps the patient live as well as possible for as long as possible.

Chapter 60. End-of-Life Care Made Easy

End-of-life care is care for a person who is approaching death.

It focuses on comfort, dignity, symptom relief, family support, honest communication, spiritual and cultural needs, and protection from unnecessary burden.

Patients may say:

“I am tired.”
“I do not want to suffer.”
“I want to be with my family.”
“I want to go home.”
“Please do not let me choke.”
“I am afraid.”
“I am ready.”
“I do not want more machines.”

Families may say:

“Is this the end?”
“Are they suffering?”
“Should we keep giving food and fluids?”
“Are we giving up?”
“What should we expect?”
“What do we do when breathing changes?”
“How will we know they are comfortable?”

End-of-life care is central to Internal Medicine because many patients die after chronic illness, frailty, organ failure, dementia, cancer, sepsis, stroke, or advanced multimorbidity.

Death is not always a failure of medicine.

Sometimes the failure is treating dying as if it were only another reversible crisis.

The first task is not to abandon treatment.

The deeper question is:

What care best protects comfort, dignity, relationship, meaning, and peace when the body is no longer able to recover?

End-of-life care becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

At the end of life, the repair trajectory changes.

The goal is no longer cure.

The goal is a peaceful, supported, dignified dying process.

1. What Is End-of-Life Care?

End-of-life care is active care in the final phase of life.

It includes:

- recognizing dying
- relieving pain
- relieving breathlessness

- reducing agitation
- managing secretions
- treating nausea
- preventing constipation or distress from bowel problems
- supporting mouth care
- reviewing medicines
- stopping burdensome non-beneficial interventions
- communicating honestly
- supporting family
- honoring spiritual and cultural needs
- documenting goals
- preparing for death
- supporting bereavement

End-of-life care is not “doing nothing.”

It is doing what matters most when time is short.

2. End-of-Life Care Is Not Abandonment

Patients and families may fear that end-of-life care means:

“The doctors have given up.”

A better explanation is:

“We are changing the focus of care. Treatments aimed at cure or reversal are no longer helping in the way we hoped. But we will continue active care for comfort, breathing, pain, anxiety, family support, and dignity.”

There is always care to provide.

Even when disease cannot be reversed, suffering can be relieved.

Even when the body is dying, the person still matters.

Even when tests no longer help, presence helps.

Even when cure is impossible, comfort is possible.

3. Recognizing That a Patient May Be Dying

Recognizing dying is one of the most important skills in Internal Medicine.

Signs may include:

- progressive weakness
- bedbound state
- reduced oral intake
- difficulty swallowing
- sleeping more
- reduced interest in surroundings

- worsening confusion or delirium
- cool extremities
- mottled skin
- reduced urine output
- irregular breathing
- Cheyne-Stokes or changing breathing pattern
- inability to take tablets
- repeated infections or admissions
- advanced organ failure not responding to treatment
- rapid decline despite appropriate care
- family noticing “they are different”
- clinician concern that recovery is unlikely

No single sign proves dying.

But the pattern matters.

The question is:

Is this person recovering, or is the body entering its final decline?

4. The First Question: Is There Unrelieved Suffering Now?

At the end of life, danger is often suffering.

Urgent attention is needed for:

- severe pain
- severe breathlessness
- choking sensation
- severe agitation
- panic
- delirium with distress
- seizures
- severe nausea or vomiting
- urinary retention
- severe constipation
- bleeding
- inability to swallow needed medicines
- distressing secretions
- family panic
- spiritual distress
- conflict about goals
- unclear resuscitation or escalation plan

The danger-first question is:

What suffering must be relieved now?

5. Immediate Red Flags at the End of Life

Red flags include:

- uncontrolled pain
- gasping distress
- severe agitation
- repeated seizures
- active bleeding
- family unable to cope
- patient expressing fear of suffocation
- patient asking for help but symptoms are untreated
- medication route no longer working
- opioid toxicity or excessive sedation
- untreated urinary retention
- vomiting with bowel obstruction concern
- delirium causing terror
- unclear plan leading to unwanted emergency transfer
- disagreement between family and patient's known wishes
- no available medicines for expected symptoms
- no one knows whom to call

End-of-life care should anticipate these problems before they become crises.

6. The Dying Process Made Easy

As the body dies, systems gradually lose capacity.

Energy Capacity Falls

The person sleeps more, speaks less, eats less, and has less interest in activity.

Swallowing Capacity Falls

Tablets, food, and fluids may become difficult or unsafe.

Circulation Changes

Hands and feet may become cool. Skin may look mottled. Blood pressure may fall.

Kidney Clearance Falls

Urine output decreases. Medicines may accumulate.

Breathing Pattern Changes

Breathing may become irregular, shallow, noisy, or pause at times.

Brain Regulation Changes

The person may become drowsy, confused, restless, or unresponsive.

Secretion Clearance Falls

Fluids may collect in the throat, causing noisy breathing.

Families often fear these signs mean suffering.

Sometimes they do.

Often they are natural signs of dying.

The clinician's role is to assess comfort, explain clearly, and treat distress.

7. Communication When Death Is Near

Families need clear words.

Avoid vague phrases such as:

"They are not doing well."

Use gentle clarity:

"I am worried that your mother is dying."

Or:

"We are seeing signs that his body is becoming weaker and may not recover from this illness."

Or:

"I think time may be short. It may be hours to days, though it is hard to predict exactly."

Then pause.

Allow silence.

Families may need time to absorb the words.

After that, explain the plan:

"Our priority now is comfort. We will treat pain, breathlessness, agitation, and any distress. We will avoid tests or treatments that cause burden without helping. We will keep you informed and support you."

Honest communication is compassionate when delivered with care.

8. Goals of Care in the Final Phase

When death is near, goals must be explicit.

Ask:

- What would the patient want if they could speak?
- What have they told you before?
- What matters most now?
- Would they want more hospital transfers or intensive treatment?
- Is comfort the priority?
- Are there people they would want present?
- Are there spiritual or cultural practices we should honor?
- Is there a preferred place of care?
- Are there treatments they would not want?

If the patient has capacity, speak directly with them.

If they do not, use prior expressed wishes, advance directives where available, and best-interest or substitute decision-making processes according to local law and practice.

The goal is to protect the patient's values when the patient may no longer be able to speak.

9. Pain at the End of Life

Pain must be assessed and treated.

Pain may appear as:

- verbal complaint
- grimacing
- moaning
- restlessness
- guarding
- tense body
- rapid breathing
- distress during movement
- agitation
- refusal of care
- inability to sleep

Patients who are unconscious may still show signs of discomfort.

Pain causes include:

- cancer
- pressure injury
- fractures
- ischemia
- wounds
- arthritis
- neuropathy
- immobility
- procedures
- urinary retention
- constipation

Treatment may include:

- continuing effective pain medicines
- changing route if swallowing fails
- using opioids where appropriate according to local guidance
- treating constipation
- positioning

- pressure relief
- gentle handling
- reducing unnecessary procedures

The goal is not to sedate the person unnecessarily.

The goal is comfort.

10. Breathlessness at the End of Life

Breathlessness is one of the most frightening symptoms.

Assess:

- Is the patient distressed?
- Is oxygen low?
- Is there fluid overload?
- Is there bronchospasm?
- Is anxiety amplifying breathlessness?
- Is the breathing pattern part of dying?
- What treatment fits the goals?

Comfort measures may include:

- positioning upright or semi-upright
- calm presence
- fan or airflow where helpful
- oxygen if it relieves hypoxemia or distress according to local practice
- opioids for refractory breathlessness according to local palliative guidance
- anxiolytic treatment where panic is severe and appropriate
- reducing unnecessary monitoring alarms
- explaining breathing changes to family

Families may ask:

“Are they suffocating?”

A careful response:

“The breathing pattern is changing as the body weakens. We are watching for signs of distress. If we see discomfort, we will treat it. Right now, our focus is keeping them peaceful.”

11. Noisy Breathing and Secretions

Near death, patients may lose the ability to clear throat secretions.

This can cause noisy breathing.

Families may find this distressing.

The patient may not be aware or suffering, especially if deeply unconscious.

Assess:

Is the patient distressed?

Is mouth care needed?

Is positioning helpful?

Are fluids or secretions excessive?

Are medicines contributing?

Is suction likely to help or harm?

Care may include:

repositioning

gentle mouth care

reducing unnecessary fluids if contributing to secretions

antisecretory medicines where appropriate according to local practice

avoiding deep suction unless clearly needed, because it can be distressing

Explain:

“The noise is caused by secretions the body is no longer strong enough to clear. It is often more distressing for family to hear than for the patient to experience. We will keep checking for comfort and treat if needed.”

12. Agitation and Terminal Delirium

Agitation near death may be caused by:

pain

urinary retention

constipation

hypoxia

infection

medicines

withdrawal

fear

spiritual distress

metabolic failure

terminal delirium

Signs include:

restlessness

pulling at sheets

calling out

trying to climb out of bed

hallucinations

fear

moaning

- inability to settle

First assess reversible distress:

- pain
- bladder
- bowel
- breathlessness
- medication toxicity
- withdrawal
- environmental fear
- family absence
- spiritual distress

Treatment may include:

- calm environment
- familiar voices
- reducing noise and stimulation
- treating pain
- relieving retention or constipation
- medication for delirium or agitation according to local guidance when distress persists

The goal is peace, not restraint.

13. Nausea and Vomiting at the End of Life

Nausea may be caused by:

- medicines
- bowel obstruction
- constipation
- kidney failure
- liver failure
- raised calcium
- gastric stasis
- intracranial disease
- anxiety
- pain

Assess whether the patient can swallow.

If not, another route may be needed according to local practice.

Treat based on likely cause.

In bowel obstruction, goals of care guide whether treatment is symptom-focused, procedural, or surgical in selected cases.

Nausea control can greatly improve comfort.

14. Mouth Care

When patients stop eating and drinking, the mouth can become dry.

Dry mouth can cause distress.

Mouth care may include:

- moistening lips
- gentle oral swabs
- small sips if safe
- ice chips if safe and desired
- lip balm
- cleaning dentures
- treating oral thrush where relevant
- avoiding forced feeding or unsafe fluids

Families often feel helpless.

Mouth care gives them a gentle way to care.

It can be deeply meaningful.

15. Food and Fluids Near Death

Reduced eating and drinking is common when the body is dying.

Families may fear:

“They are starving.”
“They are dying because we are not feeding them.”

Explain gently:

“When the body is dying, it often cannot use food and fluids normally. The reduced intake is usually part of the dying process, not the cause of it. Forcing food or fluids may cause choking, vomiting, swelling, or discomfort. We will focus on comfort, mouth care, and offering small amounts if safe and wanted.”

This is one of the most important conversations in end-of-life care.

Artificial hydration or nutrition may help in selected situations, but near death it may also cause burden.

The decision should fit goals, prognosis, comfort, and local practice.

16. Reviewing Medicines Near Death

At the end of life, medicines should be reviewed.

Ask:

- Is this medicine providing comfort now?
- Is it preventing distress now?
- Is it still possible to swallow?
- Is the medicine causing burden?

Is the medicine for long-term prevention only?

Could stopping cause withdrawal or rebound?

Is another route needed?

Are essential symptom medicines available?

Medicines often stopped near death may include those used only for long-term prevention when no longer helpful.

Medicines often continued or added are those for comfort:

pain

breathlessness

agitation

nausea

seizures

secretions

anxiety

bowel care where relevant

Do not stop medicines blindly.

Some need careful continuation, substitution, or tapering depending on context.

Medication review should reduce burden and protect comfort.

17. Routes of Medicine

When swallowing fails, alternative routes may be needed.

Options depend on local practice and availability.

Possibilities include:

subcutaneous

intravenous

buccal or sublingual

rectal in selected contexts

transdermal for some medicines

nebulized or inhaled where appropriate

topical for selected symptoms

The practical question is:

Can the patient receive needed comfort medicines reliably and safely?

If not, the care plan is incomplete.

18. Anticipatory Medicines

Anticipatory medicines are medicines prescribed in advance for symptoms likely to occur near death.

They may address:

- pain
- breathlessness
- nausea
- agitation
- secretions
- seizures

The exact medicines depend on local formulary, guidance, diagnosis, kidney and liver function, prior opioid exposure, and clinical context.

The purpose is to prevent panic.

A family should not have to wait for severe distress before help is available.

Anticipatory prescribing requires:

- clear indications
- safe dosing according to local guidance
- route plan
- caregiver and nursing instructions
- monitoring
- review
- documentation

19. Stopping Burdensome Interventions

Near death, some interventions may no longer help.

Examples may include:

- repeated blood tests
- routine vital signs that do not change comfort care
- unnecessary antibiotics if not aligned with goals
- glucose checks when not improving comfort
- long-term preventive tablets
- non-beneficial IV fluids
- forced feeding
- burdensome transfers
- unnecessary imaging
- alarms and monitors that distress family
- restraints
- invasive procedures unlikely to help

Stopping burdensome interventions is not neglect.

It is protection from harm when the goal has changed.

Ask:

Does this intervention improve comfort, dignity, or a goal the patient values?

If not, reconsider it.

20. Resuscitation and Escalation Decisions

When death is expected, CPR may be medically inappropriate or inconsistent with goals.

Families may need explanation.

Avoid:

“Do you want us to do everything?”

Say:

“If the heart stops because the body is dying from this illness, CPR would not reverse the underlying process and would likely cause injury. I recommend that we allow a natural death and focus fully on comfort.”

Escalation decisions should include:

- CPR
- ICU transfer
- ventilation
- vasopressors
- dialysis
- feeding tubes
- hospital transfer
- antibiotics
- blood tests
- IV fluids

These choices should be explained in terms of likely benefit, burden, and the patient’s values.

21. Family Support During Dying

Families need care too.

They may experience:

- fear
- guilt
- anger
- grief
- denial
- exhaustion
- conflict
- confusion
- spiritual distress
- relief mixed with sadness

- uncertainty about what to do

Support includes:

- explaining signs of dying
- telling them what symptoms are being treated
- encouraging presence if desired
- allowing silence
- inviting them to speak to the patient
- normalizing hearing as possibly present even when unresponsive
- offering breaks
- checking if they have eaten or rested
- asking about spiritual or cultural needs
- preparing them for death
- explaining what happens after death

Families remember how death was handled.

End-of-life care can wound or heal them.

22. Cultural and Spiritual Care

End-of-life care must respect culture and spirituality.

Ask:

- Are there prayers, rituals, or practices important now?
- Is there a spiritual leader or community elder to call?
- Are there family members who should be present?
- Are there customs around washing, touching, positioning, or viewing the body?
- Are there foods, symbols, music, silence, or readings that matter?
- Are there concerns about forgiveness, reconciliation, or unfinished business?
- Are there decisions that must involve family or community?

Do not assume.

Ask respectfully.

Honor what can be honored safely.

23. The Last Hours

In the last hours, the patient may show:

- profound weakness
- minimal response
- reduced swallowing
- irregular breathing
- pauses in breathing

- cool hands and feet
- mottled skin
- reduced urine output
- relaxed jaw
- noisy secretions
- changes in facial color
- final breaths that may be irregular

The family may need guidance.

Explain:

“These changes are expected as the body becomes weaker. We are watching for signs of discomfort. You can speak to them, hold their hand if that feels right, and simply be present.”

Care priorities:

- comfort medicines available
- pain and breathlessness controlled
- mouth care
- calm environment
- family support
- spiritual rituals
- privacy
- avoid unnecessary disturbance
- clear plan for what to do when death occurs

24. At the Time of Death

When death occurs, care continues.

The clinician or appropriate professional confirms death according to local procedure.

Support the family:

- speak calmly
- use clear words
- allow silence
- express sympathy
- explain next steps
- offer time with the body
- ask about spiritual or cultural practices
- answer practical questions
- avoid rushing unless necessary
- ensure dignity of the body

Use clear language:

“I am sorry. He has died.”

Avoid euphemisms that confuse families.

Presence matters.

25. After Death

After death, tasks may include:

- confirmation of death
- documentation
- notification of relevant team members
- death certificate processes according to local law
- discussion with family
- return of belongings
- care of the body
- organ or tissue donation processes where relevant and appropriate
- bereavement support
- referral for social or spiritual support
- review of unresolved questions
- staff debrief where needed

Families may ask:

- Did they suffer?
- Was everything done?
- Could we have prevented this?
- What happens now?
- Can we see them?
- Who signs the certificate?
- When can funeral arrangements begin?

Answer gently and clearly.

26. Supporting Children and Families

Children may be involved.

Do not assume children should be excluded.

Families may need guidance.

General principles:

- use honest, simple language
- avoid confusing phrases like “went to sleep”
- allow questions
- let children participate in ways appropriate to age and family wishes

- support parents or guardians
- offer memory-making where appropriate
- respect culture and family choice

Children can often sense when something serious is happening.

Clear, gentle truth is usually safer than silence.

27. Staff Distress

End-of-life care affects clinicians too.

Staff may feel:

- sadness
- failure
- moral distress
- frustration
- helplessness
- grief
- anger
- fatigue
- relief
- uncertainty

This is normal.

Good teams support each other.

Debrief when needed, especially after:

- difficult deaths
- conflict
- young patients
- traumatic events
- moral distress
- unexpected deterioration
- family anger
- prolonged suffering

Clinicians cannot provide humane care if they deny their own humanity.

28. Wise Perturbation in End-of-Life Care

Wise end-of-life care asks:

- Is the patient dying?
- What symptoms are present?
- What symptoms are likely soon?

- What can still be relieved?
- What interventions are now burdensome?
- What route of medicines is needed?
- What does the patient want?
- What does the family understand?
- What spiritual or cultural needs matter?
- What crisis plan is needed?
- What setting is safest and most aligned with goals?
- What documentation is needed?

Wise perturbation may include:

- pain medicine
- breathlessness medicine
- agitation relief
- anti-nausea medicine
- antisecretion medicine
- seizure plan
- mouth care
- repositioning
- stopping non-beneficial tests
- stopping long-term preventive medicines
- clarifying no-CPR or escalation plan where appropriate
- family meeting
- spiritual care
- home hospice or community support where available
- bereavement support

The goal is comfort, not abandonment.

29. Repair Trajectory at the End of Life

At the end of life, repair means:

- pain relieved
- breathlessness eased
- agitation reduced
- mouth comfortable
- family informed
- spiritual needs honored
- unnecessary burdens removed
- patient not transferred against wishes

- medicines available
- crisis plan clear
- family not left alone in panic
- death recognized and respected
- dignity preserved
- bereavement support offered

The body may not recover.

But the situation can become more coherent, less frightening, and more humane.

This is repair of suffering, relationship, and meaning.

30. Monitoring End-of-Life Care

Monitor:

- pain
- breathing distress
- agitation
- secretions
- nausea
- seizures
- mouth dryness
- urinary retention
- constipation if still relevant
- medication effect
- over-sedation or under-treatment
- family distress
- spiritual concerns
- cultural needs
- caregiver exhaustion
- whether goals remain clear
- whether setting remains appropriate

Ask regularly:

- Does the patient look comfortable?
- Are there signs of pain?
- Is breathing distressing?
- Is the family worried about anything they are seeing?
- Are medicines working?
- Are there new symptoms?
- Does the plan still fit?

Is anyone who needs to be called not yet here?

Monitoring is not only numerical.

It is attentive presence.

31. Discharge or Home Death Planning

If the patient wishes to die at home, planning must be careful.

Ask:

Is home the patient's wish?

Is the family able and willing?

Are symptoms controlled enough?

Are medicines available?

Is there a route for medicines if swallowing fails?

Is nursing support available?

Is equipment needed?

Is oxygen needed?

Is a hospital bed needed?

Is there a plan for breathlessness, pain, agitation, secretions, seizures?

Who will family call day or night?

What should they do when death occurs?

Are legal documents and death certification processes understood?

Are spiritual or cultural supports arranged?

Is caregiver burden realistic?

A home death can be peaceful.

It can also become traumatic if support is inadequate.

Home planning must be honest and practical.

32. Worked Case 1: Advanced Cancer in the Last Days

A 64-year-old woman with metastatic cancer is bedbound, sleeping most of the day, eating very little, and has worsening pain and difficulty swallowing tablets. Her family asks if she is starving.

End-of-Life Problem

Dying phase with pain, reduced intake, swallowing failure, and family distress.

Capacity Failure

Energy, swallowing, nutrition processing, comfort, medication route, family understanding.

Coupling Conditions

Metastatic cancer, opioid need, family fear, cultural meaning of feeding, home or hospital setting.

Wise Perturbation

Explain that reduced intake is part of dying. Focus on comfort, mouth care, and safe offering of small amounts if desired. Change pain medicine route according to local guidance. Provide anticipatory symptom plan and family support.

Repair Trajectory

Pain controlled, mouth comfortable, family less fearful, medicines reliable, feeding pressure reduced, dignity preserved.

33. Worked Case 2: End-Stage Heart Failure

An 82-year-old man with end-stage heart failure is breathless at rest despite treatment. He says he does not want ICU or machines and wants comfort.

End-of-Life Problem

Advanced organ failure with refractory breathlessness and clear comfort preference.

Capacity Failure

Circulation, oxygenation, comfort, energy, agency.

Coupling Conditions

Heart failure, kidney vulnerability, family concern, fear of suffocation, prior admissions.

Wise Perturbation

Clarify and document goals. Continue symptom-relieving treatments that help. Stop burdensome interventions that do not fit goals. Treat breathlessness with positioning, calm presence, appropriate heart failure measures, and palliative breathlessness medicines according to local guidance. Support family.

Repair Trajectory

Breathlessness less distressing, no unwanted escalation, family understands plan, patient's wishes respected.

34. Worked Case 3: Advanced Dementia and Dying

An 89-year-old woman with advanced dementia, recurrent aspiration pneumonia, weight loss, and immobility is now minimally responsive, with irregular breathing and reduced urine output.

End-of-Life Problem

Final decline in advanced dementia.

Capacity Failure

Swallowing, defense, cognition, nutrition, mobility, breathing rhythm, kidney output.

Coupling Conditions

Advanced dementia, recurrent aspiration, family grief, feeding concerns, possible infection, goals uncertainty.

Wise Perturbation

Recognize dying. Explain expected changes. Focus on comfort, mouth care, positioning, breathlessness relief, secretion management if needed, and family presence. Avoid burdensome transfers or interventions if not aligned with goals. Honor spiritual and cultural needs.

Repair Trajectory

Patient appears peaceful, family understands dying process, distressing symptoms treated, dignity preserved.

35. Worked Case 4: Terminal Agitation

A 71-year-old man with advanced liver disease becomes restless, confused, and frightened in the final days. He is jaundiced, weak, and no longer swallowing reliably.

End-of-Life Problem

Terminal delirium or hepatic encephalopathy with distress.

Capacity Failure

Brain regulation, liver transformation, comfort, sleep, medication route, family safety.

Coupling Conditions

Advanced liver disease, possible infection, constipation, bleeding risk, medication accumulation, family distress.

Wise Perturbation

Assess and treat reversible distress where appropriate and aligned with goals, including pain, constipation, retention, infection, and medicine effects. Use appropriate route and medicines for agitation according to local palliative guidance. Explain to family that agitation can occur as the brain is affected by advanced illness.

Repair Trajectory

Restlessness reduces, fear lessens, family understands, patient becomes more peaceful.

36. Worked Case 5: Family Requests “Everything”

A 76-year-old woman with advanced metastatic cancer is dying. She is unconscious, breathing irregularly, and no longer able to swallow. Her family asks for “everything” and says stopping tests means giving up.

End-of-Life Problem

Family distress and misunderstanding during active dying.

Capacity Failure

Patient communication, family understanding, trust, goal alignment.

Coupling Conditions

Advanced cancer, grief, fear, cultural expectations, previous unclear communication, family guilt.

Wise Perturbation

Use clear compassionate communication. Explain that the patient is dying and that tests or CPR will not reverse the process. Reframe the plan as active comfort care. Ask what the patient would have wanted. Offer family presence, spiritual support, and frequent updates.

Repair Trajectory

Family understands comfort focus, patient avoids burdensome interventions, symptoms treated, conflict reduced, dignity protected.

37. Worked Case 6: Home Death Planning

A 70-year-old man with advanced COPD and heart failure wants to die at home. His wife wants to honor this but fears she will not know what to do if he becomes breathless.

End-of-Life Problem

Preferred home death with caregiver fear and symptom crisis risk.

Capacity Failure

Breathing reserve, caregiver confidence, crisis planning, medication access.

Coupling Conditions

Advanced COPD, heart failure, wife caregiver, home environment, community nursing availability, fear of suffocation.

Wise Perturbation

Create a clear home plan: breathlessness medicines and non-drug strategies according to local guidance, who to call, what signs to expect, what to do when death occurs, equipment needs, caregiver respite, and emergency backup. Ensure medicines and supplies are available.

Repair Trajectory

Patient remains at home if feasible, breathlessness plan reduces panic, wife feels supported, crisis calls are clear, death occurs with dignity if possible.

38. Common Student Pitfalls

Pitfall 1: Not Recognizing Dying

Failure to recognize dying leads to burdensome, non-beneficial interventions.

Pitfall 2: Saying "Nothing More Can Be Done"

Comfort, dignity, symptom relief, family support, and spiritual care remain essential.

Pitfall 3: Avoiding Clear Words

Families need honest language such as "dying" or "near the end" when appropriate.

Pitfall 4: Continuing Long-Term Preventive Medicines Automatically

Medicine goals change near death.

Pitfall 5: Forgetting the Route

If swallowing fails, comfort medicines need another route.

Pitfall 6: Misinterpreting Reduced Intake

Reduced eating and drinking are often part of dying, not neglect.

Pitfall 7: Ignoring Family Distress

Family panic can become patient distress.

Pitfall 8: Treating Noisy Breathing as Always Suffering

Assess comfort and explain secretions carefully.

39. Clinical Practice Box

When caring for a dying patient, complete this structure:

Is the patient likely dying?
Trajectory, functional decline, intake, consciousness, breathing, urine output, response to treatment.

Current symptoms:
Pain, breathlessness, agitation, secretions, nausea, seizures, mouth dryness, anxiety.

Immediate suffering:
What must be relieved now?

Goals of care:
Comfort, home, family presence, no CPR, no ICU, spiritual needs, cultural needs.

Medicine review:
What helps comfort? What is burdensome? Can the patient swallow? What route is needed?

Anticipatory plan:
Pain, breathlessness, agitation, nausea, secretions, seizures, crisis contact.

Family understanding:
Do they know the patient is dying? Do they know what to expect?

Spiritual/cultural needs:
Who should be called? What rituals or practices matter?

Care setting:
Hospital, home, hospice, nursing facility. Is it safe and supported?

After-death plan:
Who to call, documentation, family support, bereavement needs.

40. Mini-Case for Practice

An 86-year-old woman with advanced dementia, CKD, heart failure, and recurrent aspiration pneumonia is now bedbound, minimally responsive, taking almost no food or fluids, breathing irregularly, and producing very little urine. Her family asks for IV fluids, antibiotics, blood tests, and transfer to ICU because they fear she is being neglected.

Apply the end-of-life care approach.

Danger

Possible active dying, family distress, potential burdensome interventions, untreated symptoms if not assessed.

End-of-Life Syndrome

Final decline in advanced dementia and multimorbidity, with reduced intake, reduced consciousness, irregular breathing, and reduced kidney output.

Capacity Failure

Swallowing, defense, kidney clearance, circulation, cognition, nutrition processing, breathing rhythm, agency.

Coupling Conditions

Advanced dementia, recurrent aspiration, CKD, heart failure, family fear, cultural meaning of feeding and treatment, possible previous unclear communication.

Wise Perturbation

Assess comfort carefully: pain, breathlessness, agitation, secretions, mouth dryness, fever distress, urinary retention, and family concerns. Explain clearly that she appears to be dying and that reduced intake is part of the process. Discuss what IV fluids, antibiotics, tests, and ICU can realistically do and what burdens they may add. Recommend comfort-focused care if consistent with her values and clinical reality. Provide mouth care, positioning, symptom medicines by appropriate route, family presence, spiritual support, and a clear plan for expected changes.

Repair Trajectory

Patient remains comfortable, mouth dryness relieved, breathing distress treated if present, unnecessary burdens avoided, family understands the dying process, spiritual and cultural needs honored, death occurs with dignity and support.

41. Student Takeaway

End-of-life care becomes easier when the clinician asks:

Is this patient dying?
What suffering is present now?
What symptoms are likely soon?
What can still be relieved?
What interventions are now burdensome rather than helpful?
Can the patient swallow medicines?
Does the family understand what is happening?
What did the patient value?
Who should be present?
What spiritual or cultural practices matter?
What plan will prevent panic, suffering, and unwanted escalation?

End-of-life care is not failure.

It is the final form of clinical responsibility.

The safe clinician recognizes dying, speaks honestly, relieves suffering, stops burdensome interventions, supports family, honors meaning, and protects the patient's dignity until the end.

Part VI. Clinical Communication and Professional Judgment

This part develops the professional capacities that keep clinical reasoning safe: communication, shared decisions, uncertainty, diagnostic error, ethics, teamwork, documentation, reflection, and lifelong learning.

Chapter 61. Clinical Communication Made Easy

Clinical communication is the way clinicians gather information, explain illness, build trust, share decisions, reduce fear, support agency, and coordinate care.

Patients do not usually say:

“Your clinical communication was inadequate.”

They say:

“No one explained what was happening.”
“I felt rushed.”
“I did not understand the plan.”
“The doctor did not listen.”
“I was afraid to ask questions.”
“They talked over me.”
“I left more confused than when I came.”
“I felt like a person, not a case.”

Clinical communication is central to Internal Medicine because medicine is not only diagnosis and treatment.

It is relationship, explanation, trust, interpretation, and coordinated action.

A correct diagnosis may fail if the patient does not understand it.
A good medicine may fail if the patient cannot take it correctly.
A safe discharge may fail if warning signs are unclear.
A serious illness conversation may fail if the patient’s values are never heard.
A handover may fail if the next clinician does not understand the risk.
A family may panic if no one explains what to expect.

The first task is not simply to “be nice.”

The deeper question is:

Has communication restored understanding, safety, agency, and trust?

Clinical communication becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical Communication?

Clinical communication includes:

- listening
- questioning
- observing
- explaining
- summarizing
- checking understanding
- responding to emotion
- sharing uncertainty
- discussing risk
- giving instructions
- safety-netting

documenting

handing over

involving family

discussing goals

breaking bad news

repairing misunderstanding

Communication is not separate from clinical reasoning.

The history depends on communication.
The diagnosis depends on communication.
The treatment plan depends on communication.
The patient's safety depends on communication.

A clinician who communicates poorly may appear technically competent but leave the patient unsafe.

2. Communication Is a Clinical Skill

Good communication is not just personality.

It is a skill that can be practiced.

It includes:

opening the consultation well

letting the patient speak

identifying the main concern

asking focused questions

using silence

noticing emotion

explaining simply

avoiding jargon

organizing information

checking understanding

making a plan

closing safely

A kind clinician may still communicate poorly if the patient leaves confused.

A quiet clinician may communicate well if the patient feels heard and understands the next step.

The question is not:

"Did I talk?"

The question is:

"Did communication help the patient and team act safely?"

3. Communication Is a Capacity Intervention

Communication supports multiple capacities.

Understanding Capacity
The patient needs to know what is happening.

Agency Capacity
The patient needs enough understanding to choose and act.

Safety Capacity
The patient needs to know danger signs and what to do.

Emotional Regulation
Explanation can reduce fear.

Trust
Respectful communication makes truth possible.

Participation
The plan must fit the person's life.

Team Coordination
Clear communication prevents errors.

Communication is therefore a treatment.

A good explanation can lower panic, improve adherence, prevent readmission, and restore dignity.

4. The First Question: Is There Communication Danger Now?

Communication failure can be dangerous.

Urgent communication attention is needed when:

- diagnosis is unclear to the patient
- treatment plan is complex
- high-risk medicines are prescribed
- discharge is planned
- serious illness is worsening
- patient lacks capacity
- family disagrees with plan
- patient refuses important treatment
- patient is frightened or mistrustful
- language barrier exists
- hearing or vision impairment blocks understanding
- health literacy is low
- delirium or dementia is present
- suicide risk is present
- safeguarding concern exists
- escalation or resuscitation decisions are needed
- handover risk is high
- follow-up is essential
- pending results are important

The danger-first question is:

Could misunderstanding cause harm?

If yes, communication is urgent clinical work.

5. Immediate Red Flags in Communication

Red flags include:

- patient cannot explain the diagnosis
- patient cannot explain medicine changes
- patient does not know warning signs
- patient says yes but looks confused
- family and patient understand different plans
- discharge summary conflicts with verbal advice
- patient has old and new medicines mixed together
- interpreter is needed but not used
- patient is too frightened to ask questions
- clinician uses jargon repeatedly
- patient refuses treatment for unclear reasons
- capacity has not been assessed
- goals of care are undocumented in serious illness
- critical test result has no named follow-up
- handover omits active danger
- caregiver is expected to provide care but has not been taught
- patient leaves without knowing who to call

These are not small administrative issues.

They are safety risks.

6. The Opening of the Consultation

The opening sets the tone.

A good opening includes:

- greeting
- name and role
- patient's preferred name
- privacy
- permission to speak with others present
- open question
- listening without early interruption

Example:

“Good morning, Mr. James. I am Dr. ____. I am one of the doctors looking after you today. Before I ask my questions, can you tell me what has been worrying you most?”

This does several things.

It identifies the clinician.
It centers the patient.
It invites the main concern.
It reduces threat.
It starts with the patient’s story.

7. Let the Patient Tell the Story

Patients often reveal the diagnosis if allowed to speak.

Early interruption can hide the real problem.

Let the patient begin.

Then guide.

Useful opening questions:

- What brought you in today?
- What has been worrying you most?
- When did this start?
- What changed?
- What were you afraid it might be?
- What were you hoping we could help with today?

After the patient speaks, summarize:

“Let me check I have this right. The breathlessness started three days ago, became worse last night, and you are worried because this feels different from your usual asthma. Is that correct?”

Summarizing shows listening and improves accuracy.

8. Elicit the Patient’s Concern

The presenting symptom is not always the patient’s main fear.

A patient with headache may fear brain tumor.
A patient with chest pain may fear heart attack.
A patient with weight loss may fear cancer.
A patient with palpitations may fear sudden death.
A patient with chronic pain may fear being disbelieved.
A patient with dementia symptoms may fear losing independence.
A patient with advanced illness may fear suffering.

Ask:

“What were you most worried this could be?”

Or:

“What is the biggest concern in your mind?”

Or:

“What would you most like us to address today?”

The patient’s concern is clinically important.

If it is not addressed, the consultation may fail even if the diagnosis is correct.

9. Listen for Emotion

Emotion is data.

Patients may show:

- fear
- anger
- shame
- grief
- guilt
- frustration
- embarrassment
- mistrust
- hopelessness
- relief

Do not rush past emotion.

Name it gently.

Examples:

“I can see this has been frightening.”

“It sounds as if you have been carrying this for a long time.”

“You seem frustrated that no one has been able to explain the pain.”

“That must have been a shock.”

Responding to emotion does not waste time.

It builds trust and often makes the rest of the consultation more efficient.

10. Avoid Jargon

Jargon creates false understanding.

Patients may nod without understanding.

Examples of jargon:

- “renal impairment”
- “heart failure”
- “lesion”
- “positive test”
- “negative test”
- “metastatic”

“benign”

“chronic”

“palliative”

“risk factor”

“compliance”

“optimize”

Use plain language.

Instead of:

“Your renal function has deteriorated.”

Say:

“Your kidneys are under stress and are not clearing waste as well as before.”

Instead of:

“You have heart failure.”

Say:

“Your heart is not pumping or relaxing well enough to move fluid forward, so fluid is backing up and making you breathless.”

Instead of:

“The scan is negative.”

Say:

“The scan did not show a blood clot, which is reassuring.”

Plain language is not simplistic.

It is precise.

11. Chunk and Check

Patients cannot absorb too much information at once.

Use small chunks.

Then check.

Example:

“There are three things I want to explain. First, what we think is happening. Second, what treatment we recommend. Third, what warning signs mean you should come back. I will pause after each part.”

After one section, ask:

“How does that sound so far?”

Or:

“What questions do you have about that part?”

Or:

“Can I check that I explained it clearly?”

Chunking prevents overload.

Checking prevents false reassurance.

12. Teach-Back

Teach-back is one of the most important safety tools.

It asks the patient to explain the plan in their own words.

Use it respectfully.

Do not say:

“Do you understand?”

Most patients say yes.

Instead say:

“Just so I know I explained it clearly, can you tell me how you will take these medicines when you get home?”

Or:

“Can you tell me what symptoms would make you come back urgently?”

Or:

“Can you show me how you will use the inhaler?”

Teach-back tests the explanation, not the patient.

It is essential for:

- new diagnosis
- discharge
- high-risk medicines
- insulin
- anticoagulants
- inhalers
- antibiotics
- diuretics
- steroid plans
- sick-day rules
- wound care
- follow-up tests
- palliative plans
- delirium or dementia caregiver instructions

If the patient cannot explain the plan, the plan is not yet safe.

13. Communicating Uncertainty

Uncertainty is normal in medicine.

Poor communication hides uncertainty.

Good communication names uncertainty and explains the plan.

Instead of:

“We do not know.”

Say:

“There are a few possible causes. The most dangerous ones we have considered are heart attack, blood clot, infection, and heart failure. So far, your tests make heart attack less likely, but we still need to monitor your breathing and repeat blood tests.”

Instead of pretending certainty, explain:

- what is known
- what is not known
- what is dangerous
- what is being watched
- what would change the plan
- when reassessment will happen

Uncertainty becomes safer when it is structured.

14. Explaining Risk

Risk is difficult to understand.

Avoid vague phrases alone:

- “small risk”
- “high risk”
- “rare”
- “common”
- “safe”

Explain risk in practical terms.

Ask:

- What is the benefit?
- What is the harm?
- How likely is each?
- What happens if we do nothing?
- What matters to the patient?

Example:

“This medicine reduces the chance of stroke from atrial fibrillation, but it also increases bleeding risk. Your kidney function, falls risk, and preferences matter. Let us discuss both sides and decide what fits you best.”

Risk communication should support agency, not pressure.

15. Communicating Serious News

Serious news includes:

- cancer diagnosis
- organ failure progression
- dementia diagnosis
- poor prognosis
- treatment no longer working
- death may be near
- loss of independence
- high-risk surgery
- serious complication
- medical error

A simple structure:

Prepare
Find privacy. Sit if possible. Know the facts. Invite support person if patient wants.

Ask Understanding
“What have you understood so far?”

Warn
“I am afraid I have difficult news.”

Say Clearly
Use simple words.

“The scan shows cancer.”

“I am worried your father is dying.”

Pause
Allow silence.

Respond to Emotion
“I can see this is a lot to take in.”

Explain Next Step
Do not overload.

“We do not need to decide everything now. The next step is to control your pain and arrange a meeting with the oncology team.”

Serious news should be clear, compassionate, and paced.

16. Do Not Say “Nothing More Can Be Done”

This phrase is almost always harmful.

There is always something to do.

Even when cure is not possible, clinicians can provide:

- pain relief
- breathlessness relief
- nausea control
- anxiety support

- family meetings
- spiritual care
- home planning
- dignity
- presence
- comfort
- meaning
- honest guidance

Instead say:

“The treatments aimed at reversing the disease are no longer helping in the way we hoped. But there is still much we can do to help your comfort, breathing, pain, family support, and dignity.”

This protects hope in a truthful form.

17. Communicating With Families

Families often hold essential information.

They also need support.

Ask the patient’s permission where possible:

“Would you like your daughter to be part of this conversation?”

Family communication should clarify:

- what is happening
- what is uncertain
- what treatment is planned
- what the patient wants
- what the family is worried about
- what support is needed
- what warning signs matter
- what decisions are coming

Families may disagree.

The clinician’s role is to return to the patient’s values:

“What would your mother say matters most to her if she could speak for herself?”

Family meetings are clinical interventions.

18. Communication When Capacity Is Impaired

Capacity may be impaired by:

- delirium
- dementia
- hypoxia

- hypoglycemia
- intoxication
- severe pain
- severe depression
- psychosis
- medication toxicity
- language barrier
- hearing or vision impairment

Before concluding the patient cannot decide, support communication:

- treat reversible causes
- use simple language
- reduce noise
- use glasses and hearing aids
- use interpreter support
- involve trusted family where appropriate
- choose a better time of day
- give written or visual aids
- check understanding

Capacity is decision-specific.

Even when the patient lacks capacity for complex decisions, they may still express comfort, fear, preference, and values.

Respect remaining agency.

19. Communication Across Language Barriers

Language barriers are safety risks.

Do not rely on guessing.

Use trained interpreter support where available, especially for:

- consent
- serious diagnosis
- medication instructions
- discharge
- palliative discussions
- mental health assessment
- safeguarding
- legal or capacity questions

Avoid using children as interpreters.

With an interpreter:

- speak to the patient, not the interpreter
- use short sentences
- pause often
- avoid idioms
- check understanding
- allow the patient to ask questions

Language access is not courtesy.

It is clinical safety.

20. Communication With Hearing, Vision, or Speech Impairment

Sensory impairment can look like confusion or non-cooperation.

For hearing impairment:

- face the patient
- reduce background noise
- speak clearly
- do not shout aggressively
- check hearing aids
- write key points
- use visual cues

For vision impairment:

- introduce yourself verbally
- explain before touching
- provide large print
- ensure glasses are available
- read instructions aloud
- consider medication label safety

For speech impairment:

- allow time
- use yes/no questions when appropriate
- use writing or communication boards
- involve speech therapy where available
- do not finish sentences too quickly
- confirm meaning

Communication must adapt to the patient's capacities.

21. Communication in Delirium

A delirious patient may be frightened and disoriented.

Use:

- calm tone
- simple sentences
- repeated orientation
- reassurance
- family presence
- explanation before touch
- avoidance of argument
- reduced stimulation

Say:

“You are in hospital. You became confused because your body is unwell. You are safe. We are treating the cause.”

Do not shame the patient for confusion.

Do not speak as if they are absent.

Even delirious patients deserve dignity.

22. Communication in Dementia

In dementia, communication should be:

- simple
- respectful
- slow
- repeated
- concrete
- supported by routine
- oriented to emotion as well as facts

Do not argue repeatedly about false beliefs unless safety requires.

Redirect gently.

Use familiar people.

Ask one question at a time.

Offer choices that are not overwhelming.

Even when memory fails, emotional tone remains.

A patient may forget your words but remember whether they felt safe or threatened.

23. Communication in Pain

Patients with chronic pain often feel disbelieved.

Avoid:

“Your scan is normal, so there is nothing wrong.”

Say:

“The scan does not show dangerous damage, which is good. But your pain is real. The pain system can remain highly sensitive even when the scan does not show severe injury. Our goal is to reduce suffering and improve function.”

Validate first.

Then explain.

Pain communication should reduce threat and support movement, sleep, and agency.

24. Communication in Addiction

Stigma blocks truth.

Avoid:

“drug-seeking”
“addict”
“clean” or “dirty” urine
“non-compliant”

Use:

“person with opioid dependence”
“person using alcohol to cope with sleep and pain”
“unexpected urine drug result”
“difficulty following the plan because of dependence, withdrawal, cost, or fear”

Ask without judgment:

“What does the alcohol help with?”

“What happens if you do not take the tablets?”

“Are you worried you may be dependent?”

Respectful communication improves safety.

25. Communication in Conflict

Conflict often arises when people are afraid, grieving, confused, or mistrustful.

Do not escalate.

Use:

- calm voice
- listening
- naming emotion
- summarizing concerns
- clarifying facts
- returning to shared goals
- setting respectful boundaries

Example:

“I can see how worried you are. You want everything possible done because you love him. I also want to make sure we do treatments that can help and avoid treatments that may only cause suffering. Can we talk together about what he would have wanted?”

Conflict improves when people feel heard.

It worsens when they feel dismissed.

26. Apology and Repair After Miscommunication

Clinicians sometimes communicate poorly.

Repair matters.

If a patient says they felt ignored:

“I am sorry you felt dismissed. That was not what you needed, and I want to understand what we missed.”

If instructions were unclear:

“I am sorry the plan was confusing. Let us go through it again and make one clear list.”

If there was an error:

Follow local disclosure and safety procedures.

An honest apology can restore trust.

Defensiveness deepens harm.

27. Written Communication

Written information supports memory.

Useful written tools include:

- diagnosis summary
- medication list
- stop/start/change table
- warning signs
- follow-up appointments
- pending tests
- wound care instructions
- inhaler plan
- glucose plan
- heart failure plan
- palliative crisis plan
- caregiver instructions

Written instructions should be:

- clear
- short
- large enough to read
- in plain language

- consistent with verbal advice
- translated where needed if possible

A written plan is not a substitute for explanation.

It is a support for recall.

28. Communication With the Healthcare Team

Team communication is patient safety.

Important tools include:

- clear handover
- problem list
- active danger list
- escalation plan
- medication changes
- pending results
- discharge barriers
- goals of care
- patient concerns
- family concerns
- follow-up ownership

Poor team communication causes:

- duplicated tests
- missed results
- medication errors
- delayed treatment
- unsafe discharge
- family confusion
- clinician frustration

A good team summary answers:

What is going on, what is dangerous, what are we doing, what are we watching, and who owns the next step?

29. Safety-Netting

Safety-netting means telling the patient what to watch for and what to do if things change.

It is essential when:

- diagnosis is uncertain
- illness may worsen
- patient is discharged

- treatment is outpatient
- red flags are possible
- follow-up is delayed
- patient is high risk
- symptoms are early or evolving

Good safety-netting includes:

- what symptoms to watch for
- how urgently to act
- where to go
- who to call
- what follow-up is planned
- what to do if follow-up fails
- confirmation of understanding

Example:

“If your breathing worsens, you develop chest pain, you become confused, your lips turn blue, or you cannot speak in full sentences, come back urgently or call emergency services. If you are not improving in two days, contact the clinic even if you do not feel worse.”

Safety-netting turns uncertainty into a plan.

30. Closing the Consultation

A good closing includes:

- summary
- diagnosis or working diagnosis
- plan
- medicines
- warning signs
- follow-up
- patient questions
- teach-back

Example:

“Let me summarize. Your chest discomfort today does not show signs of a heart attack on the first tests, but because of your risk factors we are repeating blood tests and monitoring you. If the pain worsens, you become short of breath, sweaty, or faint, tell us immediately. Before I go, what questions do you have?”

Do not end with:

“Any questions?”

Patients often say no.

Better:

“What questions do you have?”

This assumes questions are welcome.

31. Wise Perturbation in Clinical Communication

Wise communication may include:

- silence
- explanation
- naming emotion
- using plain language
- asking what matters
- clarifying uncertainty
- checking understanding
- involving family
- using interpreter support
- writing instructions
- correcting misunderstanding
- apologizing
- arranging follow-up
- documenting goals
- making a safety-net plan

The wise question is:

What communication will restore safety, understanding, trust, and agency now?

32. Repair Trajectory After Communication

Communication repair is shown when:

- patient can explain the plan
- family understands what to expect
- medicines are taken correctly
- warning signs are understood
- fear decreases
- trust improves
- patient asks questions
- team understands priorities
- handover is clear
- discharge is safer
- goals are documented
- conflict reduces
- follow-up happens

patient feels respected

clinician understands the patient's life context

Good communication leaves a trace in action.

33. Worked Case 1: Confusing Discharge Instructions

A 78-year-old woman with heart failure and CKD is discharged after AKI. She receives a long medication list but does not know which medicines were stopped or restarted. One week later she returns with dizziness and worsening kidney function.

Communication Problem

Medication communication failure after discharge.

Capacity Failure

Agency, medicine safety, kidney clearance, blood pressure regulation.

Coupling Conditions

CKD, heart failure, older age, complex regimen, unclear written instructions, possible caregiver absence.

Wise Perturbation

Reconcile medicines. Explain stop/start/change clearly. Use large-print written list. Use teach-back. Involve caregiver or pharmacy where appropriate. Arrange follow-up labs.

Repair Trajectory

Patient and caregiver can explain medicines, dizziness improves, kidney function monitored, readmission risk reduced.

34. Worked Case 2: Serious News

A 65-year-old man has imaging showing metastatic cancer. He believes the scan was only to check for infection and is waiting to go home.

Communication Problem

Serious diagnosis requiring clear, compassionate explanation.

Capacity Failure

Understanding, emotional safety, future planning, agency.

Coupling Conditions

Unexpected diagnosis, family not present, fear, uncertain prognosis, need for oncology and symptom planning.

Wise Perturbation

Arrange privacy. Ask what he understands. Warn that there is difficult news. Explain clearly and simply. Pause. Respond to emotion. Offer next steps without overload. Ask whom he wants involved.

Repair Trajectory

Patient understands diagnosis, feels supported, family involvement arranged, symptom and oncology plan clear, questions invited.

35. Worked Case 3: Chronic Pain and Feeling Dismissed

A 52-year-old woman with chronic widespread pain says, "Every doctor tells me the tests are normal, so I must be crazy."

Communication Problem

Invalidating communication has damaged trust and agency.

Capacity Failure

Trust, meaning, pain regulation, mood, participation.

Coupling Conditions

Chronic pain, normal tests, fear, possible central sensitization, previous dismissal, poor sleep.

Wise Perturbation

Validate pain as real. Explain that normal tests can be reassuring for danger while pain system sensitivity remains treatable. Ask what pain has taken away. Create a functional plan with sleep, movement, mood support, and follow-up.

Repair Trajectory

Patient feels believed, fear reduces, engagement improves, function-focused plan begins, trust repaired.

36. Worked Case 4: Family Conflict Near End of Life

A patient with advanced dementia is dying. The family demands ICU transfer because they believe comfort care means abandonment.

Communication Problem

Family misunderstanding, grief, fear, and goal conflict.

Capacity Failure

Family understanding, trust, patient dignity, goal alignment.

Coupling Conditions

Advanced dementia, imminent death, cultural meaning of treatment, prior unclear conversations, family guilt.

Wise Perturbation

Acknowledge love and fear. Explain clearly that the patient is dying and ICU will not reverse the process. Reframe comfort care as active care. Ask what the patient would have wanted. Offer spiritual support and frequent updates.

Repair Trajectory

Family understands dying process, symptoms treated, unwanted escalation avoided, conflict reduces, dignity preserved.

37. Worked Case 5: Language Barrier

A patient with new insulin prescription nods during discharge teaching, but later reveals she did not understand the instructions because English is not her first language.

Communication Problem

Language barrier causing high-risk medicine danger.

Capacity Failure

Glucose safety, agency, medicine management.

Coupling Conditions

New insulin, language barrier, health literacy, fear of asking questions, discharge pressure.

Wise Perturbation

Use interpreter support. Demonstrate insulin use. Use teach-back. Provide written instructions in preferred language where possible. Involve family or caregiver with consent. Arrange close follow-up.

Repair Trajectory

Patient demonstrates correct use, recognizes hypoglycemia, glucose monitoring plan clear, follow-up arranged.

38. Worked Case 6: Uncertainty in Chest Pain

A 58-year-old man with chest pain has initial tests that are reassuring, but risk remains. He wants to leave and says, “So it is not my heart?”

Communication Problem

Uncertainty requires careful explanation and safety-netting.

Capacity Failure

Understanding, risk interpretation, safety, agency.

Coupling Conditions

Fear, desire to leave, cardiac risk factors, evolving symptoms, need for repeat testing.

Wise Perturbation

Explain what is reassuring and what remains uncertain. Describe why monitoring or repeat testing is recommended. Discuss risks of leaving. Ask what matters to him. Provide safety-net advice if he refuses recommended care and assess capacity.

Repair Trajectory

Patient understands uncertainty, participates in decision, warning signs clear, follow-up or monitoring plan documented.

39. Common Student Pitfalls

Pitfall 1: Asking “Do You Understand?”

Use teach-back instead.

Pitfall 2: Using Jargon

Plain language is safer and more precise.

Pitfall 3: Ignoring Emotion

Unanswered emotion blocks understanding.

Pitfall 4: Giving Too Much Information at Once

Chunk and check.

Pitfall 5: Hiding Uncertainty

Name uncertainty and explain the plan.

Pitfall 6: Saying “Nothing More Can Be Done”

There is always care to provide.

Pitfall 7: Forgetting Families and Caregivers

They often carry the plan after discharge.

Pitfall 8: Poor Safety-Netting

A patient must know what to do if things worsen.

40. Clinical Practice Box

When communicating clinically, complete this structure:

Patient’s main concern:
What are they most worried about?

Understanding:
What do they already understand? What do they misunderstand?

Emotion:
Fear, anger, grief, shame, frustration, relief?

Explanation needed:
Diagnosis, uncertainty, treatment, medicines, risk, follow-up, prognosis?

Barriers:
Language, hearing, vision, cognition, health literacy, culture, mistrust, family conflict?

Plain-language summary:
What is happening? What are we doing? What are we watching?

Teach-back:
Can the patient or caregiver explain the plan?

Safety-net:
What warning signs? What action? Who to call? When to return?

Documentation:
What was discussed, understood, decided, and planned?

Repair trajectory:
What should communication improve — safety, trust, adherence, goals, follow-up, family understanding?

41. Mini-Case for Practice

A 74-year-old man with diabetes, CKD, heart failure, mild dementia, and recent pneumonia is being discharged. His daughter is present. He has new antibiotics, a changed diuretic dose, a stopped blood pressure medicine, repeat blood tests in three days, and warning signs for breathlessness, fever, low urine output, and confusion. He nods but cannot explain the plan.

Apply the clinical communication approach.

Communication Danger

High-risk discharge with complex medicine changes, cognitive vulnerability, kidney and heart failure risk, need for caregiver understanding.

Capacity Failure

Understanding, agency, medicine safety, follow-up reliability, caregiver-supported repair.

Coupling Conditions

Mild dementia, multimorbidity, medication changes, daughter involvement, pneumonia recovery, CKD, heart failure.

Wise Perturbation

Use plain language. Create a written stop/start/change medicine list. Explain why repeat blood tests matter. Use teach-back with daughter and patient. Clarify warning signs and who to call. Confirm medicine access and follow-up. Document pending results and responsibility.

Repair Trajectory

Patient and daughter can explain medicines, warning signs, blood test plan, and follow-up. Medicines are taken safely. Kidney and heart status monitored. Readmission risk reduced.

42. Student Takeaway

Clinical communication becomes easier when the clinician asks:

What does the patient understand?
What are they worried about?
What emotion is present?
What information is essential now?
What words will make sense to this person?
What barriers block understanding?
Can the patient or caregiver explain the plan back?
What warning signs and follow-up are needed?
What must be documented and handed over?

Clinical communication is not decoration.

It is a core clinical intervention.

The safe clinician listens carefully, explains plainly, names uncertainty, responds to emotion, checks understanding, involves families appropriately, documents clearly, and uses communication to restore safety, agency, trust, and life-coherent care.

Chapter 62. Shared Decision-Making Made Easy

Shared decision-making is the process by which clinician and patient make important healthcare decisions together, using the best available medical knowledge and the patient's values, goals, fears, preferences, and life context.

Patients do not usually say:

"I would like shared decision-making."

They say:

"What would you do if it were your mother?"
"Do I really need this treatment?"
"What happens if I do nothing?"
"I am afraid of the side effects."
"I want more time, but not at any cost."
"I do not understand my options."
"I just want the doctor to tell me what is best."
"I need to talk to my family."
"I cannot manage another medication."
"I want to be at home."

Shared decision-making is central to Internal Medicine because many decisions are not purely technical.

There may be more than one reasonable option.
Benefits and harms may be uncertain.
The best choice may depend on what the patient values most.
The medically possible option may not be the personally acceptable option.
A treatment may prolong life but reduce comfort.
A medicine may reduce stroke risk but increase bleeding risk.
A test may provide information but create anxiety or lead to burdensome procedures.
A hospitalization may treat disease but worsen frailty or delirium.
A preventive treatment may help over years, while the patient is suffering today.

The first task is not to ask the patient to make medical decisions alone.

The deeper question is:

What decision best fits the medical reality and the patient's life?

Shared decision-making becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Shared Decision-Making?

Shared decision-making means combining two kinds of expertise.

The clinician brings expertise about:

- diagnosis
- prognosis
- treatment options
- benefits
- harms
- uncertainty

- clinical experience
- safety
- guidelines
- medical urgency

The patient brings expertise about:

- values
- goals
- fears
- daily life
- treatment burden
- family responsibilities
- finances
- culture
- faith
- acceptable trade-offs
- previous experiences
- what makes life worth living

Shared decision-making happens where these forms of knowledge meet.

It is not:

- abandoning the patient to decide alone
- forcing the clinician's preference
- offering every possible option without guidance
- asking "What do you want?" without explanation
- treating patient preference as ignorance
- treating medical evidence as irrelevant

It is a structured conversation that leads to a decision the patient can understand, accept, and live with.

2. Shared Decision-Making Is Not "Patient Chooses Everything"

Some clinicians misunderstand shared decision-making.

They think it means:

"Here are the options. You decide."

That can feel like abandonment.

Patients often need guidance.

A better approach is:

"There are a few medically reasonable options. I will explain what each can and cannot do. Then I want to understand what matters most to you, so we can choose the option that fits you best."

The clinician should not disappear.

The clinician should guide without dominating.

This is especially important when decisions are complex, frightening, or time-sensitive.

3. Shared Decision-Making Is Not "Doctor Decides Everything"

The opposite error is paternalism.

This happens when the clinician decides without understanding the patient's values.

Examples:

- starting a treatment without discussing side effects
- recommending surgery without asking about goals
- continuing aggressive treatment when the patient wants comfort
- stopping treatment without explaining why
- choosing a medicine the patient cannot afford
- prescribing a plan the patient cannot follow
- assuming all patients value survival over function
- assuming all patients fear death more than dependency

Medical expertise is essential.

But medical expertise alone cannot define what matters most in a patient's life.

The safe clinician asks:

"What outcome are we trying to protect for this person?"

4. When Is Shared Decision-Making Most Important?

Shared decision-making is especially important when:

- there is more than one reasonable option
- benefits and harms are closely balanced
- outcomes are uncertain
- treatment burden is high
- patient values strongly affect the decision
- long-term prevention competes with present quality of life
- serious illness is present
- frailty or dementia changes risk
- surgery or invasive procedure is being considered
- anticoagulation, dialysis, chemotherapy, ICU, or feeding decisions arise
- pain treatment involves opioid or sedative risk
- tests may lead to difficult downstream decisions
- patient is hesitant or fearful
- family members disagree
- clinician recommendation conflicts with patient preference

Shared decision-making is not needed for every small decision.

If a patient has life-threatening hypoglycemia, the immediate treatment is not a preference-sensitive choice.

But once danger is stabilized, decisions about prevention, targets, medicines, support, and goals may require shared decision-making.

5. The First Question: Is There Immediate Danger?

Danger changes the decision process.

In emergencies, clinicians may need to act quickly.

Examples:

- severe hypoxia
- shock
- cardiac arrest
- severe hypoglycemia
- stroke within urgent treatment window
- sepsis
- major bleeding
- airway obstruction
- life-threatening arrhythmia
- overdose
- severe withdrawal
- suicidal crisis

In these situations, immediate stabilization comes first.

But even in emergencies, communication matters.

Say:

“This is urgent. Your oxygen is dangerously low. We need to support your breathing now. I will explain as we go.”

After danger is stabilized, return to shared decision-making where possible.

The danger-first question is:

Is there time for a preference-sensitive decision now, or must we stabilize first?

6. Immediate Red Flags in Decision-Making

Red flags include:

- patient does not understand the diagnosis
- patient cannot explain the options
- patient feels pressured
- patient is refusing treatment without understanding consequences
- patient appears delirious or lacks capacity
- family is answering for a capable patient

- clinician is asking the patient to decide without guidance
- clinician is ignoring clearly stated patient values
- decision involves major burden or irreversible consequence
- risks are being minimized
- benefits are being overstated
- uncertainty is hidden
- no one has discussed what happens if treatment fails
- no follow-up or review point is planned
- goals of care are unclear in serious illness

When these are present, pause.

The decision process itself may be unsafe.

7. The Shared Decision-Making Pathway

A simple pathway is:

- define the decision
- check understanding
- explain options
- explain benefits and harms
- explain uncertainty
- elicit values
- explore practical fit
- make a recommendation
- decide together
- document and review

This pathway prevents two errors:

- making decisions without the patient
- leaving the patient alone with medical complexity

The goal is a decision that is medically sound and personally coherent.

8. Step 1: Define the Decision

Many conversations fail because the decision is unclear.

Say explicitly:

“The decision today is whether to start anticoagulation to reduce stroke risk from atrial fibrillation.”

Or:

“The decision is whether dialysis fits your goals better than conservative kidney care.”

Or:

“The decision is whether to continue hospital-based treatment or focus care at home.”

Or:

“The decision is whether this pain medicine is helping enough to justify its risks.”

A clear decision reduces confusion.

The patient should know what is being decided and what is not being decided.

9. Step 2: Check Understanding

Before explaining options, ask what the patient already understands.

Useful questions:

“What have you understood so far?”
“What have other doctors told you?”
“What do you think is happening?”
“What worries you most about this decision?”
“What are you hoping this treatment will do?”

This reveals:

- misunderstanding
- unrealistic expectations
- fear
- misinformation
- cultural beliefs
- previous trauma
- family influence
- hidden goals

Do not assume understanding.

Elicit it.

10. Step 3: Explain the Options

Options should be clear and limited to reasonable choices.

Too many options can overwhelm.

Explain:

- the recommended option
- reasonable alternatives
- no treatment or watchful waiting when appropriate
- comfort-focused care when relevant
- trial of treatment with review point where useful

Example:

“There are three reasonable paths. One is to start the medicine now. Another is to wait and repeat tests first. A third is not to start because the bleeding risk may be too high. Let me explain each.”

Avoid presenting unrealistic or harmful options as equally valid.

Shared decision-making does not mean offering treatments that are medically inappropriate.

11. Step 4: Explain Benefits and Harms

For each option, explain:

- what it may improve
- how soon benefit may appear
- how likely benefit is
- what harms may occur
- what monitoring is needed
- what burden it creates
- what happens if it does not work
- whether it can be stopped

Example:

“This medicine may reduce your chance of stroke, but it increases bleeding risk. It also means we need to consider kidney function, falls, other medicines, and what to do if you have surgery or bleeding.”

Benefits and harms should be connected to patient life.

Not only:

“This lowers risk.”

But:

“This may reduce the chance of a stroke that could affect speech, walking, and independence.”

Not only:

“This causes side effects.”

But:

“This could cause dizziness, which matters because you have already fallen twice.”

12. Step 5: Explain Uncertainty

Uncertainty should be named.

Examples:

“We cannot predict exactly whether this treatment will help you personally.”

“The scan may give more information, but it may not change treatment.”

“Some patients feel better with dialysis, but some frail patients feel more burdened by the travel, procedures, and fatigue.”

“We can try this for a defined period and review whether it is helping.”

Uncertainty is not weakness.

It is honesty.

A decision made under uncertainty can still be wise if the uncertainty is acknowledged and monitored.

13. Step 6: Elicit Values

Values are what matter most to the patient.

Ask:

- What matters most to you now?
- What are you hoping to preserve?
- What are you most afraid of?
- What outcome would be unacceptable?
- What trade-off would you accept?
- What would make treatment worthwhile?
- What would make it too burdensome?
- What does a good day look like?
- What do you need to be able to do?
- Who should be involved in this decision?
- Are there spiritual or cultural beliefs that matter here?

Values are not abstract.

They are practical.

For one patient, the priority may be living longer.
For another, avoiding hospital.
For another, staying mentally clear.
For another, attending a family event.
For another, avoiding dependency.
For another, minimizing pain.
For another, being at home.
For another, protecting family from financial burden.

The same medical facts may lead to different right decisions.

14. Step 7: Explore Practical Fit

A treatment may be medically correct but practically impossible.

Ask:

- Can you afford this medicine?
- Can you get to appointments?
- Can you store the medicine safely?
- Can you swallow tablets?
- Can you inject insulin?
- Can you monitor glucose?
- Can you attend dialysis three times weekly if needed?
- Can your caregiver manage this?
- Is transport available?
- Can you take time off work?

Does the plan fit your meals?

Does the plan fit your home?

Does the plan fit your memory and cognition?

Will side effects affect your work, driving, caregiving, or worship?

A plan that does not fit life will fail.

Shared decision-making must include reality.

15. Step 8: Make a Recommendation

Patients often want the clinician's recommendation.

A good recommendation is not coercion.

It is medical guidance shaped by patient values.

Example:

"Given that your biggest priority is avoiding another stroke and you are willing to accept some bleeding risk, I recommend starting anticoagulation, with careful monitoring and a plan to reduce fall risk."

Or:

"Given your frailty, repeated admissions, and your wish to stay at home, I recommend we focus on comfort and home support rather than ICU transfer if your illness worsens."

Or:

"Because this sleeping tablet is causing falls and confusion, I recommend we reduce it gradually rather than continue it unchanged."

A recommendation should explain why it fits.

16. Step 9: Decide Together

After explanation and recommendation, ask:

"How does this plan fit with what matters to you?"

Or:

"What concerns do you still have?"

Or:

"Would you like more time, or does this feel like the right plan?"

Some decisions can be made immediately.

Others need time, family discussion, prayer, second opinion, or review.

When safe, allow time.

When urgent, explain why delay is risky.

Shared decision-making respects both urgency and reflection.

17. Step 10: Document and Review

Document:

decision discussed

- options explained
- benefits and harms discussed
- patient values
- capacity assessment if relevant
- family involvement
- clinician recommendation
- final decision
- uncertainty
- review plan
- safety-net advice

A decision is not complete unless the next clinician can understand it.

Review is important because values, illness, and treatment response can change.

Ask later:

- Is this still helping?
- Are harms acceptable?
- Has your goal changed?
- Do we need to revisit the decision?

Shared decision-making is often a process, not one conversation.

18. Decision-Making Capacity

Shared decision-making requires capacity for the specific decision.

Capacity includes ability to:

- understand relevant information
- retain it long enough to decide
- weigh benefits and harms
- communicate a choice

Capacity can be impaired by:

- delirium
- dementia
- severe depression
- psychosis
- intoxication
- withdrawal
- severe pain
- hypoxia
- hypoglycemia
- medication effects

- language barrier
- hearing or vision impairment

Before declaring lack of capacity, support capacity:

- treat reversible causes
- use plain language
- use interpreter support
- provide hearing aids or glasses
- involve trusted support
- reduce distractions
- allow time
- choose best time of day
- use written or visual aids

Capacity is decision-specific.

A patient may lack capacity for a complex surgery decision but still express comfort preferences.

Respect remaining agency.

19. When the Patient Lacks Capacity

If the patient lacks capacity, decisions should be made according to local law, ethics, advance directives, appointed decision-makers, and best-interest or substituted-judgment principles.

Ask:

- Did the patient previously express wishes?
- Is there an advance directive?
- Who is the legal decision-maker where applicable?
- What did the patient value?
- What would the patient say if they could speak?
- What option best protects dignity and welfare?
- Are family members aligned?
- Is there conflict requiring ethics or senior support?

Even when capacity is absent, involve the patient as much as possible.

They may still express fear, comfort, preferences, and distress.

20. Family Involvement

Many patients want family involved.

Some do not.

Ask the patient:

“Who would you like involved in this decision?”

Family can help with:

- memory
- values
- practical support
- transport
- caregiving
- medication management
- cultural or spiritual context
- home safety
- understanding previous wishes

But family should not override a capable patient.

If family disagrees, return to the patient's values.

"Our job is to understand what your father would want and what treatment can realistically achieve."

Family involvement is support, not replacement, unless capacity and legal structures require surrogate decision-making.

21. Shared Decision-Making in Multimorbidity

Multimorbidity creates competing priorities.

Example:

A patient with diabetes, CKD, heart failure, arthritis, and frailty may face choices about glucose targets, diuretics, pain treatment, blood pressure, anticoagulation, and hospital admission.

Single-disease guidelines may pull in different directions.

Shared decision-making asks:

- Which problem is most dangerous now?
- Which treatment helps one disease but worsens another?
- What is the patient's main goal?
- What is the treatment burden?
- What is the time horizon of benefit?
- What can be simplified?
- What outcome matters most?

In multimorbidity, the decision is rarely:

"What is best for this disease?"

It is:

"What is best for this person with these interacting conditions?"

22. Shared Decision-Making in Frailty

Frailty changes benefit and harm.

A treatment that helps a robust patient may harm a frail patient.

Ask:

- Will this treatment restore function?
- Will it cause delirium, falls, or hospital decline?
- How long until benefit?
- Is the patient likely to live long enough to benefit?
- What burden will treatment create?
- What matters more: longevity, function, comfort, home, independence?
- Can we try treatment with a review point?
- Would a less intensive plan fit better?

Frailty does not mean denying treatment.

It means treatment must be matched to reserve.

23. Shared Decision-Making in Dementia

Dementia requires careful decision support.

Ask:

- Does the patient have capacity for this decision?
- Can information be simplified?
- Is delirium present?
- What did the patient value before dementia progressed?
- Who supports decisions?
- Are safety risks understood?
- Does the plan fit caregiver capacity?
- Are goals of care documented?

Examples include decisions about:

- driving
- medicines
- living alone
- feeding
- hospitalization
- surgery
- restraints
- antipsychotic use
- end-of-life care

Dementia care must protect remaining agency and plan for future loss of capacity.

24. Shared Decision-Making in Preventive Medicine

Preventive medicine often depends on time horizon.

Examples:

- statins
- cancer screening
- tight glucose control
- osteoporosis treatment
- blood pressure targets
- aspirin use
- lifestyle interventions

Ask:

- How long until benefit is likely?
- What is the patient's current burden?
- What harms are possible now?
- Does the patient value long-term prevention over current comfort?
- Is frailty or advanced illness present?
- Is the intervention still aligned with goals?

Long-term prevention may be very important for many patients.

But in advanced illness, some preventive interventions may no longer fit.

Shared decision-making prevents automatic medicine continuation.

25. Shared Decision-Making With High-Risk Medicines

High-risk medicines often require shared decision-making.

Examples:

- anticoagulants
- insulin
- opioids
- sedatives
- steroids
- immunosuppressants
- chemotherapy
- antipsychotics in dementia
- medicines with bleeding, infection, falls, or monitoring burden

Discuss:

- purpose
- expected benefit
- major harms
- monitoring
- alternatives
- stopping plan

what to do during illness

patient fears

practical ability to use safely

High-risk medicines should never be prescribed without understanding and follow-up.

26. Shared Decision-Making in Serious Illness

Serious illness decisions often involve trade-offs.

Patients may need to choose between:

more treatment and more burden

hospital care and home time

life prolongation and comfort

procedure and symptom control

dialysis and conservative care

chemotherapy and quality of life

feeding tube and comfort feeding

ICU and ward-based comfort-focused care

Ask:

What are you hoping for?

What are you afraid of?

What would be an acceptable outcome?

What would be worse than death?

What does your family understand?

What would you want if things worsen suddenly?

Where would you prefer to be cared for if time is short?

The clinician should provide honest guidance.

False hope can steal time.

Truth without compassion can crush.

Shared decision-making needs both truth and tenderness.

27. Shared Decision-Making and Culture

Culture shapes decision-making.

Some patients prefer individual autonomy.
Some prefer family-centered decisions.
Some want direct information.
Some want information filtered through family.
Some make decisions through faith, elders, or community.
Some see suffering, death, disability, and treatment through spiritual meanings.

Ask:

How would you like decisions to be made?

Who should be involved?

How much information would you like directly?

Are there beliefs or practices we should respect?

Are there treatments you would not accept?

Are there family roles we should understand?

Do not stereotype.

Ask.

Respect culture while also protecting the patient's rights, safety, and expressed wishes.

28. Shared Decision-Making and Trust

Patients may mistrust healthcare because of:

past dismissal

discrimination

medical trauma

poor communication

cost

historical injustice

family experiences

fear of being experimented on

fear of abandonment

language barriers

Trust is not demanded.

It is earned.

Build trust by:

listening

explaining

admitting uncertainty

respecting questions

avoiding pressure

following through

acknowledging previous harm

documenting clearly

making practical plans

involving trusted supports

A patient who hesitates may not be "difficult."

They may be protecting themselves.

29. Shared Decision-Making and Refusal of Treatment

Patients may refuse treatment for many reasons.

Before labeling refusal as irrational, ask:

- What worries you about this treatment?
- What have you heard about it?
- What happened before?
- What are you afraid will happen?
- What matters more to you?
- Do you understand what may happen without treatment?
- Would another option be acceptable?
- Would more time or family discussion help?
- Is cost a barrier?
- Is there a cultural or spiritual concern?
- Is capacity intact?

A capable patient may refuse recommended treatment.

The clinician should ensure understanding, explore alternatives, document clearly, and continue care.

Refusal is not the end of relationship.

30. Shared Decision-Making and Clinician Recommendation

Sometimes clinicians avoid making recommendations because they fear being paternalistic.

But patients often need guidance.

A recommendation should be:

- medically honest
- value-informed
- clearly explained
- open to discussion
- not coercive
- documented

Example:

“Because you told me your priority is staying mentally clear and avoiding falls, I recommend we do not increase the sedative. Instead, we should work on pain control, sleep routine, and anxiety support.”

Or:

“Because this infection is reversible and you were walking independently last week, I recommend hospital treatment now, while also protecting you from delirium and deconditioning.”

Recommendations are safest when they connect medicine to values.

31. Trial of Treatment

When uncertainty is high, a time-limited trial can be useful.

Examples:

- trial of diuretics for breathlessness
- trial of rehabilitation after hospital decline
- trial of dialysis in uncertain benefit
- trial of non-invasive ventilation
- trial of pain medicine
- trial of nutrition support
- trial of antibiotics in serious illness
- trial of deprescribing

A good trial defines:

- goal
- duration
- markers of benefit
- markers of harm
- review date
- what happens if it works
- what happens if it fails

Example:

“We can try this treatment for 72 hours. We will look for easier breathing, improved alertness, and kidney stability. If those do not improve, we should revisit whether continuing is helping or only adding burden.”

A trial prevents endless treatment drift.

32. Decision Aids

Decision aids can help patients understand options.

They may include:

- printed summaries
- diagrams
- risk charts
- question prompts
- videos
- values worksheets
- medication comparison tables
- procedure explanations

Decision aids do not replace conversation.

They support it.

Use them when decisions are complex, values-sensitive, or risk-heavy.

Always check understanding afterward.

33. Repair Trajectory After Shared Decision-Making

A good shared decision is shown by:

- patient understands the decision
- patient can explain the plan
- benefits and harms were discussed
- values were considered
- practical barriers were addressed
- family involvement fits patient wishes
- clinician recommendation was clear
- uncertainty was named
- review point exists
- decision is documented
- patient feels respected
- treatment burden fits goals
- patient follows through or communicates problems
- conflict reduces
- care becomes more coherent

The goal is not that every patient chooses what the clinician expected.

The goal is that the decision is informed, supported, and aligned.

34. Worked Case 1: Anticoagulation in Atrial Fibrillation

A 78-year-old woman with atrial fibrillation, hypertension, CKD, and two recent falls is offered anticoagulation. She fears stroke but also fears bleeding.

Decision

Whether to start anticoagulation.

Medical Issues

Stroke prevention, bleeding risk, kidney function, falls, medicine interactions, monitoring.

Patient Values

She values independence and fears a disabling stroke, but also fears bleeding after falls.

Wise Shared Decision

Explain stroke and bleeding risks in plain language. Review kidney function, falls causes, medicines, and alternatives. Discuss what matters most. Recommend based on balanced risk and patient values. Address fall prevention and monitoring if treatment is chosen.

Repair Trajectory

Patient understands trade-off, decision documented, falls plan started, medicine plan safe, follow-up arranged.

35. Worked Case 2: Dialysis or Conservative Kidney Care

An 82-year-old man with advanced CKD, frailty, heart failure, and poor mobility is deciding about dialysis.

Decision
Dialysis planning versus conservative kidney care.

Medical Issues
Clearance, symptom control, survival uncertainty, treatment burden, transport, vascular access, heart failure, frailty.

Patient Values
He wants to avoid spending much of his remaining time traveling to treatment and wants to stay at home if possible.

Wise Shared Decision
Explain what dialysis can and cannot do. Explain conservative kidney care as active care, not abandonment. Discuss likely burdens and possible benefits. Involve family and nephrology. Make a recommendation aligned with his goals.

Repair Trajectory
Decision fits values, symptoms managed, family understands, future crises planned, care burden reduced.

36. Worked Case 3: Insulin in Mild Dementia

A 76-year-old woman with diabetes and mild dementia has high glucose. Insulin is being considered, but she lives alone and sometimes forgets tablets.

Decision
Whether and how to intensify diabetes treatment.

Medical Issues
Hyperglycemia, hypoglycemia risk, cognitive impairment, meal inconsistency, injection safety, monitoring ability.

Patient Values
She wants to remain independent and fears injections.

Wise Shared Decision
Explain risks of high glucose and low glucose. Assess capacity, caregiver support, meal pattern, and ability to monitor. Consider simpler, safer regimen according to local guidance. Involve family with consent.

Repair Trajectory
Glucose plan becomes safer, hypoglycemia avoided, patient understands plan, independence supported, caregiver role clarified.

37. Worked Case 4: ICU Escalation in Advanced COPD

A 74-year-old man with severe COPD is admitted with respiratory failure. He has had multiple admissions and previously said he did not want machines if recovery was unlikely.

Decision
Whether ICU escalation and ventilation fit goals if deterioration occurs.

Medical Issues
Reversibility, likely benefit, burden of ventilation, risk of prolonged dependency, symptom relief.

Patient Values
He values being awake, communicating, and avoiding prolonged machines.

Wise Shared Decision

Assess capacity. Ask understanding. Explain best-case, worst-case, and likely outcomes. Clarify what level of support he would accept. Document escalation plan. Treat breathlessness actively.

Repair Trajectory

Escalation plan clear, patient values honored, family informed, crisis decisions less chaotic.

38. Worked Case 5: Opioids for Chronic Pain

A 58-year-old man with chronic back pain asks for stronger opioids. He is sleeping poorly, drinking alcohol nightly, and has depression.

Decision

Whether to escalate opioids.

Medical Issues

Pain, function, opioid benefit, dependence, overdose risk, alcohol interaction, depression, sleep, alternatives.

Patient Values

He wants relief and to return to work.

Wise Shared Decision

Validate pain. Explain opioid risks in his context. Ask what function he wants to regain. Recommend against unsafe escalation while offering a broader pain plan: sleep, mood, movement, safer medicines, alcohol support, and follow-up.

Repair Trajectory

Patient feels believed, opioid harm reduced, pain plan broadened, work goal addressed, safety monitored.

39. Worked Case 6: Feeding in Advanced Dementia

An 89-year-old woman with advanced dementia has recurrent aspiration pneumonia and poor intake. Family asks about feeding tube placement.

Decision

Feeding tube versus comfort-focused hand feeding and supportive care.

Medical Issues

Swallowing failure, aspiration risk, nutrition, comfort, prognosis, procedure burden, dementia stage.

Patient Values

Previously valued comfort, home, and not being kept alive by machines.

Wise Shared Decision

Explain advanced dementia trajectory and feeding options compassionately. Discuss what tube feeding can and cannot achieve. Explore family fears about starvation. Recommend comfort-focused feeding if aligned with patient values and clinical reality.

Repair Trajectory

Family understands, feeding becomes less distressing, comfort prioritized, aspiration risk addressed honestly, care aligns with prior wishes.

40. Common Student Pitfalls

Pitfall 1: Asking the Patient to Decide Without Explanation

This is abandonment, not shared decision-making.

Pitfall 2: Giving a Recommendation Without Asking Values

This is paternalism, not shared decision-making.

Pitfall 3: Listing Options Without Clarifying the Decision

The patient must know what is being decided.

Pitfall 4: Hiding Uncertainty

Uncertainty should be named and monitored.

Pitfall 5: Ignoring Practical Barriers

Cost, transport, cognition, meals, family, and work can determine whether a plan succeeds.

Pitfall 6: Treating Family Preference as Patient Preference

A capable patient's voice comes first.

Pitfall 7: Avoiding Recommendations

Patients often need clinician guidance.

Pitfall 8: Failing to Review Decisions

Illness, goals, and treatment response change.

41. Clinical Practice Box

When using shared decision-making, complete this structure:

Decision to be made:
What exactly are we deciding?

Patient understanding:
What does the patient understand? What needs correction?

Options:
Reasonable choices, including no treatment or time-limited trial where appropriate.

Benefits and harms:
What can each option achieve? What burdens or risks does each carry?

Uncertainty:
What is unknown? What will we monitor?

Patient values:
What matters most? What is feared? What outcome is unacceptable?

Practical fit:
Cost, transport, memory, caregiver support, work, home, food, monitoring, access.

Clinician recommendation:
What do you recommend and why does it fit?

Decision and review plan:
What was decided? When will it be reviewed? What would change the plan?

Documentation:
Who was involved? What was understood? What was agreed?

42. Mini-Case for Practice

A 79-year-old man with diabetes, CKD, heart failure, frailty, mild dementia, and atrial fibrillation is admitted after a fall. He has not been anticoagulated because of fall risk. His daughter wants "whatever prevents stroke," but he says he mainly wants to avoid losing independence and does not want medicines that make him dizzy or bleed. His kidney function is reduced, and his medication list is complex.

Apply the shared decision-making approach.

Decision
Whether anticoagulation fits his goals and risk profile.

Medical Reality
Atrial fibrillation creates stroke risk. Anticoagulation may reduce stroke risk but increases bleeding risk. CKD, falls, frailty, dementia, and polypharmacy complicate safety.

Capacity and Voice
Assess whether he has capacity for this decision. If he does, his values guide the decision. His daughter can support but should not override him.

Values
He values independence, avoiding dizziness, avoiding bleeding, and reducing disabling stroke risk if treatment is safe enough.

Practical Fit
Review kidney function, fall causes, medicines, adherence capacity, caregiver support, monitoring needs, and cost or access.

Wise Shared Decision
Explain stroke and bleeding trade-offs in plain language. Discuss fall prevention and medicine simplification. Offer a clinician recommendation based on his risk, values, and practical context. Document decision and review plan.

Repair Trajectory
Patient and daughter understand the trade-off, decision is documented, fall risks are addressed, medicines are simplified, follow-up is arranged, and care aligns with the patient's own goals.

43. Student Takeaway

Shared decision-making becomes easier when the clinician asks:

What decision is being made?
Is there immediate danger, or is there time to decide together?
Does the patient understand the diagnosis and options?
What are the realistic benefits, harms, burdens, and uncertainties?
What matters most to the patient?
What outcome would be unacceptable?
Does the plan fit the patient's life, cognition, family, finances, and capacity?

What does the clinician recommend, and why?
What was decided, documented, and scheduled for review?

Shared decision-making is not passive.

It is not abandonment.

It is not paternalism.

It is the disciplined joining of medical knowledge with the patient's lived values so that treatment serves the person, not merely the disease.

The safe clinician explains clearly, listens deeply, recommends honestly, respects agency, supports families appropriately, and helps patients choose care they can understand, accept, and live with.

Chapter 63. Clinical Uncertainty Made Easy

Clinical uncertainty means that the clinician does not yet know exactly what is happening, what will happen next, or which decision will produce the best outcome.

Patients do not usually say:

“I am experiencing diagnostic uncertainty.”

They say:

“So what is wrong with me?”
“Are you sure?”
“Could it be something serious?”
“Why are the tests normal if I feel so bad?”
“Do I need more tests?”
“Should I go to hospital?”
“What if it gets worse?”
“How long will this last?”
“What do we do now?”

Clinicians also feel uncertainty.

They may think:

“This could be benign, but I do not want to miss danger.”
“The tests do not fit the symptoms.”
“The patient looks well, but something feels wrong.”
“I have several possible diagnoses.”
“The guideline does not fully fit this patient.”
“Should I admit, observe, refer, or discharge?”

Clinical uncertainty is central to Internal Medicine because medicine is rarely perfectly clear.

Symptoms evolve.
Tests have limits.
Diseases overlap.
Patients present early.
Comorbidities blur the picture.
Guidelines do not cover every situation.
The same symptom may be harmless in one patient and dangerous in another.

The first task is not to pretend certainty.

The deeper question is:

How can we act safely, honestly, and wisely when we do not yet know everything?

Clinical uncertainty becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. Uncertainty Is Normal in Medicine

Uncertainty is not failure.

It is part of clinical reality.

A patient may present before the disease has fully declared itself.
A serious illness may begin with mild symptoms.
A benign illness may feel dramatic.

A test may be falsely reassuring.
A scan may show incidental findings.
A patient may have two illnesses at once.
A medicine may cause symptoms that look like disease.
A frail patient may present atypically.
A young patient may have rare disease.
A common disease may present in an uncommon way.

Good clinicians are not those who never feel uncertainty.

Good clinicians are those who manage uncertainty safely.

The goal is not perfect certainty before action.

The goal is safe action with honest reassessment.

2. Dangerous Certainty

Certainty can be dangerous when it arrives too early.

Examples:

- “It is just anxiety.”
- “It is just old age.”
- “It is just viral.”
- “It is just chronic pain.”
- “It is just dementia.”
- “It is just gastritis.”
- “It is just a mechanical fall.”
- “The test is normal, so nothing is wrong.”
- “The patient is difficult.”
- “The diagnosis is already known.”

These phrases may close thinking too soon.

Premature certainty causes missed diagnosis.

The safer approach is:

“This is the most likely explanation right now, but what dangerous alternative must I still exclude or safety-net?”

Clinical humility protects patients.

3. Uncertainty Is a Capacity Problem

Uncertainty affects multiple capacities.

Patient Understanding

The patient may not understand why more testing, observation, or follow-up is needed.

Patient Safety

An evolving illness may worsen after leaving care.

Clinician Judgment

The clinician must decide despite incomplete information.

Emotional Regulation

Uncertainty creates anxiety for patients, families, and clinicians.

Agency

The patient needs a plan they can follow even if the diagnosis is not final.

Team Coordination

The next clinician must know what remains uncertain and what to watch for.

Uncertainty becomes dangerous when it is hidden, unmanaged, or undocumented.

It becomes safer when it is named, structured, monitored, and shared.

4. The First Question: Is There Immediate Danger?

When uncertain, always return to danger.

Ask:

- Is the airway safe?
- Is breathing safe?
- Is circulation safe?
- Is consciousness safe?
- Is glucose safe?
- Is there sepsis?
- Is there bleeding?
- Is there stroke?
- Is there myocardial infarction?
- Is there pulmonary embolism?
- Is there aortic catastrophe?
- Is there ectopic pregnancy in relevant contexts?
- Is there meningitis or encephalitis?
- Is there spinal cord compression?
- Is there severe electrolyte disturbance?
- Is there AKI?
- Is there overdose or withdrawal?
- Is there suicidal risk?
- Is there unsafe home situation?

The danger-first question is:

What must not be missed today?

When danger is possible, uncertainty should lead to urgent assessment, observation, escalation, or safety-netting.

5. Immediate Red Flags in Uncertainty

Uncertainty requires special caution when there is:

- abnormal vital signs
- new confusion
- severe pain
- syncope
- chest pain
- breathlessness
- neurological deficit
- severe headache
- fever with systemic illness
- immunosuppression
- pregnancy context
- frailty
- anticoagulant use
- recent surgery
- cancer history
- recurrent presentation
- worsening despite treatment
- unexplained weight loss
- inability to eat or drink
- reduced urine output
- severe weakness
- clinician concern that “something is not right”
- patient or family reports clear deviation from baseline
- poor follow-up reliability
- unsafe social situation

Red flags do not always prove serious disease.

They mean uncertainty must be managed with greater caution.

6. Types of Clinical Uncertainty

Clinical uncertainty has different forms.

Diagnostic Uncertainty

What is the diagnosis?

Example:

Chest pain could be reflux, muscle pain, myocardial infarction, pulmonary embolism, pneumonia, anxiety, or aortic disease.

Prognostic Uncertainty

What will happen next?

Example:

A frail patient with pneumonia may recover, decline slowly, or deteriorate suddenly.

Treatment Uncertainty

Which treatment is best?

Example:

A patient with CKD, heart failure, and arthritis needs pain relief, but NSAIDs are risky.

Risk Uncertainty

How likely is harm?

Example:

Should a patient with atrial fibrillation and recurrent falls receive anticoagulation?

Value Uncertainty

What matters most to the patient?

Example:

A patient may value home time more than life extension through burdensome treatment.

System Uncertainty

Can the plan actually happen?

Example:

Will the patient obtain medicines, attend follow-up, understand instructions, and return if worse?

Naming the type of uncertainty helps determine the next step.

7. The Uncertainty Pathway Made Easy

When uncertain, use this pathway:

- stabilize immediate danger
- define the syndrome
- list the dangerous possibilities
- list the likely possibilities
- identify what information is missing
- decide what must be done now
- decide what can safely wait
- communicate uncertainty
- safety-net clearly
- arrange reassessment
- document the uncertainty and plan

This pathway prevents panic.

It also prevents false certainty.

The question is:

What is the safest next step given what we know and what we do not know?

8. Stabilize First, Diagnose Second

In acute medicine, stabilization may come before diagnosis.

If the patient is hypoxic, support oxygenation.
If the patient is shocked, support circulation.
If glucose is dangerously low, correct glucose.
If sepsis is likely, treat promptly according to local pathway.
If the airway is threatened, escalate urgently.
If there is severe hyperkalemia, treat danger while investigating cause.

Do not wait for perfect diagnosis before treating immediate danger.

At the same time, do not stop thinking after stabilization.

The sequence is:

Stabilize → investigate → reassess → refine diagnosis → adjust plan

9. Define the Syndrome

When the diagnosis is uncertain, define the syndrome.

Instead of saying:

“I do not know what this is.”

Say:

“This is acute breathlessness with low oxygen saturation.”

Or:

“This is fever with confusion in a frail patient.”

Or:

“This is chest pain with exertional features.”

Or:

“This is chronic weight loss with anemia.”

Or:

“This is recurrent falls with dizziness and polypharmacy.”

A syndrome gives structure.

It tells you which dangerous diagnoses must be considered.

It tells the next clinician what problem remains active.

10. Separate Dangerous From Likely

The most likely diagnosis is not always the most important diagnosis.

For example:

A young patient with chest pain is most likely to have benign chest wall pain or reflux.

But the clinician must still consider danger:

- myocardial infarction
- pulmonary embolism
- pneumothorax

- pneumonia
- aortic dissection in selected patterns
- pericarditis or myocarditis

A frail older patient with confusion may have dementia progression.

But danger includes:

- delirium
- infection
- hypoxia
- hypoglycemia
- AKI
- medication toxicity
- stroke
- urinary retention
- constipation

Ask two separate questions:

What is most likely?
What is most dangerous if missed?

Good clinical reasoning holds both.

11. Probability and Consequence

Clinical decisions depend on probability and consequence.

A diagnosis can be:

High Probability, High Consequence

Treat and investigate urgently.

Example: sepsis in a hypotensive febrile patient.

Low Probability, High Consequence

Consider carefully and exclude when appropriate.

Example: pulmonary embolism in unexplained pleuritic chest pain with risk factors.

High Probability, Low Consequence

Treat conservatively if safe.

Example: uncomplicated viral upper respiratory infection in a well patient.

Low Probability, Low Consequence

Usually avoid excessive testing.

Example: rare disease with no supporting features and no danger signs.

The art of medicine is not testing for everything.

It is matching investigation and action to probability, consequence, and patient context.

12. Tests Do Not Remove All Uncertainty

Tests help.

But tests are not perfect.

A test can be:

- too early
- falsely negative
- falsely positive
- poorly matched to the question
- affected by pre-test probability
- technically limited
- abnormal but irrelevant
- normal despite disease
- abnormal because of chronic disease
- difficult to interpret in multimorbidity

A normal test does not always mean no disease.

An abnormal test does not always mean the cause has been found.

Ask:

- What question is this test answering?
- How reliable is it in this situation?
- What would I do if it is positive?
- What would I do if it is negative?
- Does the result fit the patient?
- Does this change management?
- Is repeat testing needed?
- Is observation more useful than another test?

Testing should reduce uncertainty enough to act safely.

It does not need to eliminate uncertainty completely.

13. Watchful Waiting Is Active Care

Watchful waiting means deliberate observation with clear safety-netting and reassessment.

It is not ignoring the patient.

It is appropriate when:

- immediate danger is unlikely
- symptoms are early or mild
- tests are reassuring
- disease may declare itself with time
- treatment risks outweigh immediate benefit
- patient can return if worse

follow-up is reliable

warning signs are clear

Watchful waiting requires:

explanation

expected course

warning signs

timeline for review

what to do if worse

documentation

patient understanding

Poor watchful waiting says:

“Come back if worse.”

Good watchful waiting says:

“At the moment, the most likely cause is viral infection, and your oxygen level, chest examination, and general condition are reassuring. However, if you develop shortness of breath, chest pain, confusion, persistent fever, inability to drink, or you are not improving within the expected time, you should return or contact us. I want to review you in ___ if symptoms persist.”

Watchful waiting is safe only when structured.

14. Observation Is a Diagnostic Tool

Sometimes the best test is time under observation.

Observation may be needed when:

chest pain is evolving

abdominal pain is early

headache pattern is concerning

syncope is unexplained

frail patient has vague decline

vital signs are borderline

delirium trigger is unclear

medication toxicity may evolve

dehydration or AKI needs reassessment

treatment response will clarify diagnosis

Observation asks:

Are symptoms improving or worsening?

Are vital signs stable?

Does pain localize?

Does fever appear?

Does mental state fluctuate?

Does oxygenation decline?

Does urine output improve?

Do repeat labs change?

Does treatment response fit the working diagnosis?

Observation is not indecision.

It is disciplined reassessment.

15. Safety-Netting Under Uncertainty

Safety-netting is essential when diagnosis is uncertain.

It should include:

what diagnosis is most likely

what dangerous possibilities have been considered

what warning signs matter

what the patient should do if warning signs occur

when to seek urgent care

when routine follow-up should happen

what to do if symptoms do not improve

who is responsible for pending results

how to access help

Example:

“Your abdominal pain does not currently show signs of appendicitis, bowel obstruction, or bleeding. But early abdominal problems can change. If the pain becomes severe or localized, you develop fever, repeated vomiting, fainting, black stools, a swollen abdomen, or you cannot keep fluids down, you should seek urgent care.”

Safety-netting turns uncertainty into a shared monitoring plan.

16. Communicating Uncertainty to Patients

Patients may think uncertainty means incompetence.

Explain uncertainty clearly.

Useful phrases:

“I do not have a final diagnosis yet, but I can tell you what we are most concerned about and what we are doing to keep you safe.”

“The tests so far are reassuring, but they do not explain everything yet.”

“This may be early in the illness, so we need to watch how it evolves.”

“I do not want to guess. I want to make a safe plan.”

“Here is what would make me worried and what you should do if it happens.”

Honest uncertainty builds trust when paired with a plan.

Uncertainty without a plan creates fear.

17. Communicating Uncertainty to the Team

Team communication must make uncertainty explicit.

A good handover includes:

- working diagnosis
- differential diagnosis
- dangers considered
- what has been ruled out
- what remains uncertain
- current stability
- pending tests
- what to watch for
- escalation triggers
- reassessment time
- patient and family concerns

Poor handover:

“Chest pain. Tests okay. Review.”

Better handover:

“Chest pain for six hours, exertional component, first ECG and troponin reassuring, but risk factors present. Repeat ECG/troponin due at ___. Watch for recurrent pain, dyspnea, hypotension, arrhythmia. If pain recurs, reassess urgently.”

A vague handover transfers uncertainty without structure.

A good handover transfers uncertainty safely.

18. Documentation Under Uncertainty

Documentation should show reasoning.

Include:

- presenting syndrome
- key positives and negatives
- red flags assessed
- working diagnosis
- dangerous differentials considered
- tests ordered and why
- treatment started
- response to treatment
- uncertainty remaining
- safety-net advice
- follow-up plan

pending results and responsibility

patient understanding

capacity or shared decision-making where relevant

Documentation should not pretend certainty.

It should show safe reasoning.

Good documentation protects the patient, the team, and the clinician.

19. Reassessment Is the Heart of Uncertainty Management

Uncertainty should trigger reassessment.

Reassessment asks:

What has changed?

Are symptoms improving?

Are vital signs stable?

Did treatment work?

Do new symptoms appear?

Do labs support or challenge the diagnosis?

Does the patient look better or worse?

Is the original plan still safe?

Has a dangerous diagnosis become more likely?

Is escalation needed?

Is discharge now safe?

Many diagnostic errors occur because the first impression is never revisited.

The safe clinician remains willing to change their mind.

20. Cognitive Bias and Uncertainty

Biases are thinking shortcuts that can mislead.

Common biases include:

Anchoring

Fixing on the first diagnosis and ignoring new evidence.

Premature Closure

Stopping the diagnostic process too early.

Confirmation Bias

Looking only for evidence that supports the chosen diagnosis.

Availability Bias

Overestimating diagnoses recently seen.

Attribution Bias

Letting assumptions about the patient affect judgment.

Search Satisfaction

Finding one problem and stopping, even though another exists.

Normalization Bias

Assuming abnormal findings are harmless because they are familiar.

The antidote is deliberate reflection:

What else could this be?
What does not fit?
What danger would I regret missing?
What would make me change my mind?

21. The "Something Does Not Fit" Signal

Clinicians should respect the feeling that something does not fit.

Examples:

- the patient looks sicker than the diagnosis suggests
- pain is disproportionate
- vital signs are abnormal despite reassuring tests
- family says this is not baseline
- symptoms are worsening despite treatment
- the story changes
- the patient returns repeatedly
- labs are drifting
- the patient cannot function despite "minor" diagnosis
- the diagnosis explains one symptom but not another

This does not mean panic.

It means pause and reassess.

Ask:

What am I missing?

22. Uncertainty in Frailty

Frailty increases uncertainty.

Frail patients may present with:

- falls
- weakness
- confusion
- poor intake
- immobility
- incontinence
- vague decline

Danger may be hidden.

A frail patient with pneumonia may not cough.
A frail patient with myocardial infarction may not have chest pain.
A frail patient with infection may have no fever.
A frail patient with abdominal disease may present as delirium.
A frail patient with medication toxicity may present as falls.

When uncertain in frailty, ask:

- What changed from baseline?
- Is delirium present?
- Is infection present?
- Is oxygen safe?
- Is glucose safe?
- Is hydration safe?
- Are medicines contributing?
- Can the patient walk, eat, drink, and toilet?
- Is home safe?
- Is caregiver support adequate?

In frailty, function is diagnostic information.

23. Uncertainty in Multimorbidity

Multimorbidity makes uncertainty harder.

Breathlessness may be COPD, heart failure, anemia, infection, PE, anxiety, or deconditioning.

Fatigue may be depression, anemia, CKD, heart failure, sleep apnea, medication effect, cancer, or inflammation.

Dizziness may be orthostatic hypotension, arrhythmia, medication effect, vestibular disease, hypoglycemia, anemia, or anxiety.

Confusion may be dementia, delirium, medication toxicity, infection, hypoxia, metabolic disturbance, or depression.

The solution is not to pick one diagnosis too early.

The solution is to map interacting capacity failures.

Ask:

- Which capacities are failing?
- Which diseases could explain them?
- Which medicines could explain them?
- Which danger must be treated first?
- Which explanation accounts for the whole pattern?
- Could more than one problem be present?

Multimorbidity often requires “both/and” reasoning.

24. Uncertainty in Chronic Symptoms

Chronic symptoms often involve uncertainty.

Examples:

- fatigue
- chronic pain
- dizziness
- functional bowel symptoms
- brain fog
- palpitations
- breathlessness without clear findings

Patients may feel dismissed.

Clinicians may feel frustrated.

The safe approach is:

- validate symptoms
- review red flags
- assess functional impact
- consider common and serious causes
- avoid endless low-yield testing
- explain the working model
- treat capacity failures
- arrange follow-up
- remain open to new evidence

Say:

“I believe your symptoms are real. We have not found a dangerous cause so far, which is reassuring. That does not mean nothing is wrong. It means we should focus on what is maintaining the symptoms and what will help you function, while continuing to watch for changes.”

Validation and safety can coexist.

25. Uncertainty and Over-Testing

Uncertainty can lead to excessive testing.

Over-testing may cause harm:

- false positives
- incidental findings
- anxiety
- radiation exposure
- invasive procedures
- cost
- delay
- confusion

- treatment of non-problems
- loss of focus on the patient's main issue

Before ordering a test, ask:

- What question will this answer?
- How likely is the diagnosis?
- What will I do with a positive result?
- What will I do with a negative result?
- Could this test harm the patient?
- Is observation better?
- Is the patient informed?
- Is this test aligned with goals?

More tests do not always mean safer care.

Better questions mean safer care.

26. Uncertainty and Under-Testing

The opposite error is under-testing.

This may happen when:

- symptoms are dismissed
- patient is labeled anxious
- chronic diagnosis is assumed
- age or dementia is blamed
- social stigma affects judgment
- clinician is busy
- initial tests are falsely reassuring
- red flags are missed
- follow-up is unreliable

Under-testing may miss danger.

Ask:

- Are there red flags?
- Are vital signs abnormal?
- Is the patient high risk?
- Is the symptom new or different?
- Has the patient returned repeatedly?
- Is follow-up reliable?
- Would missing this diagnosis cause serious harm?
- Does the patient look worse than expected?

Safe uncertainty management avoids both over-testing and under-testing.

27. Uncertainty and Guidelines

Guidelines help.

But guidelines cannot replace judgment.

Guidelines may not fully fit:

- frailty
- multimorbidity
- pregnancy context
- advanced illness
- rare disease
- atypical presentation
- resource-limited settings
- patient values
- treatment burden
- local availability

Use guidelines as structured wisdom, not rigid scripts.

Ask:

- Does this guideline apply to this patient?
- What assumptions does it make?
- Does multimorbidity change risk?
- Does frailty change benefit?
- Are patient goals included?
- Is local context different?
- What should be individualized?

Clinical judgment lives where guideline meets person.

28. Uncertainty and Shared Decision-Making

Some uncertainty must be shared with the patient.

Especially when:

- more than one reasonable option exists
- benefit and harm are balanced
- prognosis is unclear
- treatment burden is high
- values matter
- time-limited trial is possible
- serious illness decisions arise

Say:

“There is not one clearly right answer. Medically, both options are reasonable. The choice depends on what matters most to you.”

Then explain options, benefits, harms, uncertainty, and recommendations.

Shared uncertainty is not dumping anxiety onto the patient.

It is inviting the patient into decisions where their values matter.

29. Time-Limited Trials Under Uncertainty

A time-limited trial is useful when treatment might help but benefit is uncertain.

Define:

- treatment being tried
- goal
- duration
- markers of improvement
- markers of harm
- review point
- what happens if it works
- what happens if it fails

Examples:

- trial of antibiotics in uncertain infection
- trial of diuresis in breathlessness with possible heart failure
- trial of non-invasive ventilation in COPD exacerbation
- trial of rehabilitation after frailty decline
- trial of deprescribing to improve dizziness
- trial of pain medicine with function goals
- trial of dialysis in uncertain benefit

A trial prevents drift.

Without a review point, uncertain treatment may continue indefinitely.

30. When to Escalate

Escalate uncertainty when:

- patient is unstable
- diagnosis may be life-threatening
- treatment is failing
- patient is worsening
- red flags are present
- expertise is needed
- procedure or imaging is urgent

- ethical conflict exists
- capacity is unclear
- serious illness goals are unclear
- clinician feels out of depth

Escalation is not weakness.

It is patient safety.

A good escalation request says:

- what is happening
- why you are worried
- what has been done
- what remains uncertain
- what help is needed
- how urgent it is

Example:

“I am worried about this patient because they have severe abdominal pain, rising lactate, and worsening tachycardia despite fluids. The diagnosis is unclear, but mesenteric ischemia or sepsis is possible. I need urgent senior surgical and medical review.”

31. When Discharge Is Safe Despite Uncertainty

Discharge can be safe when:

- immediate danger is unlikely
- vital signs are stable
- pain or symptoms are controlled enough
- patient can eat, drink, walk, and function safely enough
- dangerous diagnoses have been reasonably considered
- tests are reassuring for the current stage
- patient understands uncertainty
- safety-net is clear
- follow-up is realistic
- pending results have ownership
- patient can return if worse
- social situation supports safety

Discharge is unsafe when:

- vital signs are unstable
- diagnosis may be dangerous and unresolved
- patient cannot function
- patient cannot understand instructions
- follow-up is unreliable

home is unsafe

symptoms are worsening

red flags are present

clinician concern remains high

Safe discharge is not certainty.

It is managed risk.

32. Repair Trajectory in Clinical Uncertainty

Repair under uncertainty is shown by:

immediate danger stabilized

syndrome clearly defined

dangerous diagnoses considered

working diagnosis stated

uncertainty named

plan documented

patient understands what is known and unknown

warning signs understood

follow-up arranged

pending results assigned

reassessment occurs

diagnosis becomes clearer over time

treatment adjusted when new information appears

patient feels believed rather than dismissed

team knows what to watch for

Repair is not always instant diagnosis.

Repair is movement from confusion to safe coherence.

33. Worked Case 1: Chest Pain With Reassuring First Tests

A 59-year-old man presents with chest pain that began four hours ago. His first ECG and blood test are reassuring. He asks, “So it is not my heart?”

Uncertainty

Early cardiac disease cannot be fully excluded yet.

Danger

Myocardial infarction or unstable cardiac syndrome remains possible depending on pattern and risk.

Capacity Failure

Circulation risk, patient understanding, safety-net need.

Wise Perturbation

Explain what is reassuring and what remains uncertain. Repeat testing or observation according to local chest pain pathway. Safety-net if outpatient care is appropriate. Document reasoning.

Repair Trajectory

Patient understands uncertainty, repeat assessment completed, danger excluded or treated, follow-up clear.

34. Worked Case 2: Abdominal Pain Too Early to Diagnose

A 24-year-old woman has mild right-sided abdominal pain for six hours. Vitals are normal, examination is mild, and initial tests are reassuring.

Uncertainty

Early appendicitis, gynecological pathology, urinary disease, gastroenteritis, constipation, or benign pain may evolve.

Danger

Surgical or gynecological emergency must not be missed.

Capacity Failure

Pain interpretation, evolving diagnosis, safety-net need.

Wise Perturbation

Assess pregnancy context where relevant, urinary symptoms, gynecological symptoms, abdominal signs, and red flags. If safe for outpatient observation, provide explicit warning signs and review plan. If concern persists, observe or escalate.

Repair Trajectory

Pain resolves or evolves into clearer diagnosis, patient returns promptly if worse, dangerous disease not missed.

35. Worked Case 3: Frail Patient With Vague Decline

An 86-year-old woman is brought in because she is “not herself,” eating poorly, and walking less. She has no fever and no clear complaint.

Uncertainty

Possible infection, delirium, dehydration, AKI, medication toxicity, pain, constipation, depression, stroke, or frailty decline.

Danger

Frail patients may hide serious illness.

Capacity Failure

Nutrition, mobility, cognition, hydration, defense, agency.

Wise Perturbation

Establish baseline and acute change. Check vitals, glucose, oxygenation, hydration, renal function, medicines, pain, bowels, bladder, infection signs, and delirium. Do not dismiss because symptoms are vague.

Repair Trajectory

Trigger found and treated where possible, function monitored, discharge only when eating, walking, cognition, and support are safe enough.

36. Worked Case 4: Chronic Fatigue With Normal Tests

A 42-year-old woman has six months of fatigue. Initial blood tests are normal. She feels dismissed and asks whether it is “all in her head.”

Uncertainty

No dangerous cause found yet, but symptoms remain real.

Danger

Depression, sleep disorder, inflammatory disease, medication effects, post-infectious syndrome, endocrine disease, or social stress may be contributors; red flags must be reviewed.

Capacity Failure

Energy, sleep, work, mood, agency.

Wise Perturbation

Validate symptoms. Review red flags and functional impact. Reassess sleep, mood, pain, medications, infection history, activity pattern, and social stress. Avoid endless random testing but remain open to new signs. Create repair plan and follow-up.

Repair Trajectory

Patient feels believed, danger monitored, sleep and activity plan begins, mood and function addressed, diagnosis refined over time.

37. Worked Case 5: Breathlessness in Multimorbidity

A 76-year-old man with COPD, heart failure, anemia, CKD, and anxiety presents with worsening breathlessness.

Uncertainty

Breathlessness may be COPD exacerbation, heart failure, infection, anemia, PE, anxiety, renal fluid overload, or mixed.

Danger

Hypoxia, respiratory failure, heart failure, infection, PE, arrhythmia.

Capacity Failure

Oxygenation, circulation, energy, clearance, emotional regulation.

Wise Perturbation

Assess oxygenation, respiratory pattern, volume status, infection signs, ECG, hemoglobin, renal function, medicines, and response to treatment. Consider that more than one cause may be present. Treat danger first and reassess.

Repair Trajectory

Breathing stabilizes, main contributors identified, treatment adjusted, patient understands mixed causes, follow-up arranged.

38. Worked Case 6: Uncertain Prognosis in Serious Illness

An 80-year-old woman with advanced heart failure and CKD is admitted again. The family asks, “Will she recover this time?”

Uncertainty

Recovery is possible but reserve is declining and prognosis is guarded.

Danger

False certainty may mislead the family; avoidance may prevent planning.

Capacity Failure

Circulation, clearance, energy, family understanding, future planning.

Wise Perturbation

Explain uncertainty honestly. Describe best case, worst case, and most likely course. Treat reversible problems. Discuss goals, escalation preferences, and what matters if time is limited. Consider palliative support.

Repair Trajectory

Family understands uncertainty, treatment goals clear, patient values documented, crisis plan created, care remains aligned if deterioration occurs.

39. Common Student Pitfalls

Pitfall 1: Pretending Certainty

Patients can handle uncertainty better than false confidence followed by surprise.

Pitfall 2: Stopping at the First Diagnosis

Always ask what does not fit.

Pitfall 3: Ignoring Red Flags Because Symptoms Are Chronic

Chronic patients can develop new emergencies.

Pitfall 4: Ordering Tests Without a Question

Every test should answer something.

Pitfall 5: Discharging Without Safety-Netting

Uncertainty requires clear warning signs and follow-up.

Pitfall 6: Not Documenting What Remains Uncertain

The next clinician needs to know what to watch.

Pitfall 7: Missing Frailty Presentations

Weakness, falls, poor intake, or confusion may be serious illness.

Pitfall 8: Failing to Reassess

Uncertainty becomes safer only through reassessment.

40. Clinical Practice Box

When managing clinical uncertainty, complete this structure:

Current syndrome:
What is the clinical pattern?

Immediate danger:
What must not be missed today?

Most likely diagnosis:
What currently fits best?

Dangerous alternatives:
What dangerous diagnoses remain possible?

What does not fit?
What findings challenge the working diagnosis?

Missing information:
What history, exam, test, observation, or collateral is needed?

Plan now:
Treat, test, observe, refer, admit, discharge, or review?

Safety-net:
What warning signs? What action? What timeframe?

Reassessment:
When and by whom? What would change the plan?

Documentation:
What is known, unknown, pending, and assigned?

41. Mini-Case for Practice

A 73-year-old man with diabetes, CKD, heart failure, COPD, atrial fibrillation, and frailty presents with weakness, poor appetite, mild breathlessness, dizziness, and one fall. He has no fever. His oxygen saturation is slightly lower than usual, creatinine is mildly worse, and ECG shows atrial fibrillation at his usual rate. His daughter says, “He is not himself.”

Apply the clinical uncertainty approach.

Current Syndrome

Frail multimorbid patient with acute functional decline, mild breathlessness, dizziness, fall, poor intake, and AKI.

Immediate Danger

Hypoxia, infection, heart failure, dehydration, AKI, medication toxicity, hypoglycemia, arrhythmia, occult bleeding, delirium, fall injury.

Most Likely Pattern

Mixed capacity decline from acute illness, reduced intake, kidney stress, medication vulnerability, and cardiopulmonary reserve limitation.

Dangerous Alternatives

Pneumonia, heart failure exacerbation, pulmonary embolism, occult myocardial ischemia, sepsis without fever, GI bleeding, stroke, severe electrolyte disturbance, medication toxicity.

Wise Perturbation

Do not dismiss because symptoms are vague. Establish baseline. Assess vitals, oxygenation, glucose, hydration, volume status, infection signs, medications, orthostatic symptoms, renal function, electrolytes, hemoglobin, pain, cognition, and fall injury. Observe or admit if safety is uncertain. Communicate uncertainty clearly to daughter.

Repair Trajectory

Dangerous causes excluded or treated, kidney function and oxygenation stabilize, dizziness improves, eating returns, walking is safe or supported, medicines adjusted, daughter understands warning signs and follow-up.

42. Student Takeaway

Clinical uncertainty becomes easier when the clinician asks:

What is the syndrome?
What is most likely?
What is most dangerous if missed?
What does not fit?
What information is missing?
Does the patient need stabilization, testing, observation, admission, referral, or safety-netted follow-up?
How will I communicate uncertainty honestly?
Who will reassess, and when?
What would make us change the plan?

Uncertainty is not failure.

Unmanaged uncertainty is dangerous.

The safe clinician does not pretend to know what is not yet known. The safe clinician stabilizes danger, names the syndrome, considers serious alternatives, avoids premature closure, communicates honestly, safety-nets clearly, documents reasoning, and reassesses until the clinical picture becomes safer and more coherent.

Chapter 64. Diagnostic Error Made Easy

Diagnostic error occurs when a diagnosis is missed, delayed, wrong, incomplete, or not communicated clearly enough to guide safe care.

Patients do not usually say:

“I experienced diagnostic error.”

They say:

“They said it was nothing.”
“I kept coming back.”
“No one listened.”
“The test was normal, so they sent me home.”
“They treated the wrong thing.”
“The diagnosis came too late.”
“I knew something was wrong.”
“Why did no one catch this earlier?”

Clinicians may say:

“The presentation was atypical.”
“The first tests were reassuring.”
“The patient had many comorbidities.”
“The disease had not declared itself yet.”
“We were focused on another problem.”
“The handover did not mention that.”
“The result came back after discharge.”

Diagnostic error is central to Internal Medicine because diagnosis is the doorway to treatment.

A wrong diagnosis can lead to wrong treatment.
A delayed diagnosis can allow disease to progress.
An incomplete diagnosis can miss a second active problem.
A poorly communicated diagnosis can become unsafe even if the clinician reasoned well.

The first task is not to blame one person.

The deeper question is:

Where did the diagnostic process lose contact with the living pattern of illness?

Diagnostic error becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Diagnostic Error?

Diagnostic error can occur in several ways.

Missed Diagnosis

The correct diagnosis is not considered.

Example:

A frail patient with confusion is labeled as dementia progression, but the true problem is pneumonia with hypoxia.

Delayed Diagnosis

The correct diagnosis is eventually found, but later than it should have been.

Example:

A patient with weight loss and iron deficiency anemia has delayed investigation for gastrointestinal malignancy.

Wrong Diagnosis

The patient is given an incorrect diagnosis.

Example:

Pulmonary embolism is diagnosed as anxiety.

Incomplete Diagnosis

One diagnosis is found, but another important diagnosis is missed.

Example:

A patient with heart failure also has pneumonia, but only fluid overload is treated.

Failure to Communicate Diagnosis

The diagnosis or uncertainty is not explained or handed over clearly.

Example:

A pending abnormal test returns after discharge, but no one follows it up.

Diagnostic error is often a process failure, not a single moment of ignorance.

2. Diagnostic Error Is Not Always Negligence

Some diagnostic errors occur despite reasonable care.

Disease may be early.
Symptoms may be vague.
Tests may be falsely reassuring.
Patients may present atypically.
Multiple diseases may overlap.
Resources may be limited.
Information may be missing.

But some errors are preventable.

They occur because:

- danger signs were missed
- the patient was not listened to
- the differential was too narrow
- the first diagnosis was never reassessed
- abnormal results were ignored
- medicines were not reviewed
- baseline function was not established
- family concerns were dismissed
- communication failed
- follow-up failed
- bias shaped judgment

The goal is not perfection.

The goal is safer diagnostic practice.

3. Diagnosis Is a Process, Not a Moment

Diagnosis does not always happen instantly.

It often unfolds through:

- patient story
- examination
- initial syndrome recognition
- danger assessment
- differential diagnosis
- testing
- treatment response
- reassessment
- follow-up
- communication
- revision of diagnosis when new evidence appears

Diagnostic error often occurs when this process stops too soon.

A diagnosis should remain open to revision when:

- symptoms worsen
- new signs appear
- treatment fails
- tests do not fit
- the patient returns
- family says this is not baseline
- the patient feels unheard
- the disease course is unusual
- new results arrive

Good diagnosis is dynamic.

4. Diagnostic Error Is a Capacity Failure

Diagnostic error affects capacities.

Patient Safety

Danger may remain untreated.

Patient Trust

The patient may feel dismissed, betrayed, or frightened.

Clinician Judgment

Reasoning may narrow too early.

Team Coordination

Important uncertainty may not be handed over.

System Reliability

Results, referrals, and follow-up may fail.

Patient Agency

The patient may not know what warning signs require return.

Diagnostic error is not only a wrong label.

It is failure of the diagnostic system to support safe action.

5. The First Question: Is There Diagnostic Danger Now?

When concerned about diagnostic error, return to immediate danger.

Ask:

- Is the patient unstable?
- Is there hypoxia?
- Is there shock?
- Is there sepsis?
- Is there stroke?
- Is there myocardial infarction?
- Is there pulmonary embolism?
- Is there aortic disease?
- Is there meningitis or encephalitis?
- Is there spinal cord compression?
- Is there acute abdomen?
- Is there major bleeding?
- Is there severe electrolyte disturbance?
- Is there AKI?
- Is there hypoglycemia?
- Is there overdose or withdrawal?
- Is there suicidal risk?
- Is there unsafe discharge?

The danger-first question is:

What diagnosis would cause serious harm if we miss it today?

6. Immediate Red Flags for Possible Diagnostic Error

Red flags include:

- repeated visits for the same problem
- worsening despite treatment
- abnormal vital signs
- symptoms not fitting the diagnosis

- severe pain out of proportion
- new confusion
- syncope
- unexplained weight loss
- persistent fever
- immunosuppression
- cancer history
- anticoagulant use with bleeding or head injury
- pregnancy context where relevant
- frailty with vague decline
- family says “this is not normal”
- patient says “something is very wrong”
- unexplained lab abnormality
- pending result without follow-up
- discharge despite inability to walk, eat, drink, or understand plan
- clinician discomfort with the explanation

When these are present, pause.

The diagnosis may need revision.

7. Common Diagnostic Error Patterns

“Just Anxiety”

Anxiety is common and real.

But dangerous disease can feel like anxiety.

Consider:

- myocardial infarction
- pulmonary embolism
- arrhythmia
- hyperthyroidism
- hypoglycemia
- withdrawal
- medication effects
- asthma
- heart failure
- anemia

Before diagnosing anxiety as the main cause, ask:

What physical danger has been reasonably excluded?

“Just Viral”

Many illnesses are viral.

But early bacterial infection, sepsis, pneumonia, meningitis, dengue-like illness, influenza complications, or other serious disease can begin vaguely.

Ask:

Are vital signs safe, and is the patient improving as expected?

"Just Old Age"

Old age does not cause acute collapse by itself.

In older adults, consider:

- delirium
- infection
- dehydration
- AKI
- medication toxicity
- stroke
- heart failure
- hypoglycemia
- fall injury
- pain
- constipation
- urinary retention

Ask:

What changed from baseline?

"Just Dementia"

A person with dementia can develop acute illness.

Sudden worsening is delirium until proven otherwise.

"Just Chronic Pain"

Chronic pain patients can develop new fracture, infection, cancer, inflammatory disease, ischemia, or neurological compression.

Ask:

Is this pain different, progressive, systemic, neurological, or dangerous?

"Just Mechanical Fall"

Falls may be caused by syncope, hypoglycemia, infection, arrhythmia, stroke, medication harm, or frailty.

Ask:

Why did upright control fail?

8. Cognitive Biases That Cause Diagnostic Error

Anchoring

Fixing on the first diagnosis.

Example:

A patient labeled as gastroenteritis later has appendicitis.

Antidote:

What else could this be?

Premature Closure

Stopping the diagnostic process too early.

Example:

Calling chest pain reflux before considering cardiac risk.

Antidote:

What dangerous diagnosis remains possible?

Confirmation Bias

Only noticing evidence that supports the current diagnosis.

Example:

Interpreting all breathlessness as COPD despite edema and weight gain.

Antidote:

What evidence argues against my diagnosis?

Availability Bias

Overdiagnosing what was recently seen.

Example:

After seeing many viral illnesses, assuming the next fever is viral.

Antidote:

Am I letting recent cases shape this one too strongly?

Attribution Bias

Allowing assumptions about the patient to distort judgment.

Example:

A patient with addiction is assumed to be drug-seeking when they have serious infection.

Antidote:

Would I reason differently if another patient had the same symptoms?

Search Satisfaction

Finding one abnormality and stopping.

Example:

Finding UTI but missing stroke or pneumonia.

Antidote:

Does this diagnosis explain the whole picture?

Diagnostic Momentum

A label gets repeated until no one questions it.

Example:

“Anxiety” appears in the chart, and every future symptom is interpreted through that label.

Antidote:

If I saw this patient fresh today, what would I think?

9. System Failures That Cause Diagnostic Error

Diagnostic error is not only cognitive.

Systems also fail.

Examples:

- rushed visits
- poor access to prior records
- fragmented care
- unclear handover
- test results not followed up
- referral delays
- language barriers
- lack of interpreter
- poor discharge communication
- medication list errors
- no continuity
- limited imaging or labs
- lack of senior review
- workload pressure
- poor documentation
- patient unable to afford follow-up
- transport barriers
- caregiver concerns not included

A good diagnostic system asks:

How do we ensure uncertainty, results, and responsibility are carried safely over time?

10. The Diagnostic Error Pathway Made Easy

When diagnostic error is possible, use this pathway:

- return to danger
- redefine the syndrome
- check whether the diagnosis explains the whole pattern
- review what has changed
- review medicines
- review tests and pending results
- seek collateral information
- reconsider dangerous alternatives
- reassess function and baseline
- escalate or consult when needed

communicate uncertainty

safety-net and follow up

document reasoning and responsibility

This pathway helps reopen thinking without becoming chaotic.

11. Redefine the Syndrome

When a diagnosis is not fitting, step back.

Do not ask only:

“Is the current diagnosis correct?”

Ask:

“What is the syndrome?”

Examples:

Instead of:

“This is anxiety.”

Say:

“This is episodic palpitations with dizziness and near-syncope.”

Instead of:

“This is old age.”

Say:

“This is acute functional decline with poor intake and confusion.”

Instead of:

“This is chronic pain.”

Say:

“This is chronic back pain with new night pain and weight loss.”

Syndrome language reopens diagnostic reasoning.

12. Ask What Does Not Fit

Every diagnosis should be tested against the whole picture.

Ask:

Does this diagnosis explain all major symptoms?

Does it explain the vital signs?

Does it explain the labs?

Does it explain the timeline?

Does it explain the severity?

Does it explain functional decline?

Does it explain treatment failure?

Does it fit the patient’s baseline?

What finding is unexplained?

What new information changes the probability?

The most important diagnostic sentence may be:

“Something does not fit.”

That sentence can save lives.

13. Repeated Presentations

Repeated presentations are warning signs.

A patient who returns again may have:

disease progression

missed diagnosis

inadequate treatment

poor adherence due to misunderstanding or access

medication side effect

unsafe home situation

unresolved pain

anxiety due to poor explanation

new complication

multiple interacting problems

Do not say:

“They are back again.”

Ask:

“What did we miss, what changed, and why did the previous plan fail?”

Repeated visits deserve diagnostic humility.

14. Treatment Failure

When treatment fails, reassess.

Possibilities include:

wrong diagnosis

incomplete diagnosis

resistant organism

wrong dose

poor adherence

poor absorption

medication interaction

new complication

disease progression

- social barrier
- treatment not given
- adverse drug reaction
- patient misunderstood the plan

Example:

A patient treated for COPD exacerbation remains breathless.

Reconsider:

- heart failure
- pneumonia
- pulmonary embolism
- anemia
- pneumothorax
- arrhythmia
- poor inhaler technique
- medication non-access
- anxiety amplifying breathlessness

Treatment failure is diagnostic information.

15. Normal Tests Can Mislead

Normal tests can falsely reassure.

Examples:

- early myocardial infarction may need repeat testing
- early appendicitis may have mild findings
- pneumonia may be subtle early
- PE may need risk-based testing
- stroke imaging may be time-sensitive and context-dependent
- inflammatory disease may fluctuate
- serious disease may exist before labs become abnormal

A normal test answers only the question it is capable of answering.

Ask:

- Was the test done at the right time?
- Was it the right test?
- Was the pre-test probability low enough?
- Does the patient still look unwell?
- Do symptoms persist or worsen?
- Is repeat testing or observation needed?

Do not say:

“The tests are normal, so nothing is wrong.”

Say:

“The tests are reassuring for certain dangerous problems, but we still need to watch your symptoms and reassess if they change.”

16. Abnormal Tests Can Mislead

Abnormal tests can also mislead.

A patient may have:

- incidental imaging findings
- chronic lab abnormalities
- colonization rather than infection
- asymptomatic bacteriuria
- mild enzyme elevation unrelated to symptoms
- old ECG changes
- chronic anemia
- chronic kidney disease baseline
- degenerative spine changes not explaining pain

Ask:

- Is this abnormality new?
- Does it fit the symptoms?
- Does it explain the severity?
- Is it causal or incidental?
- What is the patient’s baseline?
- Will treating it help?
- Could focusing on it distract from the real diagnosis?

Do not treat test results instead of patients.

17. Medication Harm as Diagnostic Error

Medication harm is often misdiagnosed as new disease.

Examples:

- sedative causing falls
- opioid causing confusion and constipation
- NSAID causing AKI and heart failure
- diabetes medicine causing hypoglycemia
- anticoagulant causing bleeding and anemia
- antihypertensive causing dizziness
- steroid causing hyperglycemia, insomnia, and mood change

anticholinergic causing delirium and urinary retention

diuretic causing dehydration and low sodium

Always ask:

Could the diagnosis be a medicine effect?

Every new symptom in a patient on medicines deserves medication review.

18. Missing the Second Diagnosis

Sometimes the first diagnosis is correct but incomplete.

Examples:

pneumonia plus heart failure

UTI plus delirium from urinary retention

COPD exacerbation plus pulmonary embolism

fall plus hypoglycemia

anemia plus colon cancer

depression plus hypothyroidism

dementia plus delirium

chronic pain plus new fracture

alcohol use plus pancreatitis and withdrawal risk

The question is:

Does one diagnosis explain everything, or are two processes present?

Internal Medicine often requires layered diagnosis.

19. Baseline Matters

Diagnostic error often occurs when baseline is unknown.

Ask:

What was the patient like last week?

Could they walk?

Could they eat?

Could they manage medicines?

Was cognition normal?

Were symptoms chronic or new?

What is their usual oxygen level?

What is their usual creatinine?

What is their usual hemoglobin?

What is their usual blood pressure?

What does family say is different?

Without baseline, acute change may be missed.

This is especially important in:

- frailty
- dementia
- CKD
- COPD
- heart failure
- chronic anemia
- disability
- chronic pain
- psychiatric illness

Baseline turns vague symptoms into diagnostic signals.

20. Collateral History Prevents Error

Collateral history means information from family, caregivers, witnesses, pharmacists, nurses, paramedics, or prior records.

It is essential when the patient has:

- delirium
- dementia
- syncope
- falls
- seizure
- intoxication
- language barrier
- severe illness
- poor recall
- medication complexity
- functional decline

Collateral may reveal:

- true onset
- baseline cognition
- medicine errors
- alcohol use
- falls
- weight loss
- unsafe home
- witnessed loss of consciousness
- seizure features

poor intake

recent discharge changes

Do not rely only on the patient's memory when memory is part of the problem.

21. Diagnostic Error in Frailty

Frailty is high risk for diagnostic error because illness presents atypically.

Serious illness may appear as:

fall

weakness

immobility

poor appetite

confusion

incontinence

drowsiness

caregiver concern

Common errors include:

calling delirium dementia

calling infection old age

calling falls mechanical

missing pain

missing dehydration

missing medication toxicity

discharging before function is safe

missing caregiver collapse

In frailty, ask:

What changed from baseline?

Is this delirium?

Is there infection without fever?

Is glucose safe?

Is oxygen safe?

Are medicines safe?

Can the patient walk, eat, drink, and toilet?

Is home safe?

Function is diagnostic evidence.

22. Diagnostic Error in Women, Older Adults, and Marginalized Patients

Diagnostic error can be shaped by bias.

Some patients are more likely to be dismissed, undertreated, or misinterpreted.

This may involve:

- sex or gender bias
- ageism
- racism or ethnicity bias
- disability bias
- mental health stigma
- addiction stigma
- weight stigma
- poverty
- language barriers
- migrant status
- low health literacy
- prior frequent attendance

Bias may lead clinicians to label symptoms as anxiety, non-compliance, exaggeration, drug-seeking, or old age.

The antidote is disciplined fairness:

Would I take this symptom more seriously if a different patient said it?
Have I considered the same dangerous diagnoses?
Have I listened fully?
Have I used an interpreter?
Have I explained the plan clearly?

Equity is diagnostic safety.

23. Diagnostic Error and Communication

Poor communication causes diagnostic error.

Patients may not share key information if they feel rushed, judged, or ignored.

Clinicians may miss clues if they interrupt too early.

Families may hold critical baseline information.

Language barriers may distort symptoms.

A patient may not understand safety-net advice.

Communication failures include:

- not asking the main concern
- not clarifying timeline
- not checking understanding
- not using interpreter
- not explaining uncertainty
- not giving warning signs
- not documenting pending results

not handing over concern

not listening to family

Good communication is diagnostic protection.

24. Diagnostic Error and Follow-Up

Some diagnoses cannot be made safely at the first visit.

Follow-up is therefore part of diagnosis.

Follow-up should answer:

Did symptoms resolve?

Did symptoms progress?

Did new signs appear?

Did tests return abnormal?

Did treatment work?

Did the patient understand the plan?

Did they obtain medicine?

Did they return if worse?

Is the working diagnosis still correct?

A plan without follow-up may turn uncertainty into error.

Every uncertain diagnosis needs a repair pathway.

25. Pending Results

Pending results are a common source of diagnostic error.

Ask:

What results are pending?

Who will check them?

When will they return?

How will the patient be contacted?

What action is needed if abnormal?

Is the patient aware?

Is the responsibility documented?

Does the discharge summary mention them?

A result that no one owns is unsafe.

The diagnostic process is not complete until important results are reviewed and acted upon.

26. Diagnostic Time-Out

A diagnostic time-out is a deliberate pause.

Use it when:

- patient is worsening
- diagnosis is unclear
- treatment is failing
- results do not fit
- patient returns repeatedly
- discharge feels unsafe
- clinician feels uneasy
- high-risk diagnosis is possible

Ask:

- What is the current syndrome?
- What is the leading diagnosis?
- What dangerous diagnosis could we be missing?
- What does not fit?
- Could medicines explain this?
- Could there be more than one diagnosis?
- What information is missing?
- Who else should be involved?
- What is the safest next step?
- What reassessment is planned?

A diagnostic time-out prevents drift.

27. Escalation and Second Opinions

Escalate when:

- the patient is unstable
- diagnosis remains unclear despite assessment
- dangerous disease is possible
- treatment is failing
- specialist input is needed
- the patient is worsening
- tests conflict with clinical picture
- ethical or capacity issues complicate care
- clinician is out of depth

Escalation is not weakness.

It is safety.

A good escalation includes:

- concise syndrome
- why you are worried

key findings

what has been done

what remains uncertain

what help you need

urgency

Example:

“I am worried this patient may have spinal cord compression. They have new back pain, leg weakness, and urinary symptoms. I need urgent senior review and imaging pathway advice.”

Clear escalation saves time.

28. Communicating Diagnostic Error

If an error or possible error has occurred, communication must be honest, respectful, and aligned with local disclosure policies.

Patients need:

acknowledgment

explanation of what is known

apology where appropriate

plan to address harm

plan to prevent recurrence

opportunity to ask questions

support

Avoid defensiveness.

A useful phrase:

“I am sorry this was not recognized earlier. Right now our priority is to treat the problem and explain clearly what happened and what we will do next.”

If facts are still being reviewed, say so.

Do not speculate beyond what is known.

Honesty is part of repair.

29. Learning From Diagnostic Error

After diagnostic error, ask:

What was the original syndrome?

What diagnosis was made?

What was missed?

What information was available?

What information was missing?

Was there a cognitive bias?

Was there a system failure?

- Was there a communication failure?
- Were red flags present?
- Did follow-up fail?
- Did results fall through?
- How can the process improve?

The goal is learning, not humiliation.

Clinicians learn best in cultures that are honest, accountable, and safe enough to examine error.

30. Repair Trajectory After Diagnostic Error

Repair may include:

- recognizing the missed diagnosis
- treating the patient promptly
- communicating honestly
- apologizing where appropriate
- explaining the new plan
- addressing harm
- involving senior or specialist support
- documenting clearly
- supporting patient and family emotionally
- reviewing system failures
- improving follow-up processes
- ensuring results are owned
- educating the team
- rebuilding trust

Repair does not erase harm.

But it can prevent further harm and restore some trust.

31. Worked Case 1: “Anxiety” That Was Pulmonary Embolism

A 42-year-old woman presents twice with breathlessness, chest tightness, and anxiety. She is reassured. On the third visit, she is tachycardic and oxygen saturation is lower than usual. Pulmonary embolism is diagnosed.

Diagnostic Error Pattern

Symptoms attributed to anxiety without sufficient attention to physiological danger.

What Did Not Fit?

Tachycardia, breathlessness, chest tightness, repeated presentation, low oxygen saturation.

Capacity Failure

Oxygenation, circulation, trust, diagnostic safety.

Wise Repair

Treat PE according to local pathway. Communicate honestly. Review why symptoms were attributed to anxiety. Safety-net future breathlessness carefully. Address anxiety without using it to dismiss physical disease.

Repair Trajectory

PE treated, patient understands plan, trust addressed, team learns from error.

32. Worked Case 2: “Dementia Progression” That Was Delirium

An 86-year-old man with dementia becomes more confused and sleepy. Staff say his dementia is worsening. His daughter says this is sudden. He is found to have pneumonia and hypoxia.

Diagnostic Error Pattern

Acute change misattributed to chronic dementia.

What Did Not Fit?

Sudden onset, drowsiness, daughter’s baseline concern, hypoxia, infection signs.

Capacity Failure

Cognition, oxygenation, defense, family trust.

Wise Repair

Treat pneumonia and hypoxia. Recognize delirium. Involve daughter for baseline. Educate team that sudden worsening is delirium until proven otherwise.

Repair Trajectory

Attention improves, oxygenation stabilizes, daughter feels heard, future baseline changes taken seriously.

33. Worked Case 3: “Mechanical Fall” That Was Syncope

A 79-year-old woman falls while walking to the kitchen. It is documented as mechanical fall. Later she reports palpitations and no memory of hitting the floor. ECG monitoring shows arrhythmia.

Diagnostic Error Pattern

Fall labeled mechanical without exploring loss of consciousness.

What Did Not Fit?

No clear trip, memory gap, palpitations, recurrent falls.

Capacity Failure

Rhythm coordination, brain perfusion, mobility safety.

Wise Repair

Assess syncope and arrhythmia pathway. Review medicines, orthostatic symptoms, injury risk, and falls prevention. Avoid “mechanical fall” label unless supported.

Repair Trajectory

Arrhythmia managed, falls reduce, patient understands warning signs, documentation improves.

34. Worked Case 4: “Gastroenteritis” That Was Sepsis

A 68-year-old man with diabetes presents with vomiting and weakness. He is diagnosed with gastroenteritis. He returns hypotensive with fever and AKI from biliary sepsis.

Diagnostic Error Pattern

Common benign diagnosis accepted despite high-risk patient and evolving systemic illness.

What Did Not Fit?

Age, diabetes, weakness, worsening, hypotension on return, AKI, possible abdominal source.

Capacity Failure

Defense, circulation, clearance, diagnostic safety.

Wise Repair

Treat sepsis urgently. Review initial red flags, safety-netting, and follow-up. Improve recognition of systemic illness in high-risk patients.

Repair Trajectory

Sepsis treated, kidney function monitored, patient and family informed, safety-net process strengthened.

35. Worked Case 5: "Medication Non-Compliance" That Was Cost Barrier

A patient with heart failure is repeatedly admitted with fluid overload. Notes say "non-compliant." Eventually, he reveals he cannot afford all medicines and cuts tablets to save money.

Diagnostic Error Pattern

Behavioral label replaced practical diagnosis.

What Did Not Fit?

Repeated admissions despite education, financial stress not assessed, medication access assumed.

Capacity Failure

Medicine access, circulation, agency, trust.

Wise Repair

Ask about affordability, access, side effects, understanding, and beliefs. Simplify regimen. Involve pharmacy, social support, or assistance programs where available. Replace blame with barrier diagnosis.

Repair Trajectory

Medicine access improves, admissions reduce, trust restored, documentation becomes more accurate.

36. Worked Case 6: "Back Pain Flare" That Was Spinal Compression

A 63-year-old man with known cancer and chronic back pain presents with worse back pain. It is treated as a flare. He returns with leg weakness and urinary difficulty.

Diagnostic Error Pattern

Chronic pain label hid new dangerous features.

What Did Not Fit?

Cancer history, worsening pain, later neurological symptoms, possible night pain or functional decline.

Capacity Failure

Neurological function, mobility, bladder control, diagnostic safety.

Wise Repair

Recognize possible spinal cord compression. Escalate urgently according to local pathway. Review red flags in chronic pain patients.

Repair Trajectory

Urgent treatment initiated, neurological function protected where possible, future red-flag assessment strengthened.

37. Common Student Pitfalls

Pitfall 1: Thinking Diagnostic Error Means Only Wrong Diagnosis

Delayed, missed, incomplete, and poorly communicated diagnoses also matter.

Pitfall 2: Stopping After One Diagnosis

One correct diagnosis may not explain the whole patient.

Pitfall 3: Ignoring Repeated Presentations

Return visits are diagnostic opportunities.

Pitfall 4: Trusting Normal Tests Too Much

Tests reduce uncertainty but do not eliminate it.

Pitfall 5: Treating Abnormal Tests Instead of the Patient

Abnormal findings may be incidental or chronic.

Pitfall 6: Missing Medication Harm

New symptoms often come from medicines.

Pitfall 7: Dismissing Family Baseline Concerns

Families often know when something is truly different.

Pitfall 8: Failing to Own Pending Results

Unreviewed results are a common source of harm.

38. Clinical Practice Box

When worried about diagnostic error, complete this structure:

Current diagnosis:
What diagnosis has been assigned?

Current syndrome:
What is the patient's actual pattern of symptoms, signs, function, and trajectory?

What does not fit?
Symptoms, vital signs, labs, severity, timeline, treatment response, baseline change.

Dangerous missed diagnoses:
What would cause serious harm if missed?

Second diagnosis possibility:
Could more than one process be present?

Medication harm:
Could medicines be causing or worsening the problem?

Baseline and collateral:
What was the patient like before? What do family/caregivers report?

Tests and results:
Are results pending, abnormal, too early, false reassuring, or not fitting? Who owns follow-up?

Diagnostic time-out:
What else could this be? What should change now?

Repair plan:
Reassess, test, observe, escalate, communicate, safety-net, document.

39. Mini-Case for Practice

A 77-year-old woman with diabetes, CKD, mild dementia, heart failure, and chronic back pain is seen after two falls, poor appetite, and worsening confusion. She is labeled as having dementia progression and mechanical falls. Her daughter says the change is sudden. She recently started a sleeping tablet and has been taking NSAIDs for back pain. Her creatinine is higher than baseline, oxygen saturation is mildly low, and she has new back pain at night.

Apply the diagnostic error approach.

Diagnostic Risk

Several labels may be premature: dementia progression, mechanical falls, chronic pain flare.

What Does Not Fit?

Sudden confusion, daughter's baseline concern, AKI, low oxygen saturation, new night back pain, recent sedative, NSAID exposure, repeated falls.

Dangerous Missed Diagnoses

Delirium, pneumonia or heart failure, medication toxicity, AKI from NSAIDs/dehydration, hypoglycemia, occult fracture, spinal pathology, infection, syncope.

Capacity Failure

Cognition, oxygenation, clearance, mobility safety, pain regulation, medicine safety, agency.

Wise Perturbation

Perform diagnostic time-out. Reassess vitals, oxygenation, glucose, renal function, electrolytes, medication list, infection signs, heart failure status, fall injury, orthostatic symptoms, neurological examination, and back pain red flags. Seek collateral from daughter. Stop or avoid harmful medicines where appropriate. Escalate imaging or specialist review if red flags persist according to local pathway. Communicate uncertainty clearly and avoid unsafe discharge.

Repair Trajectory

Delirium trigger identified and treated, kidney function stabilizes, oxygenation explained, falls cause addressed, pain red flags assessed, medicines simplified, daughter feels heard, diagnosis becomes safer and more complete.

40. Student Takeaway

Diagnostic error becomes easier to prevent when the clinician asks:

What is the actual syndrome?
What diagnosis has been assumed?
What does not fit?
What dangerous diagnosis would I regret missing?
Could there be more than one diagnosis?

Could medicines be causing this?
What changed from baseline?
What does the family or caregiver know?
Are tests too reassuring, misleading, pending, or unowned?
Does the patient need reassessment, observation, escalation, or clearer safety-netting?

Diagnostic error is not simply being wrong.

It is losing the thread between the patient's living pattern and the clinician's explanation.

The safe clinician resists premature closure, listens for mismatch, reviews medicines, respects baseline, owns uncertainty, follows pending results, communicates honestly, and reassesses until the diagnosis is not only plausible, but safe.

Chapter 65. Professional Judgment Made Easy

Professional judgment is the disciplined ability to decide what is clinically wise, ethically sound, practically possible, and safe for this patient in this situation.

Patients do not usually say:

"I need your professional judgment."

They say:

"What do you think is best?"
"Is this serious?"
"Should I go to hospital?"
"Do I really need this test?"
"Can I stop this medicine?"
"Would you recommend this for your own family?"
"I do not know what to do."
"Please help me decide."

Professional judgment is central to Internal Medicine because medicine is not only applying rules.

Guidelines help, but patients are complex.
Tests help, but tests have limits.
Evidence helps, but evidence must be interpreted.
Protocols help, but protocols cannot know every person.
Risk scores help, but they do not replace bedside assessment.
Patient preferences matter, but patients should not be abandoned to decide alone.
Clinician experience matters, but it can be biased.
Urgency matters, but rushing can cause harm.

The first task is not simply to follow habit, instinct, guideline, or patient demand.

The deeper question is:

What is the wisest, safest, most proportionate, life-serving action now?

Professional judgment becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Professional Judgment?

Professional judgment is clinical reasoning in action.

It includes:

- recognizing danger
- interpreting symptoms
- weighing probability and consequence
- applying evidence
- knowing when guidelines fit
- knowing when guidelines do not fully fit
- balancing benefit and harm
- communicating uncertainty
- considering patient values

judging capacity and risk

deciding when to treat, test, observe, refer, admit, discharge, escalate, or stop

documenting reasoning

reassessing when the situation changes

Professional judgment is not guessing.

It is not arrogance.

It is not simply “clinical intuition.”

It is disciplined attention to the whole situation.

2. Professional Judgment Is Not the Same as Personal Opinion

A professional judgment is not merely:

“I feel like doing this.”

It must be accountable to:

clinical facts

patient history

examination

evidence

safety

ethics

patient values

local resources

law and policy

team communication

follow-up reality

A personal opinion may be based on preference.

A professional judgment must be explainable.

The clinician should be able to say:

“I recommended this because the patient had these risks, this likely diagnosis, these possible harms, these values, and this follow-up plan.”

Professional judgment must leave a trail of reasoning.

3. Judgment Is Needed Because Patients Are Not Guidelines

Guidelines are essential.

They summarize evidence and reduce unsafe variation.

But guidelines cannot fully capture:

frailty

multimorbidity

- dementia
- pregnancy context
- renal or liver impairment
- advanced illness
- treatment burden
- cost
- culture
- family support
- patient goals
- limited resources
- unusual presentations
- conflicting diseases
- medication interactions
- local availability
- uncertain diagnosis

A guideline may say what usually works for a defined condition.

Professional judgment asks:

Does this recommendation fit this person now?

The goal is not to ignore guidelines.

The goal is to apply them wisely.

4. Professional Judgment Is a Capacity Skill

Judgment protects capacities.

Biological Capacity

The clinician must protect oxygenation, circulation, glucose, clearance, defense, repair, and regulation.

Functional Capacity

The plan should preserve walking, eating, sleeping, toileting, thinking, and participating.

Agency Capacity

The patient should understand and participate as much as possible.

Safety Capacity

The plan must reduce danger, not simply satisfy a protocol.

Team Capacity

The next clinician must understand the reasoning.

System Capacity

The plan must be realistic in the available care environment.

Professional judgment asks:

What action will best protect the patient's capacities with the least avoidable harm?

5. The First Question: Is There Immediate Danger?

Professional judgment begins with danger.

Before nuanced reasoning, ask:

- Is the airway safe?
- Is breathing safe?
- Is circulation safe?
- Is consciousness safe?
- Is glucose safe?
- Is there sepsis?
- Is there bleeding?
- Is there stroke?
- Is there myocardial infarction?
- Is there pulmonary embolism?
- Is there severe electrolyte disturbance?
- Is there AKI?
- Is there overdose or withdrawal?
- Is there severe pain?
- Is there suicidal risk?
- Is there unsafe discharge?

The danger-first question is:

What must be stabilized or excluded before we can safely deliberate?

In danger, action may need to be rapid.

But even rapid action should remain reasoned.

6. Immediate Red Flags Requiring Strong Judgment

Strong professional judgment is needed when:

- the patient is unstable
- symptoms are vague but the patient looks unwell
- tests conflict with the clinical picture
- a guideline does not fit the patient
- several diseases interact
- treatment for one disease worsens another
- patient refuses important treatment
- family demands burdensome treatment
- capacity is uncertain
- goals of care are unclear
- discharge is being considered but function is unsafe

- follow-up is unreliable
- medicines are high-risk
- diagnosis is uncertain
- patient is repeatedly returning
- there is possible abuse, neglect, or coercion
- resources are limited
- the clinician feels uneasy

A red flag is not always a diagnosis.

Sometimes it is a signal that routine thinking is not enough.

7. The Professional Judgment Pathway

A practical pathway is:

- identify immediate danger
- define the syndrome
- assess severity and trajectory
- identify capacity failures
- identify coupling conditions
- review evidence and guidelines
- weigh benefit, harm, burden, and uncertainty
- include patient values and capacity
- decide the wise perturbation
- create a repair trajectory
- communicate and document reasoning
- reassess

This pathway keeps judgment from becoming vague.

It turns “clinical sense” into visible reasoning.

8. Judgment Begins With the Syndrome

When uncertain, name the syndrome.

Examples:

- acute breathlessness with hypoxia
- fever with confusion
- chest pain with exertional pattern
- falls with dizziness and polypharmacy
- chronic pain with sleep failure and opioid risk
- advanced frailty with poor intake and functional collapse
- advanced heart failure with repeated admissions and changing goals

The syndrome tells you what kind of judgment is needed.

A label alone may mislead.

The phrase:

“This is heart failure.”

is less useful than:

“This is advanced heart failure with worsening renal function, frailty, repeated admissions, and a stated wish to avoid ICU.”

Professional judgment depends on the full pattern.

9. Judgment Weighs Probability and Consequence

A professional decision must consider both likelihood and seriousness.

Ask:

- What is most likely?
- What is most dangerous if missed?
- What is reversible?
- What is time-sensitive?
- What is low risk to treat now?
- What is high risk to treat unnecessarily?
- What can safely wait?
- What cannot safely wait?

Example:

A young patient with pleuritic chest pain may most likely have musculoskeletal pain.

But if risk factors, tachycardia, hypoxia, or concerning history are present, pulmonary embolism must be considered.

Professional judgment does not test everyone for everything.

It matches action to probability, consequence, and context.

10. Judgment Balances Benefit and Harm

Every intervention can help or harm.

Antibiotics can treat infection and cause allergy, diarrhea, resistance, or drug interactions.
Diuretics can relieve congestion and cause AKI, low sodium, or falls.
Insulin can control hyperglycemia and cause hypoglycemia.
Anticoagulants can prevent stroke and cause bleeding.
Opioids can relieve pain and cause constipation, sedation, falls, dependence, or respiratory depression.
Hospitalization can save life and cause delirium, deconditioning, infection, or loss of confidence.
A scan can reveal danger and reveal incidental findings that create anxiety or unnecessary procedures.

Professional judgment asks:

Is the expected benefit worth the likely harm and burden for this patient now?

11. Judgment Includes Treatment Burden

Treatment burden is the work and suffering caused by care.

It includes:

- tablets
- injections
- monitoring
- clinic visits
- blood tests
- transport
- cost
- side effects
- dietary restrictions
- anxiety
- procedures
- hospital time
- caregiver workload
- loss of independence
- confusion from complex plans

A treatment may be medically effective but personally overwhelming.

Professional judgment asks:

Can this patient realistically carry the burden of this plan?

If not, the plan must be simplified, supported, or reconsidered.

12. Judgment Includes Time Horizon

Some treatments help quickly.

Others help over months or years.

Examples:

Immediate Benefit

- oxygen for hypoxia
- glucose correction
- antibiotics for serious bacterial infection
- analgesia for severe pain
- diuresis for pulmonary edema
- treatment of severe hyperkalemia

Medium-Term Benefit

- rehabilitation
- nutrition support
- medication adjustment

- blood pressure stabilization
- mood treatment
- heart failure optimization

Long-Term Benefit

- some preventive medicines
- some screening tests
- some risk-reduction interventions
- some chronic disease targets

Professional judgment asks:

Is the patient likely to benefit within a meaningful timeframe?

In advanced frailty or serious illness, long-term preventive treatments may become less important than present comfort, safety, and function.

In a robust younger patient, long-term prevention may be central.

Time horizon matters.

13. Judgment Includes Patient Values

Professional judgment is incomplete without asking what matters to the patient.

Examples:

One patient may accept bleeding risk to reduce stroke risk.
Another may decline anticoagulation because falls and bleeding feel unacceptable.
One patient may choose dialysis to live longer.
Another may decline dialysis because travel, procedures, and fatigue conflict with desired life.
One patient may accept ICU care.
Another may value being awake, at home, and with family more than life extension through machines.

Ask:

- What matters most?
- What are you hoping for?
- What are you afraid of?
- What outcome would be unacceptable?
- What burden would be too much?
- What would make treatment worthwhile?
- What does a good day look like?

Professional judgment joins medical reality with patient values.

14. Judgment Includes Capacity

Before relying on patient choice, assess whether the patient has capacity for the decision.

Capacity may be impaired by:

- delirium
- dementia

- severe depression
- psychosis
- intoxication
- withdrawal
- hypoxia
- hypoglycemia
- severe pain
- medication toxicity
- language barriers
- hearing or vision impairment

Support capacity first.

Use:

- plain language
- interpreter
- hearing aids
- glasses
- quiet environment
- family support with consent
- written information
- time
- treatment of reversible causes

Capacity is decision-specific.

A patient may lack capacity for complex surgery but still express comfort preferences.

Judgment protects agency without ignoring safety.

15. Judgment Includes Practical Reality

A good plan must be possible.

Ask:

- Can the patient afford medicines?
- Can they obtain them?
- Can they attend follow-up?
- Can they understand instructions?
- Can they store medicines?
- Can they swallow tablets?
- Can they use inhalers?
- Can they check glucose?
- Is transport available?

Is caregiver support available?

Is the home safe?

Are there food or housing barriers?

Is the health system able to deliver the plan?

A medically elegant plan that cannot happen is not a good plan.

Professional judgment must fit reality.

16. Judgment and Guidelines

Guidelines should inform judgment.

They help prevent:

outdated practice

personal bias

unsafe variation

missed evidence

overconfidence

But guidelines must be interpreted.

Ask:

Does the patient match the population?

Are there exclusions?

Does frailty change risk?

Does multimorbidity create conflict?

Does kidney or liver function matter?

Does the patient's goal fit the recommendation?

Is the treatment available?

Is monitoring available?

Is the guideline recommendation strong or conditional?

Does the situation involve emergency danger?

Guidelines are maps.

Professional judgment is navigation.

17. Judgment and Experience

Experience is valuable.

Experienced clinicians recognize patterns, danger, and subtle deterioration.

But experience can also create bias.

A clinician may think:

"I have seen this before."

Sometimes that helps.

Sometimes it blinds.

Professional judgment uses experience but remains humble.

Ask:

- Am I anchoring?
- Am I assuming?
- What else could this be?
- What does not fit?
- Would I decide differently if this were another patient?
- What would a colleague notice?
- Do I need help?

Experience should sharpen attention, not close it.

18. Judgment and Emotion

Clinician emotion affects judgment.

Emotions may include:

- fear
- irritation
- fatigue
- urgency
- overconfidence
- helplessness
- guilt
- sympathy
- frustration
- pressure to please
- fear of complaint
- fear of missing diagnosis
- desire to discharge quickly
- desire to do something even when nothing helps

Emotion is not bad.

But unexamined emotion can distort judgment.

Ask:

- Why am I reacting strongly?
- Am I avoiding a difficult conversation?
- Am I over-treating because I feel helpless?
- Am I under-treating because I feel frustrated?
- Am I discharging because the system is pressured?

Am I ordering tests because I am anxious rather than because they help?

Professional judgment includes self-awareness.

19. Judgment and Bias

Bias threatens judgment.

Bias may involve:

- age
- sex
- race or ethnicity
- disability
- mental illness
- addiction
- weight
- poverty
- language
- frequent attendance
- chronic pain
- cognitive impairment
- social status

Bias can cause clinicians to dismiss symptoms, undertreat pain, overdiagnose anxiety, miss serious disease, blame patients, or fail to explain.

Antidote questions:

- Would I take this symptom more seriously in another patient?
- Have I considered danger fairly?
- Have I listened fully?
- Have I used an interpreter?
- Am I labeling behavior instead of diagnosing barriers?
- Have I asked what the patient is afraid of?
- Have I explained the plan clearly?

Fairness is part of professional judgment.

20. Judgment and Resource Limits

Medicine often occurs under resource limits.

Resources may include:

- beds
- staff
- time

- medicines
- imaging
- specialists
- transport
- oxygen
- monitoring
- community care
- palliative support
- rehabilitation
- family support

Professional judgment under resource limits asks:

- Who is in greatest danger?
- What action gives the most urgent benefit?
- What can safely wait?
- What lower-burden alternative exists?
- What must be escalated?
- What must be communicated honestly?
- What plan is realistic?
- What safety-net is needed?

Resource limits do not remove ethical responsibility.

They make transparent prioritization more important.

21. Judgment and “Doing Something”

Clinicians often feel pressure to do something.

But not every action helps.

Unwise action may include:

- unnecessary antibiotics
- unnecessary imaging
- excessive blood tests
- harmful sedatives
- escalating opioids without a functional plan
- continuing futile treatment
- admitting when home care would be safer
- discharging when function is unsafe
- adding medicines for side effects
- treating numbers instead of patients

Sometimes the best judgment is active non-intervention:

- observe
- explain
- safety-net
- deprescribe
- stop a harmful medicine
- wait with review
- focus on comfort
- involve family
- clarify goals

Not doing a harmful thing is still care.

22. Judgment and Escalation

Good judgment includes knowing when to ask for help.

Escalate when:

- danger is present
- diagnosis is unclear and serious
- patient is worsening
- treatment is failing
- procedure or specialist input is needed
- capacity or ethics is complex
- family conflict is high
- clinician is unsure
- the patient needs a higher level of care
- local protocol requires senior review
- discharge feels unsafe

A good escalation says:

- what is happening
- why you are worried
- what you think it may be
- what has been done
- what remains uncertain
- what help you need
- how urgent it is

Escalation is professional strength, not weakness.

23. Judgment and De-Escalation

Professional judgment also includes knowing when to step down.

De-escalation may mean:

- stopping unnecessary antibiotics
- reducing oxygen when no longer needed
- stopping monitoring that does not change care
- removing catheters or lines
- switching IV to oral medicines when safe
- reducing sedatives
- simplifying medicines
- moving from ICU to ward
- moving from hospital to home
- shifting from disease-directed treatment to comfort-focused care
- stopping tests that no longer fit goals

De-escalation is not neglect.

It is reducing burden when intensity no longer helps.

24. Judgment and Documentation

Professional judgment should be documented.

Good documentation includes:

- clinical syndrome
- key findings
- danger considered
- working diagnosis
- uncertainty
- rationale for treatment
- rationale for not treating or not testing
- patient values
- capacity assessment where relevant
- shared decision-making
- escalation or senior discussion
- safety-netting
- follow-up plan
- pending results and responsibility

If the decision is complex, document why.

The next clinician should be able to understand the reasoning.

25. Judgment and Accountability

Professional judgment carries accountability.

This does not mean the clinician must always be right.

It means the clinician must:

- reason carefully
- act honestly
- communicate clearly
- follow up results
- respect patients
- seek help when needed
- revise decisions when evidence changes
- disclose errors appropriately
- learn from outcomes

Accountability is not blame.

It is responsibility for the process of care.

26. Judgment in Discharge Decisions

Discharge requires judgment.

Ask:

- Is danger stabilized or excluded?
- Are vital signs safe?
- Is diagnosis clear enough?
- If uncertain, is safety-net adequate?
- Can the patient eat and drink?
- Can the patient walk or transfer safely?
- Can they take medicines?
- Do they understand the plan?
- Is cognition safe?
- Is pain controlled?
- Are follow-up and pending results arranged?
- Is home safe?
- Is caregiver support adequate?
- Is the patient likely to return if worse?

Discharge is not safe simply because tests are normal.

Discharge is safe when the patient can continue repair outside the clinical setting.

27. Judgment in Admission Decisions

Admission may be needed for:

- unstable vital signs

- severe symptoms
- uncertain dangerous diagnosis
- need for IV therapy or monitoring
- inability to eat or drink
- AKI or electrolyte danger
- delirium
- unsafe mobility
- uncontrolled pain
- high-risk social situation
- failed outpatient treatment
- frailty with functional collapse
- need for urgent investigation
- caregiver breakdown

But admission can also harm through:

- delirium
- deconditioning
- falls
- infection
- sleep disruption
- loss of independence
- cost
- family disruption

Professional judgment asks:

Will admission improve safety and repair more than it will harm this patient?

28. Judgment in Refusal of Treatment

When a patient refuses treatment, judgment must slow down.

Ask:

- Does the patient have capacity?
- Do they understand the risk?
- What are they afraid of?
- Is there mistrust?
- Is cost a barrier?
- Is there misinformation?
- Is pain, delirium, intoxication, or depression affecting choice?
- Is there coercion?
- Are there acceptable alternatives?

Can harm be reduced?

What safety-net is needed?

A capable patient can refuse treatment.

But the clinician remains responsible for explanation, alternatives, documentation, and ongoing care.

29. Judgment in Serious Illness

In serious illness, professional judgment must include prognosis and goals.

Ask:

Is treatment still helping?

Is the patient recovering?

Is the body losing reserve?

Are repeated admissions improving life or prolonging suffering?

What does the patient understand?

What matters most now?

What would be too much?

Should palliative care be involved?

Should escalation limits be discussed?

Should treatment be time-limited?

Is comfort the priority?

Serious illness judgment requires courage.

It may be easier to continue treatment than to talk honestly.

But honest, compassionate judgment protects dignity.

30. Judgment and Time-Limited Trials

When uncertain, a time-limited trial can be wise.

Define:

what treatment is being tried

what it is meant to achieve

how long it will be tried

what improvement would look like

what harm would stop it

when review will occur

what happens if it fails

Example:

“We will try diuresis for 48 hours to see whether breathlessness improves without worsening kidney function. If breathing does not improve or kidneys worsen, we will reconsider the diagnosis and plan.”

Time-limited trials prevent endless treatment drift.

They also reassure patients that treatment is purposeful.

31. Judgment and Repair Trajectory

Professional judgment should define a repair trajectory.

Ask:

- What should improve?
- How soon?
- What markers show benefit?
- What markers show harm?
- What function should return?
- What symptom should lessen?
- What lab should stabilize?
- What would mean the plan is failing?
- When should we reassess?

Examples:

Pneumonia

Repair trajectory:

- fever settles
- breathing improves
- oxygenation stabilizes
- appetite returns
- delirium clears
- mobility improves

Heart Failure

Repair trajectory:

- breathlessness improves
- edema reduces
- weight or fluid status improves where monitored
- kidney function remains safe
- dizziness does not worsen
- walking improves

Depression

Repair trajectory:

- safety improves
- sleep improves
- appetite improves
- activity returns
- follow-up maintained

suicidal thoughts reduce

If no repair trajectory exists, the plan may be incomplete.

32. Worked Case 1: Guideline Versus Frailty

An 87-year-old woman with frailty, recurrent falls, CKD, diabetes, and mild dementia has mildly elevated glucose. A strict disease-focused plan would intensify treatment.

Judgment Problem

Guideline-based glucose intensification may increase hypoglycemia, falls, and confusion.

Capacity Failure

Glucose regulation, cognition, mobility safety, medication agency.

Coupling Conditions

Frailty, CKD, dementia, falls, poor intake, polypharmacy.

Professional Judgment

Prioritize avoidance of hypoglycemia and treatment burden. Simplify regimen according to local guidance. Involve caregiver. Monitor symptoms and safety rather than chasing strict targets.

Repair Trajectory

No hypoglycemia, fewer falls, stable symptoms, simpler medicine plan, caregiver understands.

33. Worked Case 2: Normal Tests but Persistent Concern

A 60-year-old man presents with chest discomfort. Initial tests are reassuring, but he has exertional symptoms, risk factors, and looks unwell.

Judgment Problem

Whether to discharge based on reassuring first tests or continue observation.

Capacity Failure

Circulation risk, diagnostic uncertainty, safety.

Coupling Conditions

Risk factors, exertional pattern, early presentation, patient anxiety, test timing.

Professional Judgment

Do not rely on one reassuring result. Follow local chest pain pathway, repeat assessment, observe or escalate as needed. Communicate uncertainty.

Repair Trajectory

Cardiac danger excluded or treated, patient understands plan, no unsafe premature discharge.

34. Worked Case 3: Admission Versus Home Care

A 79-year-old man with advanced COPD has mild worsening breathlessness. Hospital admission may help monitoring, but previous admissions caused delirium and severe deconditioning.

Judgment Problem

Whether admission helps more than harms.

Capacity Failure

Ventilation, mobility, cognition, agency, home safety.

Coupling Conditions

COPD, frailty, prior delirium, home support, oxygen status, severity, patient preference.

Professional Judgment

Assess severity carefully. If danger is low and home support is strong, consider supported outpatient plan with safety-net and rapid review. If oxygenation, infection, exhaustion, or home safety is concerning, admit while actively preventing delirium and deconditioning.

Repair Trajectory

Breathlessness improves, delirium avoided, mobility protected, escalation plan clear.

35. Worked Case 4: Family Requests ICU

A patient with advanced dementia, recurrent aspiration, severe frailty, and active dying is minimally responsive. Family requests ICU and “everything.”

Judgment Problem

Balancing family distress with medical appropriateness and patient dignity.

Capacity Failure

Patient agency, comfort, family understanding, goal alignment.

Coupling Conditions

Advanced dementia, dying phase, family grief, unclear prior communication, cultural meanings.

Professional Judgment

Recognize dying. Explain clearly and compassionately. Recommend comfort-focused care if ICU would not reverse dying and would add burden. Explore patient’s prior wishes. Offer symptom relief, spiritual care, and family support.

Repair Trajectory

Symptoms controlled, family understands, burdensome escalation avoided, dignity preserved.

36. Worked Case 5: Patient Refuses Admission

A 55-year-old woman with pneumonia and low oxygen saturation refuses admission because she must care for her disabled son.

Judgment Problem

Respecting autonomy while addressing serious danger and social reality.

Capacity Failure

Oxygenation, understanding, caregiving responsibility, safety.

Coupling Conditions

Pneumonia, hypoxia, family caregiving, fear of abandonment of son, possible lack of social support.

Professional Judgment

Assess capacity. Explain risks clearly. Explore the caregiving barrier. Involve social support, family, or community resources if available. Recommend admission if medically needed. If she still refuses with capacity, create the safest possible alternative plan, document, and safety-net urgently.

Repair Trajectory

Either admission becomes possible through support, or outpatient plan is as safe as possible with clear risk documentation and rapid review.

37. Worked Case 6: Pain Treatment and Opioid Risk

A 62-year-old man with chronic pain asks for stronger opioids. He has depression, alcohol use, falls, and poor sleep.

Judgment Problem

Treating real pain without causing overdose, dependence, falls, or worsening function.

Capacity Failure

Pain regulation, mood, sleep, mobility safety, medicine safety, agency.

Coupling Conditions

Chronic pain, depression, alcohol, falls, sleep disturbance, possible dependence, patient fear of being dismissed.

Professional Judgment

Validate pain. Assess suicide risk, alcohol use, current medicines, function, and red flags. Avoid unsafe escalation. Offer broader pain plan with mood, sleep, movement, safer medicines, and close follow-up. Consider specialist support where available.

Repair Trajectory

Patient feels believed, overdose risk reduced, pain plan safer, function improves, mood addressed.

38. Common Student Pitfalls

Pitfall 1: Thinking Judgment Means Ignoring Guidelines

Judgment applies guidelines wisely; it does not discard evidence.

Pitfall 2: Following Guidelines Without Seeing the Patient

Guidelines must fit frailty, multimorbidity, goals, and practical reality.

Pitfall 3: Confusing Confidence With Competence

Strong judgment includes humility and reassessment.

Pitfall 4: Failing to Ask What Matters

A technically correct plan may be wrong for the person.

Pitfall 5: Ignoring Treatment Burden

The plan must be livable.

Pitfall 6: Avoiding Escalation

Asking for help is good judgment.

Pitfall 7: Avoiding De-Escalation

Stopping burdensome treatment can be wise care.

Pitfall 8: Not Documenting Reasoning

Complex decisions need clear documentation.

39. Clinical Practice Box

When exercising professional judgment, complete this structure:

Immediate danger:
What must be stabilized or excluded now?

Clinical syndrome:
What is the pattern, not just the label?

Capacity failures:
Oxygenation, circulation, energy, clearance, defense, cognition, mobility, agency, comfort?

Coupling conditions:
Frailty, multimorbidity, medicines, social support, cost, cognition, culture, goals, resources.

Evidence and guidelines:
What do they recommend? Do they fit this patient?

Benefit, harm, burden:
What will this action help? What could it harm? What burden does it add?

Patient values:
What matters most? What outcome is unacceptable?

Decision:
Treat, test, observe, admit, discharge, escalate, de-escalate, refer, deprescribe, or comfort-focus?

Repair trajectory:
What should improve? When? What would show harm or failure?

Communication and documentation:
What was explained, decided, documented, and handed over?

40. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recurrent falls presents with breathlessness, dizziness, poor intake, and worsening kidney function. Her oxygen saturation is borderline, she has mild edema, she is taking diuretics, antihypertensives, diabetes medicines, NSAIDs, opioids, and a sleeping tablet. Her daughter says she is not safe at home, but the patient wants to leave.

Apply the professional judgment approach.

Immediate Danger

Borderline oxygenation, AKI, possible heart failure, dehydration, medication toxicity, hypoglycemia, falls, delirium risk, unsafe discharge.

Clinical Syndrome

Multimorbid frail patient with acute capacity decline involving oxygenation, circulation, clearance, mobility, cognition risk, and medicine safety.

Coupling Conditions

CKD, heart failure, diabetes, frailty, mild dementia, chronic pain, polypharmacy, NSAID exposure, opioid and sedative risk, poor intake, caregiver concern, patient preference to leave.

Judgment Needed

This case cannot be managed by one disease guideline alone. The decision must balance cardiopulmonary danger, kidney safety, medication harm, functional safety, patient agency, and home support.

Professional Judgment

Assess capacity. Stabilize and investigate danger. Review medicines urgently, especially NSAIDs, diuretics, antihypertensives, diabetes medicines, opioids, and sedative. Assess volume status, glucose, renal function, electrolytes, oxygenation, cognition, falls injury, and home support. If discharge is unsafe because of AKI, borderline oxygenation, falls, confusion risk, or inability to manage medicines, recommend admission or observation. If the patient refuses with capacity, explain risks, involve daughter with consent, simplify medicines, arrange urgent follow-up, and document carefully.

Repair Trajectory

Oxygenation stabilizes, kidney function improves, dizziness reduces, medicines simplified, falls risk addressed, pain treated safely, eating improves, daughter understands plan, discharge occurs only when repair can continue safely.

41. Student Takeaway

Professional judgment becomes easier when the clinician asks:

What is dangerous now?
What is the real clinical syndrome?
Which capacities are failing?
What coupling conditions make this patient different from the textbook case?
What do evidence and guidelines recommend, and do they fit?
What are the benefits, harms, burdens, and uncertainties?
What matters most to the patient?
Is the plan practically possible?
Should we treat, test, observe, admit, discharge, escalate, de-escalate, or focus on comfort?
What repair trajectory will tell us whether the judgment was wise?

Professional judgment is not instinct alone.

It is disciplined wisdom under uncertainty.

The safe clinician uses evidence without becoming rigid, listens without abandoning expertise, acts without rushing blindly, pauses without neglecting danger, escalates without shame, de-escalates without fear, and always asks whether the plan truly serves the living patient before them.

Chapter 66. Medical Ethics Made Easy

Medical ethics is the disciplined practice of asking what is right, safe, respectful, fair, and life-serving in clinical care.

Patients do not usually say:

“I have an ethical concern.”

They say:

“No one asked me what I wanted.”
“I do not understand why this is being done.”
“My family wants one thing, but I want another.”
“I do not want more treatment.”
“Please do everything.”
“I cannot afford this medicine.”
“I feel judged.”
“Is this fair?”
“Who decides?”
“Am I allowed to refuse?”

Clinicians may think:

“The patient refuses treatment, but I think they need it.”
“The family wants ICU, but the patient is dying.”
“The patient lacks capacity. Who decides?”
“The treatment may help, but the burden is huge.”
“Resources are limited. How do we prioritize fairly?”
“The patient is at risk, but confidentiality matters.”
“I am not sure what the right thing is.”

Medical ethics is central to Internal Medicine because every clinical act affects a person’s body, choices, dignity, relationships, and future.

A blood test may seem simple, but it still requires purpose.
A medicine may help one condition and harm another.
A hospitalization may save life and destroy independence.
A discharge may be medically efficient but socially unsafe.
A family request may come from love but conflict with the patient’s wishes.
A patient refusal may be autonomous or may reflect fear, misunderstanding, coercion, delirium, depression, or lack of access.
A technically possible treatment may no longer be ethically proportionate.

The first task is not to memorize ethical vocabulary.

The deeper question is:

What action best protects the patient’s life, dignity, agency, safety, relationships, and fair access to care?

Medical ethics becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Medical Ethics?

Medical ethics is practical moral reasoning in clinical care.

It asks:

What is the patient’s medical situation?

What is the patient's capacity?

What does the patient understand?

What does the patient value?

What benefits are possible?

What harms are possible?

What burdens are being imposed?

Who should decide?

Is consent valid?

Is refusal informed?

Is confidentiality protected?

Is safety at risk?

Is the plan fair?

Are resources being used responsibly?

Is the patient being treated with dignity?

Are we doing something because it helps, or because we are afraid not to act?

Ethics is not separate from medicine.

Ethics is the question of whether medicine is being used rightly.

2. The Four Common Principles

A simple way to begin is with four principles:

Autonomy

Respect the patient's right to make informed decisions about their own body and care.

Beneficence

Act to benefit the patient.

Non-Maleficence

Avoid causing unnecessary harm.

Justice

Treat patients fairly and use resources responsibly.

These principles are useful.

But real cases become difficult because the principles may conflict.

A patient may autonomously refuse a beneficial treatment.
A treatment may benefit disease but harm dignity.
A medicine may help one patient but consume scarce resources.
A family may request treatment that clinicians believe will cause more harm than benefit.

Ethics becomes practical when these principles are applied to the living patient before you.

3. Ethics Is a Capacity Problem

Ethical problems often arise when capacities are threatened.

Agency Capacity

Can the patient understand, choose, and express values?

Safety Capacity

Is the patient at risk of serious harm?

Comfort Capacity

Is suffering being relieved or worsened?

Function Capacity

Will treatment preserve or destroy meaningful function?

Relationship Capacity

Are family, caregivers, and community involved appropriately?

System Capacity

Are resources available and used fairly?

Professional Capacity

Can the clinician act with integrity, honesty, and accountability?

Ethics asks:

How do we protect life-capacity without violating dignity, fairness, or agency?

4. The First Question: Is There Immediate Danger?

Ethics does not replace emergency care.

If there is immediate danger, stabilize first when appropriate.

Immediate danger includes:

- airway threat
- severe hypoxia
- shock
- severe hypoglycemia
- cardiac arrest
- stroke emergency
- sepsis
- major bleeding
- overdose
- severe withdrawal
- suicidal crisis
- violent danger
- severe delirium
- inability to protect self
- safeguarding emergency

But even emergencies have ethical dimensions.

Ask:

- Is the patient capable of deciding?
- Is there an advance directive or known wish?

- Is treatment urgently needed to prevent serious harm?
- Is the intervention proportionate?
- Is restraint or sedation necessary and least restrictive?
- Who must be informed?
- What should be documented?

The danger-first question is:

What must be done now to preserve life and safety while respecting the person as much as possible?

5. Immediate Ethical Red Flags

Ethical red flags include:

- treatment without consent when consent is possible
- patient refusal not explored
- capacity assumed without assessment
- family overriding a capable patient
- patient coerced by family or clinician
- confidentiality breached without justification
- unsafe discharge due to social pressure or bed pressure
- burdensome treatment continued without realistic benefit
- pain or distress undertreated
- patient treated differently because of age, disability, race, addiction, mental illness, poverty, weight, or language
- interpreter needed but not used
- goals of care unclear in serious illness
- resuscitation status unclear in advanced illness
- patient lacks capacity and no decision-maker or best-interest process is used
- safeguarding concern ignored
- clinician moral distress ignored
- resource limitation hidden rather than addressed honestly

When these are present, pause.

The care plan may be ethically unsafe.

6. Autonomy Made Easy

Autonomy means the patient has the right to make informed choices.

Respecting autonomy requires more than asking:

“Do you agree?”

It requires:

- information

- understanding
- voluntariness
- capacity
- freedom from coercion
- opportunity to ask questions
- respect for refusal
- respect for values

Autonomy does not mean the clinician must provide any requested treatment.

It means the patient's informed choices and values matter.

A patient may say yes because they feel pressured.

A patient may say no because they misunderstand.

A patient may appear difficult because they are afraid.

Autonomy requires conversation.

7. Informed Consent

Informed consent means the patient agrees to a treatment, test, or procedure after understanding relevant information.

Consent should include:

- what is being proposed
- why it is recommended
- expected benefits
- important risks
- alternatives
- option of no treatment where relevant
- what may happen without treatment
- practical burdens
- opportunity for questions
- voluntary agreement

The depth of consent depends on the situation.

A simple blood test requires less discussion than high-risk surgery, chemotherapy, dialysis, anticoagulation, or ICU ventilation.

Consent is not a signature.

A signature may document consent, but the ethical act is understanding and voluntary agreement.

8. Refusal of Treatment

A capable patient may refuse treatment, even if the clinician disagrees.

But refusal must be informed.

When a patient refuses, ask:

What do you understand about the condition?

What worries you about the treatment?

What do you think may happen if we do not treat?

Are you feeling pressured by anyone?

Is cost a barrier?

Is fear or previous trauma involved?

Is religion or culture important here?

Do you need more time?

Would another option be acceptable?

Can we reduce the risk in another way?

Do not respond to refusal with anger.

Refusal is an invitation to understand.

If the patient has capacity and continues to refuse, respect the decision, document carefully, offer alternatives, and maintain care.

Refusal of one treatment is not refusal of all care.

9. Decision-Making Capacity

Capacity is the ability to make a particular decision at a particular time.

It is not all-or-nothing.

A patient may have capacity to choose food but not to refuse emergency surgery.
A patient may have capacity in the morning but not during delirium at night.
A patient may understand simple treatment but not complex risk.

Capacity usually involves four abilities:

understand relevant information

retain it long enough to decide

weigh benefits and harms

communicate a choice

Capacity can be impaired by:

delirium

dementia

psychosis

severe depression

intoxication

withdrawal

hypoxia

hypoglycemia

severe pain

medication toxicity

- language barrier
- hearing or vision impairment

Before declaring incapacity, support capacity.

Use plain language.
Treat reversible causes.
Use interpreter support.
Provide hearing aids and glasses.
Reduce noise.
Allow time.
Involve trusted people with consent.
Choose the best time of day.

Ethically, the clinician should maximize capacity, not simply assess it.

10. When the Patient Lacks Capacity

When a patient lacks capacity, decisions should follow local law, professional guidance, advance directives, appointed decision-makers, and best-interest or substituted-judgment standards.

Ask:

- Is incapacity temporary or permanent?
- Can the decision wait until capacity improves?
- Is there an advance directive?
- Is there a legally appointed decision-maker?
- What did the patient previously say?
- What values guided the patient's life?
- What option best protects welfare and dignity?
- What are the benefits and burdens?
- What is least restrictive?
- Are family members in agreement?
- Is ethics or senior support needed?

Even if the patient lacks capacity, include them as much as possible.

They may still express comfort, fear, trust, distress, or preference.

The person does not disappear when capacity is impaired.

11. Beneficence Made Easy

Beneficence means acting for the patient's good.

But "good" must be interpreted carefully.

Good may mean:

- cure
- survival
- pain relief

- breathlessness relief
- preserved walking
- avoided stroke
- avoided bleeding
- home time
- mental clarity
- dignity
- spiritual peace
- family presence
- less treatment burden
- safer medicines
- honest prognosis

The clinician must not assume that biological survival is always the patient's highest good.

In early reversible illness, survival and recovery may be the obvious good.

In advanced illness, comfort and dignity may become the primary good.

Beneficence asks:

What benefit truly matters for this patient now?

12. Non-Maleficence Made Easy

Non-maleficence means avoiding unnecessary harm.

Medical harms include:

- side effects
- complications
- pain
- delirium
- falls
- infection
- bleeding
- AKI
- hypoglycemia
- over-sedation
- loss of independence
- treatment burden
- anxiety from over-testing
- false reassurance
- missed diagnosis
- unwanted escalation

- loss of dignity

Sometimes harm is unavoidable.

Surgery causes pain but may save life.
Chemotherapy causes side effects but may treat cancer.
Anticoagulation increases bleeding risk but may prevent stroke.

The ethical question is not whether a treatment has any harm.

The question is:

Is the likely benefit proportionate to the harm and burden?

13. Justice Made Easy

Justice means fairness.

Justice asks:

- Are patients treated equally when their clinical needs are equal?
- Are vulnerable patients protected?
- Are resources used responsibly?
- Are decisions free from discrimination?
- Are language, disability, poverty, or social barriers being addressed?
- Is access fair?
- Are scarce resources prioritized transparently?
- Are we over-treating one patient while neglecting another?
- Are we blaming patients for barriers outside their control?

Justice is not only about large systems.

It appears at the bedside.

A patient who cannot afford medicine needs a practical plan.
A patient who does not speak the clinician's language needs interpretation.
A patient with addiction deserves infection treatment and pain assessment.
A patient with dementia deserves dignity.
A poor patient deserves the same diagnostic seriousness as a wealthy one.

Fairness is clinical work.

14. Confidentiality

Confidentiality protects trust.

Patients share intimate information because they trust clinicians to guard it.

Confidential information may include:

- diagnosis
- medicines
- test results
- mental health
- substance use

- sexual health
- family issues
- finances
- immigration or legal concerns
- domestic violence
- reproductive health
- prognosis

Do not share information casually.

Do not discuss patients in public spaces.

Do not disclose to family without patient permission if the patient has capacity.

However, confidentiality is not absolute.

There may be situations where disclosure is required or justified to prevent serious harm, comply with law, protect vulnerable persons, or manage public health risks according to local rules.

When confidentiality must be breached, disclose the minimum necessary information and document the reason.

15. Truth-Telling

Truth-telling is central to trust.

Patients need honest information to make decisions.

But truth should be delivered with compassion and pacing.

Avoid false reassurance:

“You will be fine.”

when prognosis is uncertain.

Avoid brutal bluntness:

“There is nothing we can do.”

A better approach:

“I wish the situation were different. The treatment is not working in the way we hoped. I am worried time may be short. We will focus on comfort, dignity, and supporting you and your family.”

Truth-telling should be:

- clear
- compassionate
- paced
- responsive to emotion
- linked to a plan

Truth without support can overwhelm.

Support without truth can mislead.

Ethical communication needs both.

16. Privacy and Dignity

Dignity is not optional.

Protect dignity by:

- introducing yourself
- asking permission before examination
- exposing only what is necessary
- using curtains or private space
- explaining before touching
- involving chaperones where appropriate
- respecting modesty
- addressing the patient by preferred name
- not speaking over the patient
- not mocking or judging
- maintaining cleanliness
- supporting toileting and hygiene
- respecting cultural and spiritual practices

Dignity matters especially when patients are:

- confused
- frail
- dying
- incontinent
- dependent
- intoxicated
- mentally ill
- poor
- imprisoned
- stigmatized
- unable to speak

The ethical question is:

Would I feel this patient was treated as fully human if I were watching from the outside?

17. Proportionality

Proportionality means that treatment intensity should match likely benefit, burden, and goals.

A treatment may be technically possible but ethically disproportionate.

Examples:

- ICU for a dying patient when it cannot reverse the dying process
- repeated blood tests when they do not change comfort-focused care

high-risk surgery when benefit is very unlikely

tight glucose control in advanced frailty causing hypoglycemia

aggressive blood pressure lowering causing falls

feeding intervention causing distress in advanced dementia

escalating opioids without benefit and with rising harm

Proportionality asks:

Is this treatment worth what it asks of the patient?

18. Medical Futility and Non-Beneficial Treatment

The term “futility” can be emotionally charged.

It is often better to say:

“This treatment is not expected to achieve the goal we all want.”

Or:

“This treatment would not reverse the underlying illness and may cause more suffering.”

Non-beneficial treatment may include interventions that:

cannot achieve physiological effect

cannot achieve patient-valued goals

prolong dying without improving comfort

impose severe burden with little realistic benefit

conflict with known patient wishes

When treatment is non-beneficial, the clinician should not present it as an equal option.

Instead, explain and recommend an alternative plan focused on what can still help.

19. Withholding and Withdrawing Treatment

Ethically, withholding a treatment and withdrawing a treatment can both be appropriate when the treatment is not beneficial, is too burdensome, or does not fit the patient’s goals.

Families may feel withdrawal is more difficult.

Explain:

“We are not stopping care. We are stopping a treatment that is no longer helping and is adding burden. We will continue active care for comfort.”

Examples may include stopping:

non-beneficial ventilation

burdensome dialysis

ineffective antibiotics

long-term preventive medicines near death

artificial hydration that worsens secretions or edema

monitoring that causes distress without changing care

The ethical focus is not simply whether treatment was started.

It is whether continuing treatment still serves the patient.

20. Resuscitation Ethics

CPR decisions are ethically complex because CPR is often misunderstood.

Patients and families may think CPR reliably restores life.

In advanced illness, CPR may be very unlikely to restore meaningful recovery and may cause injury.

Discuss CPR in relation to:

- underlying illness
- likelihood of success
- expected outcome
- patient values
- burdens
- goals of care

Avoid:

“Do you want everything done?”

Say:

“If your heart were to stop because this illness is worsening, CPR would not reverse the underlying problem and would likely cause harm. I recommend that we allow a natural death and focus on comfort.”

Resuscitation decisions should be documented and communicated.

21. Ethics of Risk

Many decisions involve risk.

Ethically, risk should not be hidden.

Examples:

- anticoagulation and bleeding
- opioid treatment and overdose
- insulin and hypoglycemia
- discharge and deterioration
- surgery and complications
- refusing treatment and disease progression
- hospitalization and delirium
- no hospitalization and home risk

Ethical risk communication includes:

- likely benefit
- important harms
- uncertainty
- alternatives

- patient values
- safety-net
- review plan

Patients do not need every technical detail.

They need enough relevant information to make an informed decision.

22. Ethics of Discharge

Discharge is an ethical decision.

Unsafe discharge may violate beneficence and non-maleficence.

Overly cautious admission may cause harm and use scarce resources.

Before discharge, ask:

- Is the patient clinically stable?
- Is diagnosis clear enough?
- Is uncertainty safety-netted?
- Can the patient understand the plan?
- Can medicines be obtained and taken?
- Is home safe?
- Is follow-up realistic?
- Are caregivers prepared?
- Are pending results owned?
- Is the patient being discharged because it is safe or because the system is pressured?

A discharge plan must respect both patient welfare and system reality.

Ethical discharge means repair can continue safely outside hospital.

23. Ethics of Resource Allocation

Resources are limited.

Beds, medicines, staff, imaging, oxygen, ICU, blood products, dialysis, and specialist services may not be equally available.

Ethical resource allocation should be:

- clinically justified
- transparent
- consistent
- based on need and likely benefit
- free from discrimination
- responsive to urgency
- documented where difficult
- supported by policy where available

Clinicians should avoid hidden rationing.

If resources are limited, communicate honestly and advocate for the patient while using resources responsibly.

Justice requires both compassion and fairness.

24. Ethics and Bias

Bias can make care unethical.

Patients may receive different care because of:

- age
- sex or gender
- race or ethnicity
- disability
- poverty
- mental illness
- addiction
- body size
- language
- immigration status
- education
- religion
- sexual orientation
- frequent attendance
- chronic pain
- cognitive impairment

Bias may lead to:

- dismissal of symptoms
- undertreatment of pain
- overuse of restraint
- underuse of interpreters
- less diagnostic testing
- less shared decision-making
- blame instead of barrier assessment
- poor communication

Ethical practice requires self-questioning:

Would I offer the same care if this patient were different?
Have I listened fully?
Have I assumed non-compliance instead of asking about barriers?
Have I used language that preserves dignity?

Ethics includes equity.

25. Ethics of Restraint and Sedation

Restraint and sedation may sometimes be considered when a patient is at immediate risk of serious harm and less restrictive measures have failed.

But they carry ethical risk.

They can cause:

- injury
- fear
- loss of dignity
- delirium worsening
- aspiration
- immobility
- trauma
- mistrust

Before restraint or sedation, ask:

- Is there immediate danger?
- Is delirium present?
- Is pain, hypoxia, retention, constipation, withdrawal, or fear driving behavior?
- Have less restrictive options been tried?
- Is this for patient safety or staff convenience?
- Is the intervention proportionate?
- Is monitoring in place?
- Can it be stopped as soon as possible?
- Is documentation clear?

The ethical goal is safety with the least restriction and greatest dignity possible.

26. Ethics of Pain Relief

Pain relief is an ethical duty.

Undertreating pain causes suffering.

Overtreating pain with unsafe medicines can cause harm.

Ethical pain care asks:

- What is causing the pain?
- Is there danger?
- What is the patient's suffering?
- What medicines are safe?
- What non-medicine supports help?
- Is the patient being believed?

- Is there addiction or dependence risk?
- Are we avoiding pain treatment because of stigma?
- Are we escalating opioids because we feel helpless?
- What functional goal matters?

Pain care requires compassion and safety together.

27. Ethics of Addiction Care

Patients with addiction deserve respectful care.

Ethical addiction care includes:

- nonjudgmental language
- treatment of medical illness
- pain assessment
- withdrawal prevention
- overdose prevention
- harm reduction
- confidentiality
- safeguarding when needed
- honest discussion of risk
- referral or treatment support
- avoidance of abandonment

Stigma is unethical when it blocks care.

A person with addiction is still a person with dignity, pain, fear, illness, and hope.

28. Ethics of Palliative and End-of-Life Care

At the end of life, ethics centers on:

- comfort
- dignity
- truth
- proportionality
- patient wishes
- family support
- relief of suffering
- avoiding burdensome non-beneficial treatment
- spiritual and cultural care
- fair use of resources
- clear documentation

Ethical end-of-life care does not hasten death through neglect.

It allows the natural dying process while actively treating suffering.

The question is:

Are we caring for the person, or are we continuing interventions because we are unable to face dying?

29. Moral Distress

Moral distress occurs when clinicians believe they know the ethically right action but feel unable to do it because of system pressures, hierarchy, family demands, resource limits, or institutional culture.

Examples:

- continuing burdensome treatment felt to be non-beneficial
- discharging a patient to unsafe conditions
- inadequate staffing causing poor care
- inability to provide needed medicines
- lack of palliative support
- family pressure overriding patient wishes
- resource limits preventing ideal care

Moral distress should not be ignored.

Clinicians should seek:

- senior discussion
- ethics consultation where available
- team debrief
- documentation
- advocacy
- policy improvement
- peer support

Ethical practice requires caring for clinicians too.

A morally injured team cannot provide life-coherent care indefinitely.

30. Ethics Consultation and Escalation

Seek ethics or senior support when:

- capacity is disputed
- family conflict is severe
- treatment seems non-beneficial but demanded
- patient refusal creates serious risk
- confidentiality conflict exists
- safeguarding concern is complex
- resource allocation is difficult
- cultural conflict affects care

- clinicians disagree about the right plan
- moral distress is high
- legal uncertainty exists

Escalation is not failure.

It is recognition that some ethical problems need shared wisdom.

31. Documentation in Ethical Decisions

Document ethical reasoning carefully.

Include:

- patient's condition
- capacity assessment
- patient's expressed wishes
- information given
- risks and benefits discussed
- family or surrogate involvement
- advance directives or prior wishes
- clinician recommendation
- decision made
- dissent or disagreement
- best-interest reasoning where relevant
- escalation or ethics consultation
- plan for review
- communication with team

Good documentation protects continuity, transparency, and accountability.

32. Repair Trajectory in Medical Ethics

Ethical repair is shown when:

- patient understands the plan
- consent is valid
- refusal is informed
- capacity is assessed and supported
- family role is appropriate
- suffering is relieved
- dignity is protected
- treatment burden is proportionate
- goals of care are clear
- resources are used fairly

bias is challenged

confidentiality is protected

safeguarding concerns are addressed

disagreement is handled respectfully

decisions are documented

clinician moral distress is acknowledged

care aligns with the patient's values and clinical reality

Ethical care is not always easy.

But it should become more transparent, respectful, and coherent.

33. Worked Case 1: Refusal of Admission

A 62-year-old woman with pneumonia and low oxygen saturation refuses admission because she cares for her disabled husband at home.

Ethical Problem

Autonomy, beneficence, non-maleficence, caregiver responsibility, and safety conflict.

Capacity Question

Can she understand the risk of refusing admission, retain information, weigh consequences, and communicate a choice?

Coupling Conditions

Hypoxia, infection, caregiving burden, fear, possible lack of support, financial or family pressure.

Wise Ethical Response

Assess capacity. Explain risks clearly. Explore the caregiving barrier. Involve social or family support if possible. Recommend admission if medically necessary. If she has capacity and still refuses, create the safest possible alternative plan, document, and maintain care.

Repair Trajectory

Either admission becomes possible through support, or refusal is informed, risks are reduced, and follow-up is urgent and clear.

34. Worked Case 2: Family Wants ICU, Patient Wanted Comfort

An 84-year-old man with advanced heart failure previously said he did not want machines. He is now delirious and deteriorating. His family requests ICU.

Ethical Problem

Respecting prior patient wishes while supporting distressed family.

Capacity Question

Current delirium likely impairs decision-making capacity.

Coupling Conditions

Advanced illness, prior expressed wishes, family fear, possible guilt, unclear documentation.

Wise Ethical Response

Clarify prior wishes and any documented advance plan. Explain prognosis and ICU burdens. Recommend care consistent with the patient's values. Provide active comfort care and family support. Document discussion.

Repair Trajectory

Patient's wishes honored, symptoms treated, family understands, unwanted escalation avoided.

35. Worked Case 3: Patient Lacks Capacity and Needs Surgery

A 79-year-old woman with delirium has a bowel obstruction. Surgery may save life but carries high risk. She cannot understand the decision.

Ethical Problem

Best-interest decision under incapacity.

Capacity Question

Delirium prevents informed decision-making now. Can surgery wait until capacity improves? If not, surrogate or best-interest process is needed.

Coupling Conditions

Acute surgical illness, delirium, frailty, prognosis, family knowledge of values, urgency.

Wise Ethical Response

Treat reversible contributors to delirium where possible, but do not delay urgent decision if dangerous. Seek surrogate input according to local law. Explain benefits, harms, alternatives, and likely outcomes. Decide based on patient's values and welfare. Document carefully.

Repair Trajectory

Decision made transparently, surgery or non-surgical plan aligns with best interests, family informed, delirium and comfort managed.

36. Worked Case 4: Confidentiality and Family Request

A capable patient with HIV asks that his family not be told. His sister asks the doctor directly, "What is his diagnosis?"

Ethical Problem

Confidentiality versus family desire for information.

Capacity Question

Patient has capacity and has clearly refused disclosure.

Coupling Conditions

Stigma, family involvement, possible public health considerations, trust.

Wise Ethical Response

Do not disclose confidential information without consent unless a specific legal or serious harm exception applies. Encourage patient to consider support if safe. Provide general information only with permission. Document preference.

Repair Trajectory

Confidentiality protected, trust maintained, patient supported, legal/public health obligations considered appropriately.

37. Worked Case 5: Non-Beneficial Treatment Near Death

A patient with advanced metastatic cancer is actively dying. Family requests repeated blood tests, IV fluids, and transfer to ICU.

Ethical Problem

Beneficence, non-maleficence, proportionality, family distress, end-of-life care.

Capacity Question

Patient is unconscious and lacks capacity. Prior wishes should guide care.

Coupling Conditions

Dying process, family fear, cultural meaning of treatment, possible prior poor communication.

Wise Ethical Response

Explain that the patient is dying and that ICU, repeated tests, and fluids will not reverse the process and may add burden. Recommend comfort-focused care. Treat symptoms actively. Invite family presence and spiritual support.

Repair Trajectory

Suffering relieved, burdensome interventions avoided, family supported, dying process dignified.

38. Worked Case 6: Addiction and Pain

A patient with opioid dependence presents with severe abdominal pain. Staff suspect drug-seeking and delay analgesia. He is later found to have pancreatitis.

Ethical Problem

Stigma, diagnostic fairness, pain relief, safety.

Capacity Question

Capacity may be intact unless intoxication, delirium, or severe distress prevents decision-making.

Coupling Conditions

Addiction history, pain, stigma, possible withdrawal, acute abdominal disease.

Wise Ethical Response

Assess pain and danger seriously. Treat acute pain safely. Evaluate for pancreatitis and other causes. Manage dependence or withdrawal risk. Avoid stigmatizing language. Document objective findings and plan.

Repair Trajectory

Pain treated, diagnosis made, trust repaired, staff learning occurs, future bias reduced.

39. Common Student Pitfalls

Pitfall 1: Thinking Ethics Only Means Consent Forms

Ethics includes dignity, fairness, suffering, capacity, truth, and proportionality.

Pitfall 2: Treating Autonomy as Abandonment

Patients need information and guidance, not unsupported choice.

Pitfall 3: Treating Beneficence as “Doctor Knows Best”

The patient’s values help define benefit.

Pitfall 4: Ignoring Treatment Burden

A treatment may be medically possible but ethically disproportionate.

Pitfall 5: Assuming Family Can Override a Capable Patient

A capable patient’s informed wishes come first.

Pitfall 6: Forgetting Capacity Is Decision-Specific

Capacity varies by decision, time, and condition.

Pitfall 7: Allowing Bias to Shape Care

Justice requires equal dignity and diagnostic seriousness.

Pitfall 8: Saying "Nothing More Can Be Done"

Comfort, dignity, truth, and support remain ethically required.

40. Clinical Practice Box

When facing an ethical issue, complete this structure:

Clinical situation:
What is happening medically? What is the trajectory?

Immediate danger:
What must be stabilized or relieved now?

Decision needed:
What exactly must be decided?

Capacity:
Does the patient have capacity for this decision? Can capacity be supported?

Patient wishes and values:
What has the patient said? What matters most? Are there prior wishes?

Benefits and harms:
What can treatment achieve? What burdens or harms may occur?

Alternatives:
What other options exist, including no treatment, comfort-focused care, or time-limited trial?

Family/surrogate role:
Who should be involved? Are they supporting or replacing patient voice?

Justice and fairness:
Are bias, access, cost, language, disability, or resource issues affecting care?

Ethical plan:
What action best protects dignity, agency, safety, proportionality, and fairness?

Documentation and review:
What was discussed, decided, documented, and scheduled for reassessment?

41. Mini-Case for Practice

An 88-year-old man with advanced dementia, severe frailty, recurrent aspiration pneumonia, CKD, and heart failure is admitted with another aspiration event. He is bedbound, no longer recognizes family, and is now minimally responsive. His daughter says he once told her he would not want to be kept alive by machines. His son insists on ICU, feeding tube placement, and "everything possible." The patient has no formal advance directive.

Apply the medical ethics approach.

Clinical Situation

Advanced dementia with recurrent aspiration, severe frailty, and likely end-stage decline.

Immediate Danger

Possible respiratory distress, infection, swallowing failure, family conflict, risk of burdensome non-beneficial treatment.

Capacity

The patient lacks capacity for complex decisions because of advanced dementia and reduced responsiveness.

Patient Wishes and Values

No formal document exists, but daughter reports prior statement against machines. Explore whether other family members heard similar values. Consider the patient's life, values, and prior preferences.

Benefits and Harms

ICU and feeding tube may not restore cognition, independence, or swallowing safety and may add distress, restraints, procedures, aspiration risk, and prolonged dying. Comfort-focused care can relieve breathlessness, pain, secretions, agitation, and family distress.

Family Role

Family should help represent the patient's values, not replace them with their own fear. The son's request may arise from grief, guilt, or misunderstanding.

Wise Ethical Plan

Hold a family meeting. Explain the medical reality clearly and compassionately. Ask what the patient would say if he could speak. Recommend care focused on comfort, dignity, mouth care, symptom relief, family presence, and avoidance of burdensome interventions that cannot achieve recovery. Offer spiritual support. Document the reasoning and plan.

Repair Trajectory

Patient remains comfortable, family better understands the illness, conflict reduces, prior wishes are honored as far as possible, burdensome treatment is avoided, and dying occurs with dignity and support.

42. Student Takeaway

Medical ethics becomes easier when the clinician asks:

What is happening medically?
What decision must be made?
Is there immediate danger or suffering?
Does the patient have capacity for this decision?
What does the patient understand and value?
What benefits are realistic?
What harms and burdens are likely?
Is the plan proportionate?
Who should be involved?
Is confidentiality protected?

Is the patient being treated fairly and with dignity?
Are bias, cost, language, disability, or resource limits affecting care?
What must be documented and reviewed?

Medical ethics is not an abstract add-on to clinical care.

It is the discipline that keeps medicine answerable to life, dignity, agency, truth, fairness, and proportion.

The safe clinician does not only ask, “Can we do this?” The safe clinician asks, “Should we do this, for this person, in this situation, in this way, for this goal?”

Chapter 67. Teamwork and Handover Made Easy

Teamwork is the coordinated work of clinicians, nurses, pharmacists, therapists, social workers, caregivers, administrators, and patients toward a shared care goal.

Handover is the transfer of responsibility, information, risk, and next steps from one person or team to another.

Patients do not usually say:

“The handover failed.”

They say:

“No one seemed to know what was going on.”
“I had to repeat my story again.”
“One doctor told me one thing and another told me something different.”
“My medicines were changed, but no one explained why.”
“The test result came back, but no one followed it up.”
“I was discharged, but the clinic did not know what happened.”
“The nurse knew something was wrong, but no one listened.”
“My family was not told the plan.”

Teamwork and handover are central to Internal Medicine because modern care is too complex for one clinician to hold alone.

A patient may move from emergency department to ward, from ward to clinic, from hospital to home, from one shift to another, from specialist to primary care, from active treatment to palliative care, or from independent living to caregiver-supported care.

At every transition, something can be lost.

The diagnosis can be lost.
The uncertainty can be lost.
The medicine changes can be lost.
The pending results can be lost.
The goals of care can be lost.
The family concerns can be lost.
The warning signs can be lost.
The patient’s voice can be lost.

The first task is not simply to “pass on information.”

The deeper question is:

What must the next person know and do so that the patient remains safe, understood, and on a coherent repair trajectory?

Teamwork and handover become easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. Why Teamwork Matters

Internal Medicine is team medicine.

No single clinician can safely manage everything alone.

The nurse may notice subtle deterioration before the doctor does.
The pharmacist may identify a dangerous drug interaction.
The physiotherapist may know whether discharge mobility is safe.
The occupational therapist may know whether the home environment fits the patient’s function.

The dietitian may identify malnutrition.
The social worker may identify neglect, poverty, or caregiver collapse.
The family may know the patient's baseline.
The patient may know what matters most.
The junior doctor may hold the overnight details.
The consultant may hold the broader trajectory.
The primary care clinician may know years of context.

Good teamwork does not dilute responsibility.

It distributes attention.

The patient becomes safer when the team sees more than one person can see.

2. Teamwork Is a Clinical Skill

Teamwork is not just being friendly.

It includes:

- shared goals
- clear roles
- respectful communication
- listening across disciplines
- closed-loop communication
- escalation
- de-escalation
- shared situational awareness
- medication reconciliation
- discharge planning
- family communication
- documentation
- follow-up ownership
- learning from error

A polite team can still be unsafe if roles are unclear.

A busy team can still be safe if communication is disciplined.

The question is:

Does the team know what matters, what is dangerous, what is uncertain, who is responsible, and what happens next?

3. Handover Is a Safety Intervention

Handover is not a formality.

It is a clinical intervention.

During handover, the outgoing clinician transfers:

- the patient's identity

the active syndrome

the working diagnosis

immediate dangers

current stability

treatment given

response to treatment

uncertainty

pending results

required actions

escalation triggers

goals of care

family concerns

discharge barriers

responsibility

A poor handover says:

“Bed 6, pneumonia, stable.”

A safer handover says:

“Bed 6 is Mrs. James, 82, frail, admitted with pneumonia and delirium. Oxygen requirement is improving, but she remains confused and is not yet eating well. Creatinine rose today, so diuretics were held. Repeat renal function is due tomorrow morning. Watch for worsening oxygen need, reduced urine output, or agitation. Daughter knows baseline and should be updated before discharge planning.”

The second handover transfers the living pattern, not just the label.

4. Teamwork Is a Capacity Problem

Teamwork protects multiple capacities.

Patient Safety Capacity

The team prevents missed deterioration, medication harm, falls, delirium, and unsafe discharge.

Diagnostic Capacity

Different team members contribute different information.

Treatment Capacity

Nurses, pharmacists, therapists, and doctors coordinate interventions.

Functional Capacity

Mobility, nutrition, swallowing, cognition, toileting, and home safety require team assessment.

Communication Capacity

Patients and families need a consistent explanation.

System Capacity

Beds, tests, medicines, referrals, and follow-up must be coordinated.

Repair Capacity

The patient needs a coherent trajectory, not fragmented tasks.

Teamwork asks:

How do we organize ourselves so the patient's repair is not broken by our fragmentation?

5. The First Question: Is There Team Danger Now?

Team danger occurs when poor coordination can harm the patient.

Urgent team attention is needed when:

- patient is deteriorating
- diagnosis is uncertain
- high-risk medicine is being started or changed
- discharge is near
- patient lacks capacity
- family conflict exists
- goals of care are unclear
- multiple teams are involved
- pending results are important
- handover is incomplete
- patient is moved between settings
- delirium, dementia, frailty, falls, or polypharmacy is present
- social situation is unsafe
- treatment plan conflicts between teams
- no one owns the next step

The danger-first question is:

Could this patient be harmed because the team is not aligned?

6. Immediate Red Flags in Teamwork and Handover

Red flags include:

- no clear working diagnosis
- no named responsible clinician or team
- conflicting plans in notes
- medication list differs between sources
- nurse concern is dismissed
- pending results have no owner
- discharge occurs without medicine reconciliation
- patient cannot explain the plan
- caregiver has not been taught required care
- physiotherapy says mobility is unsafe but discharge proceeds
- delirium is present but no prevention plan exists
- goals of care discussed but not documented

- resuscitation decision unclear
- specialist recommendation not integrated
- primary care follow-up not informed
- family receives mixed messages
- “stable” is handed over without explaining risk
- patient transferred without escalation triggers

These are clinical hazards.

They require correction before harm occurs.

7. The Teamwork Pathway Made Easy

A practical teamwork pathway is:

- define the patient’s main problem
- identify immediate dangers
- clarify the working diagnosis and uncertainty
- identify capacity failures
- identify roles
- assign responsibility
- communicate the plan
- confirm understanding
- monitor the repair trajectory
- hand over what remains active
- close the loop on pending tasks
- reassess as the patient changes

Teamwork fails when responsibility is assumed but not assigned.

The safest question is:

Who is doing what, by when, and what should happen if the situation changes?

8. Shared Situational Awareness

Shared situational awareness means the team has a common understanding of the patient’s current state.

The team should know:

- why the patient is here
- what is most dangerous
- what is improving
- what is worsening
- what remains uncertain
- what treatment is active
- what response is expected

what would trigger escalation

what the patient wants

what discharge depends on

Without shared situational awareness, each person works from a different map.

The nurse may think the patient is unstable.
The doctor may think discharge is near.
The family may think the patient is dying.
The physiotherapist may think mobility is unsafe.
The pharmacist may think medicines are unresolved.

The team must bring these maps together.

9. Roles Must Be Clear

Teamwork fails when roles are vague.

Ask:

Who is the lead clinician?

Who is reviewing today?

Who is checking blood results?

Who is adjusting medicines?

Who is speaking to family?

Who is arranging imaging?

Who is calling the specialist?

Who is assessing mobility?

Who is checking swallowing?

Who is planning discharge?

Who is documenting goals of care?

Who is following pending results after discharge?

Do not assume.

Clarify.

A task without an owner is a task at risk.

10. Closed-Loop Communication

Closed-loop communication means the sender gives a message, the receiver confirms it, and completion is reported back when needed.

Example:

Doctor:

“Please check a glucose now because the patient is drowsy.”

Nurse:

“I will check glucose now.”

Later:

“Glucose is low. I have started the hypoglycemia protocol and called you back.”

Closed-loop communication is essential for:

- urgent tasks
- medication changes
- critical results
- deteriorating patients
- transfers
- discharge instructions
- resuscitation decisions
- blood transfusion
- insulin
- anticoagulation
- oxygen escalation
- sepsis pathways

In high-risk care, “I told someone” is not enough.

The loop must close.

11. Listening to Nurses

Nurses often detect deterioration early.

They see:

- changes in breathing
- reduced urine output
- confusion
- agitation
- falls risk
- pain behavior
- poor intake
- family concern
- medicine side effects
- skin changes
- functional decline
- patient fear
- subtle decline during the shift

A nurse saying:

“I am worried about this patient.”

should trigger attention.

Do not ask only:

“What are the vitals?”

Ask:

“What has changed?”
“What are you seeing that worries you?”
“Is this different from earlier?”
“What does the family say?”

Team safety improves when professional concern is respected.

12. Pharmacists and Medication Safety

Pharmacists are essential in Internal Medicine.

They help identify:

- drug interactions
- incorrect doses
- renal adjustment issues
- duplication
- allergies
- anticoagulant safety
- insulin safety
- opioid risk
- sedative risk
- anticholinergic burden
- medication reconciliation errors
- discharge medicine confusion
- adherence barriers
- cost issues
- deprescribing opportunities

Medication error is one of the most common transition harms.

Any high-risk patient needs medication teamwork.

Especially patients with:

- CKD
- liver disease
- frailty
- polypharmacy
- dementia
- recent hospitalization
- anticoagulants
- insulin

- opioids
- sedatives
- steroids
- immunosuppressants

A medicine plan should not be considered safe until someone can explain what was started, stopped, changed, continued, and why.

13. Therapists and Function

Physiotherapists, occupational therapists, speech and language therapists, and rehabilitation staff often see what disease labels miss.

They assess:

- walking
- transfers
- balance
- stairs
- strength
- endurance
- swallowing
- communication
- cognition during tasks
- home equipment
- falls risk
- ability to bathe, dress, toilet, cook, and manage daily life

A patient may be medically stable but functionally unsafe.

A discharge plan that ignores therapy assessment can fail.

Ask:

- Can the patient transfer safely?
- Can they walk safely?
- Can they manage stairs?
- Can they swallow safely?
- Can they use the toilet?
- Can they wash and dress?
- Do they need equipment?
- Is home suitable?
- Is caregiver support enough?

Function is not an optional add-on.

Function is often the difference between safe discharge and readmission.

14. Social Work and Care Context

Social workers and care coordinators identify conditions that medical teams may miss.

They may assess:

- home safety
- caregiver availability
- financial barriers
- food insecurity
- housing insecurity
- abuse or neglect
- transport
- insurance or benefits
- community support
- placement needs
- safeguarding
- family conflict
- legal or documentation issues

A patient's medical plan may fail because of social reality.

Example:

A patient is prescribed insulin but has no fridge, no meals, poor vision, and no support.

That is not non-compliance.

That is a system mismatch.

Social assessment is clinical assessment.

15. The Patient Is Part of the Team

The patient is not simply the recipient of care.

The patient contributes:

- symptoms
- priorities
- fears
- values
- treatment tolerance
- side effects
- practical barriers
- goals
- previous experience
- personal meaning

Ask:

- What matters most to you?
- What are you worried about?
- What part of the plan feels hardest?
- What has helped before?
- What has harmed before?
- What do you need to understand before you leave?
- Who helps you at home?

A team that excludes the patient becomes technically busy but life-disconnected.

16. Family and Caregivers as Team Members

Families and caregivers may know:

- baseline function
- usual cognition
- medication habits
- eating pattern
- falls history
- substance use
- mood change
- home safety
- patient values
- prior wishes
- caregiver limits

They also may carry the care plan after discharge.

Ask:

- What is the patient normally like?
- What has changed?
- What worries you most?
- What care do you provide?
- What can you manage?
- What can you not manage?
- What do you need before discharge?
- Do you understand the medicines?
- Do you know warning signs?

Caregiver involvement requires patient consent when the patient has capacity.

But when caregivers are expected to provide care, they must be prepared.

17. Handover Structure

A useful handover structure includes:

Identity
Who is the patient?

Situation
Why are they here now?

Background
What important history shapes the risk?

Assessment
What is the current working diagnosis, severity, and uncertainty?

Risks
What could go wrong?

Recommendations
What needs to happen next?

Responsibility
Who owns the next steps?

This is similar to structured communication formats used in many clinical settings.

The exact acronym matters less than the discipline:

Who is this patient, what is happening, what is dangerous, what is uncertain, what must happen, and who is responsible?

18. What Must Always Be Handed Over?

Important handover items include:

- active diagnosis or syndrome
- immediate danger
- abnormal vital signs
- oxygen requirement
- mental state change
- sepsis concern
- chest pain or arrhythmia concern
- bleeding risk
- AKI or electrolyte danger
- glucose risk
- falls risk
- delirium risk
- high-risk medicines
- allergies
- infection control issues
- pending results
- imaging awaited

- procedures planned
- treatment response
- escalation plan
- resuscitation status where relevant
- goals of care
- family concerns
- capacity concerns
- safeguarding concerns
- discharge barriers
- tasks due overnight or before next review

Handover should prioritize what the next clinician must act on or watch.

19. Handover of Uncertainty

Uncertainty must be handed over clearly.

Poor handover:

“Abdominal pain, probably gastritis.”

Better:

“Abdominal pain, currently mild and vitals stable. Gastritis is possible, but early appendicitis or biliary disease has not fully declared itself. If pain localizes, fever develops, vomiting persists, or inflammatory markers rise, reassess urgently.”

Uncertainty handover should include:

- what is most likely
- what remains dangerous
- what has been checked
- what is pending
- what would change the plan
- when reassessment should happen

Unhanded uncertainty becomes diagnostic error.

20. Handover of Pending Results

Pending results are high risk.

Always hand over:

- what test is pending
- why it was ordered
- when it is expected
- who will check it
- what action is needed if abnormal
- whether the patient can be discharged before it returns

- how the patient will be contacted if already discharged

Examples:

- blood cultures
- imaging reports
- biopsy results
- critical blood tests
- microbiology sensitivities
- troponin repeats
- renal function after medication change
- anticoagulation monitoring where applicable
- cancer pathway investigations
- outpatient referrals

A pending result without ownership is unsafe.

21. Handover of Medicines

Medication handover must be exact.

Include:

- new medicines started
- medicines stopped
- medicines held temporarily
- dose changes
- reason for changes
- monitoring needed
- restart plan
- high-risk medicine warnings
- anticoagulation plan
- insulin plan
- steroid plan
- antibiotic duration and review
- opioid and bowel plan
- sedative reduction plan
- renal dose adjustment
- allergies and adverse reactions

Dangerous phrases include:

“Continue usual meds.”

when the usual list is unclear.

Safer phrasing:

“ACE inhibitor and diuretic were held because of AKI. Repeat renal function tomorrow. Restart only after review of creatinine, potassium, blood pressure, and volume status.”

Medicine handover prevents harm.

22. Handover of Goals of Care

Goals of care must not disappear between shifts.

Hand over:

- patient’s understanding
- patient’s priorities
- family discussions
- resuscitation decisions
- escalation limits
- palliative care involvement
- preferred place of care
- decisions still pending
- conflicts or uncertainties
- spiritual or cultural needs

Example:

“Patient understands cancer is advanced and wants comfort-focused care at home if possible. No ICU or CPR after discussion yesterday. Daughter aware and agrees. Son arriving tomorrow and may need update.”

This prevents unwanted escalation and repeated distressing conversations.

23. Handover During Deterioration

When a patient is deteriorating, handover must be urgent and specific.

Include:

- current vital signs
- trend
- working diagnosis
- treatment already given
- response
- what you are worried about
- what you need
- escalation status
- relevant comorbidities
- patient wishes or limits of care

Example:

“I need urgent review. Mr. Brown with pneumonia is now more hypoxic, oxygen requirement increased, respiratory rate rising, and he is more confused. Antibiotics started earlier, fluids given cautiously because of heart failure. I am worried about sepsis or respiratory failure. He is for full escalation currently. Please review now.”

Do not soften urgent concern.

Clarity saves time.

24. Handover at Discharge

Discharge is a major handover.

The receiving team may be the patient, family, primary care clinician, community nurse, specialist clinic, pharmacist, or care home.

Discharge handover should include:

- diagnosis
- hospital course
- unresolved issues
- medicine changes
- pending results
- follow-up appointments
- warning signs
- functional status
- mobility aids
- wound care
- oxygen or device plan
- nutrition or swallowing plan
- cognition or delirium status
- caregiver needs
- goals of care
- recommended monitoring
- who to contact

The patient and caregiver should receive a version they can understand.

The next clinician should receive enough clinical detail to continue care.

Discharge without handover is not discharge.

It is transfer of risk without support.

25. Handover to Primary Care

Primary care often carries the long-term repair trajectory.

Hospital teams should communicate:

- what changed

- why it changed
- what needs monitoring
- what medicines were stopped and whether to restart
- what results are pending
- what referrals were made
- what the patient was told
- what warning signs matter
- what goals-of-care discussions occurred
- what social support was arranged
- what remains uncertain

Primary care should not have to reconstruct the admission from fragments.

Continuity is a safety intervention.

26. Handover Between Specialties

Specialty handover can fail when each team focuses narrowly.

Examples:

- cardiology manages heart failure but kidney function worsens
- nephrology advises renal safety but breathlessness worsens
- psychiatry assesses mood but delirium is missed
- surgery evaluates abdomen but medication toxicity is ignored
- oncology focuses on cancer treatment while frailty and goals are not addressed

Specialty handover should clarify:

- reason for referral
- specific question
- current patient status
- relevant comorbidities
- urgency
- what the primary team needs help deciding
- who remains responsible for overall care

A referral should not simply say:

“Please review.”

It should ask a question.

27. Escalation Within the Team

Escalation is needed when:

- patient deteriorates
- nurse or family is worried

- junior clinician is uncertain
- treatment is failing
- diagnosis is unclear
- discharge feels unsafe
- capacity or ethics is complex
- workload exceeds safe care
- conflict is escalating
- critical result returns
- urgent procedure may be needed

Escalation should be welcomed.

A culture that punishes escalation creates silence.

Silence creates harm.

The safe team says:

“If you are worried, call.”

And means it.

28. De-Escalation Within the Team

Teams must also de-escalate when intensity no longer helps.

De-escalation may include:

- reducing monitoring
- removing catheters
- stopping unnecessary antibiotics
- simplifying medicines
- switching IV to oral treatment
- moving from acute ward to rehabilitation
- moving from hospital to home
- shifting from disease-directed treatment to comfort-focused care
- reducing overnight disruptions
- stopping repeated blood tests
- deprescribing high-risk medicines

De-escalation should be communicated clearly so no one thinks care has been abandoned.

Say:

“We are stopping the blood tests because they are no longer changing treatment and are causing burden. We are continuing active comfort care.”

29. Conflict in Teams

Team conflict may arise because of:

- uncertainty
- hierarchy
- workload
- unclear roles
- different professional priorities
- family pressure
- resource limits
- moral distress
- poor communication
- personality differences
- previous harm

Conflict becomes safer when teams return to the patient.

Ask:

- What is the patient's main problem?
- What is dangerous?
- What does the patient want?
- What are we trying to achieve?
- What information is missing?
- What decision is needed now?
- Who should lead?
- What can we agree on?
- What needs senior or ethics support?

The patient should not suffer because the team cannot coordinate.

30. Psychological Safety in Teams

Psychological safety means team members can speak up about concerns without fear of humiliation or punishment.

It allows:

- nurses to raise concern
- juniors to ask for help
- pharmacists to challenge unsafe prescribing
- therapists to question discharge safety
- students to ask questions
- families to be heard
- errors to be discussed
- near misses to be learned from

A team without psychological safety may appear quiet.

But quiet is not the same as safe.

A safe team invites concern.

Useful phrases:

“What are we missing?”
“Does anyone feel this plan is unsafe?”
“What concerns do nursing or therapy have?”
“Please call me if anything changes.”
“Thank you for raising that.”

31. Teamwork and Error

Errors often occur at transitions.

Examples:

- insulin omitted
- anticoagulant duplicated
- antibiotics stopped too early or continued too long
- abnormal result not followed
- patient discharged without oxygen plan
- delirium not handed over
- palliative wishes lost
- AKI medicines restarted too early
- allergy ignored
- wrong patient information transferred
- family not updated
- safeguarding concern forgotten

When error occurs, ask:

- What happened?
- Where did the handover fail?
- Was responsibility clear?
- Was the information available?
- Was the system too complex?
- Was the team afraid to speak?
- How can this be prevented?

Do not only ask who failed.

Ask what failed.

32. Repair Trajectory in Teamwork and Handover

Teamwork repair is shown when:

- patient’s main problem is clear

dangers are known

roles are assigned

medicines are reconciled

pending results are owned

team members speak up

family understands the plan

patient receives consistent information

discharge barriers are addressed

follow-up is arranged

goals of care are documented

handover includes uncertainty and escalation triggers

errors are learned from

patient transitions safely between settings

The repair trajectory belongs to the team, not just the individual clinician.

33. Worked Case 1: Missed Pending Result

A patient is discharged after investigation for weight loss. A scan report finalized after discharge shows a suspicious mass, but no one checks it for a week.

Teamwork Problem

Pending result without ownership.

Capacity Failure

Diagnostic safety, continuity, trust, timely treatment.

Coupling Conditions

Discharge before final report, unclear responsibility, busy service, patient unaware.

Wise Team Response

Identify who owns pending results before discharge. Communicate to primary care and patient. Create tracking system. Contact patient promptly when result returns. Explain and arrange urgent follow-up.

Repair Trajectory

Result acted on, patient informed, diagnostic pathway resumes, system for pending results improved.

34. Worked Case 2: Medicine Reconciliation Failure

An 80-year-old man with CKD and heart failure is discharged after AKI. His diuretic and ACE inhibitor were held in hospital, but discharge paperwork says “continue usual medicines.” He restarts everything and returns with dizziness and worsening renal function.

Teamwork Problem

Medication handover failure.

Capacity Failure

Kidney clearance, blood pressure regulation, medicine safety, patient agency.

Coupling Conditions

CKD, heart failure, AKI, complex medicines, unclear discharge list, primary care not informed.

Wise Team Response

Reconcile medicines before discharge. List held medicines and restart criteria. Use pharmacist review. Explain to patient and caregiver. Inform primary care. Arrange repeat renal function.

Repair Trajectory

Medicines clarified, kidney function stabilizes, patient understands, repeat harm prevented.

35. Worked Case 3: Nurse Concern Dismissed

A nurse reports that a patient with pneumonia is “not right” despite acceptable vital signs. The patient later becomes septic.

Teamwork Problem

Professional concern not taken seriously.

Capacity Failure

Defense, circulation, team listening, early warning.

Coupling Conditions

Pneumonia, subtle deterioration, shift pressure, hierarchy, incomplete reassessment.

Wise Team Response

Treat nurse concern as clinical data. Reassess patient fully. Review trends, urine output, mental state, oxygen needs, labs, and treatment response. Encourage escalation culture.

Repair Trajectory

Deterioration recognized earlier, treatment escalated, staff feel safe speaking up, patient monitored more closely.

36. Worked Case 4: Discharge Against Therapy Advice

A frail patient recovering from delirium is medically stable. Physiotherapy says she cannot transfer safely, but discharge proceeds because blood tests improved. She falls at home the next day.

Teamwork Problem

Disease stability mistaken for discharge readiness.

Capacity Failure

Mobility, cognition, safety, caregiver-supported function.

Coupling Conditions

Frailty, recent delirium, unsafe transfers, home environment, bed pressure.

Wise Team Response

Integrate therapy assessment into discharge decision. Delay discharge or arrange support/equipment if needed. Involve family and community services. Document functional status.

Repair Trajectory

Patient transfers safely, falls risk reduced, discharge matches function, readmission avoided.

37. Worked Case 5: Goals of Care Lost Overnight

A patient with advanced cancer agreed to comfort-focused care during the day. Overnight, breathlessness worsens. The night team is unaware and transfers the patient for aggressive intervention the patient did not want.

Teamwork Problem

Goals-of-care handover failure.

Capacity Failure

Agency, dignity, comfort, continuity.

Coupling Conditions

Advanced illness, shift change, incomplete documentation, family distress, urgent symptoms.

Wise Team Response

Document goals clearly. Include escalation limits in handover. Ensure comfort medicines and crisis plan are available. Inform night team and nursing staff.

Repair Trajectory

Patient's wishes honored, breathlessness treated promptly, unwanted escalation avoided, family supported.

38. Worked Case 6: Fragmented Specialist Plans

A patient with heart failure, CKD, diabetes, and anemia receives separate recommendations from cardiology, nephrology, endocrinology, and hematology. The medicine list becomes complex and contradictory.

Teamwork Problem

Specialty recommendations not integrated into one coherent patient plan.

Capacity Failure

Medicine safety, kidney clearance, circulation, glucose regulation, agency.

Coupling Conditions

Multimorbidity, polypharmacy, multiple teams, unclear lead clinician, patient confusion.

Wise Team Response

Identify lead coordinating clinician. Reconcile recommendations. Prioritize danger, patient goals, and medication safety. Communicate one integrated plan to patient, family, and primary care.

Repair Trajectory

Medicine list simplified, contradictions resolved, patient understands plan, monitoring assigned, specialties aligned.

39. Common Student Pitfalls

Pitfall 1: Thinking Handover Is Just a List of Patients

Handover transfers risk, responsibility, uncertainty, and next steps.

Pitfall 2: Saying "Stable" Without Explaining Risk

Stable compared with what? What could change?

Pitfall 3: Failing to Assign Ownership

A task without an owner is unsafe.

Pitfall 4: Ignoring Nursing or Therapy Concerns

Different professionals see different dangers.

Pitfall 5: Forgetting Pending Results

Unowned results are common sources of diagnostic delay.

Pitfall 6: Discharging Based on Labs Alone

Function, cognition, medicines, home support, and follow-up matter.

Pitfall 7: Giving Families Mixed Messages

Inconsistent communication creates fear and conflict.

Pitfall 8: Losing Goals of Care at Transitions

Patient wishes must travel with the patient.

40. Clinical Practice Box

When handing over a patient, complete this structure:

Patient identity and context:
Name, age, location, key background, baseline function.

Current syndrome:
Why is the patient here now?

Immediate danger:
What could go wrong in the next hours or days?

Working diagnosis and uncertainty:
What do we think is happening? What remains unclear?

Current treatment and response:
What has been done? Is it working?

Capacity failures:
Oxygenation, circulation, clearance, cognition, mobility, nutrition, comfort, agency.

Key medicines:
Started, stopped, held, changed, high-risk medicines, monitoring, restart plans.

Pending tasks/results:
What is pending? Who owns it? What action is needed?

Escalation triggers:
What should prompt urgent review or senior help?

Goals and family issues:
Patient wishes, capacity, family concerns, resuscitation or escalation plan, palliative needs.

Discharge barriers:
Mobility, cognition, medicines, support, follow-up, home safety.

41. Mini-Case for Practice

A 82-year-old woman with heart failure, CKD, diabetes, frailty, mild dementia, and recent delirium is improving after pneumonia. Her oxygen requirement is lower, but she is still weak, eating poorly, intermittently confused, and has AKI improving after diuretics were held. Her daughter is worried she is not back to baseline. A repeat renal function test is pending tomorrow. Physiotherapy has not yet cleared transfers. The team is considering discharge because the ward is busy.

Apply the teamwork and handover approach.

Team Danger

Discharge pressure may cause unsafe transition if cognition, mobility, medicines, renal function, and caregiver readiness are not aligned.

Current Syndrome

Recovering pneumonia with residual frailty, delirium vulnerability, poor intake, AKI recovery, and functional decline.

Capacity Failures

Oxygenation improving but not fully resolved, clearance recovering, cognition fluctuating, nutrition poor, mobility unsafe, agency limited by dementia and delirium risk.

Coupling Conditions

Heart failure, CKD, diabetes, frailty, mild dementia, recent delirium, held diuretics, daughter's baseline knowledge, pending renal function, therapy not complete.

Wise Team Response

Hold a multidisciplinary review. Clarify whether discharge is safe. Assign ownership for renal function result, diuretic restart decision, medication reconciliation, physiotherapy assessment, delirium plan, nutrition support, daughter update, and follow-up. Handover uncertainty and escalation triggers clearly. Do not discharge until repair can continue safely at home or support is arranged.

Repair Trajectory

Renal function reviewed, medicine plan clarified, mobility assessed, daughter informed, cognition closer to baseline or supported, nutrition plan made, discharge occurs with clear follow-up and reduced readmission risk.

42. Student Takeaway

Teamwork and handover become easier when the clinician asks:

What is the patient's main syndrome?
What is dangerous now?
What remains uncertain?
Which capacities are failing?
Who owns each task?
What pending results must be followed?
What medicines were started, stopped, held, or changed?
What should trigger escalation?
What do the patient and family understand?
Are goals of care documented?
Is discharge safe functionally, cognitively, medically, and socially?

Teamwork is not politeness alone.

Handover is not reciting a list.

Both are life-preserving clinical acts.

The safe clinician communicates clearly, listens across disciplines, respects concern, assigns responsibility, hands over uncertainty, closes loops, and ensures that the patient's repair trajectory survives every transition of care.

Chapter 68. Clinical Documentation Made Easy

Clinical documentation is the written record of the patient's story, assessment, reasoning, decisions, treatment plan, communication, and follow-up.

Patients do not usually say:

"Your documentation was unsafe."

They say:

"No one knew what had happened before."
"The notes said something I never said."
"My medication list was wrong."
"The clinic did not know what the hospital changed."
"The result came back, but no one followed it up."
"They wrote that I was non-compliant, but I could not afford the medicine."
"The discharge summary did not explain the plan."

Clinicians may think:

"I know what I meant."
"I will remember."
"The next team will figure it out."
"It is obvious."
"I do not have time to write everything."

But clinical documentation is not merely paperwork.

It is a safety tool.
It is a communication tool.
It is a reasoning tool.
It is a legal record.
It is a continuity tool.
It is a memory tool.
It is a professional accountability tool.

The first task is not to write long notes.

The deeper question is:

What must be recorded so that the patient's care remains safe, coherent, honest, and continuous?

Clinical documentation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. Why Documentation Matters

Documentation matters because clinical care happens over time.

A patient may be seen by:

- emergency clinicians
- ward doctors
- nurses
- pharmacists
- specialists
- therapists

- primary care clinicians
- community nurses
- palliative care teams
- caregivers
- future clinicians
- the patient themselves

The note must help the next person understand:

- what happened
- what was found
- what was considered
- what was decided
- what remains uncertain
- what must happen next
- who is responsible
- what the patient was told

Poor documentation creates danger.

A missed allergy can cause harm.
A missing medication change can cause overdose or relapse.
An unowned pending result can delay cancer diagnosis.
An unclear goals-of-care note can lead to unwanted ICU transfer.
A vague discharge summary can cause readmission.
A judgmental phrase can damage trust and bias future care.

Good documentation carries the patient safely across time.

2. Documentation Is Clinical Reasoning Made Visible

A good note does more than list facts.

It shows reasoning.

It should answer:

- What is the clinical syndrome?
- What is the working diagnosis?
- What dangerous alternatives were considered?
- What evidence supports the diagnosis?
- What evidence does not fit?
- What is the current severity?
- What is the plan?
- What needs reassessment?
- What is uncertain?
- What did the patient understand?
- What follow-up is needed?

A note that says:

“Chest pain. ECG normal. Discharge.”

is unsafe.

A better note says:

“Central chest discomfort for two hours, no ongoing pain, no dyspnea or syncope, stable vital signs, ECG without acute ischemic change, initial troponin reassuring. Low-risk features today, but early cardiac disease discussed. Repeat testing not indicated by local pathway / or repeat testing completed as per pathway. Safety-net given for recurrent chest pain, dyspnea, sweating, syncope, or worsening symptoms. Follow-up advised.”

The second note shows reasoning.

It allows the next clinician to see the clinical logic.

3. Documentation Is a Capacity Tool

Documentation protects capacities.

Diagnostic Capacity

It preserves the story, findings, differential diagnosis, and uncertainty.

Treatment Capacity

It records what medicines, procedures, tests, and monitoring are planned.

Communication Capacity

It tells the next clinician and patient what was explained.

Safety Capacity

It records red flags, escalation triggers, allergies, risks, and safety-netting.

Agency Capacity

It records patient preferences, consent, refusal, capacity, and goals.

Continuity Capacity

It links today’s care to tomorrow’s review.

Documentation asks:

What must be remembered so the patient’s repair trajectory continues safely?

4. The First Question: Is There Documentation Danger Now?

Documentation danger exists when unclear records could cause harm.

Urgent documentation is needed when:

- diagnosis is uncertain
- patient is unstable
- high-risk medicines are started, stopped, or changed
- allergy or adverse reaction is identified
- capacity is impaired or disputed
- consent or refusal occurs
- goals of care are discussed
- resuscitation or escalation decisions are made

- patient is discharged
- pending results exist
- specialist advice is given
- family conflict exists
- safeguarding concern exists
- patient leaves against medical advice
- a serious event, fall, deterioration, or error occurs
- there is a time-limited treatment trial
- follow-up responsibility must be assigned

The danger-first question is:

Could someone misunderstand or miss something important if I do not document this clearly?

If yes, document now.

5. Immediate Red Flags in Documentation

Red flags include:

- no working diagnosis
- no assessment of severity
- no documentation of abnormal vital signs
- no medication reconciliation
- no allergy documentation
- no explanation for stopping or starting high-risk medicines
- no record of capacity assessment when capacity is uncertain
- no documentation of refusal of treatment
- no safety-net advice recorded
- no pending result ownership
- no follow-up plan
- no escalation plan
- no goals-of-care documentation in serious illness
- no family communication note when family is central to care
- vague phrases such as “stable,” “non-compliant,” or “poor historian” without explanation
- copied old information that is no longer true
- contradictory notes from different teams
- discharge summary missing key changes

These are not minor clerical issues.

They are patient safety hazards.

6. What a Good Clinical Note Should Do

A good clinical note should be:

- accurate
- clear
- concise
- relevant
- timely
- respectful
- organized
- clinically useful
- understandable to another clinician
- honest about uncertainty
- specific about responsibility
- free from unnecessary judgment
- aligned with what was communicated to the patient

A good note does not need to include every word spoken.

It should include what matters for care.

The goal is not to produce a perfect essay.

The goal is to preserve the clinical signal.

7. The Basic Structure of a Note

A simple note may include:

Date and Time

When was the patient seen?

Author and Role

Who wrote the note?

Reason for Review

Why was the patient seen now?

Subjective History

What did the patient or family report?

Objective Findings

Vitals, examination, important results.

Assessment

Clinical syndrome, working diagnosis, severity, uncertainty.

Plan

Treatment, tests, monitoring, referrals, safety-netting, follow-up.

Communication

What was explained, to whom, and what was understood.

Responsibility

Who will do what next?

The structure can vary by setting, but the essentials remain the same.

8. Document the Syndrome, Not Only the Label

Labels can be misleading.

A note that says:

“COPD.”

is incomplete.

Better:

“Acute breathlessness with increased cough and wheeze in known COPD; oxygen saturation below baseline; infection versus COPD exacerbation versus heart failure considered.”

A note that says:

“Dementia.”

is incomplete.

Better:

“Known dementia with acute worsening confusion over two days; delirium suspected. Infection, hypoxia, dehydration, medication effect, constipation, and urinary retention being assessed.”

A note that says:

“Fall.”

is incomplete.

Better:

“Unwitnessed fall with possible loss of consciousness; no clear trip; reports dizziness on standing. Syncope, orthostatic hypotension, arrhythmia, medication effect, and injury being assessed.”

Syndrome documentation keeps diagnostic reasoning open.

9. Document What Is Dangerous

The note should show that dangerous possibilities were considered.

For chest pain, document relevant danger assessment:

- ongoing pain or resolved
- exertional features
- dyspnea
- syncope
- sweating
- ECG findings
- troponin pathway where relevant
- risk factors
- differential diagnosis
- safety-netting

For confusion, document:

- acute versus chronic
- attention
- baseline
- infection signs
- oxygenation
- glucose
- medications
- hydration
- pain
- retention or constipation
- safety

For falls, document:

- trip or collapse
- loss of consciousness
- head injury
- anticoagulants
- neurological signs
- glucose
- blood pressure or orthostatic symptoms
- ECG where relevant
- injury assessment
- mobility safety

Good documentation should answer:

What dangerous diagnosis did we consider, and why is the plan safe?

10. Document Uncertainty Honestly

Do not write as if everything is certain when it is not.

Unsafe:

“Gastritis. Discharge.”

Safer:

“Epigastric pain most consistent with gastritis today; no peritonism, stable vitals, no GI bleeding symptoms, ECG reassuring. Early biliary disease, pancreatitis, and cardiac causes considered. Safety-net given for worsening pain, vomiting, black stools, chest pain, breathlessness, syncope, or fever.”

Uncertainty should be documented with:

- working diagnosis
- alternatives considered
- what has been checked
- what remains uncertain

- what follow-up or safety-net is in place

Honest uncertainty protects patients.

It also protects clinical reasoning.

11. Document What Changed

Clinical care is about change over time.

Document:

- symptoms improving or worsening
- vital sign trends
- oxygen requirement changes
- mental state changes
- urine output changes
- pain changes
- oral intake
- mobility
- weight or fluid status where relevant
- laboratory trends
- treatment response
- new concerns

Instead of:

“Patient stable.”

Write:

“Oxygen requirement decreased from 4 L to 1 L since yesterday; respiratory rate improved; still poor appetite and intermittent confusion.”

The second note tells the team what is truly improving and what still needs attention.

12. Avoid the Word “Stable” Alone

“Stable” is often too vague.

Stable can mean:

- not changed
- not deteriorating
- still abnormal but unchanged
- safe for discharge
- unchanged but seriously ill
- not reviewed properly

Instead, specify:

- stable vital signs

- stable oxygen requirement
- stable renal function
- stable hemoglobin
- stable mental state
- stable but still requiring monitoring
- stable for transfer
- stable for discharge with follow-up

A patient can be “stable” and still unsafe.

Clarity prevents false reassurance.

13. Document Baseline Function

Baseline function is essential in Internal Medicine.

Document:

- usual walking ability
- mobility aids
- ADLs
- IADLs
- cognition
- living situation
- caregiver support
- usual oxygen requirement
- usual creatinine
- usual hemoglobin
- usual weight or edema status
- usual medicines
- previous independence

This is especially important in:

- frailty
- dementia
- falls
- delirium
- heart failure
- COPD
- CKD
- multimorbidity
- discharge planning

A note should make clear:

What has changed from baseline?

Without baseline, deterioration is easy to miss.

14. Document Medicines Carefully

Medication documentation must be exact.

Include:

- medicine name
- dose if clinically required by local documentation standard
- frequency
- route
- indication
- start date where relevant
- stop date or duration where relevant
- reason for change
- monitoring required
- medicines held temporarily
- restart criteria
- allergies
- adverse reactions
- patient adherence or access issues

High-risk medicine changes require special clarity.

Examples:

- anticoagulants
- insulin
- opioids
- sedatives
- steroids
- antibiotics
- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- immunosuppressants
- antipsychotics
- anti-seizure medicines

A dangerous note says:

“Restart usual meds.”

A safer note says:

“Diuretic held due to AKI and poor intake. Repeat renal function and volume status tomorrow before restart. Patient and daughter informed not to restart at home until reviewed.”

Medicine documentation prevents harm.

15. Document Allergies and Adverse Reactions

Allergy documentation should include:

- substance
- reaction
- severity
- timing if known
- whether true allergy or intolerance if known
- action taken

Unsafe:

“Penicillin allergy.”

Better:

“Penicillin: facial swelling and wheeze after dose in past, avoid.”

Or:

“Codeine: nausea only, intolerance rather than allergy.”

Clear allergy documentation prevents both dangerous exposure and unnecessary avoidance.

16. Document Capacity

When capacity is relevant, document it clearly.

Include:

- decision being assessed
- information provided
- patient’s understanding
- ability to retain information
- ability to weigh benefits and harms
- ability to communicate choice
- factors affecting capacity
- supports used
- conclusion
- plan for reassessment if capacity may improve

Do not write:

“Patient lacks capacity.”

without specifying the decision.

Better:

“Capacity assessed regarding refusal of admission for pneumonia with hypoxia. Patient understood diagnosis and need for oxygen but was unable to explain risk of deterioration or consequences of going home despite repeated explanation. Delirium suspected. Daughter involved. Decision made in best interests to admit for treatment and reassess capacity tomorrow.”

Capacity documentation must be specific and respectful.

17. Document Consent

For important treatments or procedures, document:

- what was proposed
- indication
- important benefits
- important risks
- alternatives
- questions answered
- patient agreement
- interpreter use if relevant
- family involvement if patient wished
- written consent where required

Consent documentation should reflect understanding, not merely signature.

For high-risk decisions, include patient values.

Example:

“Discussed anticoagulation for atrial fibrillation: stroke reduction benefit and bleeding risk, including relevance of CKD and falls. Patient values stroke prevention and accepts bleeding risk after discussion. Plan agreed with monitoring and falls review.”

This shows shared reasoning.

18. Document Refusal

When a patient refuses recommended care, document carefully.

Include:

- recommended treatment
- reason for recommendation
- risks of refusal explained
- patient’s understanding
- capacity assessment
- patient’s stated reasons
- alternatives offered
- safety-netting
- follow-up plan

family involvement if permitted

clinician recommendation

Avoid judgmental wording.

Unsafe:

“Patient refused admission and left.”

Better:

“Admission recommended for pneumonia with low oxygen saturation. Risks of worsening breathing, sepsis, collapse, and death explained in plain language. Patient able to repeat risks and states she refuses admission because no one is available to care for disabled spouse. Capacity intact for this decision. Social support options explored. Patient still declines admission. Oral treatment and urgent follow-up arranged; safety-net given; daughter informed with consent.”

Refusal documentation should show respect and reasoning.

19. Document Goals of Care

Goals-of-care documentation is essential in serious illness.

Include:

patient understanding

prognosis discussion

values and priorities

preferred place of care

acceptable and unacceptable outcomes

resuscitation discussion where relevant

escalation preferences

family involvement

palliative care involvement

decisions made

uncertainty

review plan

Unsafe:

“Family aware.”

Better:

“Discussed advanced heart failure trajectory with patient and daughter. Patient understands illness is worsening despite treatment. States priority is comfort and home time; does not want ICU or ventilation if deterioration occurs. Wishes active symptom treatment and hospital care only if likely to improve comfort. Daughter understands. Plan documented and to be reviewed if condition changes.”

Goals must travel with the patient.

Documentation makes that possible.

20. Document Family Communication

When family communication is clinically important, document:

- who was present
- relationship to patient
- whether patient consented if capable
- what was discussed
- what family understood
- concerns raised
- decisions made
- disagreements
- follow-up plan
- information withheld at patient request if relevant

Family notes matter when:

- dementia or delirium present
- serious illness present
- discharge depends on caregiver
- family conflict exists
- goals of care are discussed
- safeguarding concerns arise
- patient lacks capacity

Avoid vague statements.

Instead of:

“Spoke to family.”

write:

“Spoke with daughter, who reports patient normally walks independently and manages own medicines. Current confusion is new. Daughter concerned about unsafe discharge. Plan explained: delirium workup, medication review, physiotherapy assessment before discharge.”

21. Document Safety-Netting

Safety-netting should be recorded.

Include:

- what symptoms to watch for
- what action to take
- timeframe
- follow-up plan
- patient understanding
- caregiver involvement where relevant

Example:

“Safety-net explained: return urgently for worsening breathlessness, chest pain, confusion, persistent fever, inability to drink, reduced urine output, fainting, or symptoms not improving within expected timeframe. Patient repeated plan back accurately.”

If safety-netting is not documented, future clinicians may not know what was discussed.

22. Document Pending Results

Pending results are high risk.

Document:

- test pending
- reason for test
- expected timeframe
- who will review
- what action is needed if abnormal
- whether patient has been informed
- how patient will be contacted
- whether discharge is safe before result

Unsafe:

“Bloods pending.”

Better:

“Blood cultures pending due to fever and rigors; ward team to review daily and adjust antibiotics if positive. If discharged before final result, responsible clinician to check result and contact patient if action needed.”

A pending result without ownership is unsafe.

23. Document Handover

When handing over, document or clearly communicate:

- active problems
- current stability
- immediate risks
- tasks due
- pending results
- escalation triggers
- medication changes
- goals of care
- family concerns
- discharge barriers

A handover note should help the next clinician act.

Example:

“Overnight watch: admitted with pneumonia and delirium. If oxygen need increases, respiratory rate rises, systolic BP falls, urine output decreases, or agitation worsens, urgent review. Repeat lactate and renal function due at 02:00. Daughter is key collateral contact.”

Handover documentation should be practical.

24. Document Discharge Clearly

Discharge documentation must answer:

- why patient was admitted or seen
- diagnosis or working diagnosis
- key findings
- treatment given
- response
- medicine changes
- what to monitor
- pending results
- follow-up
- warning signs
- functional status
- equipment or support
- goals of care where relevant
- who received explanation

The discharge summary is a handover to the future.

It should not be an afterthought.

25. Avoid Judgmental Language

Documentation should be respectful.

Avoid labels such as:

- non-compliant
- difficult
- manipulative
- drug-seeking
- poor historian
- refuses to cooperate
- alcoholic
- addict
- frequent flyer

Use descriptive language.

Instead of:

“Non-compliant with medications.”

Write:

“Patient reports missing medicines because cost and transport make refills difficult.”

Instead of:

“Drug-seeking.”

Write:

“Patient requesting opioid escalation; reports uncontrolled pain and withdrawal symptoms when doses missed. Risks and alternatives discussed. Pain and dependence plan needed.”

Instead of:

“Poor historian.”

Write:

“History limited by delirium; collateral obtained from daughter.”

Language shapes future care.

Respectful documentation protects patients from bias.

26. Avoid Copy-Paste Harm

Copying old notes can spread errors.

Risks include:

- outdated medication list
- old diagnosis repeated
- incorrect baseline
- resolved problem kept active
- old examination copied as if current
- incorrect family contact
- outdated goals of care
- old allergies copied incompletely
- old plan repeated without review

Before copying, ask:

- Is this still true?
- Did I verify it today?
- Does it reflect current condition?
- Could this mislead someone?

A copied note should never replace current assessment.

27. Avoid Defensive Documentation

Defensive documentation is written mainly to protect the clinician rather than help the patient.

It may be long, legalistic, judgmental, or unclear.

Good documentation protects the clinician by protecting the patient.

It should be:

- honest
- factual
- clinically relevant
- respectful
- clear about reasoning
- clear about communication
- clear about follow-up

Do not write emotionally.

Do not argue in the chart.

Do not blame.

Document what happened, what was assessed, what was decided, and why.

28. Correcting Documentation Errors

If documentation contains an error, correct it according to local policy.

Principles:

- do not erase dishonestly
- make correction visible
- state what was incorrect
- provide accurate information
- date and sign correction
- notify relevant team if error affects care

Example:

“Correction to earlier note: patient is allergic to penicillin with history of facial swelling, not nausea. Antibiotic plan reviewed and changed.”

The purpose is safe truth.

29. Documentation and Legal Accountability

Clinical documentation may be used in legal, regulatory, or complaint processes.

But the primary purpose remains patient care.

Good legal protection comes from good clinical documentation:

- accurate timeline
- clear reasoning
- informed consent
- capacity assessment
- risk discussion

safety-netting

follow-up ownership

communication with patient and family

escalation

response to deterioration

If it matters clinically, document it.

If it would help the next clinician understand safety, document it.

30. Documentation in Resource-Limited Settings

In busy or resource-limited settings, documentation must still protect essentials.

Prioritize:

identity

time

syndrome

danger

key findings

working diagnosis

treatment

medication changes

pending tasks

safety-netting

follow-up

responsibility

A short clear note is better than a long vague one.

Example:

“Seen 10:30. Fever, cough, RR elevated, O2 below baseline. Pneumonia likely; sepsis considered. Antibiotics started per local pathway, fluids cautious due to HF. Bloods and CXR pending; Dr. ___ to review results today. Escalate if O2 need rises, BP falls, confusion worsens, or urine output drops.”

This note is brief but useful.

31. Documentation and the Patient’s Right to Read

Increasingly, patients may access their records.

Even when they do not, write as if they might.

Ask:

Is this accurate?

Is this respectful?

Would the patient recognize this as fair?

Have I avoided unnecessary judgment?

Have I recorded their concerns?

Have I explained decisions clearly?

Have I distinguished facts from interpretation?

Documentation is not private venting.

It is part of the patient's story.

32. Documentation as Professional Reflection

Good documentation can improve reasoning.

Writing forces the clinician to ask:

What do I really think is happening?

What evidence supports this?

What does not fit?

What am I worried about?

What am I doing next?

Who needs to know?

What would make me change course?

If you cannot write a clear assessment, the reasoning may not yet be clear.

The act of documentation can reveal confusion and prompt reassessment.

33. Repair Trajectory in Documentation

Documentation repair is shown when:

diagnosis and uncertainty are clear

medicines are accurate

allergies are accurate

capacity and consent are recorded

patient values are documented

goals of care are visible

pending results are owned

follow-up is assigned

safety-netting is recorded

family communication is clear

discharge summary supports continuity

notes are respectful

team members can act safely from the record

patient's story is not distorted

Good documentation keeps care coherent across time.

34. Worked Case 1: AKI and Medicine Restart

A 78-year-old man with CKD and heart failure develops AKI during pneumonia. His diuretic and ACE inhibitor are held. At discharge, the summary simply says “continue usual medicines.”

Documentation Problem

Medicine changes and restart criteria are unclear.

Capacity Failure

Kidney clearance, circulation, medicine safety, continuity.

Coupling Conditions

CKD, heart failure, AKI, infection, complex medication list, primary care follow-up.

Wise Documentation

Document which medicines were held, why, current renal function trend, volume status, when to repeat blood tests, who will decide restart, and what the patient was told.

Repair Trajectory

Patient does not restart unsafe medicines prematurely, kidney function monitored, heart failure managed, primary care understands plan.

35. Worked Case 2: Capacity and Refusal

A 69-year-old woman with hypoxic pneumonia refuses admission. The note says, “Patient refused treatment.”

Documentation Problem

No capacity assessment, risk explanation, reason for refusal, or safety plan recorded.

Capacity Failure

Agency, oxygenation safety, ethical clarity, continuity.

Coupling Conditions

Hypoxia, fear of admission, home responsibilities, possible misunderstanding.

Wise Documentation

Record the diagnosis, admission recommendation, risks explained, patient’s understanding, capacity assessment, reasons for refusal, alternatives offered, safety-netting, follow-up, and family involvement with consent.

Repair Trajectory

Refusal is informed, risk reduced, future clinicians understand context, patient remains supported.

36. Worked Case 3: Pending Cancer Investigation

A 61-year-old woman has iron deficiency anemia and weight loss. Endoscopy referral is made, but no one documents urgency or ownership. Months later, cancer is diagnosed.

Documentation Problem

Diagnostic concern and follow-up responsibility were not clearly recorded.

Capacity Failure

Diagnostic safety, continuity, timely investigation.

Coupling Conditions

Weight loss, anemia, outpatient referral system, patient understanding, possible access barriers.

Wise Documentation

Document concern for GI blood loss or malignancy, referral urgency, tests ordered, who tracks referral, safety-netting, and patient understanding of importance.

Repair Trajectory

Referral completed, abnormal results tracked, diagnosis made earlier if present, patient understands follow-up.

37. Worked Case 4: Goals of Care Missing

A patient with advanced COPD says he does not want ICU or ventilation. This is discussed on ward round but not documented. Overnight he deteriorates and is transferred to ICU.

Documentation Problem

Patient's values and escalation limits did not travel across shifts.

Capacity Failure

Agency, dignity, continuity, team safety.

Coupling Conditions

Advanced COPD, acute deterioration risk, shift handover, family anxiety.

Wise Documentation

Document patient capacity, discussion, understanding, wishes, clinician recommendation, agreed escalation plan, family involvement, and symptom plan for breathlessness.

Repair Trajectory

Patient wishes honored, night team understands plan, breathlessness treated without unwanted escalation.

38. Worked Case 5: Judgmental Label

A patient with heart failure is documented as "non-compliant." Later it emerges he could not afford medicines and did not understand dose changes.

Documentation Problem

Judgmental label hid practical barriers.

Capacity Failure

Medicine access, agency, trust, heart failure control.

Coupling Conditions

Cost, low health literacy, complex medicines, poor discharge explanation.

Wise Documentation

Write specific facts: "Patient reports missing diuretic because prescription cost and transport prevented refill; also uncertain about new dose after last discharge." Document plan to address access, education, and follow-up.

Repair Trajectory

Barrier identified, medicine access improves, trust repaired, future clinicians avoid blame.

39. Worked Case 6: Delirium Baseline

An 85-year-old woman with dementia is admitted confused. The note says "confused due to dementia." Her son later explains she was conversational and walking independently one week ago.

Documentation Problem

Baseline was not documented; delirium risk missed.

Capacity Failure

Cognition, diagnostic safety, family collateral, function.

Coupling Conditions

Dementia, acute illness, missing collateral history, frailty.

Wise Documentation

Document baseline cognition and function from son, acute change timeline, attention assessment, delirium differential, investigations, and safety plan.

Repair Trajectory

Delirium recognized, acute trigger treated, family concern respected, future teams understand baseline.

40. Common Student Pitfalls

Pitfall 1: Writing Labels Without Reasoning

Document the syndrome and why the diagnosis fits.

Pitfall 2: Saying "Stable" Without Detail

Stable must specify what is stable and what remains unsafe.

Pitfall 3: Not Documenting Uncertainty

Uncertainty must be handed forward.

Pitfall 4: Forgetting Pending Results

Every important pending result needs an owner.

Pitfall 5: Poor Medication Documentation

Started, stopped, held, changed, and restart criteria must be clear.

Pitfall 6: Judgmental Language

Describe barriers and behaviors specifically, not moral labels.

Pitfall 7: Missing Capacity and Consent Documentation

Complex decisions need clear ethical documentation.

Pitfall 8: Copying Old Notes Without Verification

Outdated information can become dangerous.

41. Clinical Practice Box

When writing a clinical note, complete this structure:

Date, time, author, role:
Who saw the patient and when?

Reason for review:
Why now? New symptom, routine review, deterioration, discharge, family concern?

Clinical syndrome:
What is the pattern, not just the label?

Immediate danger:
What dangerous possibilities were considered or excluded?

Key findings:
Vitals, examination, function, cognition, pain, hydration, oxygenation, important results.

Assessment:
Working diagnosis, severity, uncertainty, what does not fit.

Plan:
Treatment, tests, monitoring, referrals, escalation, reassessment.

Medicines:
Started, stopped, held, changed, reason, monitoring, restart criteria.

Communication:
What was explained, to whom, questions, understanding, family discussion.

Consent, capacity, refusal, goals:
Document when relevant.

Pending results and follow-up:
Who owns them? What action is needed?

Safety-net:
Warning signs, action, timeframe, patient/caregiver understanding.

42. Mini-Case for Practice

A 79-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and recent pneumonia is being discharged. During admission she had AKI, delirium, poor intake, and falls risk. Her diuretic and ACE inhibitor were held. Her insulin dose was reduced after hypoglycemia. She is now eating better but not back to baseline mobility. Her daughter will supervise medicines. Repeat renal function is needed in three days. Goals of care were discussed: she wants hospital treatment for reversible illness but does not want ICU or ventilation if recovery is unlikely.

Write the documentation priorities.

Clinical Syndrome

Recovering pneumonia complicated by AKI, delirium, hypoglycemia, frailty-related functional decline, and medication vulnerability.

Immediate Risks

AKI recurrence, fluid overload if diuretics held too long, hypoglycemia, falls, delirium recurrence, unsafe mobility, medication confusion.

Medicine Documentation

Record which medicines are held, which are reduced, why, and who will review restart. Clarify insulin plan, hypoglycemia warning signs, and daughter's supervision role.

Follow-Up Documentation

Repeat renal function in three days, clinical review for volume status, glucose review, mobility support, and primary care handover.

Goals Documentation

Record capacity, patient wishes, daughter involvement, escalation preferences, and review plan.

Safety-Net

Return urgently for worsening breathlessness, edema, confusion, poor intake, reduced urine output, falls, fever, chest pain, or hypoglycemia symptoms.

Repair Trajectory

Renal function stabilizes, medicines restarted only when safe, glucose remains safe, walking improves, delirium does not recur, daughter understands plan, goals of care travel with patient.

43. Student Takeaway

Clinical documentation becomes easier when the clinician asks:

What must the next clinician know?
What is the syndrome, not just the label?
What danger was considered?
What remains uncertain?
What changed from baseline?
What medicines were started, stopped, held, or changed, and why?
What did the patient understand and decide?
Was capacity, consent, refusal, or goals of care relevant?
What pending results need ownership?
What follow-up and safety-net were arranged?

Clinical documentation is not paperwork separate from care.

It is care made durable.

The safe clinician writes notes that are accurate, respectful, timely, reasoned, and useful — so the patient's story, risk, values, treatment, and repair trajectory are not lost as care moves across people, places, and time.

Chapter 69. Reflective Practice Made Easy

Reflective practice is the disciplined habit of learning from clinical experience.

It means pausing after patient care to ask:

What happened?
Why did it happen?
What did I think and feel?
What did I miss?
What went well?
What caused harm or near harm?
What will I do differently next time?

Patients do not usually say:

"Your reflective practice needs improvement."

They say:

"No one seemed to learn from what happened."
"The same mistake happened again."
"I felt dismissed."
"The doctors did not explain why things changed."
"I wish someone had listened earlier."
"I hope this does not happen to someone else."

Clinicians may think:

"That case bothered me."
"I should have noticed earlier."
"I am not sure I handled that conversation well."
"The patient deteriorated and I keep replaying it."
"I feel guilty."
"I feel angry."
"I feel numb."
"I need to understand what happened."

Reflective practice is central to Internal Medicine because clinical work is complex, uncertain, emotional, and morally demanding.

No clinician gets every case right.
No guideline covers every situation.
No test removes all uncertainty.
No team avoids every communication failure.
No doctor remains untouched by suffering, death, conflict, error, pressure, or ambiguity.

The first task is not to become a perfect clinician.

The deeper question is:

How can clinical experience become wisdom rather than repetition, defensiveness, shame, or burnout?

Reflective practice becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

In reflective practice, the "patient" is partly the clinician and the clinical system itself.

1. What Is Reflective Practice?

Reflective practice is intentional learning from experience.

It is more than remembering.

It is more than feeling bad.

It is more than writing a diary.

It is the disciplined review of action, reasoning, emotion, outcome, communication, ethics, teamwork, and future improvement.

Reflection asks:

- What was the clinical situation?
- What did I notice?
- What did I miss?
- What assumptions did I make?
- What influenced my decision?
- What did the patient experience?
- What did the family experience?
- What did the team experience?
- What did the outcome teach?
- What must change in my practice?
- What must change in the system?

Reflection turns experience into clinical maturity.

Without reflection, experience may simply harden habits.

2. Reflective Practice Is Not Rumination

Reflection and rumination are different.

Reflection

Reflection is structured, honest, compassionate, and action-oriented.

It asks:

What can be learned, repaired, and improved?

Rumination

Rumination is repetitive self-attack without learning.

It says:

“I am terrible.”
“I should have known.”
“I cannot stop replaying it.”
“Everything is my fault.”

Rumination drains capacity.

Reflection restores capacity.

A clinician should not use reflection as self-punishment.

The purpose is responsibility with learning, not shame without repair.

3. Reflective Practice Is Not Excuse-Making

Reflection is also not defensiveness.

Defensiveness says:

“There was nothing I could have done.”
“The patient was difficult.”
“The system was busy.”
“The family was unreasonable.”
“The result was unpredictable.”

Sometimes these may contain truth.

But defensive reflection stops too soon.

Good reflection asks:

Even if the case was difficult, what can I still learn?
Even if the system was pressured, what could have made care safer?
Even if the outcome was unavoidable, was the communication humane?
Even if I was not at fault, what should I notice next time?

Reflection balances honesty with humility.

4. Reflective Practice Is a Capacity Skill

Reflective practice protects capacities.

Clinical Reasoning Capacity

Reflection helps clinicians recognize diagnostic patterns, uncertainty, bias, and error.

Emotional Capacity

Reflection helps clinicians process distress rather than bury it.

Ethical Capacity

Reflection helps clinicians notice moral tension, proportionality, dignity, and fairness.

Communication Capacity

Reflection improves listening, explanation, conflict management, and serious illness conversations.

Team Capacity

Reflection identifies handover failures, role confusion, hierarchy problems, and missed escalation.

Professional Capacity

Reflection supports growth, accountability, humility, and resilience.

A clinician who never reflects may become technically experienced but relationally and morally brittle.

5. The First Question: Is There Immediate Danger?

Reflection is not only for later.

Sometimes urgent reflection is needed now.

Immediate danger exists when:

- the same error may repeat
- the patient remains unsafe
- a pending result is unowned

- a handover failed
- a medication error is active
- a patient or family was misinformed
- a capacity or consent issue is unresolved
- conflict is escalating
- a clinician is too distressed to practice safely
- a team is not functioning
- moral distress is impairing care
- a near miss reveals current system danger

The danger-first question is:

Is there something that must be repaired immediately to prevent further harm?

Reflection should lead to action when safety is at stake.

6. Immediate Red Flags in Reflective Practice

Red flags include:

- persistent shame or guilt interfering with practice
- repeated emotional numbness
- anger toward patients or families
- cynicism becoming routine
- avoidance of difficult patients
- fear of making decisions
- over-testing due to anxiety
- under-testing due to fatigue
- not asking for help
- hiding errors
- blaming patients repeatedly
- repeated conflict with team members
- poor sleep after cases
- intrusive memories after traumatic events
- moral distress without support
- repeated near misses
- defensiveness during feedback
- inability to receive correction
- feeling that patients no longer feel like persons

These are signs that professional capacity needs attention.

The clinician is not a machine.

The clinician is a living participant in care.

7. When Should Clinicians Reflect?

Reflection is useful after:

- diagnostic uncertainty
- diagnostic error
- patient deterioration
- death
- difficult conversation
- complaint
- conflict with family
- conflict with team
- near miss
- medication error
- unexpected recovery
- successful teamwork
- ethical dilemma
- refusal of treatment
- discharge that felt unsafe
- strong emotional reaction
- patient who reminded you of someone
- case where bias may have influenced judgment
- moment of excellent care worth repeating

Reflection is not only for failure.

Reflect on what went well.

Good practice should also be understood, reinforced, and shared.

8. The Reflective Practice Pathway

A simple pathway is:

- describe what happened
- identify the clinical syndrome
- identify the decision points
- identify danger and outcome
- examine reasoning
- examine emotion
- examine communication
- examine teamwork and system factors
- examine ethics and values

identify learning

plan repair or change

follow through

This structure prevents vague reflection.

It turns experience into specific learning.

9. Step 1: Describe What Happened

Begin with facts.

Ask:

Who was the patient?

What brought them in?

What was the clinical situation?

What decisions were made?

What happened next?

What was the outcome?

Who was involved?

Avoid interpretation at first.

Write:

“The patient presented with breathlessness and chest pain. Initial tests were reassuring. He was discharged and returned the next day with pulmonary embolism.”

Not:

“I failed to diagnose PE.”

Start with the event.

Meaning comes after careful review.

10. Step 2: Identify the Syndrome

Ask:

What was the actual syndrome?

Was it named clearly?

Did the team focus on a label too early?

Were symptoms grouped correctly?

Did the diagnosis explain the whole pattern?

Example:

Instead of:

“Anxiety.”

The syndrome may have been:

“Acute breathlessness with tachycardia and chest tightness.”

Instead of:

“Fall.”

The syndrome may have been:

“Unwitnessed collapse with memory gap and possible syncope.”

Reflection often reveals that the first mistake was poor syndrome definition.

11. Step 3: Identify Decision Points

Every case contains decision points.

Examples:

- whether to admit or discharge
- whether to order a test
- whether to treat immediately
- whether to escalate
- whether to call family
- whether to stop a medicine
- whether to reassess
- whether to believe a concern
- whether to discuss goals of care
- whether to document uncertainty
- whether to ask for help

Ask:

- What were the key decisions?
- What information was available then?
- What information was missing?
- What pressures existed?
- What alternatives were possible?

Good reflection judges decisions based on what was knowable at the time, not only what was known later.

12. Step 4: Identify Danger and Outcome

Ask:

- What danger was present?
- Was it recognized?
- Was it stabilized?
- Was it communicated?
- Did harm occur?
- Was there a near miss?
- Was the outcome preventable, partially preventable, or likely unavoidable?

What would earlier recognition have changed?

What safety-net was provided?

Avoid both extremes:

“Everything was my fault.”

and

“Nothing could have been done.”

Most cases are more nuanced.

13. Step 5: Examine Clinical Reasoning

Ask:

What was my working diagnosis?

What differential did I consider?

What did I not consider?

What evidence supported my diagnosis?

What evidence did not fit?

Did I anchor too early?

Did I over-trust a normal test?

Did I under-value the patient’s concern?

Did I miss medication harm?

Did I miss baseline change?

Did I consider more than one diagnosis?

Did I reassess when treatment failed?

Reflection improves future reasoning by naming the thinking process.

14. Step 6: Examine Emotion

Ask:

What did I feel during the case?

Anxiety?

Irritation?

Fear?

Pressure?

Sadness?

Helplessness?

Overconfidence?

Fatigue?

Shame?

Sympathy?

Frustration?

Avoidance?

Emotion can influence judgment.

A clinician may over-investigate because of fear.
A clinician may under-investigate because of fatigue.
A clinician may dismiss a patient because of irritation.
A clinician may avoid prognosis because of discomfort.
A clinician may continue burdensome treatment because stopping feels like failure.
A clinician may prescribe because they want to please.

Emotions are not enemies.

Unexamined emotions are risks.

15. Step 7: Examine Communication

Ask:

Did I listen long enough?

Did I identify the patient's main concern?

Did I explain clearly?

Did I use jargon?

Did I check understanding?

Did I safety-net?

Did I involve family appropriately?

Did I use an interpreter where needed?

Did I communicate uncertainty?

Did I respond to emotion?

Did the patient leave knowing the plan?

Communication failures often appear later as clinical failures.

A patient may not return because warning signs were unclear.
A family may demand ICU because prognosis was never explained.
A patient may not take medicine because the plan was confusing.
A complaint may arise because the patient felt dismissed, not because the outcome was poor.

Communication is part of clinical quality.

16. Step 8: Examine Teamwork

Ask:

Was responsibility clear?

Was handover safe?

Were pending results owned?

Did nurses or therapists raise concerns?

Were those concerns heard?

Did pharmacy identify medicine risk?

Did discharge planning include function?

Were family concerns communicated?

Were goals of care handed over?

Did hierarchy block speaking up?

Did workload affect care?

Did the system make safe care difficult?

Many errors are team or system errors.

Reflection should not become private self-blame when the learning belongs to the whole team.

17. Step 9: Examine Ethics

Ask:

Was consent valid?

Was capacity assessed when needed?

Were patient values heard?

Was treatment proportionate?

Was suffering relieved?

Was dignity protected?

Was there bias?

Was confidentiality respected?

Was discharge fair and safe?

Were resource limits handled honestly?

Was family involvement appropriate?

Did moral distress affect care?

Ethical reflection keeps clinical practice answerable to the person, not only to the disease.

18. Step 10: Identify Learning

Learning should be specific.

Weak learning:

“I should be more careful.”

Better learning:

“In older adults with falls, I must avoid the phrase ‘mechanical fall’ unless a clear trip is witnessed. I will ask about loss of consciousness, prodrome, palpitations, glucose, medicines, orthostatic symptoms, and injury.”

Weak learning:

“Communicate better.”

Better learning:

“In serious illness, I will ask the patient what they understand before giving information, then state prognosis concerns clearly and document goals of care.”

Specific learning changes practice.

19. Step 11: Plan Repair or Change

Reflection should lead to action.

Possible actions include:

- reviewing a guideline
- discussing case with senior colleague
- calling patient or family to clarify plan
- correcting documentation
- following up pending result
- changing a checklist
- improving handover template
- adding medication reconciliation step
- arranging debrief
- seeking supervision
- practicing a communication phrase
- reading about a missed diagnosis
- apologizing where appropriate
- escalating system problem
- documenting goals more clearly
- changing personal habit

Ask:

What will I do differently next time?

and

What must be fixed now?

20. Step 12: Follow Through

Reflection without follow-through becomes intention only.

Ask later:

- Did I change my practice?
- Did the team change the process?
- Did we close the loop?
- Did the patient receive follow-up?
- Did I discuss this case?
- Did I document the learning?

- Did the same problem recur?

Reflection should produce a visible repair trajectory.

Learning must become behavior.

21. Reflective Practice After Diagnostic Error

After diagnostic error, reflect on:

- syndrome definition
- differential diagnosis
- red flags
- cognitive bias
- test interpretation
- baseline assessment
- medication review
- collateral history
- communication
- follow-up
- pending results
- system issues
- repair with patient and family

Ask:

- What was knowable at the time?
- What clue was missed?
- What would have prompted earlier reassessment?
- How can the process change?
- What does the patient need now?
- Has honest communication occurred?

Diagnostic error reflection should produce both clinical learning and relational repair.

22. Reflective Practice After a Patient Death

After death, reflection may include:

- Was dying recognized?
- Were symptoms controlled?
- Was pain treated?
- Was breathlessness relieved?
- Was the family informed?
- Were goals of care clear?
- Was escalation appropriate?

- Were burdensome interventions avoided?
- Were spiritual or cultural needs honored?
- Did the team support each other?
- Did anything remain unresolved?

Not every death is a failure.

But every death can teach.

A good death may teach what to repeat.

A difficult death may teach what to repair.

23. Reflective Practice After Conflict

Conflict may occur with patients, families, or team members.

Reflect:

- What was the conflict really about?
- Fear?
- Mistrust?
- Grief?
- Poor communication?
- Unclear goals?
- Cultural misunderstanding?
- System pressure?
- Moral distress?
- Personality clash?
- Previous trauma?

Ask:

- Did I listen?
- Did I become defensive?
- Did I name emotion?
- Did I explain clearly?
- Did I return to shared goals?
- Did I set boundaries respectfully?
- Was senior support needed?
- Was the patient's voice protected?

Conflict is often a signal of unaddressed fear or unclear meaning.

24. Reflective Practice After Success

Do not reflect only on difficulty.

After good care, ask:

What made this go well?

Was danger recognized early?

Was communication clear?

Did teamwork function well?

Did family support help?

Did a checklist prevent error?

Did a nurse's concern lead to action?

Did a goals-of-care conversation prevent unwanted escalation?

Did medication review prevent harm?

Did the patient feel heard?

Success contains patterns worth preserving.

Reflection helps good practice become repeatable.

25. Reflective Writing

Reflective writing may help structure learning.

A simple format:

What happened?

Describe the case.

Why did it matter?

Identify clinical, emotional, ethical, or system significance.

What did I think and feel?

Name reasoning and emotion.

What went well?

Identify strengths.

What could have been better?

Identify gaps.

What have I learned?

Make learning specific.

What will I do differently?

State action.

Reflective writing should be honest but respectful.

Protect patient confidentiality.

Do not include unnecessary identifying details.

26. Reflective Discussion

Reflection often improves through discussion.

Useful settings include:

supervision

- ward debrief
- morbidity and mortality meeting
- case conference
- ethics discussion
- peer conversation
- Balint-style group
- teaching round
- palliative debrief
- significant event analysis

Good reflective discussion should be:

- respectful
- specific
- psychologically safe
- patient-centered
- system-aware
- learning-oriented
- not humiliating
- not defensive

The goal is to increase wisdom, not assign shame.

27. Feedback and Reflection

Feedback is external reflection.

It may come from:

- patients
- families
- nurses
- pharmacists
- therapists
- peers
- seniors
- juniors
- complaints
- compliments
- outcomes
- audits

Receiving feedback can be hard.

Ask:

- What is true here?
- What surprised me?
- What do I resist hearing?
- What pattern is emerging?
- What can I change?
- What support do I need?

Do not accept unfair feedback uncritically.

But do not reject uncomfortable feedback automatically.

Professional growth requires the ability to learn without collapsing.

28. Reflection and Burnout

Burnout can reduce reflective capacity.

Burnout may cause:

- emotional exhaustion
- cynicism
- reduced empathy
- irritability
- detachment
- reduced concentration
- poor sleep
- sense of futility
- avoidance
- errors
- loss of meaning

Reflection can help, but reflection alone cannot fix unsafe systems.

If burnout is severe, clinicians need support, rest, workload attention, peer connection, supervision, and system change.

Do not turn burnout into another personal failure.

Ask:

- What is mine to change?
- What belongs to the system?
- What support do I need?
- What boundaries are necessary?
- What restores meaning?
- What is unsafe and must be escalated?

Reflective practice should protect the clinician’s humanity.

29. Reflection and Moral Distress

Moral distress occurs when clinicians feel unable to do what they believe is right.

Examples:

- continuing non-beneficial treatment
- discharging to unsafe conditions
- inadequate staffing
- lack of medicines
- ignoring patient wishes
- family conflict
- poor end-of-life care
- untreated pain
- resource limitations

Reflect:

- What value was threatened?
- What harm was I worried about?
- What prevented the right action?
- Who else shared this concern?
- Was escalation possible?
- What documentation was needed?
- What system change is needed?
- What support do I need now?

Moral distress should not be buried.

Buried moral distress becomes cynicism.

30. Reflection and Bias

Reflection helps identify bias.

Ask:

- Did I listen differently because of this patient's age, gender, race, language, disability, addiction, mental illness, poverty, weight, or frequent attendance?
- Did I use judgmental language?
- Did I assume non-compliance instead of asking about barriers?
- Did I take pain seriously?
- Did I use an interpreter?
- Did I explain as carefully as I would to another patient?
- Did I dismiss symptoms because of a prior label?
- Did I allow stigma to shape risk assessment?

Bias reflection is uncomfortable.

But discomfort is part of ethical growth.

31. Reflection and Professional Identity

Reflective practice shapes the kind of clinician one becomes.

Without reflection, clinicians may become:

- technically skilled but emotionally numb
- efficient but dismissive
- knowledgeable but rigid
- confident but unsafe
- compassionate but overwhelmed
- guideline-driven but person-blind
- experienced but unteachable

With reflection, clinicians can become:

- humble
- discerning
- emotionally steady
- ethically alert
- clinically sharper
- better communicators
- safer team members
- more resilient
- more humane

The question is:

What kind of clinician is this experience forming in me?

32. Reflective Practice and Life-Coherent Medicine

Life-coherent medicine asks whether care serves life-capacity.

Reflective practice asks:

- Did our care restore capacity or reduce it?
- Did treatment serve the patient's life or only the disease?
- Did we protect agency?
- Did we reduce suffering?
- Did we notice coupling conditions?
- Did we act proportionately?
- Did we repair or merely intervene?
- Did we learn from the outcome?
- Did we preserve dignity?

Reflection is the clinician's way of staying coupled to reality.

Without reflection, practice drifts.

With reflection, medicine remains answerable to life.

33. Worked Case 1: Missed Delirium

A patient with dementia became acutely more confused. The team assumed dementia progression. The next day, pneumonia and hypoxia were diagnosed.

Reflection

The syndrome was not named correctly. The true syndrome was acute confusion in a person with dementia, which should have triggered delirium assessment.

Reasoning Issue

Premature closure and diagnostic momentum.

Team Issue

Family baseline concern was not given enough weight.

Learning

Sudden worsening in dementia is delirium until proven otherwise.

Repair

Treat pneumonia and hypoxia, communicate with family, update team teaching, document baseline function clearly in future cases.

34. Worked Case 2: Difficult Family Meeting

A family became angry when told their father was dying. The clinician felt attacked and ended the conversation quickly. Later, the family complained that no one explained the plan.

Reflection

The family's anger may have represented fear, grief, guilt, and poor prior communication.

Communication Issue

Emotion was not named or explored.

Ethical Issue

Goals of care were not clarified.

Learning

In serious illness conflict, acknowledge emotion before explaining more facts.

Repair

Arrange another meeting with senior support, clarify prognosis, ask what the patient would have wanted, document goals, offer spiritual support.

35. Worked Case 3: Unsafe Discharge

A frail patient was discharged because blood tests improved. She fell at home because mobility had not recovered.

Reflection

Medical stability was mistaken for discharge readiness.

Team Issue

Physiotherapy and caregiver concerns were not integrated.

Capacity Issue

Mobility and home safety were not treated as core clinical outcomes.

Learning

Discharge requires medical, functional, cognitive, social, and medication safety.

Repair

Review discharge checklist, include therapy clearance and caregiver readiness, document baseline and current mobility.

36. Worked Case 4: Excellent Handover

A deteriorating patient was handed over with clear diagnosis, uncertainty, pending labs, escalation triggers, and family concerns. Overnight deterioration was recognized early and treated.

Reflection

Good handover protected the patient.

What Went Well

Risk was named, uncertainty was handed over, tasks were assigned, and escalation triggers were clear.

Learning

Structured handover prevents harm.

Repair Trajectory

Make this handover style routine and teach it to juniors.

37. Worked Case 5: Bias in Pain Assessment

A patient with opioid dependence presented with severe abdominal pain. The clinician initially felt skeptical but paused, reassessed, and diagnosed pancreatitis.

Reflection

Stigma could have caused diagnostic error.

Emotional Issue

Irritation and suspicion were present.

Ethical Issue

Pain and danger deserved fair assessment.

Learning

Addiction does not make pain unreal.

Repair

Use neutral language, assess danger objectively, treat pain safely, manage dependence without stigma.

38. Worked Case 6: Moral Distress Near End of Life

A patient with advanced cancer received repeated invasive treatments despite clear decline. The team felt they were prolonging suffering but avoided discussing prognosis with family.

Reflection

The team experienced moral distress because treatment burden no longer seemed proportionate.

Communication Issue

Prognosis and goals were not discussed early enough.

Ethical Issue

Non-maleficence, dignity, and proportionality were threatened.

Learning

Avoiding difficult conversations can lead to burdensome care.

Repair

Hold goals-of-care meeting, involve palliative care, clarify patient values, support team debrief.

39. Common Student Pitfalls

Pitfall 1: Confusing Reflection With Self-Blame

Reflection should lead to learning and repair, not endless shame.

Pitfall 2: Avoiding Reflection After Difficult Cases

Avoidance preserves the pattern.

Pitfall 3: Reflecting Only on Mistakes

Good practice should also be studied and repeated.

Pitfall 4: Ignoring Emotion

Emotion shapes judgment and must be examined.

Pitfall 5: Ignoring System Factors

Not every problem is individual failure.

Pitfall 6: Becoming Defensive

Defensiveness blocks learning.

Pitfall 7: Writing Vague Learning Points

Learning must be specific enough to change behavior.

Pitfall 8: Not Following Through

Reflection is incomplete without action.

40. Clinical Practice Box

When reflecting on a case, complete this structure:

What happened?
Brief factual description.

What was the syndrome?
How should the clinical pattern have been named?

What were the key decisions?
Admit, discharge, test, treat, observe, escalate, communicate, document?

What was dangerous?
What harm occurred or nearly occurred?

What went well?
What should be repeated?

What did not go well?
Reasoning, communication, teamwork, ethics, documentation, system?

What did I feel?
Fear, anger, sadness, shame, fatigue, overconfidence, helplessness?

What did the patient or family experience?
Were they heard, informed, respected, supported?

What have I learned?
Specific learning point.

What will I change?
Concrete action for next time.

What repair is needed now?
Patient follow-up, apology, documentation correction, team debrief, system change?

41. Mini-Case for Practice

A 74-year-old man with COPD, heart failure, CKD, frailty, and mild dementia was admitted with breathlessness. The team treated COPD exacerbation. He improved slightly but remained breathless, swollen, and confused. Nursing staff said he seemed worse overnight, but the concern was not escalated. He deteriorated with pulmonary edema and AKI. His daughter later said, “He was not like this at baseline.”

Apply the reflective practice approach.

What Happened?

A multimorbid frail patient with breathlessness was treated as COPD exacerbation, but heart failure, AKI, delirium, and baseline change were not fully integrated.

Syndrome

Acute breathlessness in multimorbidity with oxygenation, circulation, clearance, and cognition failure.

Reasoning Reflection

The team may have anchored on COPD and missed mixed causes. The diagnosis did not explain edema, AKI, and confusion.

Team Reflection

Nursing concern was not treated as important clinical information. Daughter’s baseline knowledge was not sought early enough.

Communication Reflection

Family concern was recognized late. Uncertainty may not have been explained.

Ethical Reflection

Frailty and cognition made the patient vulnerable. His voice depended partly on collateral information.

Learning

In multimorbid breathlessness, avoid single-disease anchoring. Listen to nursing concern and family baseline. Reassess when symptoms do not fit the working diagnosis.

Repair Plan

Review patient urgently, treat heart failure and AKI according to context, assess delirium, update daughter, document baseline, and discuss the case in team debrief. Add handover prompt: “What else could be causing this?”

Repair Trajectory

Breathlessness improves, kidney function stabilizes, delirium clears, team listens earlier to concern, future breathlessness cases are mapped across oxygenation, circulation, clearance, medicines, and frailty.

42. Student Takeaway

Reflective practice becomes easier when the clinician asks:

What happened?
What was the true clinical syndrome?
What decisions mattered?
What went well?
What did not fit?
What did I feel?
How did communication, teamwork, ethics, and documentation affect the outcome?
Was there bias, moral distress, or system pressure?
What did the patient and family experience?
What have I learned?
What must I change?
What repair is needed now?

Reflective practice is not self-punishment.

It is professional metabolism.

It turns experience into wisdom, error into learning, distress into support, and routine care into mature clinical judgment.

The safe clinician reflects honestly, learns specifically, repairs where possible, seeks support when needed, and allows every patient encounter to deepen both competence and humanity.

Chapter 70. Lifelong Learning Made Easy

Lifelong learning is the ongoing practice of updating knowledge, refining judgment, improving skills, correcting errors, and becoming more clinically trustworthy over time.

Patients do not usually say:

“I need a clinician committed to lifelong learning.”

They say:

“Is this still the best treatment?”
“Has anything changed?”
“Why did another doctor tell me something different?”
“Are there safer options now?”
“Do I still need this medicine?”
“Can you explain the evidence?”
“How do you know this is the right plan?”

Clinicians may think:

“I learned this years ago.”
“The guideline has changed.”
“I am not sure what the latest evidence says.”
“This patient does not fit the textbook.”
“I need to review this.”
“I keep seeing this problem and need a better approach.”
“I made a mistake and must understand why.”

Lifelong learning is central to Internal Medicine because medicine changes, patients vary, evidence evolves, treatments improve, harms become clearer, and clinical judgment matures only through continued practice and reflection.

The first task is not to know everything.

The deeper question is:

How does the clinician remain teachable, safe, current, humble, and life-serving across a whole career?

Lifelong learning becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

In lifelong learning, the clinician’s own knowledge, habits, reasoning, and practice patterns become the object of care.

1. What Is Lifelong Learning?

Lifelong learning is the disciplined habit of continuing to grow as a clinician.

It includes:

- reading
- asking questions
- reviewing guidelines
- learning from patients
- learning from colleagues
- learning from mistakes

updating clinical knowledge

practicing communication

improving procedural skills

understanding new medicines

recognizing outdated habits

reflecting on difficult cases

receiving feedback

teaching others

auditing one's practice

adapting to local context

remaining humble before uncertainty

Lifelong learning is not simply collecting information.

It is the transformation of information into safer care.

2. Why Lifelong Learning Matters

Medicine changes.

Diseases are reclassified.
Treatment targets change.
Medicines are withdrawn.
New harms are discovered.
New therapies become available.
Guidelines are updated.
Diagnostic tools improve.
Public health threats emerge.
Resistance patterns change.
Technology changes workflow.
Patient expectations change.
Ethical standards evolve.

A clinician who stops learning may remain confident while becoming unsafe.

The question is not:

"Did I learn this once?"

The question is:

"Is what I know still true, useful, safe, and applicable to this patient?"

3. Lifelong Learning Is a Patient Safety Skill

Lifelong learning protects patients from:

outdated treatment

missed diagnoses

unsafe prescribing

poor communication

- unrecognized bias
- diagnostic overconfidence
- inappropriate testing
- guideline misuse
- treatment drift
- failure to deprescribe
- failure to recognize new evidence
- failure to learn from error

Learning is not an academic luxury.

It is part of clinical safety.

A clinician's knowledge base is like a medication list.

It needs review, updating, discontinuation of harmful items, and addition of better tools.

4. Lifelong Learning Is a Capacity Problem

The clinician has capacities too.

Knowledge Capacity

What does the clinician know?

Reasoning Capacity

Can the clinician apply knowledge to complex patients?

Emotional Capacity

Can the clinician tolerate uncertainty, feedback, error, and grief?

Ethical Capacity

Can the clinician recognize dignity, fairness, consent, and proportionality?

Communication Capacity

Can the clinician explain, listen, and repair misunderstanding?

Team Capacity

Can the clinician learn with and from others?

Adaptation Capacity

Can the clinician change when evidence or context changes?

Lifelong learning asks:

What capacities must I strengthen so that my care remains safe and life-coherent?

5. The First Question: Is There Learning Danger Now?

Sometimes a knowledge gap creates immediate danger.

Learning danger exists when:

- the clinician is managing an unfamiliar emergency
- a high-risk medicine is being prescribed
- the diagnosis is uncertain and dangerous
- local guidance is needed

a new protocol applies

the patient is deteriorating

a rare but serious condition is possible

a guideline has changed

the clinician is relying on memory for a high-risk decision

a procedure is unfamiliar

a patient asks a question the clinician cannot answer

a repeated error pattern appears

a colleague raises concern

the clinician feels falsely confident

The danger-first question is:

What do I need to know or verify now to keep this patient safe?

A safe clinician knows when to pause, check, ask, or escalate.

6. Immediate Red Flags in Lifelong Learning

Red flags include:

“I have always done it this way.”

“I do not need to check.”

“Guidelines are for juniors.”

“The patient is wrong because the textbook says otherwise.”

“I do not want feedback.”

“I never make diagnostic errors.”

“This is just anxiety.”

“This is just old age.”

“The computer says the dose is fine.”

“I cannot ask because I should already know.”

“I am too busy to learn from this.”

“That complication was just bad luck.”

“Patients are more difficult now.”

“New evidence does not apply to me.”

These statements may signal professional closure.

Professional closure is dangerous because it blocks correction.

The lifelong learner remains open without becoming unstable.

7. The Lifelong Learning Pathway

A practical learning pathway is:

recognize the learning need

- define the clinical question
- find trustworthy information
- appraise relevance
- apply to the patient
- discuss when needed
- document and follow up
- observe outcome
- reflect
- update practice

This pathway prevents shallow learning.

The goal is not simply to read.

The goal is to improve care.

8. Step 1: Recognize the Learning Need

Learning begins when the clinician notices a gap.

Learning needs may arise from:

- uncertainty
- error
- near miss
- patient question
- new guideline
- new medicine
- unusual case
- repeated presentations
- poor outcome
- audit finding
- colleague feedback
- teaching responsibility
- ethical discomfort
- system change
- personal discomfort

Useful questions:

- What do I not know?
- What am I assuming?
- What has changed since I learned this?
- What keeps recurring in my practice?
- What mistakes do I fear making?

What do patients ask that I cannot explain well?

What decisions feel uncomfortable?

Recognizing ignorance is not weakness.

It is the doorway to safer practice.

9. Step 2: Define the Clinical Question

A vague question leads to vague learning.

Instead of:

“I need to read about heart failure.”

Ask:

“In an older patient with heart failure and CKD, how should diuretics be adjusted when renal function worsens?”

Instead of:

“I need to learn diabetes.”

Ask:

“In a frail older adult with recurrent hypoglycemia, how should glucose targets and medicines be simplified?”

Instead of:

“I need to read about pain.”

Ask:

“How can I treat chronic neuropathic pain while reducing opioid and sedative risk?”

A good clinical question includes:

patient type

problem

intervention or issue

outcome

context

Focused questions make learning useful.

10. Step 3: Find Trustworthy Information

Not all information is equal.

Trustworthy sources may include:

local clinical guidelines

national or regional guidelines

specialty society guidance

systematic reviews

high-quality textbooks

peer-reviewed journals

- drug formularies
- institutional protocols
- senior clinical expertise
- multidisciplinary team knowledge
- pharmacists
- public health advisories
- palliative care guidance
- ethics policies
- patient safety alerts

Be cautious with:

- social media claims
- isolated anecdotes
- outdated textbooks
- promotional material
- non-peer-reviewed summaries
- incomplete online posts
- overconfident simplified advice
- industry-driven claims
- personal habit presented as evidence

The safest learner asks:

Who is saying this, on what evidence, for which patients, and with what limitations?

11. Step 4: Appraise Relevance

Evidence must fit the patient.

Ask:

- Does this evidence apply to this patient's age?
- Does it include frail patients?
- Does it include multimorbidity?
- Does kidney or liver disease change safety?
- Does dementia affect feasibility?
- Does the patient's prognosis change time-to-benefit?
- Does the patient's goal match the studied outcome?
- Is the intervention available locally?
- Is monitoring possible?
- Are costs or access barriers present?
- Are harms reported clearly?
- Is the benefit clinically meaningful?

Evidence is not automatically wisdom.

Evidence becomes wisdom when interpreted through the patient's reality.

12. Step 5: Apply Learning to the Patient

After learning, return to the patient.

Ask:

- Does this change diagnosis?
- Does this change treatment?
- Does this change risk?
- Does this change monitoring?
- Does this change communication?
- Does this change follow-up?
- Does this change goals of care?
- Does this change what I should stop doing?

Learning that does not return to the patient remains abstract.

The question is:

What will I do differently now because of what I learned?

13. Step 6: Discuss When Needed

Some learning should be shared.

Discuss with:

- senior clinicians
- specialists
- pharmacists
- nurses
- therapists
- palliative care teams
- ethics committees
- primary care colleagues
- public health colleagues
- the patient and family

Discussion is important when:

- evidence is uncertain
- risk is high
- patient is complex
- treatment is unfamiliar
- patient values matter

resources are limited

local practice differs

ethical concerns exist

the decision is irreversible

the clinician is unsure

Learning is often social.

Good clinicians learn in teams.

14. Step 7: Document and Follow Up

If learning changes care, document:

what issue was reviewed

what guidance or advice informed decision

what decision was made

patient-specific reasoning

patient discussion

monitoring plan

follow-up

uncertainty

Example:

“Reviewed renal dosing guidance and discussed with pharmacy. Antibiotic adjusted for current kidney function. Renal function to be repeated in 48 hours.”

This shows safe learning in action.

15. Step 8: Observe Outcome

Learning is incomplete until outcome is observed.

Ask:

Did the patient improve?

Did symptoms settle?

Did harm occur?

Did labs stabilize?

Did the patient understand?

Did the plan fit home life?

Did the medicine cause side effects?

Did follow-up occur?

Did the diagnosis change?

Did the guideline fit this case?

Outcomes teach.

But outcomes must be interpreted carefully.

A good outcome does not always prove the decision was right.

A bad outcome does not always prove the decision was wrong.

Reflect on the process.

16. Step 9: Reflect

After applying learning, reflect:

- What did I learn?
- What surprised me?
- What remains uncertain?
- What would I do again?
- What would I change?
- What should I teach others?
- What should be added to a checklist?
- What system issue became visible?
- What patient explanation worked well?

Reflection turns isolated learning into professional growth.

17. Step 10: Update Practice

The final step is change.

Examples:

- add a medication safety check
- update discharge template
- revise chest pain safety-net phrase
- check renal dosing more reliably
- ask baseline function earlier
- involve family sooner in delirium
- avoid “mechanical fall” without explanation
- use teach-back for high-risk medicines
- document pending result ownership
- deprescribe more thoughtfully
- discuss goals of care earlier
- review palliative symptom guidance
- improve handover structure

Learning must become habit.

A clinician has not truly learned until practice changes.

18. Learning From Patients

Patients are teachers.

They teach:

- how illness feels
- how treatment burden works
- what symptoms mean in real life
- how fear shapes decisions
- how cost affects adherence
- how stigma harms care
- how family systems support or undermine repair
- how serious illness changes priorities
- what explanations are understandable
- what it means to live with chronic disease

Ask patients:

- What has this illness been like for you?
- What part of treatment is hardest?
- What do clinicians often misunderstand?
- What helps you feel safe?
- What makes care difficult?
- What do you wish we had explained earlier?

Clinical wisdom grows when the patient's lived experience is taken seriously.

19. Learning From Colleagues

Colleagues teach different forms of knowledge.

Nurses teach deterioration, comfort, practical care, and family dynamics.
Pharmacists teach medication safety.
Physiotherapists teach mobility and rehabilitation.
Occupational therapists teach home function.
Speech and language therapists teach swallowing and communication.
Dietitians teach nutrition and cachexia.
Social workers teach the social reality of care.
Palliative care teams teach comfort, goals, and dying.
Specialists teach depth.
Generalists teach integration.
Patients teach meaning.

A lifelong learner asks:

What does this colleague see that I do not see?

20. Learning From Mistakes

Mistakes are painful teachers.

A mature clinician does not hide from them.

After error or near miss, ask:

- What happened?
- What was missed?
- Why did it make sense at the time?
- What assumptions were present?
- What system factors contributed?
- What communication failed?
- Was there bias?
- What repair is needed?
- What will prevent recurrence?

Learning from mistakes requires psychological safety and accountability together.

Blame alone produces silence.

Excuses alone produce repetition.

Learning requires truth with repair.

21. Learning From Success

Success also deserves study.

Ask:

- Why did this case go well?
- What did we notice early?
- What communication helped?
- What teamwork worked?
- What handover protected the patient?
- What explanation reduced fear?
- What decision matched the patient's values?
- What process should we repeat?

A good outcome should not be treated as luck alone.

Identify the pattern worth preserving.

22. Learning From Guidelines Without Becoming Rigid

Guidelines help standardize care and improve safety.

But the learner must ask:

- What patient population does this guideline address?
- What outcomes does it prioritize?
- What harms does it mention?
- What does it not cover?

How does frailty change this?

How does multimorbidity change this?

How does kidney or liver disease change this?

How do patient goals change this?

What local resources are assumed?

Guidelines are tools for judgment.

They are not substitutes for judgment.

A lifelong learner uses guidelines to become safer, not mechanical.

23. Learning in Multimorbidity

Multimorbidity requires integrated learning.

A clinician must learn not only diseases, but interactions.

Examples:

heart failure and CKD

diabetes and frailty

COPD and anxiety

pain and addiction

dementia and delirium

anticoagulation and falls

steroids and infection risk

NSAIDs and kidney injury

depression and chronic disease

palliative care and organ failure

The question is not:

“What is the guideline for each disease?”

The question is:

“How do these diseases, treatments, and life conditions interact in this person?”

Integrated learning is essential for Internal Medicine.

24. Learning in Resource-Limited Settings

Lifelong learning must fit local reality.

In resource-limited settings, clinicians must learn:

how to prioritize danger

how to use limited tests wisely

how to treat safely when resources are constrained

when to refer

how to safety-net

- how to adapt guidelines
- how to use clinical examination well
- how to communicate uncertainty
- how to coordinate community support
- how to advocate for system improvement

Resource limitation does not mean abandoning evidence.

It means applying evidence with context, creativity, honesty, and fairness.

25. Learning and Technology

Technology can support learning.

Examples include:

- electronic guidelines
- drug interaction tools
- clinical calculators
- digital libraries
- simulation
- online courses
- decision support
- telemedicine
- artificial intelligence tools
- electronic records
- audit dashboards

But technology can also mislead.

Risks include:

- outdated information
- automation bias
- copying errors
- over-reliance on alerts
- alert fatigue
- misinformation
- loss of bedside reasoning
- privacy risks
- overconfidence from quick answers

The safe clinician asks:

Does this technology improve judgment, or replace it prematurely?

Technology should support clinical reasoning, not weaken it.

26. Learning and Teaching

Teaching is one of the best ways to learn.

When teaching, the clinician must clarify:

- what matters
- why it matters
- what danger looks like
- how to reason
- what to avoid
- how to explain
- how to document
- how to follow up

Teaching students and juniors forces the clinician to make tacit judgment visible.

Useful teaching questions include:

- What is the syndrome?
- What is dangerous?
- What is most likely?
- What does not fit?
- What capacity is failing?
- What treatment could help?
- What could harm?
- What is the repair trajectory?
- What would make us change the plan?

Teaching turns knowledge into shared clinical culture.

27. Learning and Feedback

Feedback is essential.

Seek feedback from:

- seniors
- peers
- juniors
- nurses
- patients
- families
- pharmacists
- therapists
- audits
- outcomes

complaints

compliments

Ask:

What did I do well?

What could be clearer?

Did my explanation make sense?

Did I listen?

Was my handover useful?

Did my note help?

Did the patient feel respected?

Did I miss anything?

What should I do differently?

Feedback may be uncomfortable.

But discomfort is not danger.

It may be growth.

28. Learning and Humility

Humility is not lack of confidence.

Humility means being teachable.

The humble clinician can say:

I need to check.

I may be wrong.

Let us reassess.

I do not know yet.

I will ask a colleague.

The evidence has changed.

The patient taught me something.

I should have explained that better.

We need to review this error.

Thank you for raising that concern.

Humility protects patients because it keeps reality above ego.

The opposite of humility is not confidence.

The opposite is closure.

29. Learning and Confidence

Clinicians need confidence.

Patients need clinicians who can act.

But confidence must be calibrated.

Under-confidence can cause delay, over-referral, over-testing, and anxiety.

Over-confidence can cause missed diagnosis, poor listening, and unsafe decisions.

Calibrated confidence means:

- act when action is needed
- ask when help is needed
- explain uncertainty honestly
- revise when evidence changes
- document reasoning
- remain open to correction

The mature clinician is neither paralyzed nor arrogant.

30. Learning and Burnout

Burnout harms learning.

A burned-out clinician may stop reading, stop reflecting, stop caring, or stop believing improvement is possible.

Signs include:

- exhaustion
- cynicism
- emotional numbness
- irritability
- reduced attention
- avoidance
- loss of empathy
- loss of meaning
- increased errors
- inability to receive feedback

Lifelong learning requires rest, meaning, community, and system support.

A clinician cannot learn well while chronically depleted.

Ask:

- What restores my professional energy?
- What drains it unnecessarily?
- What support do I need?
- What system issue must be escalated?
- What boundaries protect safe care?
- What learning is realistic now?

Learning should nourish practice, not become another burden of perfectionism.

31. Learning and Professional Renewal

A long career requires renewal.

Renewal may come from:

- patient gratitude
- good teamwork
- teaching
- reading deeply
- mastering a difficult area
- mentoring
- reflection
- service
- spiritual practice
- research
- quality improvement
- community health
- clinical curiosity
- remembering why medicine matters

Without renewal, lifelong learning becomes mere compliance.

With renewal, learning becomes vocation.

The question is:

What keeps my practice alive, honest, and connected to the people I serve?

32. Lifelong Learning and Life-Coherent Medicine

Life-coherent medicine asks whether care protects and restores life-capacity.

Lifelong learning asks the same question of the clinician's own practice.

- Is my knowledge serving life?
- Are my habits still safe?
- Are my explanations understandable?
- Are my treatments proportionate?
- Are my diagnoses open to reality?
- Are my notes useful?
- Are my patients heard?
- Are my teams safer because I am present?
- Am I still teachable?

A life-coherent clinician does not merely accumulate facts.

They cultivate wisdom.

33. Worked Case 1: Outdated Prescribing Habit

A clinician continues using an older medicine out of habit. A pharmacist notes repeated side effects in older patients.

Learning Problem

Practice habit has not been updated.

Capacity Failure

Medication safety, clinician adaptation, team learning.

Coupling Conditions

Older patients, frailty, polypharmacy, pharmacist knowledge, outdated habit.

Wise Learning Response

Review current guidance and adverse effect profile. Discuss with pharmacy. Update prescribing habit. Teach team. Monitor outcomes.

Repair Trajectory

Fewer side effects, safer prescribing, pharmacist input valued, clinician practice updated.

34. Worked Case 2: Recurrent Diagnostic Miss

A clinic repeatedly labels palpitations as anxiety. One patient is later found to have arrhythmia.

Learning Problem

Pattern of premature closure.

Capacity Failure

Diagnostic reasoning, patient trust, rhythm safety.

Coupling Conditions

Anxiety symptoms, time pressure, normal initial exams, inadequate ECG or monitoring strategy.

Wise Learning Response

Review palpitations approach. Create checklist for red flags: syncope, exertional symptoms, family history, abnormal pulse, medication or thyroid triggers, ECG findings, recurrence. Teach safety-netting.

Repair Trajectory

Dangerous arrhythmias considered earlier, patients feel heard, anxiety is addressed without dismissing physiology.

35. Worked Case 3: New Guideline in Diabetes and Frailty

A clinician learns that strict glucose control may harm frail older adults with recurrent hypoglycemia.

Learning Problem

Single-disease target does not fit frailty.

Capacity Failure

Glucose safety, mobility, cognition, clinician judgment.

Coupling Conditions

Frailty, CKD, poor intake, dementia, polypharmacy, fall risk.

Wise Learning Response

Review local guidance. Identify frail patients at risk. Simplify regimens. Use shared decision-making. Educate caregivers. Monitor hypoglycemia and function.

Repair Trajectory

Fewer hypoglycemic episodes, fewer falls, simpler care, better quality of life.

36. Worked Case 4: Learning From a Complaint

A family complains that no one explained their father was dying until the final hours.

Learning Problem

Delayed serious illness communication.

Capacity Failure

Family understanding, trust, end-of-life preparation, clinician communication.

Coupling Conditions

Advanced illness, uncertainty, clinician discomfort, fragmented teams, no documented goals.

Wise Learning Response

Review case. Identify missed opportunities for prognosis discussion. Teach ask-tell-ask structure. Add goals-of-care prompts to ward review. Encourage earlier palliative involvement.

Repair Trajectory

Future families receive earlier, clearer communication; goals documented; dying process less chaotic.

37. Worked Case 5: Learning From Nurses

Nurses repeatedly report that a certain discharge process leads to medicine confusion. Physicians initially think the paperwork is adequate.

Learning Problem

Team knowledge is being ignored.

Capacity Failure

Medication safety, teamwork, patient agency.

Coupling Conditions

Complex discharge medicines, patient literacy, rushed workflow, nursing experience.

Wise Learning Response

Listen to nursing concerns. Review readmissions. Redesign discharge medicine explanation with pharmacist and nurse input. Use teach-back.

Repair Trajectory

Patients understand medicines better, readmissions reduce, team trust improves.

38. Worked Case 6: Learning in Resource Limitation

A clinic lacks easy access to advanced imaging. Clinicians must decide which headache patients need urgent referral.

Learning Problem

Need for safe prioritization under limited resources.

Capacity Failure

Diagnostic safety, resource stewardship, patient trust.

Coupling Conditions

Limited imaging, variable follow-up, high anxiety, serious but uncommon diagnoses.

Wise Learning Response

Review red flags, local referral pathways, neurological examination, safety-netting, and follow-up processes. Create practical triage approach.

Repair Trajectory

High-risk patients referred urgently, low-risk patients reassured safely, resources used fairly, follow-up improves.

39. Common Student Pitfalls

Pitfall 1: Thinking Graduation Ends Learning

Qualification begins responsibility; it does not end learning.

Pitfall 2: Reading Without Applying

Learning must change patient care.

Pitfall 3: Chasing Novelty While Ignoring Basics

Danger recognition, communication, medicines, documentation, and follow-up remain central.

Pitfall 4: Trusting Memory for High-Risk Details

Check guidance when risk is high.

Pitfall 5: Rejecting Feedback

Feedback is often uncomfortable before it becomes useful.

Pitfall 6: Learning Only From Errors

Successes also teach.

Pitfall 7: Becoming Rigid With Guidelines

Guidelines need patient-centered judgment.

Pitfall 8: Trying to Learn Alone

Medicine is learned best in teams and communities of practice.

40. Clinical Practice Box

When approaching lifelong learning, complete this structure:

Learning trigger:
Uncertainty, error, patient question, new guideline, repeated pattern, feedback, discomfort?

Clinical question:
What exactly do I need to know?

Source:
Where will I find trustworthy information?

Relevance:
Does this apply to my patient population and local context?

Application:
What will I do differently in diagnosis, treatment, communication, documentation, or follow-up?

Patient fit:
How does frailty, multimorbidity, kidney function, prognosis, goals, cost, or culture affect use?

Discussion:
Who should I ask or involve?

Outcome:
Did the change help? Did harm occur?

Reflection:
What did this teach me?

Practice update:
What habit, checklist, explanation, or system should change?

41. Mini-Case for Practice

A clinician notices that several frail older patients with diabetes have been admitted with hypoglycemia, falls, and confusion. Their glucose levels were being managed according to strict targets learned years earlier. Families report poor appetite and difficulty managing complex regimens.

Apply the lifelong learning approach.

Learning Trigger

Repeated hypoglycemia, falls, confusion, and family difficulty suggest a pattern of treatment harm.

Clinical Question

How should diabetes treatment be individualized in frail older adults with poor intake, CKD, cognitive impairment, and fall risk?

Source

Review local diabetes guidance, geriatric principles, medication safety resources, and pharmacist input.

Relevance

Strict targets may not fit frailty, dementia, poor intake, or limited life expectancy. Avoiding hypoglycemia may be more important than tight control.

Application

Review high-risk diabetes medicines, simplify regimens, involve caregivers, use teach-back, monitor symptoms, and adjust goals according to patient context.

Outcome

Fewer hypoglycemic episodes, fewer falls, improved caregiver confidence, safer discharge planning.

Reflection

The old habit was disease-centered rather than capacity-centered. Learning required shifting from glucose numbers alone to safety, function, cognition, and quality of life.

Practice Update

Add frailty, hypoglycemia, cognition, and caregiver capacity to every diabetes medication review in older adults.

42. Student Takeaway

Lifelong learning becomes easier when the clinician asks:

What do I need to learn now to keep this patient safe?
What question am I really trying to answer?
Is my knowledge current?
Is the source trustworthy?
Does the evidence fit this patient?
What have patients, families, colleagues, errors, and successes taught me?
What habit needs updating?
What should I stop doing?
What should I start doing?
How will I know whether my learning improved care?

Lifelong learning is not optional.

It is the ongoing repair of the clinician's own knowledge, judgment, skill, humility, and humanity.

The safe clinician remains curious, current, reflective, teachable, team-oriented, patient-centered, and willing to revise practice when reality, evidence, or experience demands it.

A clinician who keeps learning keeps medicine alive.

Part VII. Putting It All Together

This part puts the whole method to work in consultation, prioritization, ward rounds, admission, discharge, follow-up, case presentation, on-call work, handover, referral, escalation, de-escalation, safety-netting, reassessment, and final clinical judgment.

Chapter 71. The Complete Consultation Made Easy

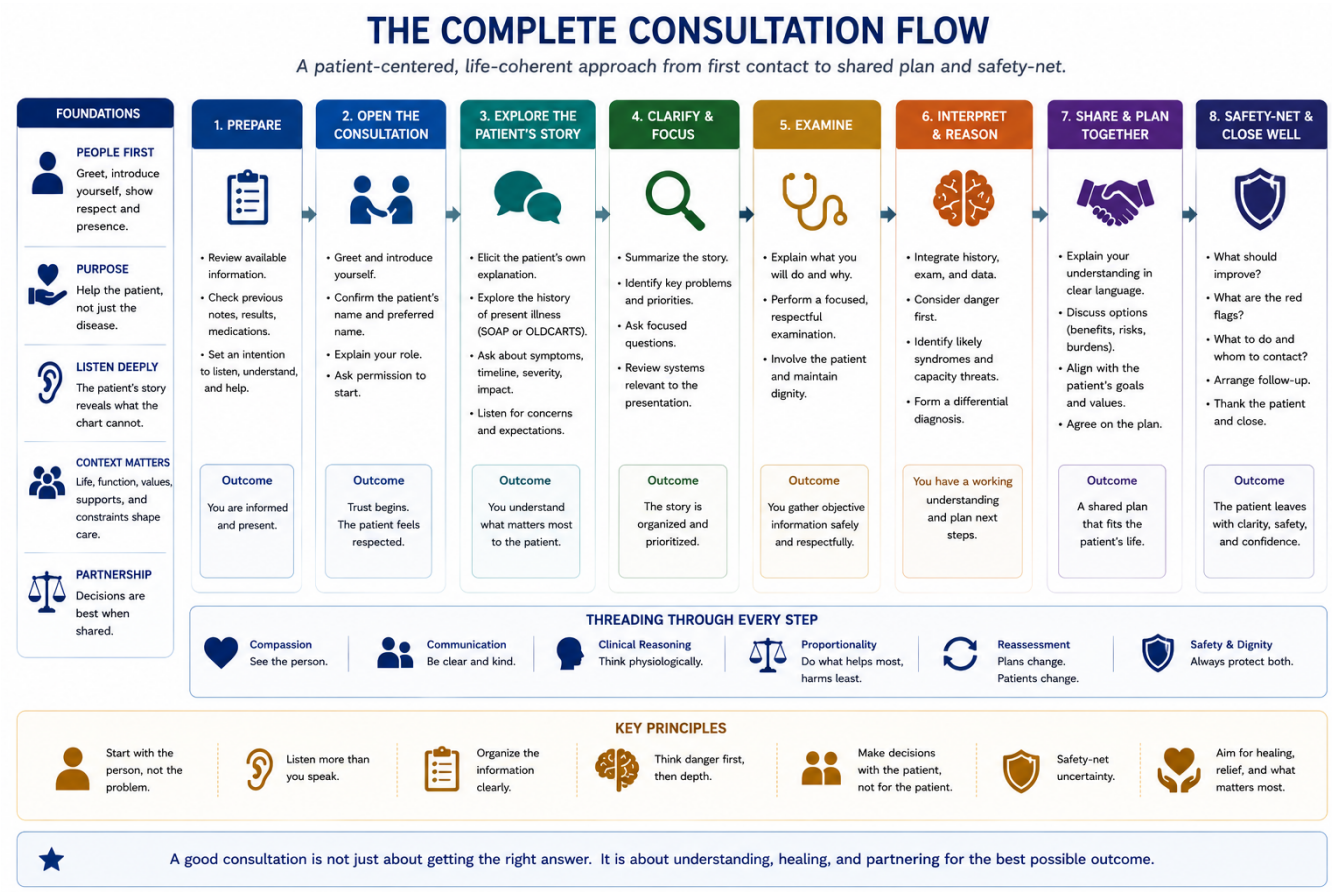

Figure 8. The Complete Consultation Flow

A complete consultation moves from preparation and listening to examination, interpretation, shared planning, safety-netting, and closure while preserving dignity, partnership, and clinical safety.

The complete consultation is the structured clinical encounter in which the clinician listens, assesses danger, defines the syndrome, examines the patient, reasons through the problem, explains clearly, agrees on a plan, safety-nets, documents, and arranges follow-up.

Patients do not usually say:

"I need a complete consultation."

They say:

"Please listen to me."
"I want to know what is wrong."
"Is this serious?"
"What should I do?"
"Do I need tests?"
"Can I go home?"
"What warning signs should I watch for?"
"When should I come back?"
"I need someone to explain this clearly."

The complete consultation is central to Internal Medicine because most clinical care begins with conversation.

A good consultation can reveal danger early.
A poor consultation can miss serious illness.
A good consultation can reassure safely.
A poor consultation can falsely reassure.
A good consultation can restore agency.
A poor consultation can leave the patient confused, frightened, or unsafe.
A good consultation can prevent unnecessary tests.
A poor consultation can trigger over-testing, over-treatment, or delayed diagnosis.

The first task is not simply to “take a history.”

The deeper question is:

Has this consultation moved the patient from uncertainty, danger, or distress toward a safe and coherent repair trajectory?

The complete consultation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Complete Consultation?

A complete consultation does not mean a long consultation.

It means a consultation that contains the essential elements required for safe care.

These include:

- preparation
- respectful opening
- patient story
- main concern
- danger assessment
- focused history
- relevant background
- medicine review
- examination
- syndrome formulation
- differential diagnosis
- capacity failure mapping
- investigation plan
- treatment plan
- patient explanation
- shared decision-making
- safety-netting
- follow-up
- documentation

A consultation can be brief and complete.

A consultation can be long and incomplete.

The measure is not time.

The measure is clinical coherence.

2. The Consultation Is Not an Interrogation

Patients are not question-answer machines.

They are living persons trying to make sense of symptoms, fear, disruption, and uncertainty.

A consultation should not feel like:

“Question, question, question, test, prescription, goodbye.”

It should feel like:

“I was heard, examined, understood, advised, warned, and given a plan.”

The clinician must gather information, but also build trust.

Information without trust may be incomplete.

Trust without information may be unsafe.

The complete consultation needs both.

3. The Consultation Is a Clinical Procedure

A consultation is as much a clinical procedure as inserting a line or interpreting an ECG.

It has steps.

It has risks.

It requires skill.

It can be performed well or badly.

Its complications include:

- missed diagnosis
- misunderstanding
- false reassurance
- unnecessary fear
- poor adherence
- medication error
- unsafe discharge
- broken trust
- delayed treatment
- unmanaged uncertainty

The clinician should therefore approach the consultation with discipline.

4. The First Question: Is There Immediate Danger?

Before exploring every detail, check whether the patient is safe now.

Danger may be obvious:

- severe breathlessness
- chest pain
- collapse
- confusion
- shock
- bleeding
- seizure
- severe pain
- weakness on one side
- suicidal intent

Danger may also be subtle:

- frail patient “not herself”
- diabetic patient “just tired”
- older adult “fell again”
- cancer patient “new back pain”
- patient on anticoagulation “hit head”
- patient with CKD “not passing urine”
- person with addiction “shaky after stopping alcohol”

The danger-first question is:

Does this patient need urgent stabilization, escalation, or immediate assessment before the routine consultation continues?

If yes, pause the usual flow.

Stabilize first.

5. Immediate Red Flags in the Consultation

Red flags include:

- airway difficulty
- severe breathlessness
- oxygen saturation below expected baseline
- chest pain with concerning features
- syncope or near-syncope
- new neurological deficit
- new confusion
- severe headache with red flags
- fever with systemic illness
- hypotension

- tachycardia with illness
- severe abdominal pain
- GI bleeding
- severe dehydration
- reduced urine output
- hypoglycemia or severe hyperglycemia symptoms
- suspected sepsis
- severe electrolyte risk
- suicidal thoughts or intent
- overdose or withdrawal
- safeguarding concern
- frailty with acute functional decline
- anticoagulant use with fall or bleeding
- pregnancy-related danger where relevant

A complete consultation identifies red flags early.

Do not bury danger at the end of the history.

6. Preparation Before Seeing the Patient

Before entering the room, briefly review:

- name and age
- reason for visit
- vital signs if available
- major diagnoses
- allergies
- high-risk medicines
- recent admissions
- recent tests
- baseline function if known
- previous similar presentations
- communication needs
- infection control or safety concerns

Preparation prevents avoidable errors.

But do not let the chart replace the patient.

The record may be incomplete, outdated, or wrong.

Use it to prepare, then listen freshly.

7. The Opening

The opening should be respectful and clear.

A good opening includes:

- greeting
- your name and role
- confirmation of patient identity
- permission if others are present
- attention to comfort and privacy
- open invitation to speak

Example:

“Good morning, Mrs. Williams. I am Dr. ____. I understand you came in because of breathlessness. Before I ask specific questions, can you tell me what has been happening and what worries you most?”

This opening does three things:

It identifies the clinician.
It names the presenting issue.
It invites the patient’s story and concern.

8. Let the Patient Speak First

Patients often reveal the most important information early if allowed to speak.

Listen for:

- symptom
- timeline
- severity
- change from baseline
- fear
- function
- previous episodes
- treatment tried
- patient’s theory
- hidden agenda
- emotional tone

Do not interrupt too quickly.

If the patient is wandering, gently guide after they have had space.

Example:

“I want to make sure I understand. Let me bring us back to when the breathlessness first started.”

Listening first saves time later.

9. Identify the Main Concern

The clinician’s concern and the patient’s concern may differ.

The clinician may focus on blood pressure.
The patient may fear cancer.
The clinician may focus on glucose.
The patient may fear losing independence.
The clinician may focus on chest pain.
The patient may fear dying like their father.
The clinician may focus on dementia.
The family may fear unsafe living alone.

Ask:

“What worries you most about this?”

Or:

“What were you hoping I could help with today?”

Or:

“Is there something you are afraid this might be?”

A consultation that does not address the main concern often feels incomplete to the patient.

10. Define the Symptom Clearly

For the main symptom, clarify:

- onset
- duration
- progression
- location
- character
- severity
- triggers
- relieving factors
- associated symptoms
- previous episodes
- treatments tried
- effect on function
- red flags

For pain, ask about quality, radiation, timing, and associated danger signs.

For breathlessness, ask about exertion, orthopnea, cough, wheeze, chest pain, fever, edema, and baseline.

For dizziness, ask whether it is vertigo, faintness, imbalance, weakness, or confusion.

For fatigue, ask about sleep, mood, anemia symptoms, weight loss, infection, medicines, and function.

Symptoms must be translated into syndromes.

11. Establish the Timeline

The timeline is often the backbone of diagnosis.

Ask:

- When were you last well?
- What changed first?
- What happened next?
- Did symptoms come suddenly or gradually?
- Are they constant or intermittent?
- Are they improving, worsening, or fluctuating?
- What treatment was started and when?
- What happened after treatment?
- Have you had this before?

A clear timeline can distinguish:

- acute from chronic
- infection from inflammation
- syncope from seizure
- delirium from dementia
- stable angina from acute coronary syndrome
- medication side effect from disease
- progressive disease from sudden event

When confused, return to the timeline.

12. Establish Baseline

Baseline matters especially in Internal Medicine.

Ask:

- What is normal for you?
- How far could you walk last month?
- Could you climb stairs?
- Were you eating normally?
- Were you managing medicines?
- Were you thinking clearly?
- Were you living alone?
- What was your usual oxygen level?
- What was your usual kidney function?
- How often did you usually use inhalers?
- Has your weight or swelling changed?

For frail patients, baseline is essential.

For dementia, baseline cognition is essential.

For CKD, baseline creatinine is essential.

For COPD, baseline oxygenation and breathlessness are essential.

For heart failure, baseline weight, edema, and exertion are essential.

A symptom is meaningful because it represents change.

13. Ask About Function

Function reveals severity.

Ask:

- Can you walk as usual?
- Can you bathe and dress?
- Can you cook?
- Can you shop?
- Can you manage medicines?
- Can you get to the toilet?
- Can you sleep flat?
- Can you eat and drink?
- Can you work?
- Can you care for others?
- Can you live safely at home?

Function is not separate from diagnosis.

A patient with “mild pneumonia” who cannot walk, eat, or think clearly is not mild.

A patient with “normal tests” but severe functional collapse needs reassessment.

Function is physiology expressed in life.

14. Review Past Medical History

Past medical history should be relevant and organized.

Ask about:

- heart disease
- stroke or TIA
- diabetes
- kidney disease
- liver disease
- lung disease
- cancer
- autoimmune disease
- infections
- surgeries
- hospital admissions

- mental health
- falls
- dementia or delirium
- frailty
- pregnancy-related history where relevant
- previous similar episodes

Do not simply collect diagnoses.

Ask how they affect the current presentation.

Examples:

CKD changes medicine safety.
Diabetes changes infection and hypoglycemia risk.
Heart failure changes breathlessness interpretation.
COPD changes oxygenation and infection risk.
Dementia changes history reliability and delirium risk.
Cancer changes weight loss, pain, clot, infection, and prognosis.

15. Review Medicines

Medicine review is part of every complete consultation.

Ask about:

- prescribed medicines
- over-the-counter medicines
- herbal or traditional medicines
- supplements
- borrowed medicines
- old medicines restarted
- eye drops
- inhalers
- injections
- patches
- creams
- recent antibiotics
- steroids
- painkillers
- sleeping tablets
- alcohol or substances
- missed doses
- cost barriers
- side effects

Ask:

“Have any medicines been started, stopped, or changed recently?”

Every new symptom may be disease, medicine, or both.

Medicines commonly cause:

- dizziness
- falls
- confusion
- AKI
- bleeding
- edema
- constipation
- nausea
- fatigue
- hypoglycemia
- hypotension
- insomnia
- mood change

A consultation without medicine review is incomplete.

16. Allergies and Adverse Reactions

Ask:

- What are you allergic to?
- What happened when you took it?
- Was there rash, swelling, breathing difficulty, collapse, vomiting, or intolerance?
- How long ago?
- Have you taken related medicines since?

Do not accept allergy labels without reaction details if possible.

A vague allergy label may prevent useful treatment.

A missed true allergy may cause danger.

17. Social Context

Social context determines whether the plan can work.

Ask:

- Who lives with you?
- Who helps you?
- Can you afford medicines?
- Can you get to appointments?
- Do you have food at home?

- Is your housing safe?
- Can you manage stairs?
- Do you smoke?
- How much alcohol do you drink?
- Do you use any substances?
- Are you safe at home?
- Are you caring for anyone else?
- What work do you do?
- What support would you need to follow this plan?

Social history is not decoration.

It tells whether treatment can actually happen.

18. Family History and Risk

Family history may matter for:

- premature heart disease
- stroke
- clotting disorders
- cancers
- diabetes
- autoimmune disease
- kidney disease
- sudden death
- dementia
- inherited conditions

Ask when relevant.

Do not let family history dominate when acute danger is already present.

Use it to refine probability and prevention.

19. Systems Review

A focused systems review helps detect missed clues.

Depending on presentation, ask about:

- fever
- weight loss
- night sweats
- appetite
- chest pain
- breathlessness

- palpitations
- cough
- hemoptysis
- abdominal pain
- vomiting
- diarrhea
- constipation
- urinary symptoms
- bleeding
- rash
- joint pain
- headache
- neurological symptoms
- mood
- sleep
- pain
- falls
- cognition

Systems review should be guided.

Do not ask endless questions without purpose.

Use it to find red flags and connect the syndrome.

20. The Examination

Examination should be respectful, purposeful, and guided by danger and syndrome.

Before examining:

- explain what you will do
- ask permission
- ensure privacy
- expose only what is needed
- offer chaperone where appropriate
- observe first

General examination includes:

- appearance
- distress
- breathing effort
- consciousness
- hydration

- color
- mobility
- pain behavior
- nutrition
- frailty signs

Vital signs are part of the examination.

Do not ignore them.

For many internal medicine presentations, the basic examination may include:

- pulse
- blood pressure
- respiratory rate
- oxygen saturation
- temperature
- mental state
- chest
- heart
- abdomen
- legs for edema
- neurological screen where relevant
- skin
- hydration
- mobility

Examination should answer a clinical question.

21. Observe Before Touching

Observation can reveal:

- respiratory distress
- cyanosis
- sweating
- agitation
- confusion
- drowsiness
- pain severity
- frailty
- cachexia
- tremor
- jaundice

- edema
- dehydration
- neglect
- fear
- abnormal movements
- inability to sit, stand, or walk

The patient's appearance may be more important than one isolated test.

Ask yourself:

Does this patient look well, unwell, toxic, frail, distressed, or unsafe?

22. Mental State and Cognition

Do not ignore cognition.

Assess:

- alertness
- attention
- orientation
- speech
- behavior
- confusion
- delirium features
- mood
- capacity where relevant

In older adults, acute confusion is danger.

In any patient, confusion may reflect:

- hypoxia
- hypoglycemia
- infection
- sepsis
- stroke
- drug effect
- withdrawal
- electrolyte disturbance
- liver or kidney failure
- head injury
- psychiatric crisis

A complete consultation asks:

Is the brain safely coordinated?

23. Build the Problem Representation

After history and examination, summarize the case in one clear sentence.

Examples:

“A 67-year-old man with diabetes and CKD presents with three days of fever, cough, low oxygen saturation, and acute confusion, consistent with pneumonia complicated by delirium and kidney vulnerability.”

“A 52-year-old woman with no known heart disease presents with sudden pleuritic chest pain, tachycardia, and breathlessness after recent travel, concerning for pulmonary embolism.”

“An 84-year-old woman with frailty and dementia presents with two days of reduced intake, falls, and acute confusion, suggesting delirium from infection, dehydration, medication effect, or metabolic disturbance.”

A good problem representation includes:

- age or relevant risk
- key background
- timing
- main syndrome
- severity
- danger or capacity failure

This turns scattered information into clinical reasoning.

24. Make a Differential Diagnosis

The differential should include:

- most likely causes
- most dangerous causes
- common causes
- patient-specific causes
- medicine causes
- psychosocial contributors
- more than one process where relevant

For chest pain, consider cardiac, pulmonary, vascular, gastrointestinal, musculoskeletal, anxiety, and other causes.

For breathlessness, consider lung, heart, blood, metabolic, neuromuscular, anxiety, and deconditioning.

For confusion, consider delirium causes, dementia, depression, drugs, metabolic disease, infection, stroke, hypoxia, and withdrawal.

For fatigue, consider anemia, endocrine, sleep, mood, infection, inflammation, malignancy, organ failure, medication, and life burden.

A differential is not a list for its own sake.

It guides action.

25. Map Capacity Failure

Ask:

- Is oxygenation failing?
- Is circulation failing?
- Is energy transformation failing?
- Is clearance failing?
- Is defense failing?
- Is regulation failing?
- Is cognition failing?
- Is mobility failing?
- Is nutrition failing?
- Is comfort failing?
- Is agency failing?
- Is social support failing?

Capacity mapping helps move beyond disease labels.

Example:

A patient with pneumonia may also have oxygenation failure, delirium, dehydration, AKI, immobility, and caregiver strain.

Treating only the infection may be incomplete.

26. Identify Coupling Conditions

Coupling conditions are the factors that shape illness persistence, vulnerability, and recovery.

They include:

- frailty
- multimorbidity
- polypharmacy
- poverty
- housing
- food access
- caregiver support
- health literacy
- culture
- faith
- trauma
- addiction
- mental health

- mobility
- cognition
- treatment burden
- work responsibilities
- transport
- local health system access

Ask:

What conditions around this patient will determine whether the plan succeeds or fails?

This prevents unrealistic care.

27. Decide What Tests Are Needed

Tests should answer questions.

Ask:

- What diagnosis am I considering?
- What danger must be excluded?
- How will this test change management?
- Is the test urgent?
- Is the test safe?
- Is the patient prepared?
- Is the result likely to be interpretable?
- What will I do if it is positive?
- What will I do if it is negative?
- Is observation better?
- Is this test aligned with goals of care?

Do not test randomly.

Do not avoid tests when danger is present.

The wise consultation uses tests as extensions of reasoning.

28. Decide the Treatment Plan

The plan should address:

- immediate danger
- likely diagnosis
- symptom relief
- capacity failures
- underlying causes
- medicines
- monitoring

- functional support
- patient goals
- social barriers
- follow-up
- escalation criteria

Treatment may include:

- urgent stabilization
- medicine
- procedure
- observation
- referral
- admission
- discharge with safety-net
- deprescribing
- rehabilitation
- palliative support
- education
- watchful waiting
- lifestyle support
- social support

The treatment plan should be proportionate.

Ask:

What is the least harmful action likely to restore safety and capacity?

29. Explain the Assessment

The patient needs to understand what you think is happening.

Use plain language.

Example:

“Your symptoms and examination suggest a chest infection. Your oxygen is a little low, and because you became confused, I am concerned that the infection is affecting your whole body. We need to treat the infection, monitor your oxygen, and check your kidneys.”

If uncertain, say so.

“I do not have the final answer yet. The most likely cause is ____, but I am also checking for ____, because that would be more serious.”

Explanation reduces fear and improves cooperation.

30. Shared Decision-Making

Use shared decision-making when:

more than one reasonable option exists

treatment burden is significant

risks and benefits are balanced

patient goals matter

serious illness is present

hospitalization is optional or uncertain

preventive treatment is being considered

invasive tests or procedures are proposed

Ask:

What matters most to you?

What are you worried about?

What outcome would be unacceptable?

What would make this treatment worthwhile?

Who should be involved in this decision?

Then recommend.

Do not abandon the patient to decide alone.

31. Safety-Netting

Every complete consultation should end with safety-netting when uncertainty or risk remains.

Safety-netting includes:

what to expect

what warning signs to watch for

what to do if they occur

when to seek urgent help

when to follow up

what to do if follow-up does not happen

pending results and who owns them

Example:

“If you become more breathless, develop chest pain, become confused, cannot keep fluids down, pass very little urine, faint, or feel worse instead of better, seek urgent care. If you are not improving within the expected time, contact us for review.”

Safety-netting should be specific.

“Come back if worse” is not enough.

32. Teach-Back

Check understanding respectfully.

Say:

“Just so I know I explained it clearly, can you tell me how you will take the medicines and what warning signs would make you come back?”

Teach-back is especially important for:

- discharge
- high-risk medicines
- insulin
- anticoagulants
- antibiotics
- diuretics
- steroids
- inhalers
- palliative plans
- frailty
- dementia caregivers
- language barriers
- low health literacy

If the patient cannot explain the plan, the consultation is not complete.

33. Follow-Up

Follow-up should be clear.

Specify:

- when
- where
- with whom
- for what purpose
- what tests before review
- what symptoms require earlier review
- who checks pending results
- what happens if appointment is missed

Follow-up is part of diagnosis and treatment.

A consultation without follow-up may leave uncertainty unmanaged.

34. Documentation

Document:

- main concern
- syndrome
- key history

- key examination
- vital signs
- danger assessed
- working diagnosis
- uncertainty
- plan
- medicines
- tests
- communication
- consent or refusal
- safety-net
- follow-up
- pending results
- family involvement where relevant

The note should allow another clinician to continue the care safely.

35. Repair Trajectory

End by knowing what repair should look like.

Ask:

- What symptom should improve?
- What function should return?
- What vital sign should stabilize?
- What lab should improve?
- What side effect should be monitored?
- What would show deterioration?
- What should happen by next review?
- What should the patient be able to do?

Example:

For pneumonia:

- fever settles
- breathing improves
- oxygen normalizes or returns to baseline
- appetite improves
- confusion clears
- walking improves
- kidney function remains safe

If there is no repair trajectory, the plan is incomplete.

36. Worked Case 1: Acute Breathlessness

A 72-year-old man with COPD, heart failure, CKD, and diabetes presents with worsening breathlessness.

Consultation Focus

Do not assume COPD.

Danger

Hypoxia, respiratory failure, heart failure, pneumonia, PE, arrhythmia, sepsis.

Syndrome

Acute breathlessness in multimorbidity with oxygenation and circulation vulnerability.

Capacity Failure

Oxygenation, circulation, clearance, energy, anxiety regulation.

Coupling Conditions

COPD, heart failure, CKD, diabetes, medicines, baseline oxygenation, home support.

Wise Consultation

Clarify timeline, cough, fever, wheeze, edema, orthopnea, chest pain, travel or clot risk, medicines, baseline function. Examine breathing, chest, heart, legs, hydration, mental state. Investigate according to danger and local pathway. Treat likely contributors and reassess response.

Repair Trajectory

Breathing improves, oxygen stabilizes, fluid status clarified, kidney function monitored, patient understands warning signs.

37. Worked Case 2: Fatigue

A 45-year-old woman presents with months of fatigue. Initial tests elsewhere were normal. She feels dismissed.

Consultation Focus

Validate and structure.

Danger

Weight loss, fever, night sweats, bleeding, severe depression, suicidality, neurological signs, organ failure symptoms.

Syndrome

Chronic fatigue with functional impairment and distress.

Capacity Failure

Energy, sleep, mood, work, agency.

Coupling Conditions

Sleep, stress, mood, chronic illness, medicines, menstrual history where relevant, work burden, social support.

Wise Consultation

Listen fully. Review timeline, sleep, mood, pain, infection history, weight, appetite, medicines, alcohol, function, red flags. Explain that normal tests are reassuring but symptoms are real. Plan targeted reassessment and repair trajectory.

Repair Trajectory

Patient feels believed, danger monitored, sleep and activity addressed, follow-up arranged, diagnosis refined over time.

38. Worked Case 3: Fall in an Older Adult

An 83-year-old woman falls at home. It is tempting to call it mechanical.

Consultation Focus

Ask why upright control failed.

Danger

Head injury, fracture, syncope, arrhythmia, stroke, hypoglycemia, infection, medication harm, long lie.

Syndrome

Fall with possible collapse, injury risk, and frailty vulnerability.

Capacity Failure

Mobility, balance, circulation, cognition, medicine safety.

Coupling Conditions

Frailty, polypharmacy, home hazards, vision, footwear, baseline mobility, caregiver support.

Wise Consultation

Ask before, during, and after the fall. Check loss of consciousness, dizziness, palpitations, glucose risk, medicines, injury, baseline walking, and home support. Examine injury, neurology, gait, heart, volume status. Plan cause treatment and falls prevention.

Repair Trajectory

Injury treated, cause identified, medicines adjusted, walking safer, home risk reduced.

39. Worked Case 4: New Confusion

An 86-year-old man with dementia is brought because he is more confused.

Consultation Focus

Sudden change means delirium until proven otherwise.

Danger

Hypoxia, infection, sepsis, hypoglycemia, AKI, stroke, medication toxicity, urinary retention, constipation, pain.

Syndrome

Acute confusion in a patient with dementia.

Capacity Failure

Brain coordination, safety awareness, agency, possibly oxygenation, clearance, defense.

Coupling Conditions

Dementia, frailty, medicines, dehydration, sensory impairment, caregiver baseline knowledge.

Wise Consultation

Get collateral baseline. Assess attention, consciousness, vitals, oxygen, glucose, hydration, infection, medicines, pain, bowels, bladder, neurological signs. Explain delirium to family.

Repair Trajectory

Trigger treated, confusion improves, safety protected, family understands, discharge waits for functional safety.

40. Worked Case 5: Chest Pain

A 56-year-old man presents with chest pain after eating. He thinks it is indigestion.

Consultation Focus

Do not accept the patient's label before danger assessment.

Danger

Myocardial infarction, unstable angina, PE, aortic disease, pneumothorax, severe pneumonia, GI bleeding depending on presentation.

Syndrome

Chest pain requiring risk stratification.

Capacity Failure

Possible circulation or oxygenation threat, fear, uncertainty.

Coupling Conditions

Risk factors, exertional pattern, associated symptoms, timing, previous disease, medicines.

Wise Consultation

Clarify character, exertion, radiation, sweating, breathlessness, syncope, pleuritic features, reflux features, risk factors, and vital signs. Examine and investigate according to local chest pain pathway. Explain uncertainty and safety-net.

Repair Trajectory

Danger excluded or treated, patient understands plan, follow-up clear.

41. Common Student Pitfalls

Pitfall 1: Taking a History Without Checking Danger

Danger comes first.

Pitfall 2: Asking Many Questions Without Defining the Syndrome

Information must be organized into clinical meaning.

Pitfall 3: Forgetting Baseline Function

Change from baseline often reveals severity.

Pitfall 4: Ignoring Medicines

Medicines can cause or worsen many presentations.

Pitfall 5: Examining Without a Question

Examination should answer clinical concerns.

Pitfall 6: Ordering Tests Without a Plan

Every test should have a purpose.

Pitfall 7: Explaining Too Little

Patients need to understand the assessment and plan.

Pitfall 8: Ending Without Safety-Netting

A consultation is incomplete if the patient does not know what to do if things change.

42. Clinical Practice Box

When completing a consultation, use this structure:

Opening:
Introduce yourself, confirm identity, invite the patient's story.

Main concern:
What is the patient most worried about?

Danger first:
Any immediate red flags or instability?

Timeline:
When did it start? What changed? Better, worse, fluctuating?

Syndrome:
What clinical pattern is emerging?

Baseline and function:
What was normal before? What can the patient no longer do?

Relevant history:
Past illness, medicines, allergies, social context, family history, systems review.

Examination:
Vitals, general appearance, focused systems, cognition, function where relevant.

Assessment:
Working diagnosis, dangerous alternatives, uncertainty, capacity failures.

Plan:
Tests, treatment, monitoring, referral, admission or discharge, medicine changes.

Explanation:
Plain-language assessment and reason for plan.

Shared decision-making:
Values, options, recommendation where relevant.

Safety-net and follow-up:
Warning signs, action, timeframe, pending results, teach-back.

Documentation:
Record reasoning, plan, communication, safety-net, and responsibility.

43. Mini-Case for Practice

A 76-year-old woman with diabetes, CKD, heart failure, osteoarthritis, frailty, and mild memory problems presents with “dizziness and weakness.” She lives alone. Her daughter says she has been eating poorly and fell yesterday. She recently started a new pain medicine and her diuretic dose was increased. She wants to go home because she dislikes hospitals.

Apply the complete consultation approach.

Opening and Concern

Ask what dizziness means to her: spinning, faintness, imbalance, weakness, confusion, or fear of falling. Ask what worries her most and why she wants to avoid hospital.

Danger

Check vital signs, glucose, oxygenation, hydration, injury from fall, arrhythmia, infection, AKI, electrolyte disturbance, medication toxicity, orthostatic hypotension, delirium, unsafe home.

Syndrome

Acute weakness/dizziness with fall, poor intake, frailty, medication changes, and possible clearance or circulation failure.

Capacity Failures

Mobility, circulation, clearance, energy, cognition, medicine safety, agency.

Coupling Conditions

CKD, heart failure, diabetes, frailty, living alone, memory problems, recent pain medicine, increased diuretic, poor intake, daughter concern.

Wise Consultation

Take timeline, establish baseline, review medicines, assess falls details, check orthostatic symptoms, examine hydration, heart, lungs, neurological status, cognition, gait, injury, and volume status. Investigate renal function, electrolytes, glucose, infection, ECG, and other tests guided by findings. Assess capacity regarding refusal of admission if needed.

Plan

Hold or adjust harmful medicines where appropriate, treat dehydration or fluid imbalance carefully, address pain safely, involve daughter with consent, consider observation or admission if AKI, falls risk, delirium, hypoglycemia, or unsafe home is present. If discharge is safe, provide clear safety-net and urgent follow-up.

Repair Trajectory

Dizziness improves, glucose and kidney function are safe, medicines simplified, falls risk reduced, eating improves, daughter understands plan, home is safe enough, and follow-up is reliable.

44. Student Takeaway

The complete consultation becomes easier when the clinician asks:

Is there immediate danger?
What is the patient’s main concern?
What is the timeline?
What has changed from baseline?
What syndrome is emerging?
Which capacities are failing?
What coupling conditions shape risk and recovery?
What diagnoses are likely and what diagnoses are dangerous?
What tests and treatments are truly needed?
What does the patient understand?

What plan is safe, proportionate, and realistic?
What warning signs and follow-up are needed?

A complete consultation is not complete because every possible question was asked.

It is complete when danger has been assessed, the syndrome has been defined, the patient has been examined, the reasoning is clear, the plan is proportionate, the patient understands, uncertainty is safety-netted, follow-up is arranged, and documentation preserves the repair trajectory.

The safe clinician does not merely collect data.

The safe clinician listens, interprets, protects, explains, decides, documents, and guides the patient toward the next safe step.

Chapter 72. Clinical Prioritization Made Easy

Clinical prioritization is the skill of deciding what must be addressed first, what can safely wait, what must not be missed, and what sequence of action best protects the patient.

Patients do not usually say:

“Please prioritize my clinical problems.”

They say:

“What is most serious?”
“What do we need to do first?”
“Can this wait?”
“Do I need to go to hospital?”
“Which medicine matters most?”
“I have so many problems — where do we start?”
“What should I worry about?”
“What can be dealt with later?”

Clinicians often face the same question.

A patient has chest pain, high glucose, kidney disease, anemia, and anxiety.
Another has COPD, heart failure, CKD, poor intake, falls, and delirium.
Another has advanced cancer, severe pain, constipation, depression, and family conflict.
Another has twenty medicines, five diagnoses, three abnormal labs, and one exhausted caregiver.

The first task is not to fix everything at once.

The deeper question is:

What order of attention will best protect life, reduce harm, restore capacity, and move the patient toward a safe repair trajectory?

Clinical prioritization becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical Prioritization?

Clinical prioritization means organizing care by urgency, risk, reversibility, patient goals, treatment burden, and feasibility.

It asks:

- What is dangerous now?
- What is most likely to harm the patient soon?
- What is reversible?
- What is time-sensitive?
- What symptom is causing the most suffering?
- What capacity is failing most seriously?
- What treatment could help quickly?
- What treatment could harm?
- What can safely wait?
- What must be monitored?
- What matters most to the patient?

What does the team need to do first?

Prioritization is not neglecting lower-priority problems.

It is sequencing care wisely.

A clinician cannot do everything at once.

But a clinician can decide what matters first.

2. Prioritization Is Not the Same as Importance

Some problems are important but not urgent.

Some problems are urgent but not the patient's long-term priority.

Some problems are frightening but not dangerous.

Some problems are silent but life-threatening.

Examples:

High cholesterol may be important, but not urgent during sepsis.

Mild chronic anemia may be important, but not first during acute hypoxia.

Severe pain may not be immediately life-threatening, but it may be the patient's most urgent suffering.

A small medication error may be more urgent than a long-standing diagnosis if it risks hypoglycemia or bleeding.

Discharge planning may seem administrative, but it becomes urgent if the patient is unsafe at home.

Prioritization asks:

Important in what way, for whom, and by when?

3. The First Priority Is Danger

Clinical prioritization begins with danger.

Before addressing chronic disease targets, preventive care, paperwork, or long-term plans, ask:

Is the airway safe?

Is breathing safe?

Is circulation safe?

Is consciousness safe?

Is glucose safe?

Is there severe infection?

Is there bleeding?

Is there stroke?

Is there myocardial infarction?

Is there pulmonary embolism?

Is there shock?

Is there severe electrolyte disturbance?

Is there AKI?

Is there overdose or withdrawal?

Is there suicidal risk?

Is there severe pain or distress?

Is the patient unsafe to leave?

The danger-first question is:

What could kill, permanently harm, or severely destabilize this patient if not addressed now?

Danger always moves to the top.

4. Immediate Red Flags for Prioritization

Prioritize urgently when there is:

abnormal airway or choking risk

severe breathlessness

low oxygen saturation or rising oxygen need

hypotension

severe hypertension with symptoms or organ threat

chest pain with concerning features

new neurological deficit

new confusion

seizure

syncope

severe hypoglycemia or hyperglycemic crisis features

suspected sepsis

major bleeding

black stool with weakness or collapse

severe abdominal pain

reduced urine output

severe electrolyte abnormality

severe dehydration

severe pain

suicidal thoughts with plan or intent

overdose

withdrawal risk

fall with head injury or anticoagulation

frailty with acute inability to walk, eat, drink, or think clearly

caregiver collapse

unsafe home discharge

These problems should not be buried under routine tasks.

5. The Prioritization Ladder

A simple prioritization ladder is:

immediate life threat

serious reversible harm

severe suffering

active capacity failure

diagnostic uncertainty with danger

high-risk medicines

discharge safety

patient goals and decisions

chronic disease optimization

long-term prevention

This ladder is not rigid.

But it helps students avoid common errors.

Do not spend twenty minutes adjusting long-term cholesterol treatment while the patient is hypoxic.

Do not focus only on blood pressure while missing delirium.

Do not treat mild lab abnormalities while ignoring severe pain.

Do not discharge because infection improved if the patient cannot walk or manage medicines.

Prioritization keeps care aligned with actual risk.

6. Prioritize by Capacity Failure

Another way to prioritize is by failing life-capacity.

Ask which capacity is most threatened.

Oxygenation

Breathlessness, low oxygen, respiratory failure.

Circulation

Shock, chest pain, arrhythmia, heart failure, syncope.

Brain Coordination

Confusion, seizure, stroke, delirium, coma.

Energy and Glucose

Hypoglycemia, hyperglycemia crisis, starvation, severe fatigue.

Clearance

AKI, severe electrolyte disturbance, liver failure, toxin accumulation.

Defense

Sepsis, severe infection, immunosuppression.

Comfort

Severe pain, breathlessness, agitation, nausea.

Mobility and Safety

Falls, weakness, unsafe transfers, fracture.

Agency

Capacity, consent, understanding, adherence, decision-making.

Social Support

Unsafe home, caregiver collapse, inability to obtain treatment.

The most urgent capacity failure often defines the first action.

7. Prioritize by Time Sensitivity

Some problems require immediate action.

Others require action today.

Others can be planned.

Now

Airway, severe hypoxia, shock, hypoglycemia, sepsis, stroke pathway, major bleeding, severe pain, suicidal crisis.

Today

AKI review, medication reconciliation, delirium workup, imaging for concerning symptoms, family meeting before discharge, antibiotic review, mobility assessment.

This Admission or Episode

Frailty plan, polypharmacy review, rehabilitation, diabetes simplification, goals-of-care discussion, nutrition support.

Long-Term

Risk factor control, screening, chronic disease optimization, lifestyle support, preventive medicine.

A good clinician asks:

What is the time window for benefit or harm?

8. Prioritize by Reversibility

Reversible problems deserve attention, especially when they threaten capacity.

Examples:

- hypoglycemia
- hypoxia
- dehydration
- medication toxicity
- urinary retention
- constipation causing delirium
- infection
- fluid overload
- electrolyte disturbance
- pain
- withdrawal

- anemia causing symptoms
- unsafe medicine combinations
- poor inhaler technique
- caregiver misunderstanding

Some irreversible problems still require care, but the goal may change.

Advanced dementia may not be reversible, but pain, fear, constipation, aspiration distress, and caregiver burden can still be addressed.

Prioritization asks:

What can still be improved, relieved, prevented, or supported?

9. Prioritize by Suffering

Suffering matters.

A patient may not be dying but may be overwhelmed by:

- severe pain
- breathlessness
- nausea
- anxiety
- insomnia
- itching
- agitation
- constipation
- loneliness
- fear
- spiritual distress
- helplessness

Suffering can become urgent even when vital signs are stable.

Do not delay pain relief simply because diagnosis is not final.

Do not ignore breathlessness anxiety because oxygen saturation is acceptable.

Do not dismiss insomnia, nausea, or constipation in serious illness.

Clinical prioritization must include comfort.

The patient is not only a set of vital signs.

10. Prioritize by Patient Goals

In serious illness, frailty, multimorbidity, and chronic disease, patient goals affect priorities.

One patient may prioritize living longer.
Another may prioritize avoiding hospital.
Another may prioritize pain relief.
Another may prioritize staying lucid.

Another may prioritize walking again.
Another may prioritize attending a family event.
Another may prioritize dying at home.
Another may prioritize reducing medication burden.

Ask:

- What matters most right now?
- What are you hoping treatment will achieve?
- What are you most worried about?
- What would be unacceptable?
- What do you need to be able to do?

Priorities should not be set only by disease labels.

They must be shaped by the patient's life.

11. Prioritize by Treatment Harm

Sometimes the most urgent priority is stopping harm.

Examples:

- NSAID causing AKI and heart failure
- sedative causing falls and delirium
- insulin causing hypoglycemia
- anticoagulant causing bleeding
- opioid causing over-sedation and constipation
- diuretic causing dehydration and low sodium
- steroid causing hyperglycemia, infection risk, or delirium
- duplicate medicines causing toxicity
- inappropriate long-term antibiotics causing harm
- unnecessary catheter causing infection risk

Ask:

Is the current treatment helping, harming, or both?

Medication review often moves high on the priority list because it can prevent immediate harm.

12. Prioritize by Diagnostic Risk

Some uncertainty is low risk.

Some uncertainty is dangerous.

Prioritize diagnostic work when:

- dangerous diagnosis remains possible
- patient is worsening
- red flags are present
- repeated presentation occurs

- treatment is failing
- tests do not fit
- baseline has changed
- family says this is not normal
- clinician feels uneasy

Examples:

- chest pain with risk factors
- new confusion in frailty
- severe headache with red flags
- weight loss with anemia
- back pain with cancer history
- fall with syncope features
- breathlessness not explained by known disease

The question is:

What diagnosis would cause serious harm if missed today?

13. Prioritize by Discharge Risk

Discharge risk can be as important as diagnosis.

Before discharge, prioritize:

- medicine safety
- ability to eat and drink
- mobility
- cognition
- pain control
- oxygen needs
- wound care
- follow-up
- pending results
- caregiver capacity
- home safety
- transport
- understanding of warning signs
- goals of care where relevant

A patient may be medically improved but not discharge-ready.

Example:

Pneumonia may be improving, but if the patient is delirious, weak, hypoglycemic, and unable to manage medicines, discharge is unsafe.

Prioritize what makes repair possible after leaving.

14. Prioritize in Multimorbidity

Multimorbidity creates competing priorities.

A patient with COPD, heart failure, CKD, diabetes, arthritis, and depression cannot be managed by treating all diseases equally at once.

Ask:

- What is dangerous now?
- Which condition is driving the current syndrome?
- Which treatment may worsen another condition?
- Which medicines are highest risk?
- Which symptom matters most to the patient?
- Which capacity failure prevents recovery?
- Which long-term goals can wait?
- Which plan is realistic?

Example:

A patient with heart failure and CKD may need diuresis for breathlessness, but kidney function must be monitored.

The priority is not “heart versus kidney.”

The priority is oxygenation, circulation, clearance, and comfort in balance.

15. Prioritize in Frailty

Frailty changes priorities.

In frailty, small stressors cause large decline.

Prioritize:

- delirium prevention and treatment
- mobility
- hydration and nutrition
- falls prevention
- medication simplification
- pain control
- infection treatment
- pressure injury prevention
- continence and toileting
- sleep
- caregiver support
- discharge safety
- goals of care

Do not prioritize disease numbers while ignoring function.

A frail patient's repair trajectory is often measured by:

- eating again
- walking again
- thinking clearly again
- sleeping better
- avoiding falls
- returning to baseline or best attainable function

In frailty, function is a priority, not an afterthought.

16. Prioritize in Delirium

In delirium, priorities include:

- immediate safety
- identify and treat causes
- reduce distress
- prevent harm
- involve family
- avoid unnecessary sedatives
- protect sleep, orientation, hydration, mobility, hearing, and vision
- plan safe discharge only after risk is reduced

Do not focus only on agitation.

Delirium is acute brain failure.

Ask:

- Is oxygen low?
- Is glucose abnormal?
- Is infection present?
- Are medicines contributing?
- Is there pain?
- Is there urinary retention?
- Is there constipation?
- Is there dehydration?
- Is there withdrawal?
- Is the environment worsening confusion?

Prioritize causes and safety together.

17. Prioritize in Chronic Disease Reviews

In chronic disease, prioritization prevents overload.

A patient may have hypertension, diabetes, CKD, obesity, chronic pain, depression, and poor sleep.

Do not try to fix everything in one visit.

Ask:

- What is most dangerous?
- What is most symptomatic?
- What is most changeable?
- What does the patient want help with?
- What treatment burden is highest?
- What medicine risk is greatest?
- What small change would create momentum?
- What should be reviewed next time?

Chronic care works best when priorities are staged.

A clear first step is better than an overwhelming complete plan that fails.

18. Prioritize Preventive Care Wisely

Preventive care matters.

But it must be prioritized by risk, time horizon, and patient context.

Ask:

- Is the patient likely to benefit?
- How long until benefit?
- What harms are possible now?
- What burden does it add?
- Does it fit the patient's goals?
- Is there a more urgent problem?
- Is the patient ready for this discussion?

Examples:

- smoking cessation may be high priority in COPD and vascular disease
- fall prevention may be more urgent than strict glucose control in frailty
- cancer screening may be appropriate for some but not others depending on prognosis and goals
- vaccination may be high priority in chronic disease
- statin therapy may be useful long-term but not the first issue during acute delirium

Prevention is important, but timing matters.

19. Prioritize When the Patient Has Many Symptoms

When a patient brings many symptoms, do not panic.

Start by asking:

"Which symptom worries you most?"

Then ask:

“Which symptom is newest or changing fastest?”

Then ask:

“Which symptom could be dangerous?”

Then ask:

“Which symptom is most limiting your life?”

A useful structure:

- patient’s top concern
- clinician’s danger concern
- most disabling symptom
- plan for remaining issues

Say:

“We may not solve every issue today, but we must first make sure there is no danger, then address the symptom causing most difficulty, and then plan follow-up for the others.”

This prevents scattered care.

20. Prioritize When Time Is Short

In real practice, time is limited.

A short consultation should still cover essentials:

- danger
- main concern
- focused history
- key examination
- working diagnosis
- immediate plan
- safety-net
- follow-up

If several problems exist, say:

“We need to focus first on the chest pain today because that could be dangerous. I also hear that your knee pain and sleep are important. Let us make a safe plan for those after we deal with the chest pain, or arrange a follow-up visit.”

Time limits should be acknowledged, not hidden.

Safe prioritization is honest.

21. Prioritize Tests

Tests should be prioritized by urgency and usefulness.

Ask:

- Which test answers the most urgent question?

Which test changes management today?

Which test can wait?

Which test is unnecessary?

Which test may cause harm?

Which test is needed before treatment?

Which test needs follow-up ownership?

Which result is time-sensitive?

Example:

In severe breathlessness, oxygenation, ECG, chest assessment, and tests for infection, heart failure, anemia, or clot may be prioritized depending on presentation.

In chronic fatigue without red flags, broad random testing may be less useful than focused evaluation and follow-up.

Prioritize tests that serve decisions.

22. Prioritize Treatments

Treatment prioritization asks:

What treatment saves life now?

What treatment prevents serious harm?

What treatment relieves severe suffering?

What treatment restores failing capacity?

What treatment reduces harm from current medicines?

What treatment is aligned with goals?

What treatment can wait?

What treatment should be stopped?

A patient with pneumonia, delirium, AKI, and falls risk may need:

antibiotics

oxygen if needed

hydration or fluid balance review

medication review

delirium measures

mobility support

family involvement

The sequence matters.

Do not only prescribe antibiotics and ignore everything else.

23. Prioritize Medicines

For medicine review, prioritize:

life-saving or essential medicines

- medicines causing harm
- high-risk medicines
- medicines needing renal or liver adjustment
- duplicate medicines
- medicines without current indication
- long-term preventive medicines whose time-to-benefit no longer fits
- medicines the patient cannot take correctly

Ask:

- What must continue?
- What must stop?
- What must be held temporarily?
- What must be monitored?
- What must be simplified?
- What must be explained?

Medicine prioritization prevents both under-treatment and over-treatment.

24. Prioritize Communication

Some conversations cannot wait.

Prioritize communication when:

- patient is seriously ill
- diagnosis is dangerous or uncertain
- treatment has major risks
- discharge is planned
- capacity is impaired
- family is confused
- goals of care are unclear
- patient refuses treatment
- high-risk medicine is prescribed
- prognosis is poor
- patient is dying
- conflict is emerging

Communication is not something to do after “real work.”

Communication is real work.

A patient who does not understand the plan is not safe.

25. Prioritize Documentation

Document first when delay could cause harm.

Prioritize documentation of:

- unstable patient review
- escalation plan
- medication changes
- allergies
- capacity assessment
- refusal of treatment
- goals of care
- resuscitation or escalation decisions
- pending results ownership
- discharge plan
- safety-net advice
- serious family discussions
- errors or adverse events

A note can wait if the patient is crashing.

But once safe, important decisions must be documented promptly.

Undocumented priorities disappear.

26. Prioritize as a Team

Prioritization improves when the team contributes.

Ask:

- What is nursing most worried about?
- What does pharmacy see as medicine danger?
- What does physiotherapy see as discharge risk?
- What does the family say is different?
- What does the patient most want addressed?
- What does the junior doctor need help with?
- What does the specialist recommend?
- Who owns each priority?

Team prioritization prevents single-perspective care.

The most important problem may be visible to someone else first.

27. Prioritize Under Pressure

Pressure may come from:

- full wards
- waiting patients
- family demands

- limited staff
- lack of beds
- limited tests
- time constraints
- emotional fatigue
- administrative urgency

Under pressure, return to the basics:

- who is unstable?
- who may deteriorate soon?
- who has time-sensitive treatment?
- who is unsafe for discharge?
- who needs a decision today?
- what task prevents the most harm?
- what can safely wait?

Pressure makes prioritization more important, not less.

28. Prioritize Ethically

Ethical prioritization asks:

- Are we treating patients fairly?
- Are we prioritizing by clinical need rather than social status?
- Are vulnerable patients being overlooked?
- Are quiet patients being ignored?
- Are loud demands distorting priorities?
- Are language barriers delaying care?
- Are disability, age, addiction, or mental illness biasing attention?
- Are resources being used proportionately?
- Are patient values included?

The sickest patient is not always the loudest.

The most vulnerable patient may be silent.

Ethical prioritization protects fairness.

29. Prioritize Reassessment

Plans require reassessment.

Prioritize reassessment when:

- patient is unstable
- treatment was just started
- diagnosis is uncertain

symptoms are worsening

vital signs are abnormal

high-risk medicines were changed

discharge depends on response

pain or breathlessness remains severe

delirium is present

family reports concern

nurse reports concern

A plan without reassessment is incomplete.

Ask:

When will we know whether this is working?

30. Prioritize the Repair Trajectory

The repair trajectory tells you whether care is moving in the right direction.

For each patient, define:

what should improve first

what should stabilize

what should be monitored

what function should return

what would mean danger

what would mean treatment harm

when the plan should be reviewed

Example:

For heart failure:

breathlessness should ease

oxygen requirement should reduce

edema should improve

kidney function should remain safe

dizziness should not worsen

walking should improve

If the repair trajectory is unclear, priorities will drift.

31. Worked Case 1: Breathlessness With Many Possible Causes

A 76-year-old man with COPD, heart failure, CKD, anemia, and anxiety presents with worsening breathlessness.

Priorities

First: oxygenation, respiratory distress, circulation, infection, heart failure, arrhythmia, PE risk.

Second: kidney function, anemia severity, medicines, anxiety, baseline function.

Third: long-term COPD and heart failure optimization.

Capacity Failures

Oxygenation, circulation, clearance, energy, emotional regulation.

Wise Prioritization

Assess danger first. Treat hypoxia or respiratory failure. Identify whether COPD, heart failure, infection, anemia, PE, or mixed causes are active. Avoid focusing only on anxiety or only on COPD.

Repair Trajectory

Breathing improves, oxygen stabilizes, main contributors identified, kidney function monitored, anxiety addressed after danger is controlled.

32. Worked Case 2: Frail Patient With Many Problems

An 85-year-old woman with frailty, dementia, diabetes, CKD, falls, poor appetite, and confusion is admitted.

Priorities

First: delirium danger, infection, hypoxia, glucose, dehydration, AKI, medication toxicity, injury.

Second: hydration, nutrition, mobility, sleep, pain, bowel and bladder.

Third: diabetes targets, long-term prevention, outpatient chronic disease review.

Capacity Failures

Cognition, energy, mobility, clearance, defense, agency.

Wise Prioritization

Do not focus first on long-term diabetes numbers. Stabilize brain, glucose safety, hydration, infection, medicines, and mobility. Involve family for baseline.

Repair Trajectory

Confusion improves, eating resumes, walking safer, kidney function stabilizes, medicines simplified, discharge support arranged.

33. Worked Case 3: Severe Pain With Stable Vitals

A 58-year-old woman with metastatic cancer has severe pain and constipation. Vitals are stable.

Priorities

Severe suffering is urgent.

First: assess pain mechanism and red flags, relieve pain, treat constipation, review opioid plan.

Second: sleep, mobility, family support, palliative care input.

Third: long-term oncology decisions if not already addressed.

Capacity Failures

Comfort, sleep, bowel clearance, mobility, meaning.

Wise Prioritization

Do not ignore pain because vitals are stable. Treat suffering actively while checking danger such as spinal cord compression, obstruction, or medication toxicity.

Repair Trajectory

Pain reduces, bowels move, sleep improves, family understands plan, crisis risk reduces.

34. Worked Case 4: Discharge Pressure

A 79-year-old man with pneumonia is afebrile and oxygen has improved. The ward needs beds. He remains weak, mildly confused, and unable to walk safely.

Priorities

First: discharge safety, delirium, mobility, medicines, home support.

Second: completion of infection treatment and follow-up.

Third: chronic disease optimization.

Capacity Failures

Mobility, cognition, energy, agency, caregiver support.

Wise Prioritization

Do not discharge based only on improved infection markers. Prioritize function, cognition, caregiver readiness, medication reconciliation, and follow-up.

Repair Trajectory

Walking safe or supported, confusion improved, family prepared, medicines clear, discharge does not lead to fall or readmission.

35. Worked Case 5: Many Abnormal Labs

A patient has mild anemia, mild hyponatremia, elevated glucose, raised creatinine, and borderline troponin. The patient also has chest pain and breathlessness.

Priorities

First: chest pain and breathlessness danger, cardiac risk, oxygenation, circulation.

Second: kidney function, sodium, glucose, anemia in context.

Third: chronic causes of anemia and long-term metabolic control.

Capacity Failures

Possible circulation, oxygenation, clearance, energy, regulation.

Wise Prioritization

Do not treat each lab in isolation. Identify which abnormality is dangerous now and which fits the syndrome. Repeat or monitor time-sensitive tests according to local pathway.

Repair Trajectory

Cardiac and respiratory danger addressed, kidney and electrolytes monitored, chronic abnormalities planned for follow-up.

36. Worked Case 6: Patient Agenda and Clinician Concern

A 62-year-old man comes for knee pain but has severe uncontrolled blood pressure and chest discomfort on exertion. He wants only pain medicine.

Priorities

First: possible cardiac danger and severe blood pressure risk.

Second: pain relief that does not increase cardiovascular or kidney harm.

Third: chronic arthritis plan.

Capacity Failures

Circulation risk, comfort, mobility, agency.

Wise Prioritization

Acknowledge knee pain, but explain that chest discomfort and blood pressure could be dangerous and must be assessed first. Avoid NSAID escalation if risk is high. Create plan for both danger and pain.

Repair Trajectory

Cardiac risk assessed, blood pressure managed safely, pain treated without avoidable harm, patient understands why priorities changed.

37. Common Student Pitfalls

Pitfall 1: Treating the First Problem Mentioned as the Highest Priority

The first complaint may not be the most dangerous.

Pitfall 2: Treating Lab Abnormalities Instead of the Patient

Labs must be interpreted within the syndrome.

Pitfall 3: Ignoring Severe Suffering Because Vitals Are Stable

Pain, breathlessness, agitation, and nausea matter.

Pitfall 4: Trying to Fix Everything at Once

Too many simultaneous goals can overwhelm care.

Pitfall 5: Prioritizing Chronic Targets During Acute Instability

Danger and capacity failure come first.

Pitfall 6: Forgetting Medicines as a Priority

Stopping harm may be the most urgent intervention.

Pitfall 7: Discharging Before Function Is Safe

Medical improvement is not the same as safe discharge.

Pitfall 8: Letting the Loudest Voice Set Priority

Prioritize by clinical need, patient values, and safety.

38. Clinical Practice Box

When prioritizing clinical care, complete this structure:

Immediate danger:
What could kill or seriously harm the patient now?

Main syndrome:
What clinical pattern organizes the case?

Most threatened capacity:
Oxygenation, circulation, cognition, clearance, defense, comfort, mobility, agency, support?

Most time-sensitive action:
What must happen now, today, this admission, or later?

Most reversible problem:
What can be corrected or relieved?

Most severe suffering:
What symptom must be relieved urgently?

Most dangerous uncertainty:
What diagnosis must not be missed?

Most harmful treatment:
Is any medicine or intervention causing harm?

Patient goal:
What matters most to the patient now?

Safe sequence:
What comes first, second, later, and what can wait?

Repair trajectory:
What should improve, by when, and what would trigger reassessment?

39. Mini-Case for Practice

A 77-year-old woman with diabetes, CKD, heart failure, frailty, osteoarthritis, depression, and mild dementia presents with poor appetite, dizziness, worsening leg swelling, two falls, confusion, knee pain, high glucose, worsening creatinine, and low mood. Her daughter says she is not safe at home. The patient says her main concern is knee pain and she wants stronger painkillers.

Apply the clinical prioritization approach.

Immediate Danger

Falls, confusion, AKI, possible heart failure worsening, medication toxicity, hypoglycemia or hyperglycemia risk, unsafe home.

Main Syndrome

Frail multimorbid patient with acute functional and cognitive decline, clearance stress, circulation/fluid imbalance, pain, mood symptoms, and medication vulnerability.

Most Threatened Capacities

Cognition, mobility, clearance, circulation, comfort, agency, caregiver-supported safety.

First Priorities

Assess delirium, vitals, oxygenation, glucose, renal function, electrolytes, volume status, infection, fall injury, medicines, and pain. Determine whether she is safe to go home.

Medicine Priority

Review diuretics, diabetes medicines, NSAIDs, opioids, sedatives, antihypertensives, and antidepressants. Avoid stronger pain medicines that increase falls or confusion without a broader plan.

Patient Goal

Acknowledge knee pain as real and important. Explain that falls, confusion, kidney stress, and swelling must be addressed first because they may be dangerous. Treat pain safely while investigating danger.

Safe Sequence

Stabilize and assess danger.

Review medicines and kidney/heart status.

Treat pain safely.

Address delirium and falls risk.

Involve daughter and assess discharge safety.

Plan depression and chronic arthritis follow-up once acute danger is controlled.

Repair Trajectory

Confusion improves, dizziness reduces, creatinine stabilizes, swelling improves, falls risk decreases, pain is controlled safely, daughter understands plan, discharge occurs only when home support is safe.

40. Student Takeaway

Clinical prioritization becomes easier when the clinician asks:

What is dangerous now?
Which capacity is most threatened?
What is time-sensitive?
What is reversible?
What suffering must be relieved?
What diagnosis must not be missed?
What treatment might be causing harm?
What matters most to the patient?
What can safely wait?
What sequence of action best supports repair?

Clinical prioritization is not about ignoring problems.

It is about ordering attention so the patient is protected from avoidable harm.

The safe clinician does not treat every issue as equal. The safe clinician recognizes danger, relieves suffering, addresses failing capacities, prevents treatment harm, listens to patient goals, uses the team wisely, and creates a sequence of care that moves the patient toward safety, coherence, and repair.

Chapter 73. The Complete Ward Round Made Easy

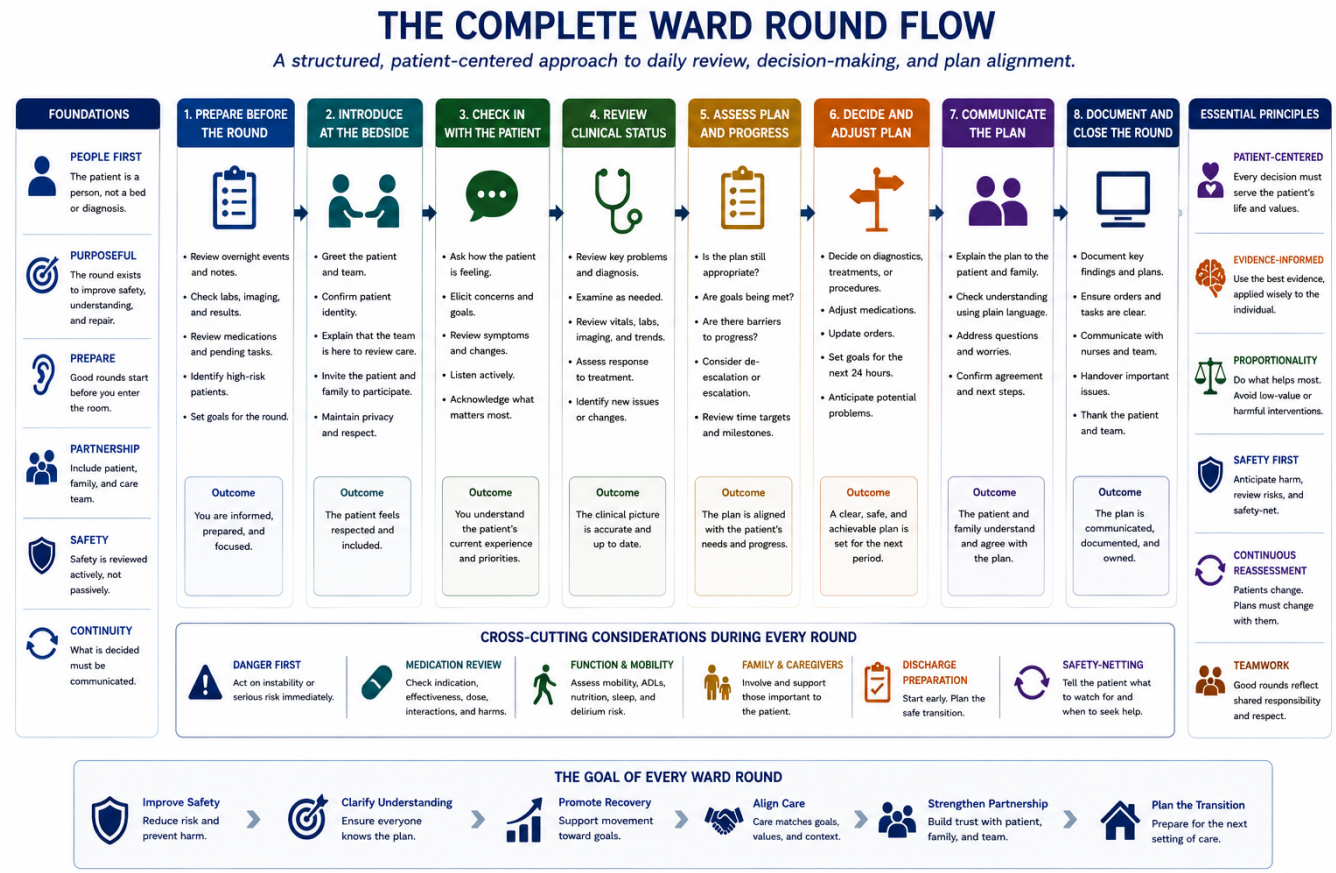

Figure 9. The Complete Ward Round Flow

The ward round is a daily process of reassessment, synthesis, decision-making, communication, and repair planning. It should integrate danger, medicines, function, family concerns, discharge readiness, and continuity of care.

The complete ward round is the structured daily review in which the clinical team reassesses the patient's condition, updates the diagnosis, checks response to treatment, identifies new danger, reviews medicines, clarifies goals, plans next steps, communicates with the patient and team, and prepares for safe discharge.

Patients do not usually say:

"The ward round was incomplete."

They say:

"The doctors came and left so quickly."
"I did not understand what they decided."
"No one told me if I am getting better."
"My medicines keep changing."
"I do not know when I am going home."
"My family wants an update."
"I told the nurse I felt worse, but no one asked me."
"The doctors talked about me, not to me."

Clinicians may think:

“We saw the patient yesterday.”
“The labs are better.”
“They are medically stable.”
“We just need discharge planning.”
“The specialist has reviewed.”
“The plan is obvious.”

But the ward round is not merely a daily ritual.

It is a safety-critical reassessment.

A patient who was stable yesterday may deteriorate today.
A diagnosis that seemed clear yesterday may no longer fit.
A medicine that helped yesterday may harm today.
A lab that improved may hide worsening function.
A discharge that seems possible medically may be unsafe functionally.
A patient who looks quiet may be delirious, depressed, in pain, or afraid.
A family concern may reveal what the chart does not.

The first task is not simply to “see everyone.”

The deeper question is:

What must be reassessed, decided, communicated, documented, and handed forward today so that this patient continues safely along a repair trajectory?

The complete ward round becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Complete Ward Round?

A complete ward round is a structured review of the patient as a whole person in a changing clinical situation.

It includes:

- preparation
- bedside assessment
- danger review
- symptom review
- vital sign review
- examination
- diagnosis review
- treatment response
- medicine review
- laboratory and imaging review
- capacity and cognition review
- function and mobility review
- nutrition and hydration review
- pain and comfort review
- goals-of-care review where relevant

family and caregiver communication

discharge planning

task assignment

documentation

handover

A ward round can be brief and complete.

A ward round can also be long and incomplete.

The test is not how much was said.

The test is whether the patient's care became safer and clearer.

2. The Ward Round Is Not a Parade

A ward round should not be a group of clinicians moving past the patient while discussing results in jargon.

The patient is not furniture in the room.

The patient is the reason for the round.

A good ward round should leave the patient knowing:

what the team thinks is happening

whether they are improving

what the plan is today

what needs to happen before discharge

what warning signs the team is watching

who will update family if needed

The ward round is both clinical review and communication.

If the team understands the plan but the patient does not, the round is incomplete.

3. The Ward Round Is a Daily Reassessment

Hospital patients change.

A ward round should ask every day:

Is the patient better, worse, or unchanged?

Does the diagnosis still fit?

Has a new problem appeared?

Are medicines helping or harming?

Are labs moving in the right direction?

Is the patient eating, drinking, walking, sleeping, urinating, and thinking?

Is pain controlled?

Is delirium present?

Is discharge becoming safer or less safe?

Does the plan still match the patient's goals?

Yesterday's assessment cannot simply be copied into today.

The patient must be seen again.

4. The First Question: Is There Immediate Danger Today?

At the start of each ward round review, ask whether the patient is in danger now.

Check for:

- worsening breathlessness
- increasing oxygen requirement
- low blood pressure
- persistent tachycardia
- chest pain
- new confusion
- reduced consciousness
- fever or sepsis signs
- reduced urine output
- severe pain
- bleeding
- severe vomiting
- hypoglycemia or severe hyperglycemia
- seizure
- new neurological deficit
- fall overnight
- agitation or unsafe behavior
- medication toxicity
- withdrawal
- suicidal thoughts
- family or nursing concern

The danger-first question is:

Has anything changed that makes this patient unsafe now?

If yes, the ward round must shift into urgent assessment and escalation.

5. Immediate Red Flags on the Ward Round

Red flags include:

- patient looks worse than yesterday
- nurse says, "I am worried"
- family says, "This is not like them"
- oxygen requirement rising

- respiratory rate rising
- blood pressure falling
- urine output falling
- creatinine rising
- potassium dangerously abnormal
- new delirium
- new drowsiness
- new agitation
- new focal neurological sign
- uncontrolled pain
- new chest pain
- new arrhythmia
- fever despite treatment
- lactate or inflammatory markers worsening in context
- hemoglobin dropping
- black stool or bleeding
- repeated hypoglycemia
- fall or head injury
- patient refusing care without capacity assessment
- discharge planned despite unsafe mobility or confusion

These should interrupt routine flow.

The team should not continue the round as if nothing is happening.

6. Prepare Before Entering the Room

Before seeing the patient, briefly review:

- overnight events
- nursing concerns
- vital sign trends
- fluid balance where relevant
- oxygen requirement
- pain scores or symptom reports
- intake and output
- blood glucose where relevant
- new labs
- imaging results
- microbiology
- medicine chart

- high-risk medicines
- procedures or referrals pending
- therapy assessments
- family concerns
- discharge barriers

Preparation makes bedside time more useful.

But do not let the computer replace the patient.

The screen may show numbers.

The bedside shows life.

7. Speak to the Nurse

The nurse often knows what changed.

Ask:

- How was the patient overnight?
- Any concerns?
- Eating and drinking?
- Passing urine?
- Bowels open?
- Pain controlled?
- Sleeping?
- Confused or agitated?
- Mobilizing?
- Any falls?
- Any family concerns?
- Any medicines missed?
- Any practical barriers?

A ward round that ignores nursing knowledge is unsafe.

Nursing observation is clinical data.

8. Enter the Bedside Well

At the bedside:

- greet the patient
- introduce the team
- confirm identity
- ask permission to discuss and examine
- include the patient in conversation
- avoid speaking over them

protect privacy

sit or lower yourself when possible

check hearing aids, glasses, and communication needs

Example:

“Good morning, Mr. Joseph. We are reviewing how you are recovering from the pneumonia and kidney stress. I would like to ask how you feel today, examine your chest, and then explain today’s plan.”

This frames the round.

The patient knows what is happening.

9. Ask the Patient: How Are You Today Compared With Yesterday?

The daily comparison matters.

Ask:

Do you feel better, worse, or the same?

Is your breathing better?

Any chest pain?

Any dizziness?

Any new pain?

Are you eating?

Are you drinking?

Are you passing urine?

Have your bowels opened?

Are you sleeping?

Are you confused or seeing things?

Have you been out of bed?

What worries you today?

The patient’s answer may challenge the chart.

If the lab improves but the patient feels worse, reassess.

10. Review the Original Syndrome

Every ward round should return to the reason for admission.

Ask:

Why was the patient admitted?

What was the main syndrome?

What was dangerous?

What diagnosis was made?

What remains uncertain?

What capacities were failing?

Example:

“Admitted with acute breathlessness, hypoxia, fever, and confusion — pneumonia with delirium and AKI risk.”

This prevents drift.

The team remembers what they are trying to repair.

11. Reassess the Diagnosis

Do not assume the original diagnosis remains correct.

Ask:

- Does the diagnosis still fit?
- Has treatment response supported it?
- What does not fit?
- Are there new symptoms?
- Are labs improving as expected?
- Did imaging confirm or challenge the diagnosis?
- Could there be a second diagnosis?
- Could medicines be contributing?
- Has the patient developed a complication?

Example:

A patient treated for COPD exacerbation remains breathless and edematous.

Reconsider:

- heart failure
- pneumonia
- PE
- anemia
- renal fluid overload
- arrhythmia
- anxiety
- deconditioning

The ward round is where diagnostic errors are caught.

12. Review Vital Sign Trends

Vital signs are not isolated numbers.

Review trends:

- temperature
- heart rate
- blood pressure

- respiratory rate
- oxygen saturation
- oxygen requirement
- pain score where used
- mental state
- urine output where relevant

A single normal reading may be less important than a worsening trend.

Examples:

- respiratory rate rising before oxygen drops
- heart rate rising before blood pressure falls
- oxygen requirement increasing despite treatment
- blood pressure lower than usual in sepsis or bleeding
- temperature resolving but confusion worsening
- urine output falling before creatinine rises

Ask:

Are the vital signs moving toward repair or deterioration?

13. Examine With Purpose

Examination should be focused but sufficient.

Depending on the case, assess:

- general appearance
- breathing effort
- chest signs
- heart rate and rhythm
- fluid status
- edema
- abdomen
- hydration
- neurological signs
- mental state and attention
- wounds
- lines and catheters
- pressure areas where relevant
- mobility or ability to sit/stand
- pain sites
- signs of bleeding
- signs of infection

Do not examine mechanically.

Ask:

What question must my examination answer today?

For pneumonia:

- Is breathing improving?
- Is oxygen need lower?
- Is delirium improving?
- Is hydration safe?

For heart failure:

- Is congestion improving?
- Is kidney function safe?
- Is blood pressure tolerating treatment?
- Is dizziness present?

For falls:

- Is injury missed?
- Can the patient mobilize safely?
- Is orthostatic hypotension possible?

14. Review Laboratory Results in Context

Labs should be interpreted through the syndrome.

Ask:

- What has improved?
- What has worsened?
- What is new?
- What needs urgent action?
- What is chronic baseline?
- What may be medicine-related?
- What result does not fit?
- What needs repeat testing?
- What result can wait?
- What result changes management?

Common ward-round lab priorities include:

- renal function
- electrolytes
- glucose
- hemoglobin
- white cell count

- inflammatory markers where relevant
- liver function
- coagulation where relevant
- drug levels where relevant
- cultures and sensitivities
- troponin trends where relevant

Do not treat numbers alone.

Treat the patient-pattern.

15. Review Imaging and Reports

Imaging should answer a clinical question.

Ask:

- What was the imaging question?
- Does the result answer it?
- Is the report final or preliminary?
- Does it fit the clinical picture?
- Are there incidental findings?
- Does this change treatment?
- Does this require further investigation?
- Does the patient know the result?
- Does primary care need follow-up?

Imaging findings must be translated into care.

A scan result without plan is incomplete.

16. Review Microbiology

For infection, review:

- cultures taken
- culture results
- sensitivities
- likely source
- antibiotic choice
- antibiotic duration or review date
- response to treatment
- need for source control
- infection control precautions
- whether antibiotics can be narrowed, stopped, or changed

Ask:

Are we treating the right infection with the narrowest safe effective plan?

Antibiotics should not continue indefinitely just because they were started.

17. Review Medicines Every Day

Ward patients are vulnerable to medication harm.

Review:

- new medicines
- stopped medicines
- held medicines
- high-risk medicines
- renal or liver dose adjustments
- antibiotics
- anticoagulants
- insulin and diabetes medicines
- diuretics
- antihypertensives
- opioids
- sedatives
- anticholinergics
- steroids
- NSAIDs
- laxatives
- inhalers
- oxygen prescription where relevant

Ask:

- What is each medicine for?
- Is it still needed?
- Is it helping?
- Is it harming?
- Is kidney or liver function changing?
- Can it be simplified?
- Should any medicine be restarted?
- Should any medicine be stopped?
- Does the patient understand the changes?

Medicine review is not optional.

It is one of the main safety functions of the ward round.

18. Review Pain and Comfort

Pain is often under-recognized on ward rounds.

Ask:

- Are you in pain?
- Where?
- Is it better or worse?
- Does it stop you moving or sleeping?
- Are medicines helping?
- Are they causing constipation, nausea, confusion, or drowsiness?
- Is there new pain that suggests danger?
- Is positioning or pressure relief needed?

Comfort also includes:

- breathlessness
- nausea
- itching
- anxiety
- insomnia
- mouth dryness
- constipation
- urinary discomfort
- wound discomfort

A patient can be medically improving and still suffering.

A complete ward round treats suffering as clinical data.

19. Review Bowels and Bladder

Bowels and bladder are often neglected.

Ask:

- Has the patient passed urine?
- Is urine output adequate?
- Is there retention?
- Is there catheter discomfort?
- Can the catheter be removed?
- Has the patient opened bowels?
- Is constipation present?
- Is diarrhea present?
- Is the patient on opioids?
- Is delirium being worsened by retention or constipation?

Constipation and urinary retention can cause:

- pain
- delirium
- agitation
- nausea
- poor appetite
- urinary infection
- immobility

Bowel and bladder care is core medicine.

20. Review Nutrition and Hydration

Ask:

- Is the patient eating?
- Drinking?
- Losing weight?
- Nauseated?
- Constipated?
- Able to swallow?
- Needs assistance feeding?
- Has mouth pain or dry mouth?
- Is there aspiration risk?
- Is fluid balance appropriate?
- Is dehydration or overload present?

Nutrition and hydration affect:

- delirium
- wound healing
- infection recovery
- kidney function
- mobility
- medication safety
- energy
- discharge readiness

Do not wait until malnutrition is severe.

21. Review Cognition and Delirium

Every older, frail, seriously ill, or high-risk patient should have cognition reviewed.

Ask:

Is the patient more alert?

Is attention improved?

Is confusion fluctuating?

Did they sleep?

Are they hallucinating?

Are they agitated?

Are they drowsy?

Are medicines contributing?

Is pain controlled?

Is oxygenation safe?

Is infection improving?

Are bowels and bladder managed?

Are hearing aids and glasses available?

Is family helping with orientation?

Delirium is a daily ward-round priority.

It often determines discharge safety.

22. Review Mobility and Function

Ask:

Has the patient been out of bed?

Can they sit?

Stand?

Transfer?

Walk?

Manage stairs?

Toilet safely?

Wash and dress?

Use usual mobility aids?

Are they weaker than baseline?

Has physiotherapy reviewed?

Is occupational therapy needed?

Are falls precautions in place?

Is pain limiting movement?

Is dizziness limiting movement?

A patient who is “medically fit” but cannot transfer safely is not ready for unsafe discharge.

Function must be part of the daily plan.

23. Review Lines, Tubes, Catheters, and Devices

Every device should have a reason.

Review:

- IV cannulas
- central lines
- urinary catheters
- feeding tubes
- drains
- oxygen devices
- monitors
- compression devices
- wound dressings
- mobility aids

Ask:

- Is this still needed?
- Is it causing harm?
- Can it be removed?
- Is there infection risk?
- Is it restricting mobility?
- Does it align with goals?

Unnecessary devices cause infections, discomfort, immobility, delirium, and dignity loss.

24. Review Skin and Pressure Injury Risk

High-risk patients include those with:

- frailty
- immobility
- poor nutrition
- incontinence
- edema
- diabetes
- vascular disease
- low consciousness
- severe illness
- end-of-life care

Ask:

- Is pressure relief in place?
- Are heels protected?

- Is skin inspected?
- Is moisture managed?
- Is nutrition supported?
- Is pain from pressure areas present?
- Can the patient reposition?
- Is wound care needed?

Skin breakdown is often a sign that the whole care system is failing to protect capacity.

25. Review Mental Health and Distress

Hospitalization can worsen:

- anxiety
- depression
- demoralization
- insomnia
- loneliness
- fear
- trauma
- substance withdrawal
- grief

Ask:

- How are you coping?
- Are you worried about anything?
- Are you sleeping?
- Do you feel low or hopeless?
- Are you frightened?
- Do you feel safe?
- Are you craving alcohol or substances?
- Have you had thoughts of harming yourself?

Do not assume mental health can wait until discharge.

Distress affects recovery.

26. Review Goals of Care

Goals of care should be reviewed when:

- illness is serious
- patient is deteriorating
- repeated admissions occur
- frailty is advanced

- treatment burden is high
- patient may be dying
- patient refuses treatment
- family conflict exists
- escalation decisions may arise
- discharge planning requires realistic expectations

Ask:

- What does the patient understand?
- What matters most now?
- What is treatment trying to achieve?
- Are current interventions proportionate?
- Should escalation limits be discussed?
- Is palliative care needed?
- Has the family been updated?
- Are goals documented?

Goals should not be left until crisis.

The ward round is the right time to notice when the care direction needs to change.

27. Review Family and Caregiver Needs

Ask:

- Does family need an update?
- Who is the main contact?
- Has the patient consented to sharing information?
- Does family know baseline?
- Are they worried?
- Can they support discharge?
- Are they overwhelmed?
- Do they understand medicines?
- Do they know warning signs?
- Are there safeguarding concerns?

Family communication is not separate from ward care.

In frailty, dementia, disability, serious illness, and discharge planning, family may be essential to safety.

28. Review Discharge Readiness Daily

Discharge planning starts early.

Ask daily:

- Is the diagnosis clear enough?

Is the patient clinically stable?

Are symptoms controlled?

Can they eat and drink?

Can they walk or transfer safely?

Is cognition safe?

Are medicines reconciled?

Are high-risk medicines explained?

Are pending results owned?

Is follow-up arranged?

Is home safe?

Is caregiver support available?

Is equipment needed?

Are therapy assessments complete?

Does the patient understand the plan?

Does the family understand?

Are goals of care documented where relevant?

Discharge readiness is not the same as improved blood tests.

It is readiness for repair outside hospital.

29. Decide Today's Priorities

At the end of each patient review, the team should know today's priorities.

Examples:

reduce oxygen and mobilize

repeat renal function and adjust diuretics

complete delirium assessment

stop sedative and treat constipation

arrange physiotherapy before discharge

update daughter

review antibiotics after culture result

clarify goals of care

arrange palliative care input

prepare discharge summary

chase pending imaging

remove catheter

restart anticoagulation if bleeding stable

monitor glucose after insulin change

A vague plan creates drift.

A clear priority list creates action.

30. Assign Tasks Clearly

For every task, identify:

- what must be done
- who will do it
- when it must happen
- what result requires action
- who must be informed

Examples:

“Repeat renal function tomorrow morning; ward doctor to review before restarting diuretic.”

“Physiotherapy to assess transfers today before discharge decision.”

“Call daughter after ward round to update and confirm baseline function.”

“Pharmacist to reconcile medicines and prepare stop/start/change list.”

A task without owner and timeframe is not a plan.

31. Communicate the Plan to the Patient

Before leaving, explain:

- what is happening
- whether they are improving
- what today’s plan is
- what needs to happen before discharge
- what symptoms to report
- when family will be updated if relevant

Example:

“Your breathing is improving, and your oxygen need is lower. Your kidneys are still under stress, so we are holding one fluid tablet today and repeating blood tests tomorrow. We also want physiotherapy to check your walking before we decide about discharge. Please tell the nurse immediately if your breathing worsens, you get chest pain, or you feel dizzy.”

This helps the patient participate in safety.

32. Document the Ward Round

A ward-round note should include:

- date and time
- who was present
- patient’s current report
- overnight events
- vital sign trend

- examination findings
- results reviewed
- diagnosis and uncertainty
- treatment response
- medicine changes
- active capacity failures
- plan
- tasks and owners
- escalation criteria
- communication with patient and family
- discharge plan
- follow-up needs

The note should not be a copy-paste of yesterday.

It should show what changed today.

33. Handover After the Ward Round

Important issues must be handed over.

Include:

- unstable patients
- pending urgent results
- new medicine changes
- high-risk monitoring
- escalation triggers
- family concerns
- goals-of-care decisions
- discharge-critical tasks
- patients needing reassessment
- patients at risk of delirium, falls, hypoglycemia, bleeding, AKI, or deterioration

The ward round is incomplete if the plan does not reach the people who must act on it.

34. The Ward Round in Frailty

In frailty, the ward round must include:

- baseline function
- delirium
- mobility
- falls
- medicines

- pain
- nutrition
- hydration
- bowels and bladder
- skin
- sensory aids
- sleep
- caregiver support
- discharge safety
- goals of care

Do not focus only on the admitting diagnosis.

A frail patient admitted with pneumonia may deteriorate because of delirium, immobility, sedatives, dehydration, constipation, or unsafe discharge.

Frailty care is daily capacity protection.

35. The Ward Round in Multimorbidity

In multimorbidity, review interactions.

Ask:

- Is treatment for one disease worsening another?
- Are medicines conflicting?
- Is kidney function changing dosing?
- Is fluid treatment helping or harming?
- Is glucose control too strict or too loose for context?
- Is pain treatment worsening falls or confusion?
- Is the patient overwhelmed by the plan?
- Which problem is today's priority?

Avoid disease-by-disease fragmentation.

Create one integrated plan.

36. The Ward Round in Serious Illness

In serious illness, ask:

- Is the patient improving?
- Is treatment achieving its goal?
- Is suffering controlled?
- Is the patient aware of the situation?
- Does the plan match patient values?
- Are we prolonging recovery or prolonging dying?

Is palliative care needed?

Should escalation limits be discussed?

Does family need a meeting?

Is preferred place of care known?

Are spiritual or cultural needs present?

The ward round should notice when the goal of care needs to shift.

37. Worked Case 1: Pneumonia With Delirium and AKI

An 83-year-old woman was admitted with pneumonia, confusion, and mild AKI. On day three, fever is lower and oxygen requirement has improved, but she remains confused and eats poorly.

Ward-Round Focus

Do not declare full recovery because infection markers improve.

Active Capacity Failures

Cognition, nutrition, hydration, mobility, clearance.

Daily Priorities

Assess delirium triggers, hydration, renal function, medicines, pain, constipation, retention, sleep, and mobility. Continue infection treatment review. Involve family for baseline.

Repair Trajectory

Breathing improves, confusion clears, appetite returns, kidney function stabilizes, walking returns toward baseline, discharge becomes safe.

38. Worked Case 2: Heart Failure With Kidney Stress

A 76-year-old man with heart failure is less breathless after diuresis, but creatinine has risen and he feels dizzy when standing.

Ward-Round Focus

Balance circulation, congestion, kidney clearance, and falls risk.

Active Capacity Failures

Circulation, clearance, mobility safety.

Daily Priorities

Assess volume status, blood pressure, orthostatic symptoms, urine output, electrolytes, renal function, diuretic dose, other blood pressure medicines, and fall risk.

Repair Trajectory

Breathlessness improves without worsening kidney injury or dizziness; medicines adjusted safely; discharge plan includes monitoring.

39. Worked Case 3: “Medically Stable” but Unsafe Mobility

A 90-year-old man admitted after UTI is afebrile and blood tests have improved. He cannot transfer from bed without two people and is more confused at night.

Ward-Round Focus

Medical stability does not equal discharge readiness.

Active Capacity Failures

Mobility, cognition, safety, caregiver-supported function.

Daily Priorities

Delirium review, physiotherapy, occupational therapy, falls prevention, medicine review, family update, discharge support planning.

Repair Trajectory

Transfers improve or support arranged, confusion settles, home safety assessed, discharge does not result in fall or readmission.

40. Worked Case 4: Severe Pain on the Ward

A patient with metastatic cancer is admitted for infection. Antibiotics are started, but the patient has uncontrolled back pain and constipation.

Ward-Round Focus

Treat suffering as urgent.

Active Capacity Failures

Comfort, sleep, bowel clearance, mobility, dignity.

Daily Priorities

Assess pain mechanism and red flags, optimize analgesia according to local guidance, treat constipation, review opioid side effects, consider palliative care, update family.

Repair Trajectory

Pain controlled, bowels move, sleep improves, mobility and dignity improve, infection treatment continues appropriately.

41. Worked Case 5: Conflicting Specialty Advice

A patient with CKD, heart failure, diabetes, and anemia has recommendations from several teams. The medication list is becoming complex.

Ward-Round Focus

Integrate recommendations.

Active Capacity Failures

Clearance, circulation, glucose regulation, energy, medicine safety.

Daily Priorities

Identify lead plan, reconcile medicines, clarify which recommendations are active, resolve conflicts, involve pharmacy, explain simplified plan to patient.

Repair Trajectory

Medicine burden reduces, monitoring assigned, specialties aligned, patient understands plan, harm risk decreases.

42. Worked Case 6: Possible End-of-Life Transition

A patient with advanced COPD and heart failure is admitted again with breathlessness. Despite treatment, he remains bedbound, exhausted, and says, “I cannot keep doing this.”

Ward-Round Focus

Recognize serious illness trajectory and revisit goals.

Active Capacity Failures

Oxygenation reserve, circulation, energy, comfort, agency, meaning.

Daily Priorities

Treat reversible breathlessness, assess suffering, ask understanding and goals, discuss prognosis honestly, involve family with consent, consider palliative care, document escalation preferences.

Repair Trajectory

Breathlessness relieved, patient heard, treatment burden reduced, goals clear, future crises planned.

43. Common Student Pitfalls

Pitfall 1: Reviewing the Chart but Not the Patient

Numbers do not replace bedside assessment.

Pitfall 2: Saying "Improving" Without Asking What Is Improving

Specify symptoms, vitals, function, cognition, labs, and comfort.

Pitfall 3: Ignoring Nursing Concerns

Nursing concern may be the earliest warning sign.

Pitfall 4: Forgetting Daily Medicine Review

Medicines that helped yesterday may harm today.

Pitfall 5: Declaring Discharge Readiness Based on Diagnosis Alone

Function, cognition, medicines, support, and follow-up matter.

Pitfall 6: Copying Yesterday's Plan

A ward-round note should reflect today's reality.

Pitfall 7: Not Assigning Tasks

Plans fail when no one owns them.

Pitfall 8: Talking About the Patient but Not To the Patient

The patient should understand the plan.

44. Clinical Practice Box

During a ward round, complete this structure:

Preparation:
Overnight events, nursing concerns, vitals, labs, imaging, medicines, therapy, family issues.

Patient voice:
Better, worse, same? Main symptom today? Main worry?

Danger today:
Any deterioration, red flags, severe symptoms, abnormal trends, nursing concern?

Syndrome and diagnosis:
Does the original diagnosis still fit? Any second diagnosis or uncertainty?

Capacity failures:
Oxygenation, circulation, clearance, cognition, mobility, nutrition, comfort, agency, support.

Treatment response:
What is improving? What is not improving? What is worse?

Medicine review:
Started, stopped, held, changed, high-risk medicines, renal/liver adjustment, side effects.

Function and discharge:
Eating, drinking, walking, toileting, cognition, home support, equipment, follow-up.

Goals and communication:
Patient understanding, family update, goals of care, escalation plan where relevant.

Today's priorities:
What must happen today?

Task ownership:
Who does what, by when, and what action follows results?

Documentation and handover:
Record today's reasoning, plan, uncertainty, tasks, escalation triggers, and discharge barriers.

45. Mini-Case for Practice

A 79-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and osteoarthritis is on day four of admission for pneumonia. Her oxygen requirement has improved and fever has settled. However, she is eating poorly, intermittently confused, constipated, weak when standing, and her creatinine has risen slightly. Her diuretic was held yesterday. She is on antibiotics, insulin, opioids for knee pain, and a sleeping tablet. Her daughter says she is not back to baseline and worries about discharge.

Apply the complete ward round approach.

Danger Today

Rising creatinine, delirium, poor intake, constipation, weakness, falls risk, medication harm, possible fluid imbalance, unsafe discharge.

Syndrome Review

Pneumonia is improving, but the patient now has frailty-related incomplete recovery with cognition, clearance, mobility, nutrition, bowel, pain, and medicine safety problems.

Capacity Failures

Cognition, clearance, mobility, nutrition, comfort, bowel clearance, agency, caregiver-supported safety.

Medicine Review

Review antibiotics, insulin in context of poor intake, opioids causing constipation or confusion, sleeping tablet causing delirium and falls, diuretic hold and restart criteria, kidney dosing, and pain alternatives.

Daily Priorities

Assess delirium triggers, treat constipation, improve hydration/nutrition, review renal function and volume status, mobilize with physiotherapy, reduce sedative burden, manage pain safely, update daughter, and delay discharge until function and cognition are safe or support is arranged.

Repair Trajectory

Confusion improves, bowels open, eating improves, kidney function stabilizes, dizziness reduces, walking improves, pain remains controlled without excess sedation, daughter understands plan, discharge becomes safe.

46. Student Takeaway

The complete ward round becomes easier when the clinician asks:

What changed overnight?
What does the nurse think?
What does the patient say?
Is there danger today?
Does the diagnosis still fit?
Which capacities are failing?
Is treatment helping or harming?
Are medicines still safe?
Is pain or distress controlled?
Is cognition, mobility, nutrition, bowel, bladder, and skin protected?
Are goals of care clear?
Is discharge safe medically, functionally, cognitively, socially, and medication-wise?
Who owns today's tasks?
What must be documented and handed over?

A complete ward round is not a daily performance.

It is the daily renewal of clinical responsibility.

The safe clinician does not simply repeat yesterday's plan. The safe clinician reassesses danger, listens to the patient and team, revises diagnosis, reviews medicines, protects function, clarifies goals, assigns tasks, documents clearly, and keeps the patient moving toward the safest possible repair trajectory.

Chapter 74. The Complete Admission Made Easy

The complete admission is the structured process by which a patient is safely brought into hospital care, assessed for danger, diagnosed provisionally, treated, monitored, communicated about, documented, and placed on a clear repair trajectory.

Patients do not usually say:

“I need a complete admission.”

They say:

“Why am I being admitted?”
“Am I very sick?”
“How long will I be here?”
“What are you treating?”
“What tests are you doing?”
“Can I eat?”
“Should I take my usual medicines?”
“Will someone call my family?”
“What needs to happen before I can go home?”

Families may say:

“What is wrong?”
“Is this serious?”
“What changed?”
“Will she recover?”
“Can he go home tomorrow?”
“Who is in charge?”

Admission is central to Internal Medicine because it is the point where acute risk, chronic illness, social reality, medication safety, patient goals, and hospital systems all meet.

A good admission can save life.
A poor admission can miss danger.
A good admission defines the syndrome clearly.
A poor admission copies labels without reasoning.
A good admission protects medicines, cognition, mobility, nutrition, and dignity.
A poor admission focuses only on one disease and creates new harm.
A good admission plans discharge from the beginning.
A poor admission lets the patient drift.

The first task is not simply to “clerk the patient.”

The deeper question is:

What must be understood, stabilized, treated, monitored, communicated, and planned today so that hospital care helps more than it harms?

The complete admission becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Complete Admission?

A complete admission includes:

immediate danger assessment

stabilization when needed

- reason for admission
- patient’s story
- collateral history where needed
- baseline function
- past medical history
- medication reconciliation
- allergy and adverse reaction review
- social and caregiver context
- examination
- vital sign and trend review
- initial investigations
- working diagnosis
- differential diagnosis
- capacity failure map
- treatment plan
- monitoring plan
- escalation plan
- communication with patient and family
- goals-of-care review where relevant
- discharge planning from day one
- clear documentation
- handover to the ward team

Admission is not complete because a form is filled.

It is complete when the patient is safely integrated into a coherent plan of care.

2. Admission Is a Transition of Risk

Admission transfers the patient from one state to another.

They may come from:

- home
- clinic
- emergency department
- another ward
- another hospital
- nursing home
- care facility
- ambulance
- family care

outpatient procedure

operating theatre

dialysis unit

At each transition, information can be lost.

The patient's usual medicines may be wrong.
The baseline function may be unknown.
The family's concern may not be recorded.
The reason for admission may be vague.
The diagnosis may be assumed.
The first treatment may be started but not reviewed.
The patient may not know what is happening.

A complete admission prevents risk from becoming invisible.

3. Admission Is Not Just Diagnosis

Diagnosis matters, but admission must do more.

A patient admitted with pneumonia may also need:

oxygen monitoring

delirium prevention

hydration assessment

kidney function monitoring

glucose safety

medicine review

mobility support

falls prevention

nutrition support

family update

discharge planning

A patient admitted with heart failure may also need:

renal monitoring

medication review

electrolyte monitoring

mobility assessment

education about fluid symptoms

social support

goals-of-care discussion if advanced disease

A patient admitted with confusion may need:

delirium workup

safety supervision

family collateral

- medicine review
- bowel and bladder assessment
- pain assessment
- sensory aids
- sleep protection
- discharge support

Admission is the first opportunity to see the whole pattern.

4. The First Question: Is There Immediate Danger?

Before completing the full history, ask:

- Is the airway safe?
- Is breathing safe?
- Is circulation safe?
- Is consciousness safe?
- Is glucose safe?
- Is there sepsis?
- Is there major bleeding?
- Is there stroke?
- Is there myocardial infarction?
- Is there pulmonary embolism?
- Is there severe electrolyte disturbance?
- Is there AKI with danger?
- Is there overdose or withdrawal?
- Is there severe pain?
- Is there suicidal risk?
- Is the patient unsafe, agitated, or unable to protect themselves?

The danger-first question is:

What must be stabilized now before the rest of the admission continues?

If the patient is unstable, the admission becomes an emergency response.

Stabilize first.

Complete details later.

5. Immediate Red Flags at Admission

Red flags include:

- severe breathlessness
- rising oxygen requirement
- low blood pressure

- severe chest pain
- new neurological deficit
- seizure
- new confusion or reduced consciousness
- severe headache with concerning features
- severe abdominal pain
- major bleeding
- black stools with weakness
- fever with systemic illness
- persistent tachycardia
- hypoglycemia
- severe hyperglycemia with dehydration or drowsiness
- severe vomiting
- reduced urine output
- severe electrolyte abnormality
- suspected sepsis
- fall with head injury or anticoagulation
- uncontrolled pain
- agitation or violent risk
- suicidal intent
- alcohol or sedative withdrawal risk
- safeguarding concern
- frailty with acute inability to walk, eat, drink, or think clearly

These findings should shape the urgency, location, monitoring, and escalation plan.

6. Why Is the Patient Being Admitted?

A complete admission must state the reason for admission clearly.

Poor reasons:

“For observation.”
“For workup.”
“Unwell.”
“Social admission.”
“Unable to cope.”

Better reasons:

“Admitted with acute breathlessness and hypoxia, likely pneumonia versus heart failure, requiring oxygen, antibiotics, and monitoring.”

“Admitted with delirium, falls, poor intake, and AKI in a frail patient; cause under investigation and discharge unsafe.”

“Admitted with chest pain requiring serial assessment according to local pathway.”

“Admitted with uncontrolled pain, constipation, and poor oral intake in advanced cancer.”

The reason for admission should explain:

- the active syndrome
- the danger
- the required hospital-level care
- what needs monitoring or treatment

If you cannot state why the patient is admitted, the plan is not yet clear.

7. Listen to the Patient’s Story

After danger is addressed, hear the story.

Ask:

- What happened?
- When were you last well?
- What changed first?
- What happened next?
- Why did you seek help today?
- What worries you most?
- Have you had this before?
- What treatment did you try?
- What did others tell you?
- What are you hoping we can help with?

The patient’s story gives meaning to the admission.

Do not reduce the patient to the referral note.

8. Establish the Timeline

The admission timeline is essential.

Clarify:

- last known well
- symptom onset
- progression
- sudden versus gradual change
- fluctuation
- treatments already given
- response to treatment
- deterioration points
- previous recent admissions
- recent medication changes

- recent falls
- recent infections
- recent travel, procedures, or exposures where relevant

A clear timeline distinguishes:

- acute illness from chronic decline
- delirium from dementia
- medication side effect from disease
- relapse from new disease
- treatment failure from late presentation
- progressive illness from sudden complication

When the case feels confusing, rebuild the timeline.

9. Get Collateral History Early When Needed

Collateral history is essential when the patient has:

- confusion
- dementia
- delirium
- syncope
- seizure
- falls
- severe illness
- intoxication
- language barrier
- communication difficulty
- severe pain
- poor recall
- frailty
- functional decline
- medication uncertainty

Collateral may come from:

- family
- caregiver
- nursing home staff
- ambulance crew
- primary care clinician
- pharmacist
- previous records

community nurses

witnesses

Ask:

What is the patient normally like?

What changed?

When did it change?

What medicines are actually taken?

Any falls?

Eating and drinking?

Urine and bowels?

Baseline walking?

Baseline cognition?

Any recent hospital visits?

Any previous wishes or goals?

A complete admission does not guess baseline when baseline can be obtained.

10. Establish Baseline Function

Baseline function tells how severe the change is and what discharge requires.

Ask:

Can the patient walk independently?

Do they use a stick, walker, or wheelchair?

Can they climb stairs?

Can they bathe and dress?

Can they cook and shop?

Can they manage medicines?

Can they manage finances?

Can they toilet independently?

Do they live alone?

Do they need caregivers?

What was cognition like before this illness?

What was appetite like?

What was usual activity level?

What was usual oxygen requirement if relevant?

A patient's repair trajectory depends on baseline.

The question is not only:

"What disease do they have?"

It is also:

“What function are we trying to restore or support?”

11. Past Medical History: Ask What Matters Now

Past medical history should be organized by relevance.

Important conditions include:

- heart disease
- heart failure
- atrial fibrillation
- stroke or TIA
- diabetes
- CKD
- liver disease
- COPD or asthma
- cancer
- dementia
- frailty
- falls
- previous delirium
- autoimmune disease
- immunosuppression
- bleeding history
- clotting history
- psychiatric illness
- addiction or dependence
- surgeries
- recent admissions

Do not list conditions mechanically.

Ask how they shape the current admission.

CKD changes medication safety.
Heart failure changes fluid decisions.
Dementia changes delirium risk.
Diabetes changes glucose and infection risk.
Cancer changes clot, pain, prognosis, and goals.
Frailty changes everything.

12. Medication Reconciliation at Admission

Medication reconciliation is one of the most important admission tasks.

Ask about:

- prescribed medicines
- actual medicines taken
- recent changes
- missed doses
- duplicate medicines
- over-the-counter medicines
- NSAIDs
- sleeping tablets
- pain medicines
- herbal or traditional remedies
- supplements
- inhalers
- eye drops
- injections
- insulin
- patches
- anticoagulants
- steroids
- antibiotics
- borrowed medicines
- old medicines restarted
- alcohol and substances

Clarify:

- what was taken today
- what was stopped recently
- what was changed after recent discharge
- what the patient cannot afford
- what causes side effects
- what the patient does not understand

A medicine list from the chart may be wrong.

The admission must create the safest possible current list.

13. High-Risk Admission Medicines

Pay special attention to:

- anticoagulants
- antiplatelets
- insulin

- sulfonylureas or other hypoglycemia-risk medicines
- opioids
- sedatives
- antipsychotics
- steroids
- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- antibiotics
- anti-seizure medicines
- immunosuppressants
- digoxin or other narrow-therapeutic medicines where used
- chemotherapy or hormonal cancer therapies
- Parkinson's medicines
- lithium or similar high-risk psychiatric medicines where relevant

For each high-risk medicine, ask:

- Is it needed now?
- Is it safe with current kidney and liver function?
- Is it causing the admission?
- Should it be continued, held, adjusted, or stopped?
- What monitoring is required?
- What happens if it is stopped suddenly?

Medication harm may be the diagnosis.

14. Allergies and Adverse Reactions

Document allergies carefully.

Ask:

- What medicine or substance?
- What happened?
- How severe?
- When?
- Was breathing or swelling involved?
- Was it rash, vomiting, diarrhea, headache, or intolerance?
- Has the patient taken similar medicines since?

Clear documentation prevents both dangerous exposure and unnecessary avoidance.

15. Social and Home Context

Admission should include the life context.

Ask:

- Where do you live?
- Who lives with you?
- Who helps?
- Are you safe at home?
- Are there stairs?
- Do you have food?
- Can you afford medicines?
- Can you get to follow-up?
- Do you have transport?
- Do you care for anyone else?
- Do you smoke?
- Alcohol use?
- Substance use?
- Work or caregiving responsibilities?
- Any safeguarding concerns?
- What would make discharge difficult?

Social context is not “extra.”

It determines whether discharge can succeed.

16. Patient Values and Goals

Even at admission, ask what matters.

Especially in serious illness, frailty, repeated admissions, cancer, organ failure, dementia, or advanced multimorbidity.

Ask:

- What are you hoping this admission will achieve?
- What worries you most?
- What matters most if your illness worsens?
- Have you ever thought about what treatments you would or would not want?
- Who should be involved in decisions?
- Would you want ICU or machines if recovery were unlikely?
- Is being at home important?
- Are there spiritual or cultural needs we should know?

Not every admission needs a long goals-of-care discussion immediately.

But serious illness should not be admitted without noticing direction of care.

17. Examination at Admission

Admission examination should be guided by syndrome and danger.

It commonly includes:

- general appearance
- distress
- consciousness
- vital signs
- oxygenation
- hydration
- chest
- cardiovascular system
- abdomen
- neurological screen
- legs for edema or DVT signs where relevant
- skin
- wounds
- pressure areas in high-risk patients
- pain sites
- mobility
- cognition
- mental state

Examine respectfully.

Explain before touching.

Preserve dignity.

Do not miss function.

Watching the patient sit, stand, transfer, or walk can be as important as listening to the chest.

18. Initial Investigations

Investigations depend on the syndrome.

Ask:

- What danger must be excluded?
- What diagnosis is likely?
- What test changes management?
- What baseline do we need?
- What monitoring will be required?
- What can wait?
- What will be repeated?

Who will follow results?

Common admission investigations may include:

- glucose
- full blood count
- renal function and electrolytes
- liver tests where relevant
- inflammatory markers where relevant
- ECG
- chest imaging where relevant
- urinalysis where relevant
- cultures when infection suspected
- arterial or venous blood gas where relevant
- troponin pathway when indicated
- coagulation where relevant
- imaging guided by symptoms
- medication levels where relevant
- pregnancy test where relevant
- other tests based on presentation

Do not order tests as ritual.

Order them because they answer clinical questions.

19. Formulate the Problem

After history, examination, and initial data, create a problem representation.

Examples:

“An 82-year-old woman with frailty, dementia, CKD, and diabetes presents with two days of fever, cough, poor intake, and acute confusion, with hypoxia and AKI, consistent with pneumonia complicated by delirium and kidney vulnerability.”

“A 66-year-old man with heart failure and CKD presents with worsening breathlessness, orthopnea, edema, and rising creatinine, suggesting decompensated heart failure with cardiorenal risk.”

“A 74-year-old man with alcohol dependence presents tremulous, hypertensive, confused, and at risk of severe withdrawal after stopping alcohol two days ago.”

The problem representation should include:

- age and relevant background
- acute syndrome
- severity
- capacity failures
- likely diagnosis
- major risks

This becomes the anchor for the admission plan.

20. Make a Differential Diagnosis

A complete admission includes a differential diagnosis.

For each syndrome, include:

- most likely diagnosis
- most dangerous diagnosis
- common alternatives
- medication causes
- multiple simultaneous processes
- patient-specific causes

For breathlessness:

- pneumonia
- COPD exacerbation
- heart failure
- PE
- anemia
- arrhythmia
- metabolic acidosis
- anxiety
- mixed causes

For confusion:

- delirium from infection
- hypoxia
- hypoglycemia
- AKI
- medication toxicity
- stroke
- withdrawal
- retention
- constipation
- dementia progression
- depression

For falls:

- trip
- syncope
- orthostatic hypotension

- arrhythmia
- hypoglycemia
- stroke
- medication effect
- infection
- frailty
- environmental hazard

A differential is not decorative.

It guides monitoring and reassessment.

21. Map Capacity Failures

Identify which capacities are failing.

Examples:

Pneumonia Admission

- oxygenation
- defense
- energy
- cognition if delirious
- hydration
- clearance if AKI
- mobility

Heart Failure Admission

- circulation
- oxygenation
- clearance
- mobility
- sleep
- comfort

AKI Admission

- clearance
- fluid balance
- electrolyte regulation
- medicine safety
- circulation

Frailty Admission

- mobility
- cognition
- nutrition

- hydration
- defense
- agency
- caregiver support

Capacity mapping prevents one-disease care.

22. Identify Coupling Conditions

Coupling conditions determine risk and recovery.

These may include:

- frailty
- multimorbidity
- polypharmacy
- dementia
- depression
- chronic pain
- addiction
- poverty
- food insecurity
- housing
- caregiver support
- language
- culture
- health literacy
- spiritual needs
- transport
- access to medicines
- previous hospital harms
- patient goals
- local resource limits

Ask:

What will make recovery easier or harder for this patient?

This shapes the admission plan.

23. Start the Treatment Plan

The treatment plan should address:

- immediate danger
- likely diagnosis

- symptom relief
- capacity failures
- medicine safety
- monitoring
- complications
- functional protection
- patient goals
- discharge preparation

Examples:

For pneumonia:

- antibiotics according to local pathway
- oxygen if needed
- fluids or fluid caution depending on context
- delirium prevention
- glucose monitoring if diabetic
- renal monitoring
- mobilization
- nutrition support
- safety-net for deterioration

For heart failure:

- diuretic plan
- oxygen if needed
- fluid and salt considerations according to local practice
- renal and electrolyte monitoring
- medicine review
- daily weight or fluid assessment where used
- mobility support
- patient education

For delirium:

- treat triggers
- avoid unnecessary sedatives
- orientation
- family involvement
- hydration
- pain, bowel, bladder review
- sensory aids
- safety supervision

Treatment must be purposeful.

24. Monitoring Plan

Every admission needs a monitoring plan.

Ask:

- What vital signs matter?
- How often should observations occur?
- What symptoms should be watched?
- What labs need repeating?
- What medicine side effects must be monitored?
- What intake or output matters?
- Is fluid balance needed?
- Is glucose monitoring needed?
- Is ECG monitoring needed?
- Is neuro observation needed?
- Is delirium monitoring needed?
- What would trigger escalation?

A plan without monitoring is incomplete.

Monitoring tells whether the repair trajectory is working.

25. Escalation Plan

An admission should state what to do if the patient worsens.

Escalation triggers may include:

- rising oxygen requirement
- respiratory distress
- hypotension
- persistent tachycardia
- new chest pain
- reduced consciousness
- new neurological signs
- reduced urine output
- worsening renal function
- dangerous electrolytes
- recurrent hypoglycemia
- severe agitation
- bleeding
- uncontrolled pain

- sepsis signs
- family or nurse concern

The escalation plan should include:

- who to call
- how urgent
- what treatment limits exist
- whether ICU or higher care is appropriate
- resuscitation status where relevant
- goals-of-care context

Do not wait until deterioration to decide what deterioration means.

26. Admit to the Right Level of Care

Not all admissions are the same.

Some patients need:

- general ward
- monitored bed
- high-dependency care
- ICU
- isolation
- palliative setting
- rehabilitation-focused bed
- mental health support
- safeguarding placement

Level of care depends on:

- stability
- oxygen need
- monitoring need
- nursing need
- delirium or agitation
- fall risk
- infection control
- treatment intensity
- goals of care
- resource availability

The right location is part of treatment.

27. Prevent Hospital Harm From the Beginning

Hospital can harm patients.

Admission should include prevention of:

- delirium
- falls
- pressure injuries
- medication errors
- infection
- immobility
- malnutrition
- dehydration
- sleep disruption
- constipation
- urinary retention
- functional decline
- loss of dignity
- unnecessary catheters
- unnecessary restraints
- unnecessary tests
- communication failure

Ask on day one:

What hospital harms is this patient most vulnerable to?

Then prevent them.

28. Delirium Prevention at Admission

For high-risk patients, begin delirium prevention immediately.

Risk factors include:

- older age
- frailty
- dementia
- severe illness
- infection
- hypoxia
- dehydration
- sensory impairment
- sleep deprivation
- pain
- constipation

- urinary retention
- polypharmacy
- sedatives
- alcohol dependence

Prevention includes:

- orientation
- glasses and hearing aids
- hydration
- pain control
- sleep protection
- mobilization
- family involvement
- bowel and bladder care
- avoiding unnecessary sedatives
- treating hypoxia and infection
- reducing lines and catheters where possible

Delirium prevention should not wait until delirium appears.

29. Falls Prevention at Admission

Assess fall risk early.

Ask:

- Did the patient fall before admission?
- Are they dizzy?
- Are they confused?
- Are they weak?
- Are they on sedatives, opioids, antihypertensives, diuretics, or hypoglycemia-risk medicines?
- Do they need help toileting?
- Do they have glasses and shoes?
- Can they use the call bell?
- Do they need supervised mobilization?
- Is the bed environment safe?

Falls prevention is not only a nursing task.

It is part of admission medicine.

30. Nutrition, Hydration, and Swallowing

At admission, ask:

- Is the patient eating?

- Drinking?
- Losing weight?
- Nauseated?
- Unable to swallow?
- Coughing with meals?
- Has poor dentition or mouth pain?
- Needs assistance feeding?
- Has dehydration?
- Has fluid overload?
- Needs dietitian or swallowing assessment?

Nutrition and hydration affect recovery.

Swallowing risk affects pneumonia, aspiration, medicines, and dignity.

31. Pain and Comfort at Admission

Ask:

- Are you in pain?
- Where?
- How severe?
- What does it stop you doing?
- What has helped?
- What medicines have harmed?
- Are there red flags?
- Are you constipated?
- Are you sleeping?

Treat pain early and safely.

Do not wait until ward round tomorrow.

Uncontrolled pain worsens delirium, immobility, hypertension, fear, and poor sleep.

32. Mental Health, Addiction, and Withdrawal Risk

Admission should screen for relevant mental health and substance risks.

Ask when appropriate:

- mood
- anxiety
- suicidal thoughts
- alcohol use
- drug use
- benzodiazepine or sedative dependence

- opioid dependence
- withdrawal symptoms
- previous withdrawal seizures
- smoking or nicotine needs
- trauma or fear

Withdrawal can become life-threatening.

Suicide risk can be hidden.

Addiction should be managed without stigma.

Mental health is part of admission safety.

33. Infection Control and Public Health

At admission, consider:

- contagious symptoms
- isolation needs
- recent travel or outbreak exposure
- multidrug-resistant organism history
- wounds
- diarrhea
- respiratory infection
- immunosuppression
- vaccination status where relevant
- public health notification requirements according to local rules

Infection control protects other patients, staff, family, and the community.

34. Communicate the Admission Plan to the Patient

Explain clearly:

- why admission is needed
- what diagnosis is suspected
- what danger is being watched
- what tests are planned
- what treatment has started
- what medicines are being continued or held
- what symptoms to report
- what needs to improve before discharge
- whether family will be updated

Example:

“We are admitting you because your breathing is worse than usual and your oxygen level is low. We think this may be pneumonia, but your heart failure may also be contributing. We are starting treatment, checking blood tests and a chest X-ray, watching your oxygen and kidneys, and reviewing your medicines carefully.”

A patient who understands the admission can participate in safety.

35. Communicate With Family or Caregivers

With patient permission where possible, update family when:

- patient is seriously ill
- patient is confused
- baseline is needed
- discharge depends on caregivers
- goals of care are relevant
- family is distressed
- major decisions are needed
- patient lacks capacity

Clarify:

- what happened
- what is suspected
- what is being done
- what is uncertain
- what family can help with
- what the next review point is

Family communication prevents confusion and supports repair.

36. Document the Admission Clearly

An admission note should include:

- date and time
- source of history
- reason for admission
- main concern
- timeline
- baseline function
- relevant past history
- medicine reconciliation
- allergies
- social context
- examination

- vital signs
- investigations
- working diagnosis
- differential diagnosis
- capacity failures
- treatment plan
- monitoring plan
- escalation plan
- goals of care where relevant
- family communication
- discharge barriers
- pending results
- task ownership

The admission note is the foundation for the hospital stay.

If it is unclear, the admission begins with drift.

37. Plan Discharge From Day One

Discharge planning begins at admission.

Ask:

- What needs to improve before discharge?
- What function must return?
- What medicines need clarification?
- What tests are pending?
- What follow-up will be needed?
- Does the patient live alone?
- Is caregiver support available?
- Is equipment needed?
- Is rehabilitation needed?
- Is palliative support needed?
- Is home safe?
- What is the likely discharge destination?
- What could delay discharge?
- What could make discharge unsafe?

Early discharge planning does not mean rushing discharge.

It means identifying what repair must happen.

38. Define the Initial Repair Trajectory

Every admission should have an expected repair trajectory.

Examples:

Pneumonia

- oxygen requirement reduces
- fever settles
- confusion improves
- appetite returns
- kidney function stabilizes
- mobility improves

Heart Failure

- breathlessness improves
- edema reduces
- oxygenation improves
- renal function remains safe
- dizziness avoided
- walking improves

AKI

- urine output improves
- creatinine stabilizes or falls
- potassium remains safe
- harmful medicines reviewed
- hydration or fluid balance corrected

Delirium

- attention improves
- sleep normalizes
- agitation reduces
- trigger treated
- mobility and intake improve
- family confirms movement toward baseline

If no repair trajectory is defined, the team may not know whether treatment is working.

39. Worked Case 1: Pneumonia in Frailty

An 84-year-old woman with frailty, dementia, CKD, and diabetes presents with cough, poor intake, confusion, and low oxygen saturation.

Admission Problem

Pneumonia with delirium, hypoxia, poor intake, and kidney vulnerability.

Danger

Hypoxia, sepsis, delirium, AKI, hypoglycemia or hyperglycemia, falls.

Capacity Failures

Oxygenation, defense, cognition, hydration, clearance, mobility, agency.

Coupling Conditions

Frailty, dementia, CKD, diabetes, polypharmacy, caregiver reliance, baseline uncertainty.

Wise Admission

Start appropriate pneumonia treatment according to local pathway, monitor oxygen and renal function, assess delirium triggers, review diabetes medicines in context of poor intake, get collateral baseline, begin falls and delirium prevention, involve family, and plan discharge needs early.

Repair Trajectory

Breathing improves, confusion clears, appetite returns, kidney function stabilizes, glucose remains safe, mobility returns toward baseline, caregiver understands plan.

40. Worked Case 2: Acute Heart Failure With CKD

A 73-year-old man with known heart failure and CKD presents with worsening breathlessness, orthopnea, edema, and reduced urine output.

Admission Problem

Decompensated heart failure with kidney vulnerability.

Danger

Pulmonary edema, hypoxia, arrhythmia, AKI, electrolyte disturbance, hypotension.

Capacity Failures

Circulation, oxygenation, clearance, sleep, mobility.

Coupling Conditions

CKD, diuretics, blood pressure medicines, salt/fluid intake, adherence, access, previous admissions.

Wise Admission

Assess oxygenation, volume status, ECG, renal function, electrolytes, medication adherence and access. Treat congestion according to local pathway while monitoring kidney function and blood pressure. Explain the plan and expected repair markers.

Repair Trajectory

Breathlessness eases, oxygenation improves, edema reduces, urine output improves, kidney function remains safe, walking improves.

41. Worked Case 3: Fall With Confusion

An 88-year-old man is admitted after an unwitnessed fall. He is confused, has mild AKI, and takes sedatives and antihypertensives.

Admission Problem

Fall with possible delirium, medication harm, AKI, and unsafe mobility.

Danger

Head injury, fracture, syncope, arrhythmia, hypoglycemia, stroke, infection, medication toxicity.

Capacity Failures

Mobility, cognition, circulation regulation, clearance, medicine safety.

Coupling Conditions

Frailty, polypharmacy, living situation, baseline cognition, dehydration, sedative use.

Wise Admission

Assess injury, loss of consciousness, ECG, glucose, infection, hydration, renal function, medicines, orthostatic symptoms, cognition, and mobility. Get collateral history. Hold or review harmful medicines where appropriate. Begin falls prevention and delirium care.

Repair Trajectory

Injury excluded or treated, confusion improves, kidney function stabilizes, sedative burden reduced, mobility assessed, discharge safety clarified.

42. Worked Case 4: Severe Alcohol Withdrawal Risk

A 50-year-old man with heavy alcohol use is admitted with tremor, sweating, anxiety, high blood pressure, and confusion after stopping alcohol two days ago.

Admission Problem

Alcohol withdrawal with risk of seizures and delirium tremens.

Danger

Seizure, severe withdrawal delirium, arrhythmia, dehydration, electrolyte disturbance, injury, self-harm.

Capacity Failures

Brain regulation, autonomic regulation, hydration, nutrition, safety, agency.

Coupling Conditions

Alcohol dependence, malnutrition, liver disease risk, social stress, shame, possible previous withdrawal seizures.

Wise Admission

Assess severity, previous withdrawal history, glucose, electrolytes, hydration, liver risk, injury, infection, and mental health. Treat according to local withdrawal pathway. Provide nonjudgmental support and plan addiction follow-up.

Repair Trajectory

Tremor and agitation reduce, seizures prevented, hydration and electrolytes stabilize, nutrition supported, patient engaged in ongoing care.

43. Worked Case 5: Advanced Cancer With Pain

A 67-year-old woman with metastatic cancer is admitted with severe pain, vomiting, constipation, and poor oral intake.

Admission Problem

High symptom burden in serious illness with possible bowel obstruction, medication side effects, or disease progression.

Danger

Uncontrolled pain, bowel obstruction, dehydration, delirium, opioid toxicity, spinal cord compression if back pain with neurological signs.

Capacity Failures

Comfort, bowel clearance, hydration, nutrition, mobility, meaning.

Coupling Conditions

Advanced cancer, opioid use, family distress, goals of care, palliative needs.

Wise Admission

Assess pain mechanism, vomiting cause, constipation, hydration, neurological red flags, medicines, and goals. Treat symptoms urgently. Involve palliative care where available. Discuss what the patient understands and wants from admission.

Repair Trajectory

Pain controlled, vomiting reduced, bowels managed, hydration comfort improved, goals clarified, family supported.

44. Worked Case 6: "Social Admission"

An 86-year-old woman is brought in because she "cannot cope at home." She has weight loss, falls, mild confusion, poor vision, and multiple medicines.

Admission Problem

Do not label as social until medical and functional causes are assessed.

Danger

Delirium, infection, dehydration, AKI, malnutrition, medication toxicity, depression, neglect, falls injury.

Capacity Failures

Nutrition, mobility, cognition, agency, support, medicine safety.

Coupling Conditions

Living alone, poor vision, frailty, polypharmacy, possible caregiver gap, poverty, home hazards.

Wise Admission

Define the syndrome as functional decline with falls and poor intake. Assess baseline, cognition, infection, hydration, renal function, medicines, nutrition, mood, safeguarding, and home support. Involve multidisciplinary team early.

Repair Trajectory

Cause of decline identified where possible, nutrition and mobility supported, medicines simplified, home safety assessed, discharge plan realistic.

45. Common Student Pitfalls

Pitfall 1: Completing Forms Without Clarifying the Syndrome

Admission must begin with clinical meaning.

Pitfall 2: Missing Immediate Danger

Full history can wait when airway, breathing, circulation, brain, glucose, or sepsis is unsafe.

Pitfall 3: Trusting the Medication List Without Reconciliation

Admission medicine errors are common and dangerous.

Pitfall 4: Forgetting Baseline Function

Without baseline, recovery and discharge goals are unclear.

Pitfall 5: Calling It a "Social Admission" Too Early

Functional collapse often has medical, medication, cognitive, or safeguarding causes.

Pitfall 6: Failing to Plan Monitoring

Treatment without monitoring is unsafe.

Pitfall 7: Not Defining Escalation Triggers

The night team needs to know what deterioration means.

Pitfall 8: Waiting Until Discharge to Plan Discharge

Discharge planning starts at admission.

46. Clinical Practice Box

When admitting a patient, complete this structure:

Immediate danger:
Airway, breathing, circulation, consciousness, glucose, sepsis, bleeding, stroke, chest pain, severe pain, self-harm.

Reason for admission:
What syndrome, danger, treatment, monitoring, or unsafe discharge requires hospital care?

Timeline:
Last well, onset, progression, treatments, response, recent changes.

Baseline function:
Walking, ADLs, cognition, eating, medicines, living situation, caregiver support.

Collateral history:
Family, caregiver, ambulance, primary care, pharmacy, prior records where needed.

Past history:
Relevant illnesses that shape current risk.

Medication reconciliation:
Actual medicines, recent changes, high-risk medicines, OTC, herbs, adherence, access.

Allergies:
Reaction and severity.

Social context:
Home, support, transport, finances, safety, substances, caregiving responsibilities.

Patient goals:
What matters, fears, decision-maker, escalation preferences where relevant.

Examination:
Vitals, general appearance, focused systems, cognition, function, pain, hydration.

Investigations:
Tests ordered, why, pending results, who reviews.

Assessment:
Problem representation, working diagnosis, differential, capacity failures, coupling conditions.

Plan:
Treatment, monitoring, escalation, medicines, symptom relief, prevention of hospital harm.

Discharge planning:
What needs to improve, supports needed, follow-up, likely barriers.

Documentation and handover:
Clear admission note, tasks, escalation triggers, goals, family communication.

47. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recurrent falls is admitted from the emergency department after three days of poor intake, dizziness, confusion, leg swelling, and two falls. Her creatinine is higher than baseline. Oxygen saturation is borderline. She takes insulin, diuretics, antihypertensives, opioids, NSAIDs, and a sleeping tablet. Her daughter says she is normally forgetful but not confused and usually walks with a stick. The patient wants to go home.

Apply the complete admission approach.

Immediate Danger

Borderline oxygenation, AKI, falls, confusion, possible delirium, medication toxicity, hypoglycemia or hyperglycemia, heart failure, dehydration or fluid overload, unsafe discharge.

Reason for Admission

Frail multimorbid patient with acute functional and cognitive decline, AKI, falls, poor intake, borderline oxygenation, and high medication risk requiring hospital assessment, treatment, monitoring, and discharge planning.

Syndrome

Acute decline in frailty with delirium risk, clearance failure, circulation/fluid imbalance, mobility failure, and medication vulnerability.

Capacity Failures

Cognition, clearance, mobility, circulation, oxygenation, energy, comfort, medicine safety, agency.

Coupling Conditions

CKD, heart failure, diabetes, mild dementia, chronic pain, polypharmacy, poor intake, daughter caregiver input, home safety concerns, patient preference to leave.

Wise Admission

Assess vitals, glucose, oxygenation, volume status, renal function, electrolytes, infection, ECG, fall injury, cognition, pain, bowels, bladder, and medication effects. Reconcile medicines urgently, especially insulin, diuretics, antihypertensives, opioids, NSAIDs, and sedative. Obtain collateral from daughter. Assess capacity regarding leaving if needed. Begin delirium and falls prevention. Monitor renal function, glucose, oxygenation, intake, urine output, and mobility. Involve pharmacy, physiotherapy, and family early.

Repair Trajectory

Confusion improves, dizziness reduces, kidney function stabilizes, oxygenation clarifies, falls risk decreases, pain is treated safely, harmful medicines reduced, eating improves, daughter understands the plan, and discharge occurs only when medically, cognitively, functionally, and socially safe.

48. Student Takeaway

The complete admission becomes easier when the clinician asks:

Why is this patient being admitted?
Is there immediate danger?
What is the true syndrome?
What changed from baseline?
What medicines may be helping or harming?
Which capacities are failing?
What coupling conditions shape recovery?
What treatment is needed now?
What monitoring is required?
What would trigger escalation?
What hospital harms must be prevented?
What needs to improve before discharge?
Who needs to know the plan?

A complete admission is not simply entry into hospital.

It is the first act of coordinated repair.

The safe clinician stabilizes danger, listens carefully, defines the syndrome, reconciles medicines, maps capacity failure, identifies coupling conditions, starts treatment, plans monitoring, prevents hospital harm, communicates clearly, documents thoroughly, and begins discharge planning from the first day.

Chapter 75. The Complete Discharge Made Easy

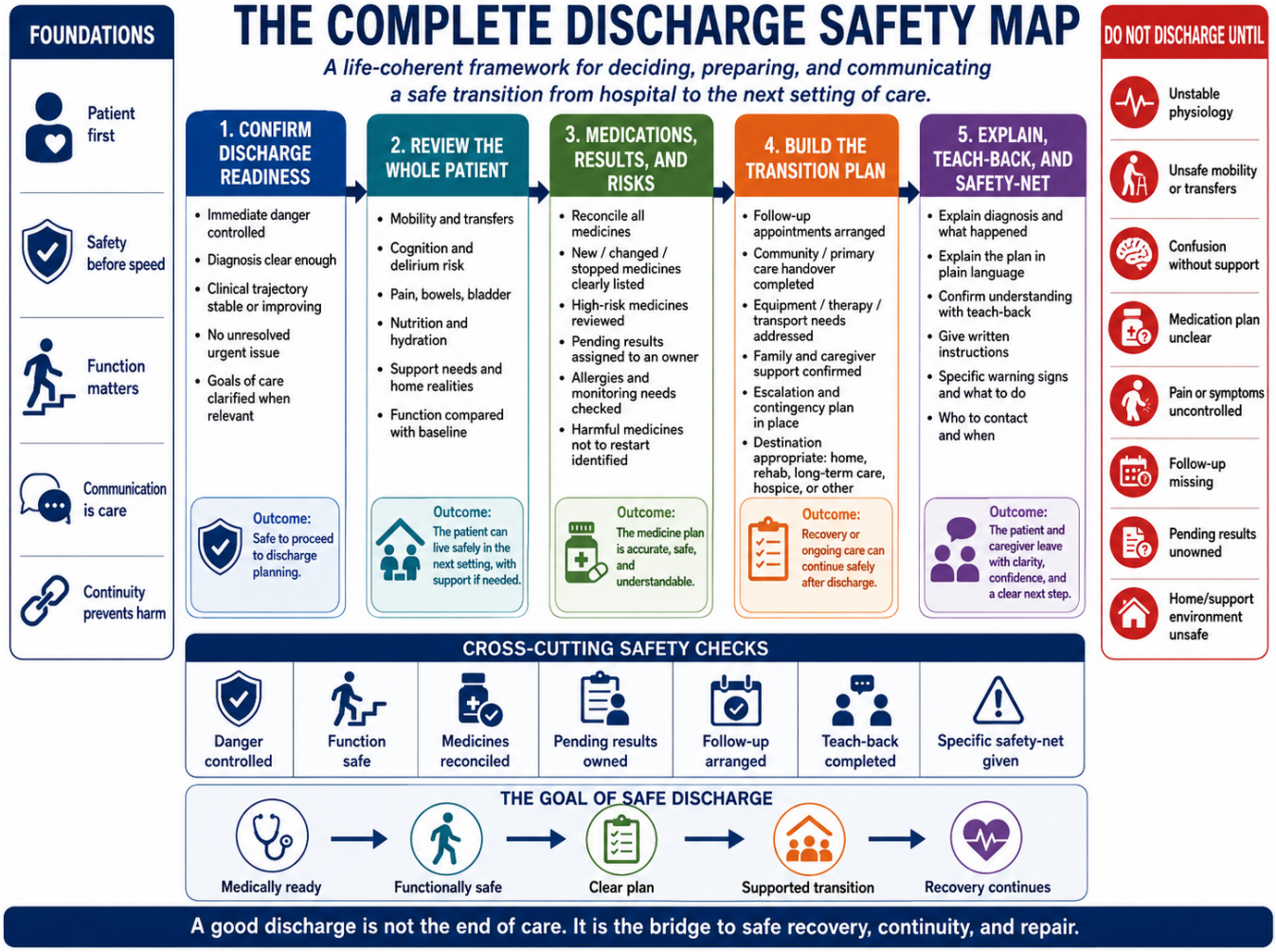

Figure 10. The Complete Discharge Safety Map

Safe discharge requires more than medical stability. It depends on controlled danger, clear diagnosis and plan, reconciled medicines, functional and cognitive safety, symptom control, follow-up, patient understanding, support, and ownership of pending results.

The complete discharge is the structured process by which a patient safely leaves hospital or acute care with a clear diagnosis, medicine plan, follow-up plan, warning signs, functional support, and understanding of what happens next.

Patients do not usually say:

“My discharge process was incomplete.”

They say:

“I do not know what happened to me.”
“I do not know which medicines to take.”
“They stopped some tablets but did not explain why.”
“No one told me when to restart my medicine.”
“I still cannot walk properly.”
“My family was not ready.”
“The clinic did not know I was discharged.”

“The result came back after I left, but no one called me.”
“I went home and got worse.”

Clinicians may think:

“The patient is medically stable.”
“The blood tests are better.”
“The infection is treated.”
“The oxygen is off.”
“The bed is needed.”
“They can go home.”

But discharge is not simply leaving hospital.

Discharge is a transfer of risk.

The patient moves from a monitored environment to home, clinic, care facility, or another service. The hospital team may no longer see the patient daily. Medicines may have changed. Function may not be back to baseline. Family may now carry care responsibilities. Pending results may still exist. The diagnosis may still be provisional. The patient may understand less than the team assumes.

The first task is not simply to complete a discharge summary.

The deeper question is:

Can this patient continue repair safely outside the current care setting, and does everyone who needs to know the plan understand their role?

The complete discharge becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Complete Discharge?

A complete discharge includes:

- clinical stability
- clear diagnosis or working diagnosis
- resolved or managed immediate danger
- medicine reconciliation
- explanation of medicine changes
- functional assessment
- cognition and capacity assessment where relevant
- nutrition and hydration safety
- pain and symptom control
- wound, device, oxygen, or equipment plan where needed
- pending result ownership
- follow-up arrangements
- safety-netting
- patient and caregiver understanding
- communication with primary care or receiving team
- transport and home support

documentation

realistic repair trajectory

A discharge is not complete because the patient is out of the bed.

It is complete when care can continue safely after the patient leaves.

2. Discharge Is a Clinical Decision

Discharge is not an administrative event.

It is a clinical decision with risks and benefits.

Benefits of discharge may include:

return to familiar environment

better sleep

reduced hospital infection risk

reduced delirium risk

restored independence

family presence

lower treatment burden

improved morale

Risks of discharge may include:

deterioration at home

medication error

fall

poor intake

missed follow-up

unrecognized delirium

inability to manage wound or device

caregiver overload

delayed response to warning signs

pending results lost

readmission

The discharge question is:

Does the benefit of leaving now outweigh the risk, and have preventable risks been reduced?

3. Discharge Begins at Admission

Safe discharge planning starts early.

From the first day, ask:

What needs to improve before discharge?

What was the patient's baseline?

What function must return?

What medicines are likely to change?

What support will be needed?

What follow-up will be required?

What tests are pending?

What home risks exist?

Who will help the patient?

What is the likely discharge destination?

What goals matter to the patient?

Waiting until the final day creates rushed discharge.

Rushed discharge creates error.

Early planning allows repair to continue smoothly.

4. The First Question: Is There Discharge Danger Now?

Before discharge, ask whether leaving would expose the patient to serious harm.

Discharge danger exists when:

oxygenation is unsafe

blood pressure is unstable

active chest pain or dangerous arrhythmia remains

infection is worsening

delirium is present and unsafe

patient cannot eat or drink

urine output is poor

kidney function is unstable

severe electrolyte abnormality remains

recurrent hypoglycemia is present

bleeding risk is uncontrolled

pain is uncontrolled

patient cannot walk or transfer safely

fall risk is high without support

medicine plan is unclear

patient cannot understand plan

caregiver cannot manage care

pending urgent results have no owner

follow-up is not arranged

home is unsafe

suicidal risk or safeguarding concern remains unresolved

The danger-first question is:

What could go wrong after discharge, and have we reduced that risk enough?

5. Immediate Red Flags Before Discharge

Red flags include:

- patient or family says, “I am not ready”
- nurse says discharge feels unsafe
- physiotherapy has not cleared mobility
- patient is newly confused
- patient is still falling or nearly falling
- oxygen requirement is new or unexplained
- renal function is worsening
- potassium or sodium remains dangerous
- glucose is repeatedly low or very high
- patient is not eating or drinking
- pain is severe
- vomiting persists
- antibiotics or anticoagulation plan is unclear
- high-risk medicines were changed but not explained
- no one knows which medicines to continue
- patient lives alone with new functional decline
- caregiver is overwhelmed
- transport or follow-up is impossible
- pending result could change urgent management
- goals of care are unclear in serious illness

These should pause discharge until addressed.

6. “Medically Fit” Is Not Always Discharge Safe

A patient may be medically improved but still unsafe.

Examples:

- pneumonia improved, but patient cannot walk
- heart failure improved, but kidney function unstable
- delirium improved, but patient still confused at night
- infection treated, but patient cannot take oral medicines
- surgery completed, but wound care unavailable
- pain controlled in hospital, but medicine access unclear
- diabetes stabilized, but patient cannot manage insulin

dementia patient medically stable, but caregiver has collapsed

Discharge safety has several dimensions:

- medical
- functional
- cognitive
- medication
- social
- emotional
- logistical
- ethical

A complete discharge checks all of them.

7. Define the Discharge Syndrome

Before discharge, restate what happened.

Do not write only:

“Pneumonia.”

Say:

“Pneumonia causing hypoxia, delirium, poor intake, and AKI in a frail patient with CKD and diabetes.”

Do not write only:

“Heart failure.”

Say:

“Acute decompensated heart failure treated with diuresis, complicated by kidney stress and dizziness requiring medicine adjustment.”

Do not write only:

“Fall.”

Say:

“Unwitnessed fall with orthostatic symptoms and sedative burden; no fracture identified; mobility remains below baseline.”

The discharge syndrome helps the next clinician understand risk.

8. Confirm Clinical Stability

Clinical stability depends on the condition.

Ask:

- Are vital signs stable?
- Is oxygenation safe?
- Is fever improving?
- Is breathing improving?
- Is circulation stable?

- Is urine output adequate?
- Is kidney function stable or improving?
- Are electrolytes safe?
- Is glucose safe?
- Is pain controlled?
- Is vomiting controlled?
- Is bleeding controlled?
- Is mental state safe?
- Is mobility safe?
- Is the patient able to take oral medicines if needed?

Stability does not mean perfect.

It means safe enough for the next level of care.

9. Confirm Diagnosis and Remaining Uncertainty

At discharge, state:

- final diagnosis where known
- working diagnosis where uncertain
- dangerous diagnoses considered
- unresolved uncertainty
- what follow-up is needed
- what warning signs require reassessment

Example:

“The most likely diagnosis is viral pleurisy. Initial cardiac assessment was reassuring according to local pathway. However, if chest pain returns, becomes exertional, is associated with breathlessness, sweating, fainting, or worsening symptoms, urgent reassessment is needed.”

A discharge can be safe despite uncertainty only when uncertainty is named and managed.

10. Review Treatment Response

Document and explain:

- what treatment was given
- what improved
- what did not improve
- what complications occurred
- what remains to be monitored
- what should continue after discharge

Examples:

For pneumonia:

- fever settled

- oxygen no longer required
- cough improving
- appetite returning
- confusion improving
- antibiotics continuing or completed

For heart failure:

- breathlessness improved
- edema reduced
- kidney function monitored
- diuretic plan adjusted
- follow-up blood test needed

For delirium:

- trigger treated
- attention improved
- still not fully baseline
- family supervision needed

The repair trajectory should be visible.

11. Medicine Reconciliation Is Essential

Medication errors are common at discharge.

Before discharge, reconcile:

- medicines before admission
- medicines started in hospital
- medicines stopped
- medicines held temporarily
- medicines changed
- medicines to restart later
- medicines not to restart
- over-the-counter medicines to avoid
- allergies and adverse reactions
- monitoring needed
- duration of treatment
- high-risk medicine instructions

The patient should leave with one clear medicine list.

Not three conflicting lists.

12. Explain Medicine Changes

Every medicine change should have a reason.

Patients and caregivers need to know:

- what to take
- what not to take
- what was stopped
- why it was stopped
- whether it is permanent or temporary
- when to restart if applicable
- what side effects to watch for
- what monitoring is needed
- who will review it

Examples:

“Your water tablet was held because your kidneys were under stress. Do not restart it until your blood test is checked and your doctor reviews your swelling and breathing.”

“Your insulin dose was reduced because you had low sugars while eating poorly. Check sugars as instructed and seek help if they are repeatedly low or high.”

“Avoid anti-inflammatory painkillers because they can worsen your kidneys and heart failure.”

Medicine explanation is not optional.

It prevents harm.

13. High-Risk Medicines at Discharge

Pay special attention to:

- anticoagulants
- antiplatelets
- insulin
- diabetes medicines with hypoglycemia risk
- opioids
- sedatives
- antipsychotics
- steroids
- antibiotics
- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- immunosuppressants
- anti-seizure medicines
- Parkinson’s medicines
- heart rhythm medicines

- medicines requiring blood monitoring

For high-risk medicines, document:

- indication
- dose and timing according to local prescribing standards
- duration or review date
- monitoring
- warning signs
- who will follow up
- patient understanding

High-risk medicines require high-quality discharge communication.

14. Discharge After AKI

After AKI, discharge needs special care.

Ask:

- Is kidney function improving or stable?
- What was baseline?
- What caused AKI?
- What medicines were stopped or held?
- Which medicines need restart decision?
- Is potassium safe?
- Is blood pressure safe?
- Is hydration safe?
- Is follow-up blood testing arranged?
- Does the patient know what medicines to avoid?
- Is primary care informed?

Common discharge risks after AKI include:

- restarting harmful medicines too early
- failing to restart important medicines when safe
- dehydration
- recurrent AKI
- hyperkalemia
- confusion about diuretics and blood pressure medicines

AKI discharge must include a clear medicine and monitoring plan.

15. Discharge After Delirium

After delirium, ask:

- Is delirium resolved?

Is the patient back to baseline?

If not, is supervision available?

Does family understand delirium?

Are sedatives reduced or stopped?

Are hearing aids and glasses available?

Is sleep improving?

Are pain, bowels, bladder, hydration, and infection addressed?

Is fall risk managed?

Is follow-up needed for cognition?

A patient recovering from delirium may look calm but remain unsafe.

Family should be warned that recovery can take time and that worsening confusion requires reassessment.

16. Discharge After Falls

After a fall admission, discharge should address:

injury

cause of fall

syncope risk

medication contributors

orthostatic symptoms

glucose risk

vision

footwear

mobility aids

physiotherapy

home hazards

bone health where relevant

caregiver support

future fall plan

Do not discharge with only:

“No fracture.”

A fall is a symptom.

The discharge plan should reduce the chance of the next fall.

17. Discharge With Chronic Disease

For chronic disease, discharge should clarify:

what changed during admission

whether the disease is stable

- which medicines changed
- what monitoring is needed
- when follow-up occurs
- what symptoms mean deterioration
- what lifestyle or self-care advice matters now
- whether goals need review

Examples:

For heart failure, explain breathlessness, swelling, weight change where monitored, dizziness, fluid issues, medicine changes, and when to seek help.

For diabetes, explain glucose monitoring, hypoglycemia signs, medicine changes, eating pattern, and follow-up.

For COPD, explain inhalers, breathlessness plan, infection warning signs, oxygen use if applicable, smoking support, and follow-up.

Discharge is a teaching moment.

18. Discharge in Frailty

Frailty discharge must include function and support.

Ask:

- Is the patient close to baseline?
- If not, what support replaces lost function?
- Can the patient transfer?
- Walk?
- Toilet?
- Eat?
- Take medicines?
- Avoid falls?
- Understand the plan?
- Is delirium resolved or managed?
- Are caregivers ready?
- Is equipment available?
- Is rehabilitation arranged?
- Is nutrition supported?
- Are medicines simplified?
- Are goals realistic?

In frailty, discharge failure often happens because function was not treated as central.

The question is:

Can the patient live safely with the current level of reserve and support?

19. Discharge in Dementia

For patients with dementia, discharge requires caregiver involvement.

Check:

- baseline cognition
- current cognition
- delirium recovery
- medicine supervision
- meal support
- wandering risk
- falls risk
- capacity
- home safety
- caregiver burden
- follow-up
- advance care planning where relevant

Instructions should be given to the caregiver as well as the patient when appropriate and with consent or best-interest process.

A patient with dementia should not be sent home with complex new instructions that no one else understands.

20. Discharge in Serious Illness

In serious illness, discharge should align with goals.

Ask:

- What does the patient understand?
- What is the expected trajectory?
- What is the goal of discharge?
- Home recovery?
- Rehabilitation?
- Symptom control?
- Time with family?
- End-of-life care?
- Avoidance of hospital?
- What symptoms might worsen?
- Who should be called?
- Are palliative supports arranged?
- Are emergency plans clear?
- Are medicines available?
- Is family prepared?

A serious illness discharge without goals-of-care clarity may result in crisis-driven readmission.

21. Discharge With Palliative Needs

For palliative discharge, ensure:

- pain plan
- breathlessness plan
- nausea plan
- constipation plan
- agitation or delirium plan
- emergency medicines where locally appropriate
- community support
- equipment
- caregiver education
- contact numbers
- goals of care
- resuscitation or escalation documentation where relevant
- preferred place of care
- spiritual or cultural needs
- follow-up

The goal is not simply to send the patient home.

The goal is to ensure comfort, dignity, and support continue after discharge.

22. Functional Safety Before Discharge

Before discharge, ask:

- Can the patient get out of bed?
- Can they transfer?
- Can they walk?
- Can they manage stairs if needed?
- Can they toilet?
- Can they bathe or wash safely?
- Can they prepare food?
- Can they use mobility aids?
- Do they need supervision?
- Has therapy reviewed if needed?
- Is equipment available?
- Is transport safe?

A patient who cannot safely reach the toilet may not be safe at home.

Functional safety is clinical safety.

23. Cognitive Safety Before Discharge

Ask:

- Is the patient alert?
- Is attention normal or improving?
- Can they understand instructions?
- Can they manage medicines?
- Can they call for help?
- Are they at risk of wandering?
- Is there ongoing delirium?
- Is there depression or suicidality?
- Is there capacity to make the discharge decision?
- Is caregiver supervision needed?

A cognitively unsafe discharge may lead to medication error, falls, dehydration, wandering, or delayed response to deterioration.

24. Nutrition, Hydration, and Swallowing Before Discharge

Ask:

- Is the patient eating enough?
- Drinking enough?
- Losing weight?
- Nauseated or vomiting?
- Constipated?
- Able to swallow safely?
- Needs modified diet?
- Needs feeding assistance?
- Has food at home?
- Can they shop or cook?
- Is caregiver support arranged?

Poor intake after discharge can cause AKI, delirium, falls, medicine toxicity, and readmission.

25. Pain and Symptom Control Before Discharge

Ask:

- Is pain controlled enough for movement and sleep?
- Is the pain plan safe?
- Are opioids accompanied by constipation prevention where appropriate?
- Is breathlessness controlled?

Is nausea controlled?

Is constipation treated?

Is sleep supported safely?

Are anxiety or panic addressed?

Does the patient know what to do if symptoms worsen?

A patient discharged in severe uncontrolled pain may return quickly or suffer unnecessarily.

26. Devices, Wounds, Oxygen, and Equipment

If the patient leaves with devices or equipment, ensure a plan for:

wound care

dressings

drains

catheters

feeding tubes

oxygen

inhalers or nebulizers

mobility aids

pressure-relieving equipment

glucose monitoring equipment

anticoagulation monitoring if required

home nursing

supplies

troubleshooting

follow-up

The patient and caregiver must know:

what is normal

what is dangerous

who to call

when review is needed

No device should leave hospital without a care plan.

27. Pending Results

Pending results are a major discharge risk.

Before discharge, document and communicate:

what result is pending

why it was ordered

who will check it

when it is expected

what action is needed if abnormal

how patient will be contacted

whether primary care or specialist receives it

whether the patient understands the importance

Examples:

cultures

biopsy

imaging report

blood tests

cancer pathway investigations

microbiology sensitivities

autoimmune tests

endocrine tests

A pending result without ownership is unsafe discharge.

28. Follow-Up Plan

A follow-up plan should specify:

who will see the patient

when

where

why

what tests are needed before review

what decisions must be made

what symptoms require earlier review

what to do if appointment is not received

Avoid vague phrases like:

“Follow up with clinic.”

Better:

“Primary care review within one week to assess breathing, renal function, blood pressure, and diuretic restart decision. Repeat renal function in three days. Return urgently if breathlessness worsens, urine output falls, confusion returns, or swelling rapidly increases.”

Clear follow-up prevents drift.

29. Safety-Netting at Discharge

Safety-netting should be specific.

Include:

warning signs

- action
- timeframe
- who to call
- when to return urgently
- what symptoms are expected
- what symptoms are not expected

Examples of warning signs:

- worsening breathlessness
- chest pain
- fainting
- confusion
- fever returning
- inability to drink
- reduced urine
- severe diarrhea or vomiting
- bleeding
- black stool
- severe pain
- new weakness
- repeated low glucose
- falls
- swelling rapidly worsening
- medication reaction
- suicidal thoughts

A safe discharge tells the patient how to recognize danger early.

30. Teach-Back Before Discharge

Teach-back is essential.

Ask:

“Just so I know I explained it clearly, can you tell me what medicines you will take tonight?”

“What tablets have been stopped?”

“What warning signs would make you seek urgent help?”

“When is your blood test or follow-up?”

“Who will help you at home?”

Teach-back is not a test of the patient.

It is a test of the explanation.

If the patient or caregiver cannot explain the plan, the discharge is not yet safe.

31. Communication With Primary Care or Receiving Team

The receiving clinician needs:

- diagnosis
- course in hospital
- major complications
- medicine changes
- pending results
- follow-up needs
- monitoring needs
- functional status
- cognitive status
- goals of care
- escalation decisions
- social concerns
- caregiver issues
- warning signs explained

The discharge summary should be available promptly.

Primary care should not have to guess what happened.

32. Communication With Family and Caregivers

When family or caregivers are part of the plan, confirm:

- they know the diagnosis
- they know medicine changes
- they know warning signs
- they know follow-up
- they know mobility limitations
- they know diet or swallowing plan
- they know wound or device care
- they know what support is arranged
- they can manage the care asked of them
- they know who to call

Caregiver consent, capacity, and confidentiality must be handled properly.

Do not assume family can provide care.

Ask.

33. Transport and Arrival Home

Discharge is not complete until the patient can safely reach the next place.

Ask:

- How will the patient get home?
- Can they sit in a car?
- Do they need ambulance transport?
- Are steps or stairs present?
- Will someone be home?
- Are keys available?
- Is oxygen needed during transport?
- Are medicines available before leaving?
- Is food available?
- Is equipment delivered?
- Is the care facility ready?
- Is the receiving team informed?

Logistics are clinical when they affect safety.

34. Documentation of Discharge

A discharge summary should include:

- admission diagnosis
- final or working diagnosis
- key findings
- treatment given
- response to treatment
- complications
- medicine changes with reasons
- allergies
- functional status at discharge
- cognitive status where relevant
- pending results and owner
- follow-up plan
- safety-net advice
- goals of care where relevant
- family communication
- equipment or support arranged
- specific tasks for primary care or receiving team

The discharge note should be useful, not merely complete.

35. Discharge Against Medical Advice

If a patient wants to leave despite medical concern, slow down.

Ask:

- Does the patient have capacity?
- What do they understand?
- What risks have been explained?
- Why do they want to leave?
- Is fear, cost, caregiving, mistrust, withdrawal, delirium, or pain driving the decision?
- Can barriers be addressed?
- Can a safer compromise be made?
- What treatment can be provided before leaving?
- What follow-up can be arranged?
- What safety-net is needed?

Document:

- capacity assessment
- risks explained
- patient reasons
- alternatives offered
- plan agreed
- safety-net
- follow-up
- family involvement if permitted

A patient leaving against advice still deserves care.

Do not punish the patient with abandonment.

36. Repair Trajectory After Discharge

Discharge should define what repair looks like.

Examples:

Pneumonia

- breathing continues to improve
- fever does not return
- appetite improves
- confusion resolves
- strength returns gradually
- antibiotics completed if prescribed

Heart Failure

- breathlessness remains improved
- swelling stable or reducing

weight stable where monitored

dizziness absent

kidney function checked

diuretic plan reviewed

AKI

urine output adequate

kidney function improving

harmful medicines avoided

medicines restarted only after review

hydration maintained

Delirium

attention and sleep improve

family monitors for confusion

sedatives avoided

urgent review if confusion worsens

A discharge plan without a repair trajectory leaves the patient unsure what improvement should look like.

37. Worked Case 1: Pneumonia Discharge in Frailty

An 84-year-old woman with frailty, dementia, CKD, and diabetes is improving after pneumonia. She no longer needs oxygen, but appetite is poor and she is weaker than baseline.

Discharge Risk

Readmission, falls, delirium recurrence, poor intake, AKI, medicine confusion.

Capacity Failures

Nutrition, mobility, cognition, clearance, agency.

Wise Discharge

Confirm oxygen stability, renal function trend, glucose safety, oral intake, mobility, caregiver support, medicine changes, antibiotic plan, delirium recovery, and follow-up. Involve family. Arrange therapy or community support if needed.

Repair Trajectory

Breathing remains stable, appetite improves, confusion clears, walking improves, glucose safe, kidney function monitored, family knows warning signs.

38. Worked Case 2: Heart Failure and AKI

A 76-year-old man admitted with heart failure improved after diuresis, but creatinine rose. Diuretic dose was reduced and ACE inhibitor held.

Discharge Risk

Fluid overload recurrence, kidney worsening, electrolyte disturbance, dizziness, medicine confusion.

Capacity Failures

Circulation, clearance, mobility safety, medicine safety.

Wise Discharge

Document exact medicine changes and reasons. Arrange renal function and electrolyte check. Clarify diuretic plan, restart criteria for held medicine, warning signs of overload and dehydration, and follow-up timing.

Repair Trajectory

Breathlessness stable, swelling monitored, kidney function checked, dizziness absent, medicines reviewed promptly.

39. Worked Case 3: Delirium Recovery

An 87-year-old man with dementia developed delirium from infection. Infection is treated, but he remains mildly more confused than baseline.

Discharge Risk

Falls, medication error, wandering, poor intake, caregiver strain, delirium recurrence.

Capacity Failures

Cognition, safety awareness, mobility, agency.

Wise Discharge

Confirm caregiver supervision, explain delirium recovery, review medicines, avoid sedatives, ensure hydration and sleep plan, arrange follow-up, warn about recurrent confusion, fever, poor intake, or falls.

Repair Trajectory

Attention improves, sleep normalizes, family sees gradual return toward baseline, urgent review if deterioration occurs.

40. Worked Case 4: New Insulin Plan

A 62-year-old patient was started on insulin during admission. Glucose improved, but the patient has never used insulin before.

Discharge Risk

Hypoglycemia, wrong dose, poor injection technique, lack of supplies, poor understanding, missed follow-up.

Capacity Failures

Glucose regulation, agency, medicine safety.

Wise Discharge

Teach injection technique, glucose monitoring, hypoglycemia recognition and treatment, meal relationship, dose plan according to local protocol, supply access, sharps disposal, follow-up, and teach-back. Involve caregiver if needed.

Repair Trajectory

Patient demonstrates technique, avoids hypoglycemia, monitors safely, follow-up adjusts plan.

41. Worked Case 5: Palliative Discharge Home

A patient with advanced cancer wishes to go home for comfort-focused care.

Discharge Risk

Uncontrolled pain, breathlessness crisis, caregiver panic, unavailable medicines, readmission, unclear emergency plan.

Capacity Failures

Comfort, dignity, family support, agency, symptom control.

Wise Discharge

Arrange palliative support, symptom medicines, equipment, caregiver teaching, contact numbers, goals-of-care documentation, emergency plan, and spiritual or cultural support if desired.

Repair Trajectory

Symptoms controlled at home, family supported, patient's place-of-care wish honored, crisis plan prevents unwanted escalation.

42. Worked Case 6: Discharge Pressure With Unsafe Mobility

A 79-year-old man treated for UTI is afebrile and blood tests improved. He cannot transfer safely, and his wife cannot lift him.

Discharge Risk

Fall, caregiver injury, readmission, pressure injury, loss of dignity.

Capacity Failures

Mobility, caregiver support, toileting, safety.

Wise Discharge

Do not discharge based only on infection improvement. Arrange physiotherapy, equipment, rehabilitation, additional care support, or alternative placement if needed. Discuss with wife honestly.

Repair Trajectory

Transfers safe or supported, caregiver not overwhelmed, home environment prepared, readmission avoided.

43. Common Student Pitfalls

Pitfall 1: Thinking Discharge Means Disease Improved

Discharge requires medical, functional, cognitive, medication, and social safety.

Pitfall 2: Poor Medicine Reconciliation

Conflicting medicine lists cause serious harm.

Pitfall 3: Forgetting Held Medicines

Patients need to know whether and when to restart them.

Pitfall 4: Ignoring Pending Results

Pending results need an owner.

Pitfall 5: Discharging Without Teach-Back

Understanding should be checked, not assumed.

Pitfall 6: Ignoring Caregiver Capacity

Family support must be confirmed, not presumed.

Pitfall 7: Vague Follow-Up

"See your doctor" is not enough for high-risk discharge.

Pitfall 8: Discharging Based on Bed Pressure

System pressure does not make an unsafe discharge safe.

44. Clinical Practice Box

Before discharge, complete this structure:

Diagnosis or working diagnosis:
What happened, and what remains uncertain?

Danger resolved or managed:
What immediate risks are now safe enough for discharge?

Clinical stability:
Vitals, oxygenation, pain, hydration, renal function, glucose, infection, bleeding, cognition.

Function:
Can the patient walk, transfer, toilet, eat, drink, and manage basic needs safely?

Cognition and capacity:
Can the patient understand the plan? If not, who supports them?

Medicines:
Started, stopped, held, changed, restart criteria, monitoring, high-risk warnings.

Symptoms:
Pain, breathlessness, nausea, bowels, sleep, anxiety, comfort.

Devices and equipment:
Wounds, catheters, oxygen, mobility aids, dressings, supplies, instructions.

Pending results:
What is pending, who owns it, and how will action happen?

Follow-up:
Who, when, where, why, and what tests before review?

Safety-net:
Warning signs, what to do, when to seek urgent care.

Patient and caregiver understanding:
Teach-back completed? Family informed where appropriate?

Receiving team communication:
Discharge summary clear and sent? Primary care or facility informed?

Repair trajectory:
What should improve after discharge, and what would mean failure?

45. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain is ready for possible discharge after admission with pneumonia, delirium, AKI, hypoglycemia, and falls. Her oxygen is now stable. Creatinine is improving but not back to baseline. Her diuretic and ACE inhibitor were held. Insulin was reduced. NSAIDs were stopped. She still walks slower than baseline and needs supervision for stairs. Her daughter will stay with her for one week. Repeat renal function is needed in three days.

Apply the complete discharge approach.

Discharge Diagnosis

Pneumonia complicated by delirium, AKI, hypoglycemia, frailty-related weakness, and medication vulnerability.

Discharge Danger

Risk of AKI recurrence, heart failure worsening, hypoglycemia, falls, delirium recurrence, medicine confusion, and caregiver strain.

Clinical Stability

Oxygen stable, infection improving, kidney function improving, glucose safer, but mobility remains below baseline.

Medicine Plan

Document diuretic and ACE inhibitor held with restart only after renal function, potassium, blood pressure, and volume status review. Insulin reduced due to hypoglycemia and poor intake. NSAIDs stopped due to kidney and heart failure risk. Pain plan adjusted safely.

Functional Plan

Supervision for stairs, mobility aid if needed, physiotherapy follow-up if available, daughter to assist temporarily, fall precautions explained.

Follow-Up

Repeat renal function in three days. Primary care review within one week for breathing, edema, kidney function, blood pressure, glucose, medicine restart decisions, pain, and mobility.

Safety-Net

Return urgently for worsening breathlessness, swelling, chest pain, confusion, poor intake, reduced urine, dizziness, falls, fever, recurrent low sugars, or severe pain.

Teach-Back

Daughter and patient should explain which medicines are stopped, which are reduced, when blood test is due, and what warning signs require urgent care.

Repair Trajectory

Breathing continues to improve, confusion clears fully, kidney function returns toward baseline, glucose remains safe, walking improves, no falls occur, medicines are restarted only when safe, daughter feels prepared, and follow-up closes the loop.

46. Student Takeaway

The complete discharge becomes easier when the clinician asks:

Is the patient clinically stable enough to leave?
What diagnosis or working diagnosis explains the admission?
What remains uncertain?
Which capacities are still fragile?
Can the patient function safely outside hospital?

Can the patient or caregiver manage the medicine plan?
What medicines were started, stopped, held, or changed, and why?
What pending results need ownership?
What follow-up is needed, when, and by whom?
What warning signs require urgent reassessment?
Does the patient understand the plan?
Can repair continue safely in the next setting?

A complete discharge is not the end of care.

It is the safe transfer of care into the next phase of repair.

The safe clinician does not discharge a diagnosis. The safe clinician discharges a living person with medicines, function, cognition, fears, family, follow-up needs, unfinished uncertainties, and a repair trajectory that must survive beyond the hospital door.

Chapter 76. The Complete Follow-Up Made Easy

The complete follow-up is the structured clinical review after an illness episode, admission, medication change, investigation, or ongoing condition, in which the clinician checks whether the patient is improving, worsening, harmed by treatment, confused about the plan, or needing a new direction of care.

Patients do not usually say:

“I need a complete follow-up.”

They say:

“Am I getting better?”
“Do I still need these medicines?”
“The hospital changed my tablets.”
“I am still weak.”
“The pain is not gone.”
“The result came back, but no one explained it.”
“I was told to repeat blood tests.”
“I do not feel back to normal.”
“What happens next?”

Clinicians may think:

“This is just a routine review.”
“They were discharged stable.”
“The acute problem is over.”
“We only need to check the blood test.”
“The plan was already made.”

But follow-up is not merely checking boxes.

Follow-up is where repair is confirmed, complications are detected, medicines are corrected, uncertainty is closed, function is reassessed, and the patient’s real-life recovery is understood.

The first task is not simply to ask, “How are you?”

The deeper question is:

Has the patient actually moved along the expected repair trajectory, and what must be adjusted now to prevent relapse, harm, or drift?

The complete follow-up becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Complete Follow-Up?

A complete follow-up includes:

- reason for follow-up
- review of the original illness or decision
- current symptoms
- change from discharge or last visit
- danger assessment
- treatment response
- medication review

- side effect review
- investigation results
- pending results
- function and recovery
- cognition and mood where relevant
- patient understanding
- adherence and access
- practical barriers
- patient goals
- need for further tests or referral
- plan adjustment
- safety-netting
- next follow-up
- documentation

Follow-up is not complete because the patient attended.

It is complete when the clinician knows whether the plan worked, failed, harmed, or needs revision.

2. Follow-Up Is a Safety Net, Not a Formality

Follow-up catches what earlier care could not fully resolve.

At discharge or initial consultation, uncertainty may remain.

The diagnosis may have been provisional.
The patient may have been improving but not fully recovered.
Medicines may have been held temporarily.
Results may have been pending.
Symptoms may need time to declare themselves.
The patient may have misunderstood instructions.
A treatment may cause side effects.
A disease may relapse.
A family may struggle at home.

Follow-up is the clinical loop closing.

Without follow-up, plans drift.

3. Follow-Up Is Where Real Life Tests the Plan

A plan that looked good in hospital may fail at home.

The patient may not afford medicines.
The patient may not understand the new list.
The patient may be too weak to cook.
The caregiver may be overwhelmed.
The patient may fall while trying to reach the toilet.
The patient may restart a stopped medicine.
The patient may stop antibiotics early.

The patient may not attend blood tests.
The patient may be frightened by persistent symptoms.

Follow-up asks:

Did the plan survive contact with the patient's real life?

If not, the plan must be adapted.

4. The First Question: Is There Danger Now?

Every follow-up begins with danger.

Ask:

- Has the patient worsened?
- Is there new chest pain?
- Is breathlessness worse?
- Is confusion present?
- Has there been a fall?
- Is there fever?
- Is oral intake poor?
- Is urine output reduced?
- Is swelling worse?
- Is there bleeding?
- Is pain uncontrolled?
- Is glucose repeatedly low or high?
- Is there severe dizziness or fainting?
- Is there new weakness, speech change, or neurological symptom?
- Is there medication toxicity?
- Is there suicidal thinking?
- Is home unsafe?

The danger-first question is:

Does this patient need urgent reassessment, admission, escalation, or immediate treatment today?

A follow-up visit can become an acute visit.

Be ready to change mode.

5. Immediate Red Flags at Follow-Up

Red flags include:

- symptoms worse than at discharge
- new breathlessness or increasing oxygen need
- chest pain
- fainting or near-fainting

- new confusion
- fever returning
- inability to eat or drink
- reduced urine output
- worsening kidney function
- dangerous potassium or sodium abnormality
- repeated hypoglycemia
- severe hyperglycemia with dehydration or drowsiness
- black stool or bleeding
- severe abdominal pain
- uncontrolled pain
- new neurological deficit
- fall with injury
- medication taken incorrectly
- high-risk medicine without monitoring
- pending result showing serious abnormality
- patient living alone despite new dependency
- caregiver unable to cope
- suicidal thoughts or severe despair

Do not treat follow-up as routine when red flags appear.

6. Clarify the Reason for Follow-Up

Begin by asking:

- Why was this follow-up arranged?
- What illness, symptom, result, medicine, or decision are we reviewing?
- What was supposed to happen by now?
- What was the expected repair trajectory?
- What did the patient understand the follow-up was for?

Examples:

- review after pneumonia
- kidney function check after AKI
- medicine restart decision
- wound check
- glucose review after hypoglycemia
- review of chest pain safety-net
- follow-up of anemia and weight loss
- review after fall

- cognitive review after delirium
- palliative symptom review
- blood pressure medicine adjustment
- pending scan result discussion

A follow-up without a clear purpose becomes unfocused.

7. Reconstruct the Recent Clinical Story

Ask:

- What happened since you left hospital or since the last visit?
- Did symptoms improve, worsen, or change?
- Did you take the medicines as planned?
- Any side effects?
- Any emergency visits?
- Any falls?
- Any fever?
- Any new symptoms?
- Did you complete blood tests or imaging?
- Did anyone explain the results?
- Did follow-up appointments happen?
- What was hardest at home?

The follow-up story should compare expected recovery with actual recovery.

The key question is:

Are we on track?

8. Compare With Baseline

Follow-up must ask whether the patient returned to baseline or found a new baseline.

Ask:

- Are you back to your usual walking?
- Are you eating normally?
- Are you thinking clearly?
- Are you sleeping?
- Can you manage medicines?
- Can you do your usual activities?
- Are you still weaker than before?
- Are you more breathless than before?
- Has your pain returned to usual level?
- Is your family concerned you are not yourself?

For frail or cognitively impaired patients, ask family or caregivers:

Is this their normal?

What remains different?

Are they improving each day?

What can they still not do?

Recovery is not only a lab value.

Recovery is return of life-capacity.

9. Review the Original Syndrome

Return to the original clinical pattern.

Examples:

Pneumonia

Was the syndrome fever, cough, hypoxia, delirium, poor intake, and AKI?

Heart Failure

Was the syndrome breathlessness, edema, orthopnea, renal stress, and dizziness?

Fall

Was the syndrome collapse, injury, dizziness, medication burden, and mobility decline?

Delirium

Was the syndrome acute confusion, infection, dehydration, medication toxicity, and frailty?

Chest Pain

Was the syndrome exertional pain, pleuritic pain, reflux-like pain, or uncertain chest discomfort?

Follow-up asks:

Did the whole syndrome repair, or only one part?

A cough may improve while weakness persists.
A fever may settle while delirium continues.
Edema may reduce while kidney function worsens.
Pain may improve while constipation becomes severe.

Follow-up must see the whole pattern.

10. Check Treatment Response

Ask:

Did the treatment help?

How quickly?

What improved first?

What did not improve?

Did symptoms return after treatment stopped?

Did new symptoms appear?

Did treatment cause side effects?

Did the patient complete treatment?

Did the patient understand the treatment?

Was treatment affordable and available?

Treatment response helps confirm or challenge diagnosis.

If antibiotics did not help, reconsider infection, resistance, wrong diagnosis, complication, or non-adherence due to access.

If diuretics helped breathlessness but worsened kidney function, adjust balance.

If pain medicine helped pain but caused confusion and constipation, revise the plan.

Response is diagnostic information.

11. Review Medicines Thoroughly

Follow-up after discharge or medication change must include medicine review.

Ask the patient to bring all medicines if possible.

Review:

what they are actually taking

what they stopped

what they restarted

what they misunderstood

what they could not afford

what caused side effects

what they take over the counter

what family helped with

what pharmacy supplied

what differs from the discharge summary

Ask:

“Show me what you take in the morning, afternoon, evening, and night.”

Do not assume the written list matches reality.

Medication discrepancies are common after transitions.

12. Review Held Medicines

Held medicines need follow-up.

Commonly held medicines include:

diuretics

ACE inhibitors or ARBs

blood pressure medicines

diabetes medicines

anticoagulants

antiplatelets

- NSAIDs
- steroids in some contexts
- sedatives
- nephrotoxic or hepatotoxic medicines
- medicines stopped during infection or AKI

For each held medicine, ask:

- Why was it held?
- Is the original problem resolved?
- Is it safe to restart?
- Is it still needed?
- What monitoring is required?
- Who decides?
- Was the patient told clearly?

A medicine held forever by accident may harm.

A medicine restarted too early may harm.

Follow-up is where this is corrected.

13. Review New Medicines

New medicines need safety review.

Ask:

- Is the patient taking it correctly?
- Does the patient know why it was started?
- Any side effects?
- Any interactions?
- Does kidney or liver function affect it?
- Is monitoring needed?
- How long should it continue?
- Does it duplicate another medicine?
- Is it still needed?
- Does it fit the patient's goals?

This is especially important for:

- anticoagulants
- insulin
- antibiotics
- opioids
- sedatives
- steroids

- diuretics
- antipsychotics
- antidepressants
- heart medicines
- seizure medicines

New medicine follow-up prevents delayed harm.

14. Review Stopped Medicines

Stopped medicines also need review.

Ask:

- Was the medicine stopped intentionally?
- Why?
- Was it causing harm?
- Is stopping permanent or temporary?
- Did symptoms worsen after stopping?
- Does the patient understand not to restart it?
- Is another clinician likely to restart it accidentally?

Example:

NSAIDs stopped after AKI and heart failure should not be restarted casually for pain.

Sedatives stopped after delirium should not be restarted without careful review.

Preventive medicines stopped near end of life should not be restarted by routine unless goals change.

Stopped medicines need as much clarity as new medicines.

15. Review Investigations and Pending Results

Follow-up often exists to close the investigation loop.

Check:

- Were blood tests done?
- Were imaging results finalized?
- Were cultures reviewed?
- Was biopsy reported?
- Were referrals accepted?
- Did the patient attend?
- Are results normal, abnormal, or pending?
- Does the result fit the clinical picture?
- What action is needed?
- Has the patient been told?

Never assume “no news is good news.”

No news may mean no one checked.

Pending results must have ownership until resolved.

16. Interpret Results in Context

Results are not self-explanatory.

Ask:

- Was this expected?
- Is it improving or worsening?
- What was baseline?
- Does it change management?
- Does it need repetition?
- Does it need urgent action?
- Does it require referral?
- Does it explain symptoms?
- Could it be incidental?
- How should it be explained to the patient?

Example:

A creatinine still above baseline after AKI may mean the patient is recovering slowly, has new baseline kidney function, remains dehydrated, has ongoing medicine harm, or needs further assessment.

A normal scan may be reassuring, but if symptoms persist or worsen, the diagnosis may need reassessment.

Follow-up requires interpretation, not result delivery alone.

17. Assess Function and Recovery

Ask:

- Can the patient walk?
- Climb stairs?
- Bathe?
- Dress?
- Toilet?
- Cook?
- Shop?
- Work?
- Sleep?
- Eat?
- Care for others?
- Manage medicines?
- Drive safely?

Return to school or work?

Participate in usual life?

Function may reveal incomplete recovery.

A patient may say:

“The infection is gone, but I still cannot walk to the bathroom.”

That is not a minor issue.

It is a capacity failure requiring action.

18. Assess Cognition and Delirium Recovery

After delirium or acute illness in older adults, follow-up should assess cognition.

Ask patient and caregiver:

Is thinking back to baseline?

Any confusion at night?

Any hallucinations?

Any sleep reversal?

Any new memory problems?

Any medication mistakes?

Any wandering?

Any falls?

Is attention improving?

Is family concerned?

Delirium recovery can take time.

Persistent cognitive decline may need further review.

Do not assume dementia progression without considering incomplete delirium recovery, depression, medicines, infection, sleep disruption, or metabolic problems.

19. Assess Mood and Demoralization

Illness episodes can leave patients emotionally shaken.

Ask:

How are you coping?

Are you feeling low?

Are you anxious about recurrence?

Are you sleeping?

Have you lost confidence?

Do you feel hopeless?

Are you afraid to move or go out?

Are you worried about being a burden?

Have you had thoughts of harming yourself?

After admission, falls, heart attack, cancer diagnosis, chronic pain flare, or ICU stay, emotional repair may lag behind physical repair.

Follow-up should not ignore the patient's inner recovery.

20. Assess Pain and Symptom Control

Ask:

Is pain controlled?

What is the pain stopping you from doing?

Are pain medicines helping?

Any constipation, nausea, drowsiness, confusion, or falls?

Is breathlessness controlled?

Any nausea or vomiting?

Any constipation?

Any itching?

Any insomnia?

Any fatigue?

Any dizziness?

Symptoms are not small issues if they prevent recovery.

Symptom control supports function, sleep, nutrition, mood, and dignity.

21. Assess Caregiver Capacity

Caregivers often carry the follow-up plan.

Ask caregiver:

How has it been at home?

Can you manage the medicines?

Can you help with mobility?

Are you sleeping?

Are you worried?

Are you overwhelmed?

Do you understand warning signs?

Do you have support?

What is hardest?

What would make care safer?

Caregiver collapse can become patient danger.

Do not assume family support is unlimited.

22. Assess Adherence Without Blame

If the plan was not followed, ask why.

Avoid:

“Why didn’t you take it?”

Ask:

- Were you able to get the medicine?
- Did you understand the instructions?
- Did it cause side effects?
- Was it too expensive?
- Were you afraid of it?
- Did the pharmacy have it?
- Did the schedule feel too complicated?
- Did anyone tell you something different?
- Did you forget?
- Did you feel better and stop?
- Did you feel worse and stop?

Non-adherence is often a signal of poor fit between plan and life.

The task is not blame.

The task is repair.

23. Reassess the Diagnosis

Follow-up is a major opportunity to correct diagnosis.

Reconsider diagnosis when:

- symptoms persist beyond expected timeframe
- symptoms worsen
- treatment fails
- new symptoms appear
- results do not fit
- patient returns repeatedly
- family says recovery is not normal
- weight loss, bleeding, fever, or pain persists
- function declines
- medicine side effects mimic illness
- the original diagnosis was uncertain

Ask:

Does the current pattern still fit the original diagnosis?

If not, revise.

A good follow-up prevents diagnostic error from continuing.

24. Decide Whether to Continue, Stop, Escalate, or De-Escalate

At follow-up, every plan needs review.

Ask:

- Continue current treatment?
- Stop completed treatment?
- Restart held medicine?
- Keep medicine stopped?
- Increase treatment?
- Reduce treatment?
- Refer?
- Investigate further?
- Admit?
- Observe with safety-net?
- Shift goals of care?
- Start rehabilitation?
- Add support?
- Deprescribe?

Do not let treatment continue by inertia.

Follow-up is where temporary decisions are either closed, continued intentionally, or revised.

25. Follow-Up After Pneumonia

Review:

- breathing
- cough
- fever
- oxygenation if relevant
- appetite
- energy
- confusion
- mobility
- antibiotic completion
- side effects
- smoking status where relevant
- need for repeat imaging or investigation according to local guidance
- whether symptoms fit expected recovery

Red flags:

- worsening breathlessness
- fever returning
- hemoptysis
- persistent weight loss
- persistent chest pain
- confusion
- poor intake
- oxygen still low
- recurrent infection

Recovery may be slow, especially in frailty.

But slow recovery still needs assessment.

26. Follow-Up After Heart Failure Admission

Review:

- breathlessness
- orthopnea
- edema
- weight trend where used
- dizziness
- blood pressure
- renal function
- electrolytes
- diuretic plan
- other heart medicines
- adherence and access
- salt/fluid advice according to local practice
- exercise tolerance
- goals and prognosis in advanced disease

Red flags:

- worsening breathlessness
- rapid swelling
- fainting
- chest pain
- severe dizziness
- reduced urine output
- dangerous renal or electrolyte results

Heart failure follow-up balances congestion relief, kidney safety, blood pressure tolerance, and patient goals.

27. Follow-Up After AKI

Review:

- baseline kidney function
- current kidney function
- potassium and other electrolytes
- hydration
- blood pressure
- urine output
- cause of AKI
- medicines held
- medicines restarted
- nephrotoxic medicine avoidance
- follow-up testing
- need for referral if recovery incomplete or severe

Ask:

- Are you drinking normally?
- Any vomiting or diarrhea?
- Any reduced urine?
- Any swelling or breathlessness?
- Did you restart any stopped medicine?
- Are you taking NSAIDs or other OTC medicines?

AKI follow-up prevents recurrence and medication harm.

28. Follow-Up After Falls

Review:

- new falls
- near falls
- dizziness
- syncope symptoms
- palpitations
- glucose episodes
- pain
- injury recovery
- mobility
- confidence

- fear of falling
- medicines
- vision
- footwear
- home hazards
- physiotherapy
- bone health where relevant
- caregiver support

A fall follow-up should not only ask whether the bruise healed.

It should ask why upright life became unsafe.

29. Follow-Up After Delirium

Review:

- cognition compared with baseline
- sleep
- hallucinations
- agitation
- appetite
- hydration
- mobility
- medicines
- infection recovery
- bowels and bladder
- caregiver concern
- safety at home
- need for further cognitive review

Explain to family that delirium can recover gradually and may recur with illness.

Safety-net for:

- new confusion
- fever
- poor intake
- falls
- medication errors
- reduced urine
- sleep reversal with agitation

Delirium follow-up protects the brain after discharge.

30. Follow-Up After Medication Change

Review:

- whether patient obtained medicine
- how they take it
- whether they know why
- side effects
- symptom response
- monitoring labs
- interactions
- whether dose adjustment is needed
- whether treatment should continue
- whether simplification is possible
- whether the patient wants to continue

Medication follow-up is essential for:

- anticoagulants
- insulin
- blood pressure medicines
- diuretics
- opioids
- sedatives
- antidepressants
- steroids
- antibiotics
- immune therapies
- anti-seizure medicines

A medicine is not fully prescribed until follow-up confirms safety and fit.

31. Follow-Up After Serious Illness Diagnosis

After a serious diagnosis, review understanding.

Ask:

- What were you told?
- What do you understand about the illness?
- What are you hoping for?
- What worries you most?
- Who should be involved?
- What treatment options were discussed?
- What matters most now?

What support do you need?

Are symptoms controlled?

Do you need palliative care support?

Are legal, financial, family, work, or spiritual concerns present?

Patients often absorb only part of serious news.

Follow-up gives space for meaning, planning, and support.

32. Follow-Up in Chronic Disease

Chronic disease follow-up should not be reduced to numbers.

Review:

symptoms

function

medicines

side effects

treatment burden

patient goals

monitoring results

complications

lifestyle barriers

mood

adherence

access

self-management confidence

need for simplification

prevention

future review plan

Ask:

“What part of managing this condition is hardest?”

This question often reveals the real work of care.

33. Follow-Up in Frailty

Frailty follow-up should assess:

weight

appetite

energy

walking speed

falls

- cognition
- continence
- pain
- sleep
- mood
- medicines
- caregiver support
- advance care planning
- recent admissions
- rehabilitation progress
- home safety
- goals

Frailty follow-up is not only disease monitoring.

It is reserve monitoring.

Ask:

“Are small problems knocking you down more than before?”

This helps identify declining resilience.

34. Follow-Up in Palliative Care

Palliative follow-up should include:

- pain
- breathlessness
- nausea
- bowels
- appetite
- sleep
- mood
- anxiety
- delirium
- family support
- caregiver exhaustion
- medicine burden
- goals
- preferred place of care
- crisis plan
- spiritual or cultural needs
- whether current treatment still helps

Ask:

“What is the most difficult symptom today?”

and

“What would make the next few days better?”

Palliative follow-up protects comfort, dignity, and meaning.

35. Follow-Up and Safety-Netting

Every follow-up should end with safety-netting.

Explain:

- what improvement is expected
- what worsening means
- what warning signs require urgent care
- what symptoms should trigger earlier review
- what results are still pending
- who will contact whom
- when the next review is needed

Example:

“Your kidney function is improving but not back to baseline. Do not restart the anti-inflammatory pain medicine. We will repeat blood tests next week. Seek urgent care if you pass much less urine, become very breathless, develop swelling, severe dizziness, confusion, or vomiting.”

Safety-netting keeps repair protected between visits.

36. Follow-Up Documentation

Document:

- reason for follow-up
- patient’s current symptoms
- comparison with baseline
- treatment response
- medicine reconciliation
- side effects
- results reviewed
- pending results
- functional recovery
- cognition and mood where relevant
- patient understanding
- barriers
- assessment
- plan changes

follow-up arrangements

safety-netting

communication with family or team

responsibility for next steps

Follow-up documentation should close loops.

It should make clear what remains open.

37. Repair Trajectory in Follow-Up

Follow-up repair is shown when:

symptoms improve as expected

function returns or support is adjusted

medicines are correct and understood

side effects are identified

held medicines are restarted or intentionally stopped

pending results are reviewed

diagnosis is confirmed or revised

patient understands warning signs

caregiver support is adequate

complications are prevented

follow-up continues only as needed

goals remain aligned

The follow-up question is:

Is repair continuing, stalled, reversed, or complete?

38. Worked Case 1: Follow-Up After Pneumonia

A 79-year-old woman was discharged after pneumonia with delirium and AKI. She attends follow-up one week later.

Follow-Up Focus

Do not ask only about cough.

Review

Breathing, fever, appetite, confusion, mobility, kidney function, glucose, antibiotic completion, medicine changes, caregiver concern.

Capacity Failures

Oxygenation, cognition, nutrition, clearance, mobility, agency.

Wise Follow-Up

Ask daughter whether cognition is back to baseline. Check renal function and medicines held after AKI. Assess eating, walking, falls, and glucose. Confirm warning signs.

Repair Trajectory

Breathing stable, confusion resolving, appetite improving, kidney function recovering, walking improving, medicines clarified.

39. Worked Case 2: Follow-Up After AKI

A 68-year-old man had AKI during gastroenteritis. His ACE inhibitor and diuretic were held. He now feels better and has restarted all medicines himself.

Follow-Up Problem

Medication restart without review may risk recurrent AKI or hypotension.

Capacity Failure

Clearance, circulation, medicine safety.

Wise Follow-Up

Check renal function, potassium, blood pressure, hydration, urine output, and volume status. Clarify which medicines should remain held, restart, or adjust. Explain sick-day or illness-related medicine caution according to local guidance.

Repair Trajectory

Kidney function stable, medicines safely adjusted, patient understands what to do during future dehydration illness.

40. Worked Case 3: Persistent Chest Pain After Reassuring Initial Review

A 54-year-old man was discharged after reassuring initial chest pain assessment. At follow-up, he reports exertional chest tightness continuing.

Follow-Up Problem

Original reassurance may no longer be enough.

Capacity Failure

Circulation risk, diagnostic safety.

Wise Follow-Up

Reassess chest pain pattern, risk factors, ECG or further testing according to local pathway, red flags, and need for urgent referral. Explain that persistent exertional symptoms require renewed assessment.

Repair Trajectory

Cardiac risk clarified, dangerous disease excluded or treated, patient understands when to seek urgent care.

41. Worked Case 4: Follow-Up After Fall

An 86-year-old woman fell at home. No fracture was found. At follow-up, she is afraid to walk and has stopped leaving her room.

Follow-Up Problem

Physical injury may have healed, but mobility confidence collapsed.

Capacity Failure

Mobility, confidence, participation, safety.

Wise Follow-Up

Assess dizziness, syncope, medicines, pain, vision, footwear, home hazards, mobility, and fear of falling. Arrange physiotherapy or strengthening where available. Review sedatives and blood pressure medicines.

Repair Trajectory

Falls risk reduced, walking confidence returns, fear decreases, independence improves.

42. Worked Case 5: Follow-Up After New Opioid

A patient was started on opioid medicine for severe pain. At follow-up, pain is improved, but the patient is constipated, drowsy, and has nearly fallen.

Follow-Up Problem

Treatment helps pain but harms cognition, bowels, and mobility.

Capacity Failure

Comfort improved, but bowel clearance, alertness, and mobility safety impaired.

Wise Follow-Up

Reassess pain cause, opioid dose and need, constipation plan, sedation, fall risk, non-opioid options, and goals. Adjust safely according to local guidance.

Repair Trajectory

Pain remains controlled, constipation resolves, drowsiness reduces, falls risk decreases.

43. Worked Case 6: Follow-Up After Serious Diagnosis

A patient newly diagnosed with advanced heart failure returns after discharge. He knows he has “heart trouble” but does not understand prognosis and is frightened by breathlessness.

Follow-Up Problem

Medical plan exists, but understanding and future planning are incomplete.

Capacity Failure

Agency, emotional regulation, self-management, meaning.

Wise Follow-Up

Ask what he understands, explain illness clearly, review medicines and symptoms, discuss warning signs, ask what matters most, involve family with consent, consider palliative support if symptom burden or prognosis warrants.

Repair Trajectory

Patient understands condition, breathlessness plan clear, medicines safer, goals begin to align with care.

44. Common Student Pitfalls

Pitfall 1: Treating Follow-Up as Routine

Follow-up may reveal danger, error, or treatment harm.

Pitfall 2: Reviewing Only the Main Diagnosis

The whole syndrome must be reviewed.

Pitfall 3: Ignoring Medicines

Medication discrepancies after discharge are common.

Pitfall 4: Forgetting Held Medicines

Held medicines require intentional restart or intentional discontinuation.

Pitfall 5: Assuming No News Means Normal Results

Pending results must be checked.

Pitfall 6: Not Reassessing Diagnosis

Persistent or worsening symptoms require diagnostic revision.

Pitfall 7: Ignoring Function

Recovery means life-capacity, not just improved labs.

Pitfall 8: Ending Without Safety-Netting

The patient must know what worsening looks like.

45. Clinical Practice Box

When completing follow-up, use this structure:

Reason for follow-up:
What illness, result, medicine, symptom, or decision is being reviewed?

Expected repair trajectory:
What was supposed to improve by now?

Current status:
Better, worse, same, or changed?

Danger today:
Any red flags requiring urgent action?

Original syndrome:
Has the whole pattern repaired, or only part of it?

Treatment response:
What helped? What failed? What harmed?

Medicines:
Actual use, new medicines, stopped medicines, held medicines, side effects, access, understanding.

Results and pending tests:
What returned? What is still pending? Who owns it?

Function and cognition:
Walking, eating, sleeping, thinking, self-care, work, caregiver concern.

Mood and distress:
Anxiety, low mood, fear, demoralization, confidence, suicidality where relevant.

Barriers:
Cost, transport, comprehension, caregiver capacity, side effects, home safety.

Revised assessment:
Diagnosis confirmed, revised, unresolved, or needs escalation?

Plan:
Continue, stop, restart, adjust, investigate, refer, admit, rehabilitate, support, or palliate?

Safety-net and next review:
Warning signs, action, timeframe, follow-up responsibility.

46. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain attends follow-up one week after discharge for pneumonia complicated by delirium, AKI, hypoglycemia, and falls. She feels "better but weak." Her daughter says she is still more forgetful than usual and nearly fell yesterday. Repeat renal function is improved but not back to baseline. The diuretic and ACE inhibitor remain held. Insulin was reduced. NSAIDs were stopped. Knee pain is worse, and she asks to restart her old anti-inflammatory tablets.

Apply the complete follow-up approach.

Reason for Follow-Up

Review recovery after pneumonia, delirium, AKI, hypoglycemia, medication changes, weakness, falls risk, and pain control.

Danger Today

Near fall, persistent cognitive change, kidney function not back to baseline, heart failure medicines held, pain prompting request for NSAID restart, hypoglycemia risk, possible caregiver strain.

Original Syndrome

Pneumonia improved, but recovery remains incomplete because cognition, mobility, clearance, pain, and medicine safety are still fragile.

Medicine Review

Do not restart NSAIDs casually because of CKD, recent AKI, and heart failure risk. Review pain alternatives. Assess whether diuretic or ACE inhibitor should remain held or be restarted only after volume status, blood pressure, potassium, renal function, and heart failure symptoms are reviewed. Confirm insulin use and glucose readings.

Function and Cognition

Assess walking, transfers, stairs, falls, delirium recovery, sleep, appetite, hydration, and daughter's supervision capacity.

Plan

Continue AKI monitoring, avoid NSAIDs, treat pain safely, consider physiotherapy or mobility support, reassess cognition, monitor for heart failure recurrence while medicines are held, review glucose, and arrange timely next review.

Safety-Net

Seek urgent care for worsening breathlessness, swelling, chest pain, confusion, reduced urine, poor intake, dizziness, falls, fever, severe pain, or recurrent low sugars.

Repair Trajectory

Breathing remains stable, cognition returns toward baseline, kidney function continues improving, no further falls occur, pain is controlled without kidney or heart harm, glucose remains safe, heart failure symptoms do not recur, and medicines are intentionally reviewed rather than drifting.

47. Student Takeaway

The complete follow-up becomes easier when the clinician asks:

Why is this patient being followed up?
What was expected to improve by now?
Is the patient better, worse, unchanged, or changed in a new way?
Is there danger today?
Did the whole syndrome repair, or only part of it?
Did treatment help, fail, or harm?
What medicines is the patient actually taking?
What was stopped, held, restarted, or misunderstood?
Are results back, pending, or unowned?
Has function, cognition, mood, and caregiver capacity recovered?
Does the diagnosis still fit?
What must continue, stop, restart, escalate, or be revised?
What safety-net and next review are needed?

A complete follow-up is not an afterthought.

It is the closing and reopening of the clinical loop.

The safe clinician uses follow-up to confirm repair, catch harm, revise diagnosis, clarify medicines, support function, close pending results, listen to real-life barriers, and keep the patient moving toward the safest attainable recovery.

Chapter 77. Case Synthesis Made Easy

Case synthesis is the disciplined process of turning scattered clinical information into a coherent understanding of what is happening to the patient, what matters most, what remains uncertain, and what should happen next.

Patients do not usually say:

“Please synthesize my case.”

They say:

“Can you explain what is going on?”
“Why do I have so many problems?”
“Are these symptoms connected?”
“What is the main issue?”
“What do we do next?”
“Why am I not getting better?”
“Is this one illness or several?”
“What should I worry about most?”

Clinicians may think:

“There is too much information.”
“The patient has many diagnoses.”
“The labs are confusing.”
“The treatment response does not fit.”
“The notes are long, but I still do not understand the case.”
“I need to present this patient clearly.”
“I need a plan that makes sense.”

Case synthesis is central to Internal Medicine because patients rarely arrive as simple textbook diagnoses.

They arrive with symptoms, timelines, comorbidities, medicines, test results, family concerns, functional changes, social barriers, emotional distress, and uncertainty.

A poor synthesis produces fragmented care.
A good synthesis creates clinical coherence.
A poor synthesis repeats facts without meaning.
A good synthesis explains the pattern.
A poor synthesis treats each abnormality separately.
A good synthesis identifies priorities.
A poor synthesis loses the patient inside the data.
A good synthesis restores the living person to the center of reasoning.

The first task is not to summarize everything.

The deeper question is:

What is the most coherent explanation of this patient’s situation, and what should we do next to protect life, reduce harm, and support repair?

Case synthesis becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Case Synthesis?

Case synthesis is the integration of clinical information into a meaningful whole.

It includes:

identifying the main syndrome

organizing the timeline

separating active from background problems

identifying immediate danger

recognizing failing capacities

linking symptoms, signs, tests, and medicines

deciding whether one diagnosis explains the case

recognizing when several diagnoses coexist

identifying uncertainty

prioritizing action

connecting treatment to repair

explaining the case clearly to others

Case synthesis is not simply making a long list.

It is making sense.

2. Synthesis Is Different From Summary

A summary repeats information.

A synthesis interprets information.

Summary

“The patient is 78 with diabetes, CKD, heart failure, dementia, pneumonia, AKI, confusion, poor intake, and falls.”

Synthesis

“This is a frail 78-year-old with pneumonia complicated by delirium, poor intake, AKI, hypoglycemia risk, and functional decline, made more dangerous by CKD, heart failure, dementia, and polypharmacy. The immediate priorities are oxygenation, delirium causes, renal safety, glucose safety, medication review, mobility, and discharge support.”

The synthesis tells the team what the case means.

It turns facts into direction.

3. Synthesis Is Not the Same as Diagnosis

Diagnosis is important, but synthesis is broader.

A diagnosis may be:

“Pneumonia.”

A synthesis asks:

How severe is the pneumonia?

What capacities are failing?

Why did this patient become delirious?

Is kidney function threatened?

Are medicines contributing?

Is glucose safe?

Can the patient walk?

Can the patient go home?

What is the repair trajectory?

What remains uncertain?

Diagnosis names a disease.

Synthesis explains the patient's clinical situation.

4. Synthesis Is a Safety Skill

Case synthesis protects against:

premature closure

fragmented care

missed second diagnosis

unsafe discharge

medication harm

poor prioritization

unclear handover

over-testing

under-testing

repeated admissions

contradictory specialty plans

failure to recognize deterioration

failure to identify goals of care

When synthesis is poor, teams may say:

"Everyone is doing something, but no one understands the whole case."

When synthesis is good, the team can say:

"We know what is happening, what is dangerous, what we are treating, what we are monitoring, and what must improve before discharge."

5. The First Question: Is There Immediate Danger?

Before building a full synthesis, identify danger.

Ask:

Is the airway safe?

Is breathing safe?

Is circulation safe?

Is consciousness safe?

Is glucose safe?

- Is there sepsis?
- Is there bleeding?
- Is there stroke?
- Is there myocardial infarction?
- Is there pulmonary embolism?
- Is there AKI or severe electrolyte disturbance?
- Is there overdose or withdrawal?
- Is there severe pain?
- Is there suicidal risk?
- Is discharge unsafe?

Danger comes before elegance.

A beautiful synthesis is useless if the patient is unstable and no one acts.

The danger-first question is:

What must be recognized or stabilized now before deeper reasoning continues?

6. Immediate Red Flags in Case Synthesis

Red flags that synthesis is needed urgently include:

- patient has many problems but no clear main issue
- patient is worsening despite treatment
- treatment response does not fit diagnosis
- several teams give conflicting advice
- medicines have been changed repeatedly
- discharge is planned but function is unsafe
- family says patient is not back to baseline
- abnormal results are being treated separately without a unifying plan
- patient has repeated admissions
- diagnosis is uncertain
- delirium is present
- frailty or multimorbidity complicates care
- goals of care are unclear
- patient is receiving high-burden treatment with little improvement
- no one can explain what needs to happen next

When no one can state the case clearly, synthesis is missing.

7. The Case Synthesis Pathway

A practical pathway is:

- identify immediate danger

- define the main syndrome
- build the timeline
- identify active problems
- separate background conditions
- map capacity failures
- identify coupling conditions
- decide whether the case is unified or mixed
- review treatment response
- name uncertainty
- prioritize next steps
- define repair trajectory
- communicate the synthesis clearly

This pathway turns complexity into order.

8. Step 1: Identify Immediate Danger

Start with danger.

Examples:

- hypoxia in pneumonia
- shock in sepsis
- chest pain with cardiac risk
- confusion from hypoglycemia
- AKI with hyperkalemia
- fall with head injury on anticoagulant
- severe pain from spinal cord compression risk
- suicidal intent in depression
- alcohol withdrawal risk
- unsafe discharge in frailty

Danger should be stated explicitly in the synthesis.

Example:

“The immediate danger is hypoxia and delirium in the context of pneumonia and frailty.”

Or:

“The immediate danger is AKI with medication toxicity and falls risk.”

If danger is not named, it may not be prioritized.

9. Step 2: Define the Main Syndrome

A syndrome is the clinical pattern that organizes the case.

Examples:

- acute breathlessness
- fever with confusion
- chest pain
- falls with dizziness
- weight loss and anemia
- chronic fatigue
- AKI with poor intake
- delirium in frailty
- decompensated heart failure
- multimorbid functional decline
- uncontrolled pain in serious illness

The main syndrome should not be too narrow.

Poor:

“UTI.”

Better:

“Fever, delirium, poor intake, and falls in a frail older adult, with urinary infection possible but not yet the whole explanation.”

Poor:

“Anxiety.”

Better:

“Episodic palpitations, chest tightness, and breathlessness with anxiety symptoms, requiring rhythm and cardiac risk assessment before anxiety is accepted as the main cause.”

The syndrome keeps reasoning open.

10. Step 3: Build the Timeline

The timeline is the skeleton of synthesis.

Ask:

- When was the patient last well?
- What changed first?
- What followed?
- What worsened?
- What improved?
- What treatment was given?
- What response occurred?
- When did new problems appear?
- Were medicines changed?
- Were there recent admissions?
- Did function decline before or after illness?

A clear timeline reveals causality.

Example:

A patient develops poor intake, then dizziness, then AKI after diuretic increase.

That suggests medication and volume contribution.

A patient develops confusion after infection and hospitalization.

That suggests delirium.

A patient develops constipation and drowsiness after opioid escalation.

That suggests treatment harm.

When the case is confusing, rebuild the timeline.

11. Step 4: Identify Active Problems

Active problems are problems that require attention now.

Examples:

- hypoxia
- fever
- delirium
- AKI
- hyperkalemia
- hypoglycemia
- severe pain
- constipation
- falls risk
- unsafe mobility
- poor intake
- bleeding
- medication toxicity
- uncontrolled heart failure
- uncontrolled infection
- family conflict
- unclear goals of care
- pending critical result

Active problems differ from background diagnoses.

A patient may have diabetes, but the active problem may be hypoglycemia from poor intake.

A patient may have CKD, but the active problem may be AKI from dehydration and NSAID use.

A patient may have dementia, but the active problem may be delirium from infection.

Synthesis identifies what is active.

12. Step 5: Separate Background Conditions

Background conditions are still important.

They shape risk, treatment, and recovery.

Examples:

- CKD changes medicine safety
- diabetes changes infection and glucose risk
- heart failure changes fluid decisions
- COPD changes breathlessness interpretation
- dementia increases delirium risk
- frailty reduces reserve
- cancer changes clot risk, pain, prognosis, and goals
- depression changes energy, adherence, and meaning
- addiction changes withdrawal, pain, and medication safety

Background conditions should not be ignored.

But they should not obscure the active syndrome.

Synthesis asks:

Which background conditions are shaping the current problem?

13. Step 6: Map Capacity Failures

Capacity mapping helps organize complexity.

Ask:

- Is oxygenation failing?
- Is circulation failing?
- Is energy transformation failing?
- Is clearance failing?
- Is defense failing?
- Is regulation failing?
- Is cognition failing?
- Is mobility failing?
- Is nutrition failing?
- Is comfort failing?
- Is agency failing?
- Is support failing?

Example:

A patient with pneumonia may have:

- oxygenation failure from lung infection
- defense activation from infection

- cognition failure from delirium
- clearance failure from AKI
- mobility failure from weakness
- nutrition failure from poor intake
- agency failure because confusion prevents decision-making

This is more useful than saying only:

“Pneumonia.”

Capacity mapping shows what must be repaired.

14. Step 7: Identify Coupling Conditions

Coupling conditions are the circumstances that shape illness and recovery.

They include:

- frailty
- multimorbidity
- polypharmacy
- cognition
- mood
- pain
- addiction
- poverty
- transport
- caregiver support
- housing
- food access
- culture
- health literacy
- language
- spiritual needs
- work and family responsibilities
- previous trauma
- system limitations
- follow-up reliability

A treatment plan may be scientifically correct but fail because coupling conditions were ignored.

Example:

A patient is discharged on insulin but cannot read the label, has poor vision, no fridge, irregular meals, and no caregiver.

The problem is not simply diabetes.

The synthesis must include agency, support, and feasibility.

15. Step 8: Decide Whether the Case Is Unified or Mixed

Students often look for one diagnosis.

Sometimes one diagnosis explains everything.

Sometimes several diagnoses coexist.

Unified Case

A single process explains most findings.

Example:

Pneumonia causing fever, cough, hypoxia, delirium, poor intake, and AKI.

Mixed Case

Several processes interact.

Example:

Breathlessness from COPD, heart failure, anemia, anxiety, and deconditioning.

Sequential Case

One problem causes another.

Example:

Gastroenteritis causes dehydration, leading to AKI, leading to medication toxicity, leading to confusion and falls.

Treatment-Harm Case

Treatment creates a new active problem.

Example:

Opioids improve pain but cause constipation, drowsiness, falls, and delirium.

The synthesis should state which pattern is most likely.

Do not force one diagnosis when the patient has multiple interacting problems.

16. Step 9: Review Treatment Response

Treatment response helps test the synthesis.

Ask:

- What treatment was given?
- What improved?
- What worsened?
- What stayed the same?
- Did the response fit the diagnosis?
- Did treatment cause harm?
- Did improvement occur too quickly or too slowly?
- Is there a second diagnosis?
- Is the patient actually taking treatment?

Examples:

- Breathlessness improves with diuresis but wheeze persists: heart failure plus airway disease may coexist.
- Fever settles but confusion persists: infection may be improving, but delirium triggers remain.
- Pain improves with opioids but mobility worsens: comfort improved, but safety declined.
- Glucose improves but patient has hypoglycemia: disease target may be too aggressive.

Synthesis must include response, not just initial diagnosis.

17. Step 10: Name Uncertainty

Good synthesis names uncertainty.

Examples:

“Pneumonia is likely, but heart failure may also be contributing to breathlessness.”

“Delirium is present, but the trigger is not yet clear.”

“AKI is improving, but the safe restart point for diuretics remains uncertain.”

“Weight loss and anemia require malignancy exclusion; outpatient follow-up must be owned.”

Uncertainty should be specific.

Do not say:

“Unclear.”

Say:

“The cause of AKI is likely dehydration and NSAID use, but obstruction has not yet been excluded.”

Specific uncertainty guides action.

18. Step 11: Prioritize Next Steps

After synthesis, decide priorities.

Ask:

- What must happen now?
- What must happen today?
- What can wait?
- What danger must be monitored?
- What medicine must be changed?
- What result must be followed?
- What function must be assessed?
- What conversation must happen?
- What specialist input is needed?
- What discharge barrier must be addressed?

A synthesis without priorities is incomplete.

The team should be able to act after hearing it.

19. Step 12: Define the Repair Trajectory

A case synthesis should state what improvement should look like.

Examples:

Pneumonia With Delirium

Repair trajectory:

- oxygen requirement falls
- fever settles
- attention improves
- appetite returns
- kidney function stabilizes
- mobility improves

Heart Failure With CKD

Repair trajectory:

- breathlessness improves
- edema reduces
- renal function remains safe
- dizziness is avoided
- diuretic plan clarified
- walking improves

Falls With Medication Harm

Repair trajectory:

- sedative burden reduced
- dizziness improves
- no further falls
- mobility improves
- home risk reduced

If the repair trajectory is absent, the team may not know whether care is working.

20. Step 13: State the Synthesis Clearly

A good synthesis can be spoken in a few sentences.

Example:

“Mrs. James is an 84-year-old woman with frailty, dementia, CKD, and diabetes admitted with pneumonia causing hypoxia, delirium, poor intake, and AKI. She is improving from the infection, but her active risks are persistent delirium, renal vulnerability, hypoglycemia risk, weakness, and unsafe discharge. Today’s priorities are renal review, medication reconciliation, delirium care, mobilization, nutrition, and daughter update. She is not discharge-ready until cognition, mobility, and medicine safety are clearer.”

This tells the team:

- who the patient is
- what is happening

what is dangerous

what is improving

what remains active

what must happen next

That is case synthesis.

21. Case Synthesis in Multimorbidity

Multimorbidity requires synthesis because single-disease reasoning is insufficient.

Example:

A patient has COPD, heart failure, CKD, diabetes, anemia, and anxiety.

They present with breathlessness.

A poor synthesis says:

“COPD exacerbation.”

A better synthesis says:

“This is acute breathlessness in a multimorbid patient, with COPD and heart failure both possible contributors, CKD limiting fluid and medication choices, anemia reducing oxygen delivery, and anxiety amplifying distress. The immediate priorities are oxygenation, infection assessment, congestion assessment, ECG, renal function, anemia severity, and treatment response.”

Multimorbidity synthesis asks:

Which diseases are active?

Which are background risks?

Which treatments conflict?

Which capacity is failing most?

What does the patient want?

What plan is realistic?

22. Case Synthesis in Frailty

Frailty changes synthesis.

A frail patient may present with:

weakness

falls

confusion

poor intake

reduced mobility

caregiver concern

The underlying causes may include:

infection

dehydration

- medication toxicity
- pain
- constipation
- urinary retention
- hypoxia
- hypoglycemia
- AKI
- social breakdown

A poor synthesis says:

“Off legs.”

A better synthesis says:

“This is acute functional decline in frailty, with new inability to walk, poor intake, and confusion. The main concern is delirium or systemic illness until proven otherwise, with medication harm and dehydration also possible. Discharge is unsafe until cause, cognition, mobility, and support are addressed.”

Frailty synthesis must include function.

23. Case Synthesis in Diagnostic Uncertainty

When diagnosis is uncertain, synthesis becomes even more important.

A good uncertainty synthesis includes:

- what is known
- what is most likely
- what is most dangerous
- what has been excluded
- what remains possible
- what test or observation is needed
- what safety-net is in place

Example:

“The patient has recurrent exertional chest tightness. Initial ECG and blood tests are reassuring, but symptoms remain concerning for stable or unstable coronary disease depending on trajectory. Reflux is possible, but exertional pattern means cardiac follow-up is needed. Safety-net is urgent return for rest pain, breathlessness, sweating, syncope, or worsening symptoms.”

Uncertainty without synthesis becomes anxiety.

Synthesis makes uncertainty manageable.

24. Case Synthesis in Treatment Failure

When treatment fails, resynthesize.

Ask:

- Was the diagnosis wrong?

Was the diagnosis incomplete?

Was treatment not delivered?

Was treatment not taken?

Is there resistance or complication?

Is there a second diagnosis?

Is there medication harm?

Is the patient too frail to respond as expected?

Are goals unrealistic?

Example:

A patient treated for pneumonia remains breathless.

Possible synthesis:

“The infection is improving, but breathlessness persists because heart failure, anemia, deconditioning, and anxiety may now be more important than infection. We need to reassess fluid status, hemoglobin, oxygenation, mobility, and goals.”

Treatment failure is not only a problem.

It is information.

25. Case Synthesis in Medication Harm

Medicines often explain clinical patterns.

Example:

A patient develops dizziness, falls, AKI, and confusion after diuretic increase, NSAID use, and sedative prescription.

Synthesis:

“This is likely medication-associated capacity failure: diuretic and NSAID exposure contributing to AKI and volume stress, sedative contributing to confusion and falls, with frailty and CKD increasing vulnerability.”

Medication synthesis asks:

What medicine changed?

What symptom followed?

What organ capacity is vulnerable?

What medicine must be stopped, held, reduced, or monitored?

What safer alternative exists?

Medicines should be treated as active forces, not background details.

26. Case Synthesis in Serious Illness

In serious illness, synthesis must include trajectory and goals.

Example:

“This is advanced heart failure with repeated admissions, declining mobility, worsening renal tolerance of diuresis, and increasing symptom burden. The current admission may treat fluid overload, but the broader

trajectory suggests declining reserve. We need to treat breathlessness, review medicines, discuss prognosis, involve family, and clarify whether future escalation matches the patient's goals."

Serious illness synthesis asks:

Is this reversible illness or progressive decline?

What treatment is still helping?

What burden is increasing?

What does the patient understand?

What matters most now?

Is palliative support needed?

A synthesis that ignores trajectory may lead to burdensome treatment drift.

27. Case Synthesis and Patient Values

A complete synthesis includes the patient's goals.

Example:

"The patient understands that COPD is advanced and prioritizes staying at home over repeated hospital treatment. Current plan should focus on breathlessness control, rescue plan, family support, and clear criteria for when hospital care would still be desired."

Without values, synthesis is incomplete.

The best clinical explanation still needs to answer:

What matters to this patient?

28. Case Synthesis and Social Reality

Social conditions may change the entire plan.

Example:

A patient with heart failure is discharged on diuretics but has no transport for blood tests, cannot afford medicines, and lives alone.

Synthesis:

"The medical plan depends on monitoring and medication access that are currently unreliable. Discharge safety requires addressing transport, medicine supply, follow-up ownership, and caregiver support."

Social barriers are not separate from clinical synthesis.

They determine whether the plan can work.

29. Case Synthesis and Handover

A handover should contain synthesis, not just facts.

Poor handover:

"Bed 4, pneumonia, on antibiotics."

Better handover:

"Bed 4 is a frail 82-year-old with pneumonia improving on antibiotics, but still delirious with poor intake and AKI. Watch oxygen, urine output, agitation, glucose, and falls. Repeat renal function is due tomorrow

before deciding whether to restart diuretic. Daughter knows baseline and should be updated before discharge."

The second handover protects the patient.

It gives the next clinician the clinical pattern.

30. Case Synthesis and Documentation

Documentation should show synthesis.

A useful assessment section includes:

- syndrome
- working diagnosis
- severity
- capacity failures
- contributing conditions
- uncertainty
- active priorities
- repair trajectory

Example:

"Assessment: Acute functional decline in frailty with delirium, poor intake, mild AKI, and falls. Urinary infection possible but not sufficient alone to explain full picture; medication burden and dehydration likely contributors. Active priorities: delirium workup, medication review, hydration, mobility assessment, falls prevention, collateral baseline, and discharge safety."

A note like this helps every team member.

31. Worked Case 1: Pneumonia, Delirium, and AKI

An 84-year-old woman with dementia, CKD, diabetes, and frailty is admitted with cough, fever, poor intake, low oxygen, confusion, and rising creatinine.

Raw Data

Cough, fever, hypoxia, confusion, poor intake, AKI, diabetes, CKD, dementia, frailty.

Weak Summary

"Pneumonia with AKI."

Strong Synthesis

"This is pneumonia in a frail older adult complicated by hypoxia, delirium, poor intake, and AKI, with diabetes and CKD increasing risk of glucose instability and medication harm. The active priorities are oxygenation, infection treatment, delirium care, renal safety, glucose review, medication reconciliation, nutrition, mobility, and discharge support."

Repair Trajectory

Fever settles, oxygen improves, attention improves, appetite returns, kidney function stabilizes, glucose remains safe, mobility improves toward baseline.

32. Worked Case 2: Breathlessness With Mixed Causes

A 72-year-old man with COPD, heart failure, CKD, anemia, and anxiety presents with breathlessness.

Raw Data
Wheeze, edema, low exercise tolerance, mild anemia, CKD, anxiety, oxygen borderline.

Weak Summary
“COPD exacerbation.”

Strong Synthesis
“This is acute breathlessness in a multimorbid patient where COPD and heart failure may both be active, anemia may reduce reserve, CKD limits fluid and medicine options, and anxiety may amplify distress. The priority is to assess oxygenation, infection, congestion, rhythm, anemia severity, renal function, and response to initial treatment.”

Repair Trajectory
Breathlessness improves, oxygen stabilizes, congestion and wheeze clarify, kidney function remains safe, anxiety addressed after danger is controlled.

33. Worked Case 3: Fall With Medication Harm

An 86-year-old woman falls twice after starting a sleeping tablet and increasing blood pressure medicine. She has CKD and poor oral intake.

Raw Data
Falls, dizziness, sedation, low blood pressure on standing, CKD, poor intake, new sleeping tablet, medication change.

Weak Summary
“Mechanical falls.”

Strong Synthesis
“This is recurrent falls likely related to medication-associated impaired balance and circulation regulation, worsened by poor intake, CKD, and frailty. Syncope and injury still need assessment, but the immediate priorities are medication review, orthostatic assessment, hydration, injury exclusion, mobility safety, and home support.”

Repair Trajectory
Dizziness improves, sedative burden reduced, no further falls, mobility safer, home plan adjusted.

34. Worked Case 4: Persistent Confusion After Infection

An 80-year-old man treated for UTI remains confused after fever settles.

Raw Data
UTI treated, fever improved, confusion persists, poor sleep, constipation, new anticholinergic medicine, family says not baseline.

Weak Summary
“Dementia.”

Strong Synthesis
“This is persistent delirium after infection, likely maintained by constipation, poor sleep, anticholinergic burden, and hospitalization in a vulnerable brain. Dementia may be background vulnerability, but persistent acute confusion should not be dismissed as baseline. Priorities are delirium review, medicine reduction, bowel care, sleep protection, family orientation, and safety planning.”

Repair Trajectory

Attention improves, sleep normalizes, bowels open, medicine burden reduced, family confirms movement toward baseline.

35. Worked Case 5: Weight Loss and Anemia

A 66-year-old man has fatigue, weight loss, iron deficiency anemia, and vague abdominal discomfort.

Raw Data

Fatigue, weight loss, anemia, abdominal symptoms, low appetite.

Weak Summary

“Anemia.”

Strong Synthesis

“This is iron deficiency anemia with systemic weight loss and abdominal symptoms, concerning for chronic blood loss or malignancy until proven otherwise. The active priority is not only iron replacement but diagnostic follow-up, symptom assessment, safety-netting, and ensuring investigation ownership.”

Repair Trajectory

Anemia treated, diagnostic pathway completed, weight and symptoms monitored, serious causes excluded or treated.

36. Worked Case 6: Advanced Illness With Repeated Admissions

A 78-year-old man with advanced COPD and heart failure has his fourth admission in six months. He is breathless, weak, and says he is tired of hospital.

Raw Data

Advanced COPD, heart failure, repeated admissions, breathlessness, weakness, poor quality of life, treatment fatigue.

Weak Summary

“COPD exacerbation.”

Strong Synthesis

“This is advanced cardiopulmonary disease with repeated decompensations, declining reserve, severe symptom burden, and treatment fatigue. There may be a reversible component to this admission, but the broader trajectory suggests need for symptom control, goals-of-care discussion, family involvement, palliative support, and a crisis plan.”

Repair Trajectory

Breathlessness relieved, reversible factors treated where appropriate, patient goals clarified, future escalation aligned with values, family supported.

37. Common Student Pitfalls

Pitfall 1: Listing Facts Without Meaning

Synthesis must interpret, not merely repeat.

Pitfall 2: Naming One Diagnosis Too Early

Complex patients may have multiple interacting diagnoses.

Pitfall 3: Ignoring the Timeline

Timeline often reveals cause, sequence, and treatment harm.

Pitfall 4: Forgetting Capacity Failure

Disease labels do not show what life functions are failing.

Pitfall 5: Ignoring Medicines

Medication harm often explains confusing cases.

Pitfall 6: Forgetting Patient Values

A clinically accurate synthesis is incomplete if it ignores what matters to the patient.

Pitfall 7: Treating Social Barriers as Separate

Support, access, literacy, transport, and caregiving shape the success of care.

Pitfall 8: Failing to Define Repair

If you cannot say what improvement should look like, the plan is incomplete.

38. Clinical Practice Box

When synthesizing a case, complete this structure:

Immediate danger:
What could seriously harm the patient now?

Main syndrome:
What clinical pattern organizes the case?

Timeline:
What changed first, next, and after treatment?

Active problems:
What needs attention now?

Background conditions:
Which chronic conditions shape risk and treatment?

Capacity failures:
Oxygenation, circulation, cognition, clearance, defense, mobility, nutrition, comfort, agency, support.

Coupling conditions:
Frailty, medicines, social support, cost, cognition, culture, goals, follow-up reliability.

Unified or mixed case:
Is one diagnosis enough, or are several processes interacting?

Treatment response:
What improved, failed, or harmed?

Uncertainty:
What remains unclear, and how will it be resolved or monitored?

Priorities:
What must happen now, today, later?

Repair trajectory:
What should improve, by when, and what would mean deterioration?

One-sentence synthesis:
Can you explain the case clearly in one or two sentences?

39. Mini-Case for Practice

A 79-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, osteoarthritis, and depression is admitted with poor appetite, dizziness, worsening leg swelling, confusion, two falls, knee pain, high glucose, rising creatinine, and low mood. Her daughter says she is not safe at home. The patient wants stronger pain medicine and wants to leave.

Apply the case synthesis approach.

Immediate Danger

Falls, confusion, AKI, possible heart failure worsening, medication toxicity, glucose instability, unsafe discharge, and possible delirium.

Main Syndrome

Acute functional and cognitive decline in a frail multimorbid patient, with clearance stress, fluid imbalance, pain, falls, and medication vulnerability.

Timeline

Poor appetite and dizziness developed, followed by falls and confusion. Leg swelling worsened. Creatinine rose. Pain remains severe. Medication changes, NSAID use, diuretic use, sedatives, opioids, or diabetes medicines may be contributing and must be reviewed.

Active Problems

Confusion, falls, AKI, swelling, dizziness, pain, poor intake, high glucose, unsafe mobility, medication risk, caregiver concern.

Background Conditions

Diabetes, CKD, heart failure, dementia, frailty, osteoarthritis, depression.

Capacity Failures

Cognition, clearance, circulation/fluid balance, mobility, comfort, nutrition, glucose regulation, agency, caregiver-supported safety.

Coupling Conditions

Polypharmacy, living situation, daughter's concern, frailty, dementia, pain, mood, possible medicine access or adherence issues, patient's wish to leave.

Unified or Mixed Case

This is likely a mixed and sequential case rather than one diagnosis. Poor intake, heart failure, kidney vulnerability, medication effects, pain, and frailty may be interacting. Delirium must be considered.

Treatment Response

The current plan has not yet produced repair. Stronger pain medicine may worsen falls and confusion unless pain is treated safely within the whole pattern.

Uncertainty

The exact drivers of AKI, swelling, confusion, dizziness, and falls remain uncertain. Infection, medication harm, fluid imbalance, glucose instability, and pain-related immobility must be assessed.

Priorities

Assess danger, review medicines, evaluate volume status, renal function, glucose, infection, cognition, falls injury, pain, bowel and bladder, and mobility. Involve daughter. Assess capacity if the patient refuses admission. Avoid unsafe discharge.

Repair Trajectory

Confusion improves, dizziness reduces, kidney function stabilizes, swelling improves without worsening kidneys, pain is controlled safely, glucose becomes safer, no further falls occur, daughter understands plan, and discharge occurs only when support and mobility are safe.

One-Sentence Synthesis

“This is a frail multimorbid patient with acute cognitive and functional decline, AKI, falls, fluid imbalance, pain, and medication vulnerability, requiring integrated assessment of delirium, heart-kidney balance, glucose safety, medicine harm, mobility, caregiver support, and discharge safety.”

40. Student Takeaway

Case synthesis becomes easier when the clinician asks:

What is dangerous now?
What is the main syndrome?
What is the timeline?
What is active and what is background?
Which capacities are failing?
What coupling conditions shape recovery?
Is this one diagnosis, several interacting diagnoses, or treatment harm?
Does the treatment response fit the diagnosis?
What remains uncertain?
What matters most to the patient?
What must happen next?
What repair trajectory will show we are on the right path?

Case synthesis is the art of making clinical reality coherent without oversimplifying it.

The safe clinician does not drown in data, cling to labels, or treat abnormalities one by one. The safe clinician organizes the living pattern, identifies danger, maps failing capacities, recognizes interaction, names uncertainty, prioritizes wisely, and gives the team a clear path toward repair.

Chapter 78. Case Presentation Made Easy

Case presentation is the disciplined communication of a patient's clinical story, current status, reasoning, priorities, and plan to another clinician or team.

Patients do not usually say:

"Please present my case well."

They say:

"I do not want to repeat everything again."
"Please tell the next doctor what is really going on."
"Make sure they know my medicines changed."
"Please tell them I am not normally confused."
"Make sure they know I cannot walk yet."
"Tell them what I am worried about."

Clinicians may think:

"I have too much information."
"I do not know where to start."
"I am afraid I will miss something."
"The consultant will ask questions I cannot answer."
"The case is complicated."
"How do I present this clearly?"

Case presentation is central to Internal Medicine because clinical care is shared.

A patient may be presented on a ward round, during handover, to a consultant, to a specialist, at a case conference, during referral, during discharge planning, in teaching, or in emergency escalation.

A poor presentation can confuse the team.
A good presentation can focus attention.
A poor presentation can bury danger in details.
A good presentation identifies what matters.
A poor presentation lists facts without reasoning.
A good presentation shows clinical judgment.
A poor presentation loses the patient's voice.
A good presentation carries the patient safely to the next decision.

The first task is not to say everything.

The deeper question is:

What does the listener need to know now to understand the patient, recognize danger, make decisions, and continue repair?

Case presentation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Case Presentation?

A case presentation is a structured account of the patient's clinical situation.

It usually includes:

- patient identity and context
- presenting problem
- timeline

relevant background

key findings

investigations

working diagnosis

differential diagnosis

capacity failures

treatment given

response to treatment

current status

active problems

uncertainty

patient values where relevant

priorities

plan

request or question

A case presentation is not a performance.

It is a clinical safety act.

The aim is not to impress.

The aim is to make the case understandable.

2. Presentation Is Not Recitation

Many students present by reciting every fact in the order they collected it.

This can be overwhelming.

Example of weak presentation:

“This is a 78-year-old woman with diabetes, CKD, hypertension, heart failure, dementia, osteoarthritis, depression, cataracts, previous appendectomy, and she came in because she was weak and dizzy and had some swelling and her daughter said she fell and she takes many medicines and her creatinine was high and her glucose was high…”

The listener may not know what matters.

A stronger presentation organizes the case:

“This is a 78-year-old frail woman with diabetes, CKD, heart failure, mild dementia, and polypharmacy, presenting with three days of poor intake, dizziness, confusion, worsening leg swelling, and two falls. The main issue is acute functional and cognitive decline with AKI, possible fluid imbalance, medication vulnerability, and unsafe discharge.”

This version gives direction.

Presentation should convert data into clinical meaning.

3. Presentation Depends on Purpose

Different situations require different presentations.

Emergency Escalation

Focus on danger, current status, what you need now.

Ward Round

Focus on overnight change, diagnosis, response, active problems, today's plan.

New Admission

Focus on presenting syndrome, timeline, danger, baseline, assessment, plan.

Specialist Referral

Focus on the question, relevant background, current findings, and what help is needed.

Discharge Planning Meeting

Focus on function, cognition, medicines, support, follow-up, and barriers.

Teaching Presentation

Focus on reasoning, differential, evidence, and learning points.

Before presenting, ask:

Why am I presenting this patient, and what decision must this presentation support?

4. The First Question: Is There Immediate Danger?

If the patient is unstable, do not give a long story first.

Lead with danger.

Example:

"I need urgent help with a 68-year-old man admitted with pneumonia who is now more hypoxic, hypotensive, confused, and has reduced urine output. I am worried about sepsis and respiratory failure."

Only after danger is clear should you provide details.

The danger-first question is:

What must the listener understand immediately to help prevent harm?

In emergency presentation, brevity and urgency matter.

5. Immediate Red Flags in Case Presentation

Your presentation should highlight red flags such as:

- unstable vital signs
- rising oxygen requirement
- chest pain
- new neurological deficit
- new confusion
- low glucose or repeated hypoglycemia
- suspected sepsis
- major bleeding
- reduced urine output
- severe electrolyte abnormality
- AKI

- fall with injury or anticoagulation
- uncontrolled pain
- suicidal risk
- treatment failure
- medication toxicity
- unsafe discharge
- unclear goals in serious illness
- pending result that may change management

Do not hide red flags deep in the presentation.

Place them where the listener can act.

6. The Core Structure of a Case Presentation

A useful structure is:

- one-line identification
- presenting syndrome
- timeline
- relevant background
- key examination and vital signs
- key investigations
- working diagnosis and differential
- active capacity failures
- treatment and response
- current priorities
- plan or request

This structure can be shortened or expanded depending on context.

The key is coherence.

7. The One-Line Identification

The first sentence should orient the listener.

It should include:

- age
- relevant background
- main presenting syndrome
- severity or reason for concern

Example:

“Mrs. James is an 84-year-old woman with frailty, dementia, CKD, and diabetes, admitted with pneumonia complicated by hypoxia, delirium, poor intake, and AKI.”

This is better than:

“Mrs. James is an 84-year-old female with a past medical history of…”

The first sentence should tell the listener why the case matters.

8. Present the Syndrome, Not Just the Symptom

Do not present isolated symptoms without interpretation.

Weak:

“She came in with weakness.”

Better:

“She presented with acute functional decline, poor intake, confusion, and falls.”

Weak:

“He came in with shortness of breath.”

Better:

“He presented with acute breathlessness, hypoxia, orthopnea, edema, and rising creatinine.”

Weak:

“He had abdominal pain.”

Better:

“He presented with sudden severe epigastric pain radiating to the back, vomiting, and dehydration.”

A syndrome gives the listener diagnostic direction.

9. Present the Timeline Clearly

The timeline should answer:

- When was the patient last well?
- What happened first?
- What happened next?
- What worsened?
- What improved?
- What treatment was started?
- What response occurred?
- What is the current state?

Example:

“She was at baseline until four days ago, when she developed cough and fever. Over the next two days she ate less, became increasingly confused, and fell once. In the emergency department she was hypoxic and had rising creatinine. After antibiotics and oxygen, fever and oxygen requirement improved, but confusion and poor mobility persist.”

This timeline tells the listener the trajectory.

Trajectory matters as much as diagnosis.

10. Present Relevant Background Only

Do not list every past condition unless relevant.

Instead, choose background that shapes the current problem.

For a patient with pneumonia and delirium, relevant background may include:

- dementia
- frailty
- CKD
- diabetes
- COPD
- heart failure
- immunosuppression
- baseline function
- recent admissions
- medicines increasing delirium risk

For chest pain, relevant background may include:

- coronary disease
- risk factors
- prior ECGs
- medications
- kidney disease
- bleeding risk
- family history
- previous similar episodes

For falls, relevant background may include:

- frailty
- dementia
- previous falls
- syncope history
- diabetes and hypoglycemia
- antihypertensives
- sedatives
- mobility baseline
- vision
- home support

The listener does not need every diagnosis.

They need the diagnoses that change interpretation and action.

11. Present Baseline Function

In Internal Medicine, baseline function should often appear early.

Include:

- usual mobility
- independence in activities
- cognition
- living situation
- caregiver support
- usual oxygen requirement where relevant
- usual kidney function where relevant
- usual symptom level

Example:

“At baseline, she lives with her daughter, walks with a stick, manages basic self-care with prompting, and is normally forgetful but not confused.”

Baseline helps the listener judge severity and recovery.

Without baseline, “improved” has no meaning.

12. Present Medicines When They Matter

Medicine details should be focused.

Mention medicines that affect the current problem.

Examples:

- anticoagulant in fall or bleeding
- insulin in confusion or hypoglycemia
- diuretics in AKI, dizziness, heart failure
- NSAIDs in AKI or GI bleeding
- opioids in drowsiness, constipation, falls
- sedatives in delirium or falls
- steroids in infection or glucose problems
- immunosuppressants in fever
- antibiotics already started
- recent medication changes

Example:

“Medication concerns include recent diuretic increase, NSAID use for knee pain, insulin despite poor intake, and a sleeping tablet, all of which may be contributing to AKI, dizziness, hypoglycemia risk, and falls.”

Medicine presentation should explain relevance, not recite lists.

13. Present Allergies Clearly When Relevant

If allergy affects treatment, present:

- medicine
- reaction
- severity

Example:

“She has a documented penicillin allergy with facial swelling and wheeze, so antibiotic choice is affected.”

Do not simply say:

“Allergic to penicillin.”

when the reaction is unknown.

Clarify when possible.

14. Present Examination Findings by Priority

Start with general condition and vital signs.

Then present focused findings.

Example:

“On examination, she is alert but inattentive and disoriented, respiratory rate is elevated, oxygen saturation is low on room air, chest has right basal crackles, she appears dry, abdomen is soft, no focal neurological deficit, and she needs assistance to stand.”

This is clinically useful because it includes:

- brain
- breathing
- hydration
- neurological danger
- mobility

Avoid giving irrelevant normal findings unless they matter.

15. Present Vital Signs as Meaning, Not Numbers Alone

Vital signs should be interpreted.

Weak:

“BP 110/70, pulse 104, sats 92, temp 38.”

Better:

“She is febrile, mildly tachycardic, oxygen saturation is below baseline, and blood pressure is lower than her usual, raising concern for systemic infection.”

Numbers matter, but their meaning matters more.

If exact numbers are needed, include them.

But do not stop at numbers.

16. Present Investigations Selectively

Include results that change diagnosis, severity, or plan.

Examples:

- hemoglobin if bleeding, anemia, fatigue, dyspnea
- white cell count or inflammatory markers in infection context
- renal function and electrolytes in AKI, diuretics, CKD, medicines
- glucose in confusion, diabetes, acute illness
- ECG in chest pain, palpitations, syncope, electrolyte risk
- imaging that confirms or challenges diagnosis
- cultures and sensitivities for infection
- troponin pathway in chest pain where relevant
- urinalysis only when clinically meaningful

Avoid dumping every lab.

Present trends when important.

Example:

"Creatinine is above her baseline but improving after fluids and holding NSAIDs. Potassium is currently safe."

Trends often matter more than isolated values.

17. Present the Working Diagnosis

After history, examination, and investigations, state what you think is happening.

Example:

"My working diagnosis is pneumonia causing hypoxia and delirium, complicated by poor intake and AKI."

Or:

"This appears to be mixed breathlessness from heart failure and COPD, with CKD limiting treatment choices."

Or:

"This is recurrent falls likely related to orthostatic hypotension and sedative burden, though arrhythmia has not yet been fully excluded."

Do not end with uncertainty alone.

Give your best current interpretation.

18. Present the Differential Diagnosis

The differential should be focused.

Include:

- most likely
- most dangerous
- alternatives that change management

- medication causes
- second diagnoses

Example:

“Differential includes pneumonia as most likely, but heart failure may also contribute to breathlessness, and PE is less likely but being considered because of tachycardia and reduced mobility.”

A good differential shows reasoning.

A weak differential is a long memorized list unrelated to the patient.

19. Present Capacity Failures

Capacity failures help the listener understand why the patient is sick and what must be repaired.

Example:

“Her main failing capacities are oxygenation, cognition, kidney clearance, nutrition, mobility, and medication safety.”

This is especially useful in complex patients.

Capacity failures prevent the team from reducing the case to one disease label.

20. Present Coupling Conditions

Mention factors that shape recovery and feasibility.

Examples:

- frailty
- dementia
- CKD
- polypharmacy
- living alone
- caregiver availability
- cost barriers
- poor health literacy
- substance use
- depression
- lack of transport
- language needs
- spiritual or cultural preferences
- treatment goals

Example:

“Recovery is complicated by frailty, mild dementia, living alone, and limited caregiver support, so discharge safety is a major issue.”

This tells the team why the plan must be realistic.

21. Present Treatment Given and Response

State:

- what was done
- why
- whether it helped
- what harm occurred
- what remains active

Example:

“She was started on antibiotics and oxygen. Fever and oxygen need have improved, but she remains confused and weak. Creatinine rose after admission, so NSAIDs were stopped and diuretics are currently held.”

Treatment response tests the diagnosis.

It also informs the next step.

22. Present Current Status

The listener needs to know where the patient is now.

Include:

- better, worse, or unchanged
- current danger
- unresolved symptoms
- current vital stability
- current function
- current cognition
- active medicine issues
- discharge readiness

Example:

“Today she is afebrile and off oxygen, but still intermittently delirious, eating poorly, and needing assistance to transfer. She is not discharge-ready.”

This is more useful than:

“She is stable.”

23. Present Patient Values When Relevant

In serious illness, chronic disease, frailty, refusal, palliative care, or major decisions, present the patient’s values.

Example:

“The patient understands the heart failure is advanced and prioritizes comfort and home time. He does not want ICU if recovery is unlikely.”

Or:

“She refuses admission because she is the sole caregiver for her husband, but capacity assessment suggests she understands the risks.”

Patient values change the plan.

They should not be left out.

24. Present the Main Clinical Question

A good presentation often ends with a question or recommendation.

Examples:

“My question is whether we should admit for monitoring or manage with urgent outpatient follow-up.”

“I need advice on balancing diuresis with worsening renal function.”

“I am concerned discharge is unsafe because cognition and mobility have not recovered.”

“I would like senior review because the diagnosis does not fully explain the deterioration.”

“I think we need a goals-of-care discussion today.”

The listener should know what decision is needed.

25. Present the Plan

A plan should be organized by priority.

Example:

Continue antibiotics and monitor oxygenation.

Assess and treat delirium contributors.

Repeat renal function tomorrow before restarting diuretic.

Review insulin because oral intake is poor.

Physiotherapy assessment before discharge.

Update daughter and clarify baseline.

Safety-net escalation for rising oxygen need, reduced urine output, worsening confusion, or hypotension.

This is clear and actionable.

The plan should not be a vague list of “continue current management.”

26. Short Case Presentations

Sometimes you need a short presentation.

Structure:

who the patient is

main syndrome

danger/current status

key background

what you need

Example:

“This is a 70-year-old man with COPD and heart failure admitted with acute breathlessness. He is now more hypoxic and tachypneic despite treatment for COPD, and he has new edema and rising creatinine. I am worried heart failure is contributing and need urgent senior review of oxygenation, fluid status, and treatment balance.”

Short does not mean incomplete.

It means focused.

27. Full Case Presentations

A full presentation may be needed for teaching, admission review, or case discussion.

It can include:

- opening one-liner
- presenting complaint and timeline
- relevant positives and negatives
- relevant past history
- medicines and allergies
- social and functional history
- examination
- investigations
- assessment and differential
- capacity failures
- plan
- patient values and follow-up

Even full presentations should be selective.

Do not lose the listener in unnecessary detail.

28. Presenting on Ward Round

Ward-round presentation should focus on change.

Include:

- overnight events
- patient’s report today
- nursing concerns
- vital sign trends
- key examination changes
- new results
- treatment response
- active problems
- today’s plan
- discharge barriers

Example:

“Overnight Mrs. James was less agitated but still confused. Oxygen requirement has reduced and fever has settled. Creatinine is slightly improved, but she ate poorly and has not mobilized beyond the chair. The active issues today are delirium recovery, nutrition, renal monitoring, and physiotherapy before discharge.”

Ward-round presentation is daily synthesis.

29. Presenting an Emergency Escalation

Emergency presentation must be urgent and structured.

Use:

- identity
- immediate problem
- current vital danger
- background that matters
- what has been done
- response
- what help is needed

Example:

“I need urgent review for Mr. Brown, 65, admitted with pneumonia. He has become more breathless, oxygen need has doubled, respiratory rate is rising, blood pressure is falling, and he is newly confused. Antibiotics were started earlier and fluids were given cautiously because of heart failure. I am worried about sepsis and respiratory failure. Please review now.”

In emergency presentation, do not begin with a long past history.

Start with the danger.

30. Presenting a Specialist Referral

A specialist referral should include a clear question.

Poor referral:

“Please review renal function.”

Better:

“I would like advice on AKI in a patient with heart failure who needs diuresis for pulmonary congestion but whose creatinine is rising. The question is how to balance decongestion with renal safety and which medicines should remain held.”

Include:

- reason for referral
- specific question
- current syndrome
- relevant history
- key results

- treatment so far
- urgency
- what decision depends on their input

A referral without a question wastes time.

31. Presenting Discharge Concerns

When presenting discharge readiness, include:

- medical stability
- function
- cognition
- medicines
- home support
- follow-up
- pending results
- patient and caregiver understanding

Example:

“Although pneumonia is improving, I do not think discharge is safe today. She remains intermittently confused, needs assistance to transfer, has renal function not yet stable after AKI, and her daughter has not been taught the medication changes. We need physiotherapy, medicine reconciliation, and daughter update before discharge.”

This presentation prevents premature discharge.

32. Presenting Uncertainty

Uncertainty should be clear and useful.

Weak:

“I am not sure what is going on.”

Better:

“The main uncertainty is whether breathlessness is primarily COPD, heart failure, or both. Infection markers are low, but edema and orthopnea suggest congestion. We are reassessing fluid status, ECG, chest imaging, and renal function.”

Useful uncertainty includes:

- what is uncertain
- what is likely
- what is dangerous
- what is being done to resolve it
- what would trigger escalation

33. Presenting Error or Concern

If an error or near miss occurred, present honestly and constructively.

Example:

“There was a medication reconciliation error at discharge. The patient restarted a medicine that had been held after AKI and returned dizzy with worsening renal function. The current plan is to stabilize, correct the medicine list, inform primary care, and review our discharge process.”

Avoid blame language.

Focus on:

- what happened
- patient impact
- immediate repair
- prevention

34. Common Student Pitfalls

Pitfall 1: Starting With Every Past Medical Condition

Start with the current syndrome and relevant background.

Pitfall 2: Hiding Danger

Lead with danger when the patient is unstable.

Pitfall 3: Presenting Facts Without Interpretation

Say what the facts mean.

Pitfall 4: Forgetting Timeline

Timeline organizes diagnosis and causality.

Pitfall 5: Ignoring Baseline Function

Baseline helps judge severity and discharge readiness.

Pitfall 6: Omitting Medicines

Medicine harm is common and must be presented when relevant.

Pitfall 7: Not Stating Your Assessment

Do not simply list data. Say what you think is happening.

Pitfall 8: Ending Without a Question or Plan

The listener should know what decision or action is needed.

35. Clinical Practice Box

When presenting a case, complete this structure:

Purpose of presentation:
Emergency help, ward round, referral, handover, teaching, discharge planning?

One-line identification:
Age, relevant background, main syndrome, severity.

Timeline:
Last well, onset, progression, treatment, response, current state.

Relevant background:
Conditions, baseline function, medicines, allergies, social context that matter now.

Examination and vitals:
Key positives, important negatives, current stability.

Investigations:
Important results and trends that change diagnosis or plan.

Working diagnosis:
What do you think is happening?

Differential and uncertainty:
What else is likely or dangerous? What remains unclear?

Capacity failures:
Oxygenation, circulation, cognition, clearance, defense, mobility, nutrition, comfort, agency, support.

Treatment and response:
What has been done? Did it help or harm?

Patient values:
What matters to the patient, if relevant?

Current priorities:
What needs attention now?

Question or plan:
What decision, advice, action, or support is needed?

36. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain was admitted with pneumonia, delirium, AKI, hypoglycemia, and falls. She is now afebrile and off oxygen. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin has been reduced. NSAIDs were stopped. She is eating better but remains weak and intermittently confused. Her daughter says she is not yet back to baseline and is worried about stairs at home.

Present this case on ward round.

Strong Presentation

“Mrs. Roberts is a 78-year-old frail woman with diabetes, CKD, heart failure, mild dementia, and chronic pain, admitted with pneumonia complicated by hypoxia, delirium, AKI, hypoglycemia, and falls.

She has improved from the pneumonia: she is now afebrile and off oxygen. However, the whole syndrome has not fully repaired. Her creatinine is improving but not back to baseline, her diuretic and ACE inhibitor remain held, insulin has been reduced after hypoglycemia, and NSAIDs were stopped because of kidney and heart failure risk.

Today the active issues are persistent intermittent confusion, weakness below baseline, renal recovery, medicine safety, pain control without NSAIDs, and discharge safety. Her daughter reports she is normally forgetful but not this confused and is worried about stairs at home.

My assessment is that she is medically improving but not yet clearly discharge-safe. The priorities today are to reassess delirium triggers, repeat renal function as planned, review volume status before any heart failure medicine restart, check glucose trend on reduced insulin, arrange physiotherapy for mobility and stairs, update her daughter, and complete medication reconciliation before discharge.”

Why This Works

It identifies the patient, syndrome, improvement, remaining capacity failures, medication issues, family concern, discharge risk, and today’s plan.

It does not simply say:

“Pneumonia improving, for discharge soon.”

It carries the real clinical pattern.

37. Student Takeaway

Case presentation becomes easier when the clinician asks:

Why am I presenting this patient?
What does the listener need to know now?
What is the one-line identity and main syndrome?
What is the timeline?
What background changes interpretation?
What are the key findings and results?
What do I think is happening?
What remains uncertain?
Which capacities are failing?
What treatment has been given, and did it work?
What matters to the patient?
What are the current priorities?
What question, decision, or plan must follow?

A good case presentation is not a memory test.

It is the spoken form of clinical synthesis.

The safe clinician presents cases clearly, honestly, selectively, and purposefully — so that danger is recognized, reasoning is visible, uncertainty is named, patient values are included, and the next step in care becomes easier to take.

Chapter 79. Case Discussion Made Easy

Case discussion is the structured conversation in which clinicians, students, teachers, teams, patients, and sometimes families think together about a clinical case to improve understanding, judgment, decisions, and care.

Patients do not usually say:

“Please discuss my case well.”

They say:

“Can you all agree on what is happening?”
“Why are different doctors saying different things?”
“What are the options?”
“What are the risks?”
“What would you recommend?”
“What happens if this treatment does not work?”
“Is there anything we are missing?”
“Please make sure everyone understands what matters to me.”

Clinicians may think:

“This case is complicated.”
“I need help thinking this through.”
“The diagnosis is uncertain.”
“The treatment options all have risks.”
“The family and team disagree.”
“The patient is not improving.”
“The guideline does not fit neatly.”
“We need a proper discussion.”

Case discussion is central to Internal Medicine because many important decisions cannot be made safely by isolated thinking.

A good case discussion can prevent diagnostic error.
A poor case discussion can reinforce premature closure.
A good case discussion can integrate multiple viewpoints.
A poor case discussion can become a display of hierarchy.
A good case discussion can clarify uncertainty.
A poor case discussion can bury uncertainty under confident language.
A good case discussion can align care with patient values.
A poor case discussion can talk about the patient while forgetting the person.
A good case discussion can convert complexity into wise action.

The first task is not to show who knows the most.

The deeper question is:

How can we think together so that this patient receives safer, clearer, more proportionate, and more life-serving care?

Case discussion becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Case Discussion?

Case discussion is collaborative clinical reasoning.

It may happen:

- on ward rounds
- after a case presentation
- during handover
- in multidisciplinary meetings
- during specialist referrals
- in morbidity and mortality meetings
- in teaching sessions
- during family meetings
- during ethics discussions
- at discharge planning meetings
- after unexpected deterioration
- when diagnosis or treatment is uncertain

A case discussion asks:

- What is happening?
- What is dangerous?
- What is most likely?
- What else could this be?
- What capacities are failing?
- What conditions shape recovery?
- What options exist?
- What are the benefits and harms?
- What matters to the patient?
- What should we do next?
- How will we know whether the plan is working?

Case discussion is the shared form of clinical judgment.

2. Case Discussion Is Different From Case Presentation

Case presentation communicates the case.

Case discussion reasons about the case.

Presentation says:

“Here is the patient’s story, findings, assessment, and plan.”

Discussion asks:

“Does this assessment make sense? What are we missing? What should we do next?”

Presentation should be clear and organized.

Discussion should be curious, disciplined, and purposeful.

A good discussion does not simply repeat the presentation.

It deepens it.

3. Case Discussion Is Not an Academic Debate Alone

Clinical discussion should not become detached from the patient.

It is not only about showing knowledge, naming rare diagnoses, or winning an argument.

A useful case discussion must return to care.

Ask:

- What decision does this discussion support?
- What action follows?
- What risk is reduced?
- What explanation becomes clearer?
- What patient value is included?
- What follow-up is arranged?
- What uncertainty is managed?

Discussion that does not change understanding, safety, or care may be interesting but incomplete.

4. The First Question: Is There Immediate Danger?

Before discussing details, ask whether urgent action is needed.

If the patient is unstable, do not spend too long in abstract discussion.

Immediate danger includes:

- airway compromise
- severe breathlessness
- rising oxygen requirement
- shock
- chest pain with instability
- new neurological deficit
- seizure
- severe hypoglycemia
- sepsis
- major bleeding
- reduced consciousness
- severe electrolyte abnormality
- AKI with danger
- overdose or withdrawal
- severe uncontrolled pain
- suicidal intent
- unsafe agitation

- unsafe discharge

The danger-first question is:

Does the patient need action now while the discussion continues?

Sometimes the wisest discussion begins with:

“Let us stabilize first, then return to the full reasoning.”

5. Immediate Red Flags During Case Discussion

Red flags include:

- no one can state the main syndrome
- everyone focuses on one lab but not the patient
- serious danger is not being addressed
- a nurse or family concern is dismissed
- uncertainty is hidden
- disagreement is avoided rather than clarified
- a junior clinician is afraid to speak
- patient values are not mentioned
- treatment burden is ignored
- discharge pressure dominates safety
- several teams give conflicting recommendations
- medicines are not reconciled
- goals of care are unclear in serious illness
- discussion produces no plan
- no one owns follow-up tasks

When these appear, the discussion itself needs correction.

6. The Case Discussion Pathway

A practical pathway is:

- clarify the purpose of the discussion
- restate the main syndrome
- identify immediate danger
- review the timeline
- identify active problems
- map capacity failures
- identify coupling conditions
- discuss diagnosis and differential
- discuss treatment options
- weigh benefit, harm, burden, and feasibility

include patient values

name uncertainty

agree on priorities

assign tasks

define repair trajectory

document and communicate the outcome

This pathway keeps discussion from becoming scattered.

7. Clarify the Purpose

Begin by asking:

“What are we trying to decide?”

Possible purposes include:

diagnosis

admission or discharge

treatment escalation

treatment de-escalation

medicine safety

investigation plan

specialist referral

goals of care

ethical dilemma

family conflict

rehabilitation plan

palliative transition

learning after error

system improvement

A discussion without a purpose may wander.

A clear purpose focuses attention.

Examples:

“We are discussing whether this patient’s breathlessness is mostly heart failure, COPD, or mixed.”

“We are discussing whether discharge is safe today.”

“We are discussing whether ongoing ICU treatment is proportionate.”

“We are discussing why this patient is not improving despite antibiotics.”

8. Restate the Main Syndrome

The discussion should begin with the clinical pattern.

Examples:

- acute breathlessness with hypoxia
- fever with delirium and AKI
- chest pain with exertional features
- falls with dizziness and polypharmacy
- weight loss with anemia
- progressive frailty with repeated admissions
- uncontrolled pain in advanced illness
- persistent symptoms despite treatment

Do not begin with a long list of diagnoses.

Begin with the syndrome that requires reasoning.

A case discussion becomes clearer when everyone is discussing the same problem.

9. Identify Immediate Danger

Ask:

- What could harm the patient today?
- What must not be missed?
- What must be stabilized?
- What requires monitoring?
- What is time-sensitive?
- What would make this unsafe?

Example:

In a case of fever and confusion, danger may include sepsis, hypoxia, hypoglycemia, meningitis, stroke, AKI, medication toxicity, or unsafe behavior.

In a case of discharge planning, danger may include falls, medication error, caregiver collapse, delirium, or unowned pending results.

Naming danger focuses the discussion.

10. Review the Timeline Together

The timeline often reveals the answer.

Discuss:

- last known well
- first symptom
- sequence of symptoms
- recent medication changes
- recent admissions
- treatment started
- response to treatment
- new problems after treatment

- worsening points
- partial recovery
- current status

A timeline can reveal:

- cause and effect
- medication harm
- delayed diagnosis
- treatment failure
- second diagnosis
- chronic decline
- acute-on-chronic deterioration

When discussion becomes confused, return to:

“What happened first?”

11. Identify Active Problems

Agree on the active problems.

Active problems are not the same as the full problem list.

A patient may have ten chronic diagnoses, but only five active problems today.

Examples:

- hypoxia
- delirium
- AKI
- falls
- pain
- poor intake
- fluid overload
- medication toxicity
- unsafe discharge
- family conflict
- unclear goals
- pending test

Listing active problems allows the team to prioritize.

Ask:

“What must be addressed today?”

12. Map Capacity Failures

Capacity mapping helps the discussion move beyond disease labels.

Ask:

- Is oxygenation failing?
- Is circulation failing?
- Is brain coordination failing?
- Is clearance failing?
- Is defense failing?
- Is energy regulation failing?
- Is mobility failing?
- Is nutrition failing?
- Is comfort failing?
- Is agency failing?
- Is support failing?

Example:

A patient with pneumonia may be improving microbiologically but still has cognition, mobility, nutrition, and clearance failures.

This means the case is not solved.

Capacity failures show what remains to repair.

13. Identify Coupling Conditions

Coupling conditions explain why this case is difficult.

Examples:

- frailty
- CKD
- heart failure
- dementia
- depression
- chronic pain
- polypharmacy
- addiction
- poverty
- transport barriers
- language barriers
- caregiver stress
- treatment burden
- limited resources
- patient goals
- previous trauma

low health literacy

lack of follow-up reliability

Discuss:

“What makes this patient different from the standard case?”

The answer often explains why the textbook plan does not fit.

14. Discuss the Diagnosis

Ask:

What is the most likely diagnosis?

What evidence supports it?

What evidence argues against it?

What dangerous diagnosis must not be missed?

Is there more than one diagnosis?

Could treatment itself be causing symptoms?

Could background disease be misleading us?

Does the patient’s response to treatment support the diagnosis?

What else would we expect if this diagnosis were correct?

Good diagnostic discussion is not simply naming possibilities.

It weighs them.

15. Ask: What Does Not Fit?

This is one of the most important questions in case discussion.

Ask:

“What does not fit our current explanation?”

Examples:

pneumonia improving, but confusion worsening

COPD treated, but edema increasing

UTI diagnosed, but no urinary symptoms and delirium persists

pain called musculoskeletal, but weight loss is present

anxiety diagnosed, but syncope occurred

fall called mechanical, but patient cannot recall falling

dementia assumed, but change was acute

heart failure treated, but creatinine rising and dizziness worsening

What does not fit may be the clue that prevents harm.

16. Discuss Treatment Response

Treatment response is evidence.

Ask:

- What improved after treatment?
- What did not improve?
- What worsened?
- Did treatment cause harm?
- Is the response too slow?
- Is the response consistent with diagnosis?
- Is there a complication?
- Should treatment continue, change, stop, or be escalated?

Example:

If antibiotics improve fever but not breathlessness, discuss heart failure, PE, anemia, COPD, or deconditioning.

If diuresis improves breathing but worsens renal function, discuss the heart-kidney balance.

If opioids improve pain but cause delirium, discuss safer pain strategy.

Treatment response should guide the next decision.

17. Discuss Investigations

Investigations should be discussed by purpose.

Ask:

- What question does this test answer?
- Will it change management?
- Is it urgent?
- Is it safe?
- Is it available?
- What are the consequences of a positive result?
- What are the consequences of a negative result?
- What if the result is indeterminate?
- Is the patient able to undergo the test?
- Does the test fit the patient's goals?

Avoid both extremes:

- testing everything because of uncertainty
- avoiding needed tests because the case is complicated

The wise question is:

Which investigation best reduces meaningful uncertainty or risk?

18. Discuss Treatment Options

For each treatment option, ask:

- What benefit is expected?

How soon?

What harm is possible?

What burden is imposed?

What monitoring is required?

What happens if we do nothing?

What alternative exists?

Does it fit the patient's physiology?

Does it fit kidney and liver function?

Does it fit frailty?

Does it fit goals?

Is it feasible locally?

A treatment is not good just because it is available.

A treatment is good when it is likely to help this patient more than harm them.

19. Discuss Medicines Carefully

Medication discussion should include:

medicines causing the problem

medicines needed urgently

medicines that should be held

medicines that should be restarted

interactions

renal or liver adjustment

high-risk medicines

deprescribing opportunities

patient adherence and access

discharge medicine clarity

Ask:

"Could any medicine be causing or worsening this?"

and

"What medicine decision must be made today?"

Many case discussions become clearer once medicines are reviewed.

20. Discuss Patient Values

A complete case discussion includes what matters to the patient.

Ask:

What does the patient understand?

What are they hoping for?

- What are they afraid of?
- What outcome would be unacceptable?
- What burden are they willing to accept?
- Who should be involved?
- What is their preferred place of care?
- What previous wishes are known?
- Does the current plan fit their values?

This is essential in:

- serious illness
- frailty
- advanced dementia
- palliative care
- high-risk procedures
- treatment refusal
- ICU decisions
- dialysis decisions
- anticoagulation decisions
- discharge planning

Do not discuss the body while forgetting the person.

21. Discuss Ethics When Needed

Ethical issues may include:

- consent
- capacity
- refusal
- confidentiality
- family disagreement
- non-beneficial treatment
- resource limits
- discharge safety
- treatment burden
- goals of care
- safeguarding
- restraint
- pain relief
- bias
- fairness

Ask:

- Who should decide?
- Does the patient have capacity?
- Has the patient been informed?
- Is the treatment proportionate?
- Are we respecting dignity?
- Are we relieving suffering?
- Are we being fair?
- Are we acting because treatment helps or because we are afraid to stop?

Ethical clarity often improves clinical clarity.

22. Discuss Function and Discharge

When discharge is possible, discuss:

- mobility
- transfers
- stairs
- cognition
- medicines
- eating and drinking
- toileting
- pain
- wound care
- devices
- caregiver support
- transport
- follow-up
- pending results
- safety-netting

Ask:

“Can repair continue safely outside hospital?”

Discharge discussion should include nursing, therapy, pharmacy, social work, patient, and caregiver input where relevant.

A purely medical discussion can produce unsafe discharge.

23. Discuss Prognosis and Trajectory

In serious illness, ask:

- Is the patient improving?

Are admissions becoming more frequent?

Is functional baseline declining?

Is treatment tolerance decreasing?

Are kidneys, lungs, heart, or brain losing reserve?

Is the patient spending more time in hospital?

Is suffering increasing?

Does the patient understand the trajectory?

Should palliative care be involved?

Should escalation limits be discussed?

Trajectory matters because the same treatment may be appropriate in one stage and burdensome in another.

Case discussion should notice when the clinical story is changing direction.

24. Discuss Uncertainty Honestly

A good case discussion does not require pretending certainty.

Name uncertainty:

diagnostic uncertainty

prognostic uncertainty

treatment uncertainty

ethical uncertainty

discharge uncertainty

system uncertainty

Then ask:

What can be clarified now?

What must be monitored?

What is the safest provisional plan?

What would make us change direction?

What should the patient be told?

What follow-up is needed?

Uncertainty becomes safer when it is named, shared, and managed.

25. Encourage Different Voices

Different team members see different realities.

Ask:

What does nursing see?

What does pharmacy think?

What does physiotherapy think?

What does occupational therapy think?

What does social work know?

What does the family report?

What does the patient say?

What does the junior clinician worry about?

What does the consultant think?

What does the specialist recommend?

A good case discussion invites relevant voices.

Hierarchy should not silence safety.

26. Avoid Groupthink

Groupthink occurs when everyone agrees too quickly, often because of hierarchy, fatigue, or desire to avoid conflict.

Warning signs:

no one asks what else it could be

dissent is discouraged

the first diagnosis becomes fixed

family or nurse concern is ignored

discussion ends before uncertainty is explored

everyone assumes the senior person must be right

no one wants to delay discharge

everyone repeats the same phrase without evidence

Antidote questions:

“What are we missing?”
“What would make this diagnosis wrong?”
“What is the most dangerous alternative?”
“Does anyone see this differently?”
“What would the nurse or family say?”
“What if the patient returns tomorrow worse?”

Healthy disagreement improves safety.

27. Manage Disagreement

Disagreement is not failure.

It may reveal complexity.

When disagreement occurs, ask:

What exactly do we disagree about?

Diagnosis?

Risk?

Treatment benefit?

Treatment burden?

- Patient values?
- Prognosis?
- Discharge safety?
- Resource use?
- Ethical principle?
- Evidence interpretation?

Then return to:

- facts
- patient status
- values
- risks
- options
- responsibilities
- next review point

If disagreement persists, seek senior, specialist, ethics, or multidisciplinary support.

The patient should not be harmed by unresolved team conflict.

28. End With Priorities

A case discussion should end with agreed priorities.

Examples:

- stabilize oxygenation
- repeat renal function
- review medicines
- get collateral history
- investigate anemia
- ask physiotherapy to assess mobility
- call family
- arrange goals-of-care meeting
- stop sedative
- treat constipation
- reassess after antibiotics
- refer to specialist
- delay discharge until cognition improves
- create palliative crisis plan

Priorities should be ordered.

Not everything can be first.

29. Assign Tasks and Ownership

Every agreed action needs:

- owner
- timeframe
- expected result
- escalation trigger
- documentation

Example:

“Dr. A will review renal function this afternoon and decide on diuretic restart.”

“Nurse B will monitor confusion and oral intake overnight and call if agitation or drowsiness worsens.”

“Physiotherapy will assess transfers before discharge.”

“Dr. C will call daughter today to clarify baseline and update plan.”

Discussion without task ownership becomes drift.

30. Define the Repair Trajectory

End by asking:

- What should improve?
- How soon?
- What will we monitor?
- What would show treatment failure?
- What would show harm?
- What would make discharge safe?
- What would require escalation?
- When will we discuss again?

Example:

“If this is pneumonia-driven delirium, we expect oxygen, fever, attention, appetite, and mobility to improve over the next few days. If confusion worsens despite infection improvement, we need to reassess medicines, constipation, retention, stroke, metabolic causes, and environment.”

Repair trajectory keeps discussion connected to reality.

31. Document the Discussion

Document:

- who participated
- main issue discussed
- clinical synthesis
- key uncertainties
- patient values
- agreed plan

- tasks and owners
- escalation triggers
- follow-up or review point
- family communication if relevant
- dissent or unresolved issue when important

A discussion that is not documented may be lost.

Documentation turns conversation into continuity.

32. Communicate the Outcome to the Patient

After team discussion, the patient should not be left confused.

Explain:

- what was discussed
- what the team thinks is happening
- what the plan is
- what remains uncertain
- what the patient should expect
- what needs to happen next
- what role the patient or family has

Example:

“We discussed your case as a team. The infection is improving, but your weakness and confusion mean you are not ready to go home safely today. We are checking your kidneys, reviewing medicines, and asking physiotherapy to assess your walking. We will update your daughter this afternoon.”

The patient should experience discussion as care, not secrecy.

33. Case Discussion in Teaching

In teaching, case discussion should help learners reason.

Useful teaching questions:

- What is the main syndrome?
- What is dangerous?
- What is most likely?
- What does not fit?
- What capacity is failing?
- What background matters?
- What medicines matter?
- What would you do first?
- What would you monitor?
- What would you tell the patient?
- What would make you change course?

Teaching discussion should not humiliate.

It should make thinking visible.

34. Case Discussion After Error

After error or near miss, discussion should ask:

- What happened?
- What was the patient impact?
- What was the clinical reasoning?
- What information was missed?
- What communication failed?
- What system factor contributed?
- Was there bias?
- What repair is needed?
- What should change?
- Who owns the improvement?

The goal is not blame alone.

The goal is truth, repair, and prevention.

35. Worked Case 1: Not Improving Despite Antibiotics

A 72-year-old man with COPD and heart failure is treated for pneumonia. Fever improves, but breathlessness worsens and oxygen requirement rises.

Discussion Purpose

Why is the patient not improving?

Syndrome

Persistent acute breathlessness despite infection treatment.

What Does Not Fit?

Fever improved, but oxygenation worsened. Pneumonia alone may not explain current deterioration.

Differential

Heart failure, PE, COPD exacerbation, pneumonia complication, anemia, arrhythmia, fluid overload, aspiration.

Capacity Failures

Oxygenation, circulation, possibly clearance.

Discussion Outcome

Reassess chest, fluid status, ECG, imaging, renal function, anemia, PE risk, treatment response, and escalation plan.

Repair Trajectory

Oxygen need stabilizes, cause of persistent breathlessness clarified, treatment adjusted, monitoring intensified.

36. Worked Case 2: Discharge Debate

An 86-year-old woman admitted with UTI and delirium is afebrile and blood tests improved. She remains intermittently confused and cannot transfer safely. Bed pressure is high.

Discussion Purpose
Is discharge safe?

Syndrome
Recovering infection with persistent delirium and functional decline.

Danger
Falls, medication error, poor intake, caregiver overload, readmission.

Capacity Failures
Cognition, mobility, agency, support.

Team Voices
Nursing reports night confusion. Physiotherapy says transfers unsafe. Daughter says not baseline.

Discussion Outcome
Discharge delayed or supported alternative arranged. Continue delirium care, mobility rehabilitation, medicine review, caregiver planning.

Repair Trajectory
Cognition improves, transfers safe or support arranged, daughter prepared, discharge becomes realistic.

37. Worked Case 3: Anticoagulation in Frailty

An 82-year-old man with atrial fibrillation, prior stroke, recurrent falls, CKD, and mild dementia is being considered for anticoagulation.

Discussion Purpose
Balance stroke prevention and bleeding/fall risk.

Syndrome
Long-term stroke prevention decision in frailty with falls and cognitive vulnerability.

Benefits
Reduced stroke risk.

Harms
Bleeding, medication errors, fall-related injury, monitoring or adherence burden depending on medicine used.

Patient Values
He fears disabling stroke but also values independence and fears bleeding after a previous fall.

Coupling Conditions
Falls, CKD, dementia, caregiver support, medicine management.

Discussion Outcome
Use shared decision-making. Consider fall prevention, medicine supervision, renal function, local guidance, bleeding risk, patient values, and review plan.

Repair Trajectory
Decision is informed, medicine plan safe if chosen, falls addressed, patient and caregiver understand risks.

38. Worked Case 4: Advanced Illness and ICU Question

A patient with advanced COPD, severe heart failure, repeated admissions, and worsening frailty is deteriorating. The team is unsure whether ICU transfer is appropriate.

Discussion Purpose
Escalation and proportionality.

Syndrome
Advanced cardiopulmonary disease with acute deterioration on background declining reserve.

Danger
Respiratory failure and dying process.

Key Questions
Is deterioration reversible? What would ICU realistically achieve? What burdens would it impose? What has patient previously said? What does family understand?

Patient Values
Patient previously said he did not want machines if unlikely to return home.

Discussion Outcome
Treat reversible symptoms, hold goals-of-care discussion, involve family and palliative care, document escalation plan.

Repair Trajectory
Breathlessness relieved, care aligns with values, burdensome non-beneficial treatment avoided if inappropriate, family supported.

39. Worked Case 5: Persistent Pain and Opioid Harm

A patient with chronic pain receives escalating opioids. Pain remains high, but the patient is constipated, drowsy, falling, and demoralized.

Discussion Purpose
How to treat pain without worsening harm.

Syndrome
Chronic pain with opioid-related capacity harm.

Capacity Failures
Comfort, bowel clearance, alertness, mobility, mood, agency.

What Does Not Fit?
Increasing opioids has not restored function and is worsening safety.

Discussion Outcome
Reassess pain mechanism, red flags, mood, sleep, dependence risk, bowel plan, non-opioid options, physical rehabilitation, psychological support, and safer goals.

Repair Trajectory
Pain becomes more manageable, bowels improve, drowsiness reduces, falls decrease, function improves.

40. Worked Case 6: Complex Multimorbidity With Conflicting Plans

A patient with heart failure, CKD, diabetes, anemia, chronic pain, and depression has multiple specialist recommendations. The medicine list is growing and the patient is overwhelmed.

Discussion Purpose
Integrate the plan.

Syndrome
Multimorbidity with polypharmacy, treatment burden, and fragmented recommendations.

Capacity Failures

Circulation, clearance, glucose regulation, comfort, mood, agency, medicine safety.

Coupling Conditions

CKD, frailty, cost, health literacy, multiple prescribers, patient overwhelm.

Discussion Outcome

Identify lead clinician, reconcile medicines, prioritize immediate danger, simplify plan, clarify monitoring, involve pharmacist, align with patient goals.

Repair Trajectory

Plan becomes coherent, medicine burden decreases, monitoring assigned, patient understands next steps.

41. Common Student Pitfalls

Pitfall 1: Discussing Rare Diagnoses Before Stabilizing Danger

Danger comes first.

Pitfall 2: Letting the Discussion Wander

Clarify the decision the discussion must support.

Pitfall 3: Ignoring What Does Not Fit

The mismatch may be the key.

Pitfall 4: Treating Disagreement as Failure

Respectful disagreement can improve care.

Pitfall 5: Omitting Patient Values

Clinical reasoning without the patient's goals is incomplete.

Pitfall 6: Ignoring Team Voices

Nursing, pharmacy, therapy, social work, and family may hold crucial information.

Pitfall 7: Ending Without a Plan

Discussion must lead to priorities, tasks, and review.

Pitfall 8: Not Documenting the Outcome

Undocumented discussion is easily lost.

42. Clinical Practice Box

When discussing a case, complete this structure:

Purpose:
What are we trying to decide or understand?

Main syndrome:
What clinical pattern organizes the case?

Immediate danger:
What could harm the patient now?

Timeline:
What happened first, next, after treatment, and now?

Active problems:
What needs attention today?

Capacity failures:
Oxygenation, circulation, cognition, clearance, defense, mobility, nutrition, comfort, agency, support.

Coupling conditions:
Frailty, multimorbidity, medicines, social context, goals, resources, caregiver support.

Diagnosis and differential:
What is most likely, most dangerous, and what does not fit?

Treatment response:
What helped, failed, or harmed?

Options:
What can we do? What are benefits, harms, burdens, and feasibility?

Patient values:
What matters to the patient?

Uncertainty:
What remains unclear, and how will we manage it?

Priorities and tasks:
What must happen now, who will do it, and by when?

Repair trajectory:
What should improve, and what would trigger reassessment?

Documentation and communication:
Who will record and explain the outcome?

43. Mini-Case for Practice

A 79-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and depression was admitted with pneumonia, delirium, AKI, hypoglycemia, and falls. Pneumonia has improved, but she remains weak, intermittently confused, constipated, and afraid to walk. Her creatinine is improving but not baseline.

Diuretic and ACE inhibitor are held. Insulin is reduced. NSAIDs were stopped, but knee pain is worse. Her daughter says she is not safe at home. The ward is under pressure to discharge.

Apply the case discussion approach.

Purpose
Decide whether discharge is safe and what must be addressed before leaving.

Main Syndrome
Recovering pneumonia with incomplete repair: persistent delirium vulnerability, AKI recovery, frailty-related weakness, falls risk, constipation, pain, and medicine complexity.

Immediate Danger
Unsafe discharge, falls, medication confusion, AKI recurrence, heart failure recurrence while medicines are held, hypoglycemia, worsening confusion, caregiver strain.

Timeline
Pneumonia caused hypoxia and delirium. AKI and hypoglycemia developed during acute illness. Infection improved, but cognition, mobility, renal function, bowel function, pain, and medicine safety remain unresolved.

Active Problems
Weakness, intermittent confusion, constipation, kidney recovery, pain without NSAIDs, held heart failure medicines, reduced insulin, falls risk, daughter concern, discharge pressure.

Capacity Failures
Cognition, mobility, clearance, comfort, bowel clearance, glucose regulation, circulation reserve, agency, caregiver-supported safety.

Coupling Conditions
Frailty, dementia, CKD, heart failure, diabetes, chronic pain, polypharmacy, daughter's capacity, home stairs, ward pressure.

Discussion
The team should ask what does not fit the discharge plan. Although pneumonia improved, the patient's functional and cognitive repair is incomplete. Discharge today may transfer unresolved risk to the daughter and home environment.

Options
Discharge today with support, delay discharge for further assessment, transfer to rehabilitation if available, arrange increased home support, review pain and constipation, reassess medicines and renal function, involve physiotherapy and pharmacy.

Patient Values
The patient wants home, but may not fully appreciate risk if delirium persists. Daughter values safety and is worried about stairs.

Priorities
Assess capacity, physiotherapy for walking and stairs, bowel treatment, pain plan avoiding NSAIDs, renal and volume review before heart failure medicine decisions, glucose review, daughter meeting, medication reconciliation, clear safety-net.

Repair Trajectory
Discharge becomes safe when cognition is stable or supervised, transfers and stairs are safe or supported, constipation improves, pain is manageable without unsafe medicines, renal function and heart failure plan are clear, glucose is safe, and daughter understands the plan.

Outcome
The discussion should end with assigned tasks and documented discharge criteria, not vague agreement to "review later."

44. Student Takeaway

Case discussion becomes easier when the clinician asks:

Why are we discussing this case?
What is the main syndrome?
What is dangerous now?
What does the timeline show?
What does not fit?
Which capacities are failing?
What coupling conditions make this case complex?
What are the diagnostic possibilities?
What has treatment shown us?
What are the options, benefits, harms, and burdens?
What matters to the patient?
What remains uncertain?
What must happen next, who owns it, and when will we reassess?

A good case discussion is shared clinical reasoning in service of the patient.

The safe clinician does not use discussion to display knowledge or avoid decisions. The safe clinician uses discussion to clarify danger, invite perspectives, challenge assumptions, include values, manage uncertainty, assign responsibility, and move the patient toward a safer and more coherent repair trajectory.

Chapter 80. Clinical Reasoning Under Pressure Made Easy

Clinical reasoning under pressure is the ability to think clearly, act safely, prioritize wisely, communicate effectively, and revise decisions when time, emotion, uncertainty, workload, or danger make care difficult.

Patients do not usually say:

“Please reason well under pressure.”

They say:

“Please help me now.”
“I feel like I cannot breathe.”
“Is this serious?”
“Why is everyone rushing?”
“Do I need to go to hospital?”
“Can I wait?”
“Please do not miss something.”
“Please tell me what is happening.”

Clinicians may think:

“There are too many patients.”
“This patient is deteriorating.”
“I do not have all the information.”
“I must decide quickly.”
“The family is anxious.”
“The nurse is worried.”
“The guideline is not enough.”
“I need senior help.”
“I feel overwhelmed.”

Clinical reasoning under pressure is central to Internal Medicine because real clinical work rarely happens in ideal conditions.

The ward is busy.
The emergency room is full.
The patient is unstable.
The notes are incomplete.
The family is distressed.
The test results are delayed.
The diagnosis is uncertain.
The night team is short-staffed.
The patient has multimorbidity.
The guideline does not fit neatly.
The clinician is tired.

The first task is not to know everything immediately.

The deeper question is:

What is the safest next step, given the danger, uncertainty, patient context, and resources available now?

Clinical reasoning under pressure becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Under pressure, this loop must become simpler, sharper, and faster.

1. What Is Clinical Reasoning Under Pressure?

Clinical reasoning under pressure means thinking and acting when conditions are difficult.

Pressure may come from:

- time shortage
- patient deterioration
- diagnostic uncertainty
- incomplete information
- multiple competing tasks
- emotional intensity
- family distress
- resource limitations
- system crowding
- night shifts
- fatigue
- fear of missing danger
- fear of over-treatment
- lack of senior support
- conflicting advice
- patient refusal
- ethical tension

The pressured clinician must still ask:

- What is dangerous now?
- What syndrome is present?
- Which capacity is failing?
- What must be done immediately?
- What can safely wait?
- What information is missing?
- Who can help?
- What should be communicated?
- What must be reassessed?

Pressure does not remove the need for reasoning.

Pressure makes disciplined reasoning more important.

2. Pressure Narrows Attention

When pressure rises, attention narrows.

This can help in emergencies.

A crashing patient requires focus.

But narrowed attention can also cause harm.

The clinician may miss:

- medication toxicity
- second diagnosis
- family baseline concern
- abnormal vital sign trend
- pending result
- capacity issue
- hypoglycemia
- delirium
- unsafe discharge
- treatment burden
- patient values

Under pressure, the clinician must deliberately widen attention after immediate danger is addressed.

The sequence is:

Focus sharply → stabilize danger → widen view → reassess the whole pattern.

3. Pressure Can Distort Judgment

Pressure can push clinicians toward:

- premature closure
- over-testing
- under-testing
- defensive medicine
- rushed discharge
- unnecessary admission
- over-treatment
- under-treatment
- poor communication
- missed documentation
- ignoring patient values
- dismissing nursing concern
- forgetting medicines
- failing to safety-net
- failing to ask for help

The pressured mind often wants a quick label.

But quick labels can become dangerous.

A safe clinician uses structure when pressure rises.

4. The First Question: Is There Immediate Danger?

Under pressure, begin with danger.

Ask:

- Is the airway safe?
- Is breathing safe?
- Is circulation safe?
- Is consciousness safe?
- Is glucose safe?
- Is there sepsis?
- Is there bleeding?
- Is there stroke?
- Is there myocardial infarction?
- Is there pulmonary embolism?
- Is there severe electrolyte disturbance?
- Is there AKI with danger?
- Is there overdose or withdrawal?
- Is there severe pain?
- Is there suicidal risk?
- Is the patient unsafe to leave?

The danger-first question is:

What could kill, permanently harm, or rapidly destabilize this patient if I do not act now?

This question prevents distraction.

It protects the patient from delay.

5. Immediate Red Flags Under Pressure

Red flags that require urgent action include:

- airway compromise
- severe breathlessness
- rising oxygen requirement
- low oxygen saturation
- shock or hypotension
- severe chest pain
- new neurological deficit
- seizure
- reduced consciousness
- new confusion

- severe hypoglycemia
- severe hyperglycemia with dehydration or drowsiness
- suspected sepsis
- major bleeding
- black stool with collapse or weakness
- severe abdominal pain
- reduced urine output
- severe electrolyte abnormality
- dangerous arrhythmia
- syncope with concerning features
- fall with head injury or anticoagulation
- overdose
- withdrawal risk
- severe agitation or violence risk
- suicidal intent
- uncontrolled pain or distress
- unsafe discharge situation

When these are present, do not continue routine work as usual.

Stop.

Prioritize.

Escalate.

Act.

6. The Pressure Reasoning Loop

A simplified reasoning loop under pressure is:

- stabilize danger
- name the syndrome
- identify the most threatened capacity
- take the safest immediate action
- call for help early
- communicate clearly
- reassess response
- widen the differential
- document key decisions
- hand over risk

This loop is not complicated.

It is designed for difficult moments.

When overwhelmed, return to it.

7. Step 1: Stabilize Danger

If the patient is unstable, immediate stabilization comes before full diagnostic certainty.

Examples:

- give oxygen when hypoxic
- check glucose when confused or drowsy
- call emergency help for shock or severe respiratory distress
- start local sepsis pathway when sepsis is suspected
- manage severe bleeding urgently
- treat severe hyperkalemia according to local emergency protocol
- protect airway if consciousness is reduced
- manage seizure according to local protocol
- reduce immediate self-harm risk
- treat severe pain while assessing cause

Stabilization does not mean diagnosis is complete.

It means danger is being controlled while reasoning continues.

8. Step 2: Name the Syndrome

Under pressure, naming the syndrome prevents chaos.

Do not begin with a final diagnosis if you do not have one.

Say:

- acute breathlessness with hypoxia
- chest pain with collapse
- fever with confusion
- fall with possible syncope
- AKI with reduced urine output
- severe abdominal pain with vomiting
- new neurological deficit
- agitation with possible delirium or withdrawal
- frailty with acute functional decline
- severe pain in advanced cancer

A syndrome is enough to guide the first actions.

Example:

“This is acute breathlessness with hypoxia in a patient with COPD and heart failure.”

That is safer than prematurely saying:

“It is just COPD.”

9. Step 3: Identify the Most Threatened Capacity

Ask:

- Is oxygenation failing?
- Is circulation failing?
- Is brain coordination failing?
- Is clearance failing?
- Is glucose regulation failing?
- Is defense failing?
- Is comfort failing?
- Is mobility safety failing?
- Is agency failing?

The most threatened capacity tells you what must be protected first.

Examples:

Hypoxia

Priority: oxygenation and cause.

Shock

Priority: circulation and source.

Confusion

Priority: brain safety, glucose, oxygen, infection, medicines, metabolic causes.

AKI

Priority: clearance, potassium, fluid balance, medicine safety.

Severe pain

Priority: comfort, danger diagnosis, safe analgesia.

Unsafe discharge

Priority: mobility, cognition, medicines, support, follow-up.

Capacity thinking keeps attention on life functions.

10. Step 4: Choose the Safest Immediate Action

Under pressure, ask:

What is the safest next step?

Not:

What is the perfect final plan?

Examples:

- unstable patient: call senior help now
- hypoxic patient: oxygen, assessment, urgent review
- confused diabetic patient: check glucose immediately
- fever with hypotension: treat as possible sepsis while assessing

fall on anticoagulant: assess head injury risk and local imaging pathway

AKI with hyperkalemia: urgent management and medicine review

patient with chest pain: ECG and local chest pain pathway

suicidal patient: ensure immediate safety and urgent mental health assessment

unsafe discharge: pause discharge and reassess

The safest next step moves the patient away from danger while preserving future options.

11. Step 5: Call for Help Early

Pressure often makes clinicians delay escalation.

They may think:

“I should manage this myself.”
“I do not want to bother the senior.”
“I need more information first.”
“Maybe it will settle.”

But delayed escalation can harm.

Call for help when:

the patient is unstable

the patient is deteriorating

diagnosis is uncertain and danger is possible

treatment is failing

several problems conflict

high-risk medicines are involved

ICU or higher care may be needed

capacity or ethics is complex

family conflict is intense

discharge feels unsafe

you feel out of depth

Escalation is not failure.

It is good judgment.

12. Step 6: Communicate Clearly

Under pressure, communication must be brief, specific, and action-oriented.

Weak:

“Can you come and see this patient? They do not look good.”

Better:

“I need urgent review. This patient with pneumonia is now more hypoxic, respiratory rate is rising, blood pressure is falling, and they are newly confused. I am worried about sepsis and respiratory failure.”

Include:

- who the patient is
- what is happening now
- why you are worried
- what has been done
- what help is needed
- how urgent it is

Clear communication reduces delay.

13. Step 7: Reassess Response

After action, reassess.

Ask:

- Did breathing improve?
- Did blood pressure improve?
- Did pain improve?
- Did consciousness improve?
- Did glucose correct?
- Did urine output improve?
- Did agitation reduce?
- Did oxygen need decrease?
- Did the patient deteriorate despite treatment?
- Did treatment cause harm?

Do not give treatment and walk away without reassessment when risk remains.

A response can confirm, challenge, or redirect reasoning.

14. Step 8: Widen the Differential After Stabilization

Once immediate danger is addressed, widen reasoning.

Ask:

- What else could this be?
- What does not fit?
- Could there be a second diagnosis?
- Could medicines be contributing?
- Has baseline changed?
- What did family or nurses notice?
- What result is pending?
- What diagnosis would be dangerous if missed?
- Has treatment response supported the working diagnosis?

Emergency focus is necessary.

But staying too narrow after stabilization creates diagnostic error.

15. Step 9: Document Key Decisions

Under pressure, documentation may be brief but must capture essentials.

Document:

- time of review
- reason for urgent review
- vital concerns
- assessment
- treatment given
- response
- escalation
- plan
- monitoring
- communication
- pending tasks
- goals or limits of care where relevant

A pressured note should answer:

What happened, what did we do, what changed, and what happens next?

Documentation supports continuity after the crisis.

16. Step 10: Hand Over Risk

After a pressured event, hand over clearly.

Include:

- what happened
- current status
- working diagnosis
- what treatment was given
- what response occurred
- what remains dangerous
- what needs monitoring
- what results are pending
- what should trigger escalation
- who has been informed

Do not assume others know.

A stabilized patient may still be high risk.

Handover prevents rebound harm.

17. Reasoning During Multiple Competing Tasks

Sometimes pressure comes from too many tasks.

A safe approach is to sort tasks by danger and time.

Ask:

- Who is unstable?
- Who could deteriorate soon?
- What result is critical?
- What medicine decision could cause harm?
- What discharge is unsafe if delayed or rushed?
- Who needs urgent communication?
- What can wait safely?

Write a quick priority list.

Do not rely on memory alone when overloaded.

Overload makes memory unreliable.

18. The “Sickest First” Rule

When several patients need attention, see the sickest first.

Sickest may mean:

- unstable vital signs
- rapidly worsening symptoms
- altered mental state
- severe pain
- possible sepsis
- chest pain
- new neurological deficit
- high-risk lab result
- severe hypoglycemia
- high-risk medicine error
- suicidal risk
- nurse concern
- family says “not normal”
- frail patient with sudden decline

The sickest patient is not always the loudest.

The quiet, confused, hypotensive patient may be in more danger than the shouting patient.

Clinical prioritization protects fairness.

19. The “Can Safely Wait?” Question

When pressure is high, ask:

Can this safely wait?

This applies to:

- routine blood test reviews
- non-urgent forms
- long-term preventive discussions
- stable chronic symptoms
- non-urgent imaging
- discharge paperwork
- routine referrals
- administrative messages

Some tasks matter but can wait.

Others cannot.

The clinician must separate urgency from importance.

20. Pressure and Cognitive Bias

Pressure increases cognitive bias.

Common biases include:

Anchoring

Fixing on the first diagnosis.

Premature Closure

Stopping reasoning too early.

Confirmation Bias

Only noticing evidence that supports the initial idea.

Availability Bias

Overdiagnosing what you recently saw.

Attribution Bias

Blaming the patient rather than assessing the syndrome.

Search Satisfaction

Stopping after finding one abnormality.

Diagnostic Momentum

Accepting previous labels without reassessment.

Under pressure, ask:

What else could this be?
What does not fit?
Could there be a second problem?
Am I blaming instead of diagnosing?
Would I think differently if this were another patient?

These questions protect judgment.

21. Pressure and Emotions

Pressure creates emotion.

Common emotions include:

- fear
- irritation
- urgency
- guilt
- frustration
- helplessness
- anger
- anxiety
- shame
- overconfidence
- panic
- emotional numbness

Emotion is not weakness.

But emotion must not drive unsafe decisions.

Ask:

- Am I rushing because I am anxious?
- Am I delaying because I am afraid?
- Am I dismissing because I am frustrated?
- Am I over-treating because I feel helpless?
- Am I avoiding the family because the conversation is hard?
- Am I discharging because the system is pressured?
- Am I ordering tests to reduce my anxiety rather than help the patient?

Self-awareness is part of pressure reasoning.

22. Pressure and Communication With Patients

Under pressure, patients still need explanation.

Even brief explanations help.

Say:

“Your breathing has worsened, and we are treating this urgently.”

“I am worried your infection may be affecting your whole body.”

“We need to check your heart quickly because of the chest pain.”

“Your sugar is low, and we are correcting it now.”

“We are calling senior help.”

Do not leave patients or families frightened by unexplained activity.

In emergencies, communication can be short.

But silence increases fear.

23. Pressure and Family Distress

Families may become anxious, angry, demanding, or fearful under pressure.

They may ask many questions while the team is acting.

Acknowledge briefly:

“I can see you are very worried. Right now we are stabilizing his breathing. I will update you as soon as we have him safer.”

This sets a boundary while showing care.

After stabilization, return and explain.

Family distress should not derail urgent care.

But family communication should not be ignored.

24. Pressure and Teamwork

Under pressure, teamwork is essential.

Use clear roles:

- who leads
- who checks vital signs
- who gives medicines
- who obtains IV access
- who calls senior help
- who checks glucose
- who communicates with family
- who documents
- who reviews results
- who arranges transfer

Closed-loop communication matters.

Say:

“Please check glucose now.”

Receiver:

“I am checking glucose now.”

Then:

“Glucose is low; treatment started.”

Under pressure, assumptions are dangerous.

Closed loops save lives.

25. Pressure and Nursing Concern

Nursing concern is a high-value signal.

A nurse may say:

“He is not right.”
“She looks worse.”
“His breathing is different.”
“She is more confused.”
“I am worried.”

Do not dismiss this because numbers are not dramatic.

Ask:

- What has changed?
- Since when?
- What are you noticing?
- What is different from earlier?
- What does the family say?
- What are the trends?

A clinician under pressure may want objective numbers only.

But experienced observation is clinical data.

26. Pressure and Guidelines

Guidelines help under pressure because they reduce cognitive load.

Use local pathways for:

- chest pain
- stroke
- sepsis
- hypoglycemia
- hyperkalemia
- anaphylaxis
- asthma or COPD exacerbation
- diabetic emergencies
- anticoagulant bleeding
- alcohol withdrawal
- acute kidney injury
- suspected PE
- major bleeding
- resuscitation

But guidelines still require judgment.

Ask:

- Does this patient fit the pathway?
- Are there contraindications?
- Does frailty change the risk?
- Does CKD change medication safety?
- Are goals of care relevant?
- Is senior input needed?
- Is this an emergency exception?

Guidelines support pressure reasoning.

They do not replace responsibility.

27. Pressure and Multimorbidity

Multimorbidity makes pressure harder.

A treatment for one condition may worsen another.

Examples:

- fluids may help sepsis but worsen heart failure
- diuretics may help pulmonary edema but worsen AKI
- insulin may treat hyperglycemia but cause hypoglycemia if poor intake
- anticoagulation may reduce clot risk but increase bleeding
- opioids may relieve pain but worsen delirium and falls
- steroids may help COPD but worsen glucose and infection risk
- sedatives may calm agitation but worsen delirium and breathing

Under pressure, ask:

What treatment helps one capacity but harms another?

Then monitor carefully.

28. Pressure and Frailty

In frailty, pressure reasoning must be extra cautious.

Frail patients may present with:

- weakness
- falls
- confusion
- poor intake
- reduced mobility
- “not coping”
- vague decline

But underlying danger may be:

infection

hypoxia

hypoglycemia

AKI

medication toxicity

stroke

pain

dehydration

constipation

urinary retention

cardiac disease

Do not dismiss vague symptoms.

In frailty, subtle change may signal serious illness.

Ask:

What changed from baseline?

and

What small stressor has overwhelmed reserve?

29. Pressure and Discharge Decisions

Discharge pressure is common.

Beds may be needed.

Patients may want to leave.

Families may push for discharge.

The system may reward throughput.

But unsafe discharge can cause harm.

Under discharge pressure, ask:

Is danger resolved or managed?

Is diagnosis clear enough?

Can the patient walk or transfer safely?

Is cognition safe?

Are medicines reconciled?

Are pending results owned?

Is follow-up arranged?

Does the patient understand warning signs?

Is caregiver support real?

Is home safe?

What would happen tonight if symptoms worsen?

Pressure should not erase discharge safety.

30. Pressure and Ethical Decisions

Ethical pressure occurs when decisions are urgent and values matter.

Examples:

- patient refuses life-saving treatment
- family demands burdensome treatment
- patient lacks capacity
- ICU decision is needed
- resuscitation status is unclear
- resources are limited
- discharge is unsafe but bed pressure is high
- restraint is considered
- confidentiality conflicts with safety

Under ethical pressure, ask:

- Does the patient have capacity?
- What are the patient's known wishes?
- What benefit is realistic?
- What harm is likely?
- Is treatment proportionate?
- Who should be involved?
- What does local law or policy require?
- Is senior or ethics support needed?

Pressure does not justify ignoring ethics.

It requires clearer ethical reasoning.

31. Pressure and Documentation

In emergencies, patient care comes first.

But documentation must follow.

A brief pressured note should include:

- time
- reason for urgent review
- key findings
- vital signs or trends
- assessment
- treatment given
- response

- senior help called
- plan
- monitoring
- escalation triggers
- communication

Example:

“22:10 urgent review for increased breathlessness. RR rising, oxygen requirement increased, patient confused. Chest crackles bilaterally, BP borderline, urine output reduced. Concern for sepsis versus pulmonary edema. Oxygen increased, ECG and urgent bloods requested, senior clinician called, antibiotics reviewed, fluid status reassessed. Nurse to monitor observations closely and call if oxygen need rises further, BP falls, or consciousness worsens.”

This note preserves continuity.

32. Pressure and After-Action Review

After a pressured event, reflect briefly.

Ask:

- What happened?
- Was danger recognized early?
- Was help called soon enough?
- Did communication work?
- Did the patient improve?
- What was missed?
- What should be handed over?
- What should be documented?
- What should we learn?

This does not need to be long.

Even a two-minute team debrief can prevent repeated errors.

Pressure events are learning opportunities.

33. The STOP Tool

When overwhelmed, use STOP:

S — Stop

Pause for a few seconds if safe.

T — Think

What is dangerous? What syndrome is this?

O — Organize

Who needs to do what? What is the next step?

P — Proceed

Act, communicate, reassess.

This simple pause can prevent chaotic action.

A pause of ten seconds can save minutes of confusion.

34. The “One Breath” Reset

When emotion rises, take one deliberate breath before speaking or acting, if the patient’s condition allows.

Ask internally:

What is the danger?
What is the next safe step?
Who needs to know?

This prevents panic from controlling action.

It also prevents harsh communication.

A calm clinician helps regulate the room.

35. Worked Case 1: Acute Breathlessness Overnight

A 74-year-old man with COPD, heart failure, and CKD becomes more breathless overnight.

Pressure

Nurse calls urgently. Oxygen need has increased. The ward is busy.

Danger

Hypoxia, respiratory failure, heart failure, pneumonia, PE, arrhythmia, sepsis.

Syndrome

Acute breathlessness with hypoxia in multimorbidity.

Capacity Failure

Oxygenation, possibly circulation and clearance.

Safe Immediate Action

Assess airway, breathing, circulation, vitals, oxygen, chest, heart, fluid status, ECG, relevant urgent tests, and treatment response. Call senior help early if severe or worsening.

Avoid

Assuming it is “just COPD” because of history.

Repair Trajectory

Oxygen stabilizes, cause clarified, treatment adjusted, kidney function monitored, clear escalation plan documented.

36. Worked Case 2: Confused Diabetic Patient

A 69-year-old woman with diabetes and CKD is found drowsy and confused.

Pressure

Clinic is full. Family is worried.

Danger

Hypoglycemia, hyperglycemic crisis, stroke, sepsis, medication toxicity, AKI, hypoxia.

Syndrome

Acute altered mental state.

Capacity Failure
Brain coordination, glucose regulation, clearance, safety.

Safe Immediate Action
Check glucose immediately. Check vital signs and oxygenation. Review medicines, infection signs, renal function, neurological signs, and recent intake. Escalate if not rapidly explained or corrected.

Avoid
Assuming confusion is dementia or “poor cooperation.”

Repair Trajectory
Glucose corrected if abnormal, cause identified, recurrence prevented, medicines adjusted, family understands warning signs.

37. Worked Case 3: Many Patients Waiting
A clinician has five tasks: discharge summary, routine blood results, family update, unstable patient review, and medication query.

Pressure
Too many tasks at once.

Prioritization
First: unstable patient review.
Second: medication query if high-risk and time-sensitive.
Third: urgent blood result if dangerous.
Fourth: family update if serious or time-promised.
Fifth: routine discharge summary if patient is safe and no time-critical issue.

Reasoning
Danger and time-sensitive harm come first.

Repair Trajectory
Unstable patient assessed, high-risk tasks completed, remaining tasks sequenced rather than forgotten.

38. Worked Case 4: Discharge Under Bed Pressure
A frail older adult admitted with pneumonia is off oxygen and afebrile, but remains weak, intermittently confused, and unsafe on stairs.

Pressure
Bed is needed.

Danger
Falls, delirium recurrence, medication error, caregiver overload, readmission.

Syndrome
Recovering pneumonia with incomplete functional and cognitive repair.

Safe Immediate Action
Pause discharge. Review cognition, mobility, medicines, home support, follow-up, and caregiver readiness. Involve therapy and family.

Avoid
Equating infection improvement with discharge safety.

Repair Trajectory
Discharge occurs when mobility and cognition are safe or support is arranged.

39. Worked Case 5: Family Demands “Everything”

A patient with advanced dementia and aspiration pneumonia is deteriorating. Family demands ICU.

Pressure

Emotional conflict, time pressure, serious illness.

Danger

Respiratory failure, suffering, non-beneficial escalation, family distress.

Syndrome

Advanced dementia with aspiration and likely end-stage decline.

Safe Immediate Action

Treat distress and reversible symptoms. Clarify capacity and prior wishes. Call senior help. Communicate prognosis clearly. Discuss proportionality and goals. Involve palliative care if available.

Avoid

Escalating automatically because family is distressed, or refusing harshly without explanation.

Repair Trajectory

Symptoms relieved, family supported, plan aligned with patient values and realistic benefit.

40. Worked Case 6: Abnormal Result at End of Shift

At the end of a busy shift, a patient’s potassium returns dangerously abnormal. The clinician is about to leave.

Pressure

Fatigue, shift transition, competing tasks.

Danger

Arrhythmia and sudden deterioration.

Syndrome

Severe electrolyte abnormality.

Safe Immediate Action

Do not leave it for routine review. Assess patient, repeat or confirm according to local practice where appropriate, initiate urgent management according to protocol, call senior help, review ECG and medicines, hand over clearly.

Avoid

Assuming the next team will notice.

Repair Trajectory

Potassium treated, cause reviewed, monitoring arranged, responsibility handed over.

41. Common Student Pitfalls

Pitfall 1: Trying to Make the Final Diagnosis Before Stabilizing Danger

Stabilize first when the patient is unsafe.

Pitfall 2: Forgetting Glucose in Confusion

Glucose is quick, reversible, and dangerous if missed.

Pitfall 3: Not Calling for Help

Escalation is part of safe reasoning.

Pitfall 4: Anchoring Under Stress

Pressure makes early labels sticky.

Pitfall 5: Ignoring Nursing Concern

Concern from the bedside often detects deterioration early.

Pitfall 6: Communicating Vaguely

Under pressure, vague communication wastes time.

Pitfall 7: Treating One Disease and Forgetting Multimorbidity

Treatment may help one capacity and harm another.

Pitfall 8: Failing to Reassess

Treatment without reassessment is unsafe.

42. Clinical Practice Box

When reasoning under pressure, use this structure:

Danger now:
What could kill, permanently harm, or rapidly destabilize the patient?

Main syndrome:
What pattern is present before the final diagnosis is certain?

Most threatened capacity:
Oxygenation, circulation, consciousness, glucose, clearance, defense, comfort, safety?

Safest next step:
What action moves the patient away from danger now?

Help needed:
Who should be called, and how urgently?

Communication:
What must the team, patient, family, or senior clinician know now?

Treatment response:
What will be reassessed, and when?

What else could it be?
What dangerous or second diagnosis must still be considered?

Medicines:
Could medicine be causing harm? Does treatment need adjustment for kidney, liver, frailty, or goals?

Documentation:
What key decisions and escalation triggers must be recorded?

Handover:
What risk must not be lost at shift change or transfer?

43. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain is on the ward recovering from pneumonia. At 10 p.m., the nurse calls because she is more confused, dizzy when standing, and has nearly fallen. She ate poorly today. Her creatinine was rising earlier. Her diuretic is held, insulin was reduced, NSAIDs were stopped, but she received opioid pain medicine and a sleeping tablet. The ward is busy.

Apply pressure reasoning.

Danger Now

Hypoglycemia, delirium, fall injury, AKI worsening, medication toxicity, dehydration, infection worsening, hypotension, hypoxia.

Main Syndrome

Acute worsening confusion and near fall in a frail multimorbid patient recovering from pneumonia with kidney vulnerability and high medication risk.

Most Threatened Capacities

Brain coordination, mobility safety, glucose regulation, clearance, circulation regulation, comfort.

Safest Next Step

Review urgently. Check glucose immediately. Check vital signs, oxygen saturation, hydration, pain, neurological status, medication chart, urine output, and recent labs. Assess for delirium triggers including infection, hypoxia, constipation, retention, pain, sedatives, opioids, and metabolic disturbance.

Help Needed

Call senior help if glucose is abnormal and not correcting, oxygen or blood pressure is unsafe, consciousness is reduced, neurological signs appear, AKI or electrolytes are dangerous, or confusion/agitation makes safety difficult.

Communication

Tell nursing staff the immediate fall precautions and monitoring plan. Inform family if deterioration is significant and appropriate. Hand over overnight risk clearly.

Treatment Response

Reassess after correcting reversible causes. Review whether opioid or sleeping tablet contributed. Avoid further sedatives unless clearly needed for safety and according to local guidance.

What Else Could It Be?

Stroke, sepsis, hypoxia, electrolyte disturbance, worsening pneumonia, urinary retention, constipation, medication toxicity, hypoglycemia, dehydration, pain.

Repair Trajectory

Confusion improves, glucose remains safe, dizziness resolves, no fall occurs, kidney function and hydration are reassessed, sedative burden is reduced, and the night team has clear escalation triggers.

44. Student Takeaway

Clinical reasoning under pressure becomes easier when the clinician asks:

What is dangerous now?
What is the syndrome?
Which capacity is failing?
What is the safest immediate action?
Who needs to help?
What must be communicated clearly?
How will I reassess response?
What else could this be after stabilization?
What medicines or treatments may be helping or harming?
What must be documented and handed over?

Pressure does not excuse poor reasoning.

Pressure demands simpler, sharper reasoning.

The safe clinician does not try to know everything at once. The safe clinician identifies danger, names the syndrome, protects the failing capacity, takes the safest next step, asks for help early, communicates clearly, reassesses, widens the differential, documents key decisions, and hands over risk so that the patient remains protected even when the system is under strain.

Chapter 81. The Complete On-Call Shift Made Easy

Figure 11. The On-Call Shift Safety Field

On-call work should be prioritized by risk of harm from delay. Immediate danger, critical results, time-sensitive treatments, high-risk medicines, severe symptoms, and unsafe transitions require early action, escalation, reassessment, and closed-loop handover.

The complete on-call shift is the period of clinical responsibility in which the clinician protects patients from deterioration, responds to urgent problems, prioritizes competing tasks, communicates clearly, documents key decisions, and hands over risk safely.

Patients do not usually say:

“I hope the on-call shift is well managed.”

They say:

“I feel worse tonight.”
“I cannot breathe.”
“I have chest pain.”
“I feel dizzy.”
“I am confused.”
“The pain is unbearable.”
“I need help now.”
“Please tell the doctor.”

Nurses may say:

“Doctor, I am worried about this patient.”
“The oxygen requirement is increasing.”
“The blood pressure is dropping.”
“The patient is more confused.”
“The potassium result is back.”
“The family wants an update.”
“This patient is trying to leave.”
“This discharge does not feel safe.”

Clinicians on call may think:

“There are too many jobs.”
“I do not know this patient.”
“The notes are unclear.”
“I am tired.”
“Which task comes first?”
“Should I call for help?”
“What can wait until morning?”
“How do I keep everyone safe?”

The on-call shift is central to Internal Medicine because illness does not pause outside routine hours.

Patients deteriorate at night.
Results return after the day team leaves.
Medicines cause harm.
Confusion worsens.
Pain escalates.
Families become anxious.
Discharges become unsafe.
New admissions arrive.
The clinician has limited time, incomplete information, and many competing demands.

The first task is not to finish every job immediately.

The deeper question is:

What must be recognized, acted on, communicated, documented, and handed over so that patients remain safe until the next phase of care?

The complete on-call shift becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

On call, this loop must be rapid, practical, and repeatedly applied.

1. What Is a Complete On-Call Shift?

A complete on-call shift includes:

- receiving handover
- identifying high-risk patients
- prioritizing tasks
- responding to deterioration
- reviewing urgent results
- managing symptoms

- assessing new problems
- reviewing medicines when safety is at risk
- communicating with nurses, patients, families, and seniors
- escalating appropriately
- documenting key decisions
- reassessing response
- preparing outgoing handover

The on-call clinician does not need to solve every long-term problem.

The on-call clinician must prevent avoidable harm, make safe immediate decisions, and maintain continuity.

2. The On-Call Shift Is a Safety Net

The on-call clinician is often the safety net between planned reviews.

The day team may have created a plan, but the on-call clinician must notice when:

- the patient deteriorates
- the plan no longer fits
- a result changes risk
- a medicine becomes unsafe
- symptoms become uncontrolled
- discharge becomes unsafe
- a family concern reveals new information
- a nurse detects subtle decline
- monitoring shows a worsening trend

On call, the clinician must ask:

Has anything changed that makes the current plan unsafe?

This question protects patients from drift.

3. The On-Call Shift Is Not Just Task Completion

On-call work can feel like a list:

- prescribe fluids
- review pain
- check blood result
- assess fall
- write discharge medicine
- review fever
- speak to family
- assess confusion
- chase scan

prescribe sleep medicine

review chest pain

But each task may hide danger.

“Prescribe fluids” may mean sepsis, dehydration, heart failure, or AKI.
“Review pain” may mean myocardial infarction, ischemic limb, perforation, fracture, or spinal cord compression.
“Confusion” may mean delirium, hypoxia, hypoglycemia, stroke, sepsis, withdrawal, or medicine toxicity.
“Fall” may mean syncope, head injury, fracture, hypoglycemia, arrhythmia, or sedative harm.

The on-call clinician must not become a task machine.

Every task should be translated into a clinical question.

4. The First Question: Is There Immediate Danger?

When called, begin with danger.

Ask:

Is the airway safe?

Is breathing safe?

Is circulation safe?

Is consciousness safe?

Is glucose safe?

Is there sepsis?

Is there major bleeding?

Is there chest pain?

Is there new neurological deficit?

Is there severe pain?

Is there AKI or severe electrolyte abnormality?

Is there overdose or withdrawal?

Is there suicidal risk?

Is the patient unsafe to remain where they are?

Is urgent senior help needed?

The danger-first question is:

Does this patient need immediate review, treatment, escalation, or transfer?

If yes, stop lower-priority tasks and go.

5. Immediate Red Flags On Call

Red flags include:

severe breathlessness

rising oxygen requirement

low oxygen saturation

- hypotension
- persistent tachycardia with illness
- chest pain
- new neurological deficit
- seizure
- reduced consciousness
- new confusion
- severe hypoglycemia
- severe hyperglycemia with dehydration or drowsiness
- suspected sepsis
- major bleeding
- reduced urine output
- severe electrolyte abnormality
- severe abdominal pain
- uncontrolled pain
- fall with injury or anticoagulation
- agitation with danger to self or others
- overdose
- alcohol or sedative withdrawal
- suicidal intent
- family or nurse saying “this is not normal”
- unsafe discharge pressure

These calls should move to the top of the list.

6. Start the Shift With Handover

A safe on-call shift begins before the first call.

Receive handover on:

- unstable patients
- patients at risk of deterioration
- new admissions
- patients awaiting urgent results
- patients needing review after treatment
- high-risk medicines
- electrolyte or renal concerns
- sepsis or infection concerns
- chest pain or stroke pathway patients
- delirium or agitation risk

- falls risk
- palliative or end-of-life patients
- patients with escalation limits
- patients awaiting transfer
- possible discharges
- family concerns
- safeguarding concerns

A good handover tells the on-call clinician:

- what to watch
- what to do if it worsens
- who to call
- what results are pending
- what decisions may be needed overnight

Poor handover creates danger.

7. Make an Initial Risk List

At the start of the shift, identify:

High-Risk Patients

Unstable, recently deteriorated, high oxygen need, sepsis risk, delirium, severe pain, bleeding, AKI, electrolyte issues, or complex goals of care.

Time-Critical Tasks

Repeat bloods, imaging, antibiotic review, potassium review, anticoagulation decisions, urgent referrals, planned reassessment.

Watchers

Patients not unstable now but likely to deteriorate.

Routine Tasks

Tasks that matter but can wait if danger appears.

A written or mental risk list prevents overload.

On call, memory alone is not enough.

8. Prioritize Calls

When several calls arrive, prioritize by danger and time sensitivity.

Ask:

- Who is unstable?
- Who could deteriorate soon?
- Which result is dangerous?
- Which medicine decision could cause immediate harm?
- Which symptom is severe?
- Which patient is unsafe?

Which task can wait?

A useful priority order is:

airway, breathing, circulation, consciousness, glucose

sepsis, chest pain, stroke, major bleeding, severe electrolyte abnormality

severe pain or distress

new confusion, fall, agitation, withdrawal

high-risk medicines and urgent results

discharge safety problems

routine prescriptions and administrative tasks

The on-call clinician must be fair, not merely reactive.

The loudest call is not always the most dangerous.

9. Responding to a Call: The First 60 Seconds

When called, ask for focused information.

Useful questions:

Who is the patient?

What is the immediate concern?

What are the current observations?

What has changed?

When did it start?

Is the patient conscious?

Is the patient breathing comfortably?

Is there chest pain, severe pain, bleeding, or new weakness?

What is the glucose if confused, drowsy, diabetic, or unwell?

What treatment has already been given?

What are you most worried about?

If the nurse says:

“I am worried,”

take it seriously.

Concern is data.

10. Deciding Whether to Attend Immediately

Attend immediately when there is:

severe breathlessness

abnormal vital signs

new confusion or reduced consciousness

chest pain

- seizure
- fall with injury or anticoagulation
- suspected sepsis
- severe pain
- significant bleeding
- dangerous lab result
- agitation causing danger
- suicidal risk
- nurse concern with unclear cause
- family reports sudden change
- patient threatening to leave when unsafe

Some calls can be handled with advice temporarily, but only if danger is clearly low and follow-up is arranged.

Do not manage serious uncertainty from a distance for too long.

11. Bedside Review On Call

At the bedside, use a rapid structure:

- look at the patient
- check vital signs
- assess airway, breathing, circulation, consciousness, glucose where relevant
- ask what changed
- examine the focused system
- review chart, medicines, recent results, and plan
- identify syndrome
- act
- escalate if needed
- reassess
- document
- hand over if risk remains

The bedside question is:

What is the safest next step now?

12. New Breathlessness On Call

Breathlessness is a high-risk call.

Consider:

- pneumonia
- COPD or asthma exacerbation
- heart failure

- pulmonary embolism
- pneumothorax
- myocardial ischemia
- arrhythmia
- anemia
- metabolic acidosis
- aspiration
- anxiety after danger assessed

Assess:

- respiratory rate
- oxygen saturation and requirement
- work of breathing
- chest findings
- heart rate and rhythm
- blood pressure
- temperature
- fluid status
- chest pain
- mental state
- recent medicines
- recent imaging and labs

Act according to danger and local pathways.

Escalate early if oxygen need rises, breathing is tiring, consciousness changes, or diagnosis is uncertain with danger.

13. Chest Pain On Call

Chest pain should be treated as dangerous until assessed.

Consider:

- acute coronary syndrome
- pulmonary embolism
- aortic disease
- pneumothorax
- pneumonia
- pericarditis
- reflux or esophageal pain
- musculoskeletal pain
- anxiety after danger assessed

Assess:

- pain onset and character
- radiation
- exertional pattern
- associated breathlessness, sweating, nausea, syncope
- vital signs
- ECG according to local pathway
- relevant blood tests according to local pathway
- risk factors
- previous cardiac disease
- anticoagulants and bleeding risk

Do not dismiss chest pain because the patient is anxious or has reflux history.

14. New Confusion On Call

New confusion is acute brain failure until proven otherwise.

Consider:

- hypoxia
- hypoglycemia
- sepsis
- stroke
- medication toxicity
- AKI or electrolyte disturbance
- urinary retention
- constipation
- pain
- alcohol or sedative withdrawal
- head injury
- sleep deprivation
- delirium from hospitalization

Assess:

- glucose
- oxygenation
- vital signs
- attention and consciousness
- infection signs
- neurological signs
- medicines

- renal function and electrolytes
- pain
- bladder and bowels
- recent fall
- baseline cognition

Avoid simply prescribing sedation.

Find and treat causes.

Sedation may be needed only when distress or danger persists despite safer measures and according to local guidance.

15. Fall On Call

A fall is not automatically mechanical.

Assess:

- injury
- head strike
- anticoagulant use
- loss of consciousness
- chest pain or palpitations
- dizziness
- seizure features
- glucose
- blood pressure and orthostatic symptoms where appropriate
- neurological signs
- infection signs
- medicines
- pain
- baseline mobility
- current ability to mobilize safely

Ask:

Why did upright control fail?

After the fall, protect against recurrence:

- review sedatives and hypotensive medicines
- ensure call bell and supervision
- manage toileting needs
- assess pain
- communicate falls precautions
- document and hand over

A fall without a cause review is an incomplete assessment.

16. Fever On Call

Fever may be mild or dangerous.

Assess:

- vital signs
- source symptoms
- mental state
- oxygenation
- blood pressure
- heart rate
- urine output
- immunosuppression
- lines, wounds, catheters
- recent cultures
- current antibiotics
- allergies
- renal function
- sepsis risk

Ask:

Is this fever part of systemic deterioration?

Do not simply prescribe antipyretic without considering infection severity and source.

Follow local sepsis and infection pathways when indicated.

17. Reduced Urine Output On Call

Reduced urine output may reflect:

- dehydration
- sepsis
- shock
- obstruction
- AKI
- heart failure
- medication effect
- catheter blockage
- bleeding
- renal disease progression

Assess:

- vital signs
- fluid balance
- intake
- bladder distension or catheter blockage
- edema and fluid overload
- renal function
- electrolytes
- medicines
- sepsis signs
- blood pressure trend

Avoid reflex fluids without assessing heart failure, renal status, and fluid overload risk.

The question is:

Is clearance failing, and why?

18. Abnormal Potassium or Electrolytes On Call

Dangerous electrolyte results require urgent action.

Assess:

- severity
- symptoms
- ECG where relevant
- renal function
- medicines
- hemolysis or sample issue where relevant
- trend
- urine output
- acid-base status where relevant
- treatment plan according to local protocol

Do not leave dangerous potassium, sodium, calcium, or other critical results for the morning without action.

Electrolyte danger can be silent until catastrophic.

19. Pain On Call

Pain calls need careful assessment.

Do not simply prescribe stronger analgesia without asking:

- Where is the pain?
- Is it new?
- Is it severe?
- What is the cause?

- Are there red flags?
- Is the patient already on opioids or sedatives?
- Is there constipation?
- Is there renal disease?
- Is there bleeding risk?
- Is there confusion or falls risk?
- Has pain suddenly worsened?

Dangerous pain includes:

- chest pain
- severe abdominal pain
- limb ischemia
- severe headache
- back pain with neurological signs or cancer history
- hot swollen joint
- severe pain after fall
- uncontrolled cancer pain
- pain with fever or systemic illness

Treat pain, but do not blind yourself to its cause.

20. Agitation On Call

Agitation may be distress, delirium, pain, hypoxia, withdrawal, fear, psychosis, intoxication, urinary retention, constipation, or environmental overload.

Assess:

- immediate safety
- oxygenation
- glucose
- vital signs
- pain
- urinary retention
- constipation
- medicines
- withdrawal risk
- infection
- baseline cognition
- sensory impairment
- triggers
- capacity

Use de-escalation where possible:

- calm voice
- reduce noise
- reorient
- involve familiar person
- treat pain
- correct reversible causes
- ensure glasses and hearing aids
- avoid unnecessary restraint

Medication for agitation should be careful, proportionate, monitored, and guided by local practice.

21. Insomnia On Call

Insomnia is common but not always benign.

Before prescribing a sleeping tablet, ask:

- Is the patient in pain?
- Breathless?
- Anxious?
- Confused?
- In withdrawal?
- Needing toilet?
- Constipated?
- Too noisy or disturbed?
- Already delirious?
- At risk of falls?
- Frail or elderly?
- On opioids or sedatives?

Sleeping tablets can worsen falls, delirium, breathing, and confusion.

Treat the cause where possible.

Do not create tomorrow's fall with tonight's prescription.

22. High-Risk Medicine Requests On Call

Be cautious with requests for:

- opioids
- sedatives
- insulin changes
- anticoagulants
- potassium replacement

- diuretics
- fluids in heart failure or renal disease
- antibiotics
- steroids
- NSAIDs
- antipsychotics

Ask:

- What is the indication?
- Is it safe now?
- What is kidney and liver function?
- What monitoring is needed?
- What interaction exists?
- Is the patient frail, confused, or at falls risk?
- Is this a continuation, restart, or new medicine?
- What did the day team intend?

When uncertain, check guidance or call senior help.

23. Reviewing Results On Call

Results may return after hours.

Prioritize:

- critical electrolytes
- renal function deterioration
- high or low glucose patterns
- falling hemoglobin
- positive cultures in an unwell patient
- troponin pathway results
- imaging showing acute danger
- coagulation problems
- blood gas abnormalities
- lactate or sepsis-related results in context

For each result, ask:

- Does this need action now?
- Does it change diagnosis?
- Does it change treatment?
- Does it require escalation?
- Does the patient need review?
- Does someone need to be informed?

Does it need repeat testing?

Does it need handover?

Do not merely acknowledge results.

Interpret them.

24. New Admissions On Call

For new admissions, the on-call clinician must ensure:

danger assessed

reason for admission clear

initial treatment started

medicines reconciled enough for safety

allergies checked

essential investigations ordered

monitoring plan set

escalation plan clear

pain and comfort addressed

delirium, falls, nutrition, and pressure risk considered where relevant

family updated where needed

documentation completed

ward team can continue care

A full perfect review may be impossible during a busy shift, but the safety essentials must be done.

25. Palliative and End-of-Life Calls On Call

On-call clinicians are often called for:

pain

breathlessness

agitation

noisy breathing

nausea

family distress

dying patient review

uncertainty about escalation

Ask:

Is the patient dying?

What are the goals of care?

Is there a documented plan?

What symptoms are uncontrolled?

What medicines are available?

What route can be used?

What has family been told?

Is senior or palliative support needed?

Is escalation appropriate or burdensome?

End-of-life on-call care requires calm, clarity, comfort, and communication.

Do not abandon the patient because cure is no longer the goal.

26. Patients Wanting to Leave On Call

If a patient wants to leave:

assess immediate danger

assess capacity

ask why they want to leave

address pain, fear, withdrawal, family duties, cost, mistrust, or confusion

explain risks clearly

offer safer alternatives

involve senior help when needed

involve family with consent

document carefully

provide treatment and safety-netting if they leave

Do not assume refusal equals capacity.

Do not assume disagreement equals incapacity.

Assess decision-specific capacity.

A patient leaving still deserves care.

27. Family Calls and Updates On Call

Families often seek updates during on-call hours.

Prioritize family updates when:

patient is deteriorating

serious decision is needed

patient is dying

patient lacks capacity

family provides essential baseline

conflict is escalating

discharge safety depends on family

a promise was made to call

When busy, explain honestly:

“I am dealing with an urgent clinical situation. I will call back when safe to do so.”

Do not let non-urgent updates displace immediate danger.

But do not ignore families in serious moments.

28. Escalation On Call

Escalate when:

- patient is unstable
- treatment is failing
- diagnosis is uncertain with danger
- higher level of care may be needed
- urgent procedure or specialist input is needed
- severe electrolyte or renal issue arises
- patient refuses high-risk care
- capacity or ethics is complex
- family conflict is severe
- end-of-life decision is unclear
- you feel out of depth

Escalation should be clear:

- who the patient is
- what is happening
- why you are worried
- what has been done
- what help is needed
- how urgent it is

Do not wait until all information is perfect.

Call when danger is real.

29. Reassessment On Call

After any significant intervention, reassess.

Examples:

- after oxygen change
- after fluids or diuresis
- after treatment for hypoglycemia
- after pain medicine
- after agitation management
- after sepsis treatment
- after electrolyte treatment

- after fall review
- after chest pain pathway step
- after transfusion or bleeding concern
- after changing high-risk medicine

Ask:

- Did the patient improve?
- Did harm occur?
- Is further action needed?
- Does senior help need update?
- What should nursing monitor?
- What should trigger another call?

Treatment without reassessment is unsafe.

30. Documentation On Call

On-call documentation should be brief but meaningful.

Document:

- time called and reviewed
- reason for review
- key history
- vital signs
- focused examination
- assessment
- treatment given
- advice from senior or specialist
- response
- plan
- monitoring
- escalation triggers
- communication with patient, family, or nurse
- handover needs

Example:

“Reviewed at 23:40 for new confusion and near fall. Glucose normal, oxygenation stable, BP lower than baseline, appears drowsy after opioid and sleeping tablet. No focal neurology. Abdomen distended; constipation likely. Impression: delirium risk with sedative/opioid effect, constipation, frailty. Held further sedative, bowel regimen reviewed, falls precautions reinforced, nurse to monitor consciousness, pain, bowels, and call if worsening confusion, hypotension, reduced urine, or new neurology. Handover to day team for medication review.”

This note tells the next team what happened and why.

31. Managing Fatigue On Call

Fatigue affects judgment.

It can cause:

- irritability
- forgetfulness
- missed results
- poor communication
- shortcuts
- overconfidence
- underconfidence
- emotional numbness
- delayed escalation
- poor documentation

Protect against fatigue by:

- using lists
- prioritizing danger
- taking brief pauses when possible
- eating and hydrating when safe
- asking for help
- avoiding memory-only task management
- handing over clearly
- recognizing when you are overloaded

Fatigue is not a moral failure.

But it must be managed because patients depend on your judgment.

32. The End-of-Shift Handover

At the end of the shift, hand over:

- unstable patients
- patients reviewed urgently
- pending critical results
- medicine changes
- patients needing reassessment
- escalation plans
- family concerns
- delirium, falls, hypoglycemia, bleeding, AKI, sepsis risks
- palliative or end-of-life issues
- patients who wanted to leave

- unresolved tasks
- documentation gaps
- safety concerns

A good outgoing handover answers:

What must the next clinician not miss?

The on-call shift is not complete until risk is transferred safely.

33. What Can Wait Until Morning?

Some tasks can wait if the patient is safe.

Examples may include:

- routine chronic disease optimization
- non-urgent paperwork
- stable long-term symptoms
- non-urgent referrals
- minor medication clarifications without immediate risk
- routine discharge summaries not needed overnight
- stable results that do not change care
- elective investigations
- non-urgent family updates

But be careful.

A task can wait only if:

- danger has been considered
- patient is stable
- delay will not cause harm
- someone will take responsibility later
- handover is clear

“Wait until morning” is a decision, not avoidance.

34. Worked Case 1: Increasing Oxygen Requirement

A 73-year-old man admitted with pneumonia now needs more oxygen overnight.

On-Call Danger

Respiratory deterioration, sepsis, heart failure, PE, aspiration, pneumothorax.

Syndrome

Acute worsening breathlessness and hypoxia.

Capacity Failure

Oxygenation, possibly circulation.

Wise On-Call Response

Review immediately. Assess work of breathing, vitals, chest, heart, fluid status, mental state, recent results and antibiotics. Escalate if oxygen requirement rises or patient tires. Investigate and treat according to local pathways.

Repair Trajectory

Oxygen stabilizes or patient escalated appropriately, cause clarified, plan documented, day team informed.

35. Worked Case 2: Dangerous Potassium Result

A potassium result returns dangerously abnormal at midnight in a patient with AKI and CKD.

On-Call Danger

Arrhythmia and sudden deterioration.

Syndrome

Severe electrolyte abnormality with clearance failure.

Capacity Failure

Electrical stability, clearance.

Wise On-Call Response

Review patient, ECG where appropriate, confirm and treat according to local protocol, review medicines, assess renal function and urine output, call senior help, monitor response, hand over.

Repair Trajectory

Potassium corrected, cause addressed, monitoring arranged, responsibility transferred.

36. Worked Case 3: Agitated Older Patient

An 86-year-old woman with dementia and infection is pulling at lines and trying to climb out of bed.

On-Call Danger

Fall, injury, delirium, treatment disruption, distress.

Syndrome

Agitation likely due to delirium until proven otherwise.

Capacity Failure

Brain coordination, safety, comfort.

Wise On-Call Response

Assess oxygenation, glucose, vitals, pain, urinary retention, constipation, medicines, environment, and infection. Use de-escalation, family support if available, sensory aids, and safety measures. Avoid reflex sedation unless necessary and proportionate.

Repair Trajectory

Patient calmer, reversible causes treated, falls prevented, sedative harm minimized, plan handed over.

37. Worked Case 4: Severe Pain in Cancer

A patient with metastatic cancer has severe pain overnight despite regular analgesia.

On-Call Danger

Uncontrolled suffering, spinal cord compression if back pain with neurology, bowel obstruction, opioid toxicity, delirium.

Syndrome

Severe pain in serious illness.

Capacity Failure

Comfort, sleep, mobility, dignity.

Wise On-Call Response

Assess pain location, character, red flags, neurological signs, current medicines, opioid side effects, constipation, nausea, renal function, and goals. Treat pain according to local guidance and call senior or palliative support if needed.

Repair Trajectory

Pain relieved, dangerous causes considered, side effects prevented, family reassured, plan documented.

38. Worked Case 5: Patient Wants to Leave

A patient admitted with chest pain wants to leave before serial assessment is complete.

On-Call Danger

Missed myocardial infarction or other serious cause.

Syndrome

Chest pain with unresolved diagnostic risk.

Capacity Failure

Circulation risk, agency, understanding.

Wise On-Call Response

Assess current symptoms and capacity. Explain risk clearly. Explore reason for leaving. Offer alternatives. Involve senior help. Document discussion, safety-net, and follow-up if the patient leaves.

Repair Trajectory

Patient stays for needed assessment or leaves with capacity, understanding, safety-net, and documented plan.

39. Worked Case 6: Busy Shift With Multiple Calls

The clinician receives calls for chest pain, a routine sleeping tablet, a potassium result, a family update, and a patient with new confusion.

Prioritization

First assess chest pain and potassium danger depending on severity. New confusion also requires urgent review, especially if unstable or diabetic. Sleeping tablet can wait and may be inappropriate. Family update depends on urgency and seriousness.

Wise On-Call Response

Triage by danger, ask focused questions, delegate where possible, call for help if overloaded, keep a task list, and hand over unresolved issues.

Repair Trajectory

Dangerous tasks completed first, routine tasks delayed safely, no critical result lost, communication preserved.

40. Common Student Pitfalls

Pitfall 1: Treating On-Call Work as a Checklist

Every task may hide a clinical problem.

Pitfall 2: Not Asking for Vital Signs

Current observations often determine urgency.

Pitfall 3: Prescribing Without Reviewing

Remote prescribing can be dangerous for fluids, sedatives, opioids, insulin, and anticoagulants.

Pitfall 4: Ignoring Nurse Concern

Bedside concern may precede objective deterioration.

Pitfall 5: Forgetting Glucose in Confusion

Always consider glucose in altered mental state.

Pitfall 6: Not Reassessing After Treatment

The patient may worsen after the first intervention.

Pitfall 7: Poor Documentation

The next team needs to know what happened and what to watch.

Pitfall 8: Weak Handover

Unhanded risk becomes lost risk.

41. Clinical Practice Box

During an on-call shift, use this structure:

Start-of-shift handover:
Who is unstable, high risk, awaiting results, or needing reassessment?

Task triage:
Which jobs are dangerous, time-sensitive, routine, or able to wait?

First call questions:
Who is the patient? What changed? What are the vital signs? What is the nurse worried about?

Danger first:
Airway, breathing, circulation, consciousness, glucose, sepsis, bleeding, chest pain, stroke, severe pain, self-harm.

Syndrome:
What clinical pattern is present before the final diagnosis is clear?

Capacity failure:
Oxygenation, circulation, cognition, clearance, glucose, comfort, mobility, agency, support.

Immediate action:
What is the safest next step?

Escalation:
Who needs to be called, and how urgently?

Reassessment:
When will you check response? What should nursing monitor?

Documentation:
What happened, what you found, what you did, response, plan, escalation triggers.

End-of-shift handover:
What must the next clinician not miss?

42. Mini-Case for Practice

You are on call overnight. A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia is recovering on the ward. The nurse calls because she is more confused, dizzy when standing, and nearly fell. She has eaten poorly. Creatinine was rising earlier. Diuretic and ACE inhibitor are held. Insulin was reduced. NSAIDs were stopped. She received opioid pain medicine and a sleeping tablet.

Apply the complete on-call approach.

First Call Questions

Ask for current vital signs, oxygen saturation, glucose, consciousness, timing of change, fall details, urine output, oral intake, pain, medicines given, and nurse's main concern.

Danger

Hypoglycemia, hypoxia, delirium, hypotension, AKI worsening, medication toxicity, dehydration, infection worsening, fall injury, stroke, urinary retention, constipation.

Syndrome

Acute confusion and near fall in a frail multimorbid patient with recent infection, kidney vulnerability, poor intake, and sedative/opioid exposure.

Capacity Failures

Brain coordination, mobility safety, glucose regulation, clearance, circulation regulation, comfort, agency.

Immediate Action

Review promptly. Check glucose, oxygenation, vital signs, hydration, pain, neurological signs, bowel and bladder status, medicine chart, recent labs, and urine output. Assess whether opioid or sleeping tablet contributed. Reinforce falls precautions.

Escalation

Call senior help if vital signs are unstable, glucose abnormal and not correcting, oxygen requirement rising, consciousness reduced, neurological signs present, severe AKI or electrolyte abnormality suspected, or patient unsafe despite measures.

Treatment and Reassessment

Correct reversible causes. Avoid further sedatives unless essential for safety and according to local guidance. Treat pain safely. Address constipation or retention if present. Reassess mental state, dizziness, glucose, blood pressure, and safety.

Documentation and Handover

Document the review, likely delirium or medication contribution, actions taken, monitoring plan, and escalation triggers. Hand over to day team for renal review, medicine reconciliation, pain plan, delirium care, and discharge safety.

Repair Trajectory

Confusion improves, no fall occurs, glucose remains safe, dizziness reduces, kidney function is reviewed, sedative burden is reduced, pain remains controlled safely, and the day team continues the repair plan.

43. Student Takeaway

The complete on-call shift becomes easier when the clinician asks:

Who is most at risk?
Which task is dangerous now?
What has changed?
What are the current vital signs?
Is airway, breathing, circulation, consciousness, and glucose safe?
What syndrome is present?
Which capacity is failing?
What is the safest immediate action?
Who needs to help?
How will I reassess?
What must be documented?
What must be handed over?

A complete on-call shift is not one in which every task is finished perfectly.

It is one in which danger is recognized early, patients are prioritized fairly, urgent problems are assessed carefully, medicines are used safely, help is requested appropriately, communication is clear, decisions are documented, response is reassessed, and unresolved risks are handed over without being lost.

The safe on-call clinician is not merely busy.

The safe on-call clinician is structured, alert to danger, humble enough to escalate, disciplined enough to document, and committed to keeping patients protected through the most vulnerable hours of care.

Chapter 82. Clinical Handover Made Easy

Clinical handover is the structured transfer of responsibility, information, risk, uncertainty, and next steps from one clinician or team to another.

Patients do not usually say:

“Please hand me over safely.”

They say:

“Does the next doctor know what is happening?”
“Do I have to explain everything again?”
“Did they tell the night team I was getting worse?”
“Does my GP know my medicines changed?”
“Who is checking my results?”
“Who is responsible now?”
“Please make sure nothing is missed.”

Clinicians may think:

“I already wrote the note.”
“The plan is obvious.”
“The next team can read the chart.”
“I mentioned it quickly.”
“There are too many patients to hand over in detail.”
“I hope they understand the risk.”

But handover is not just passing information.

Handover is the transfer of clinical responsibility.

A poor handover can lose danger.
A good handover protects the patient.
A poor handover lists diagnoses without priorities.
A good handover identifies what must not be missed.
A poor handover hides uncertainty.
A good handover names uncertainty and assigns follow-up.
A poor handover assumes the next person will work it out.
A good handover makes the next safe action clear.

The first task is not simply to “tell them about the patient.”

The deeper question is:

What does the next clinician or team need to know, watch, do, and reassess so that care remains safe and coherent after responsibility transfers?

Clinical handover becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical Handover?

Clinical handover is the safe transfer of care from one person or team to another.

It may occur:

- from day team to night team
- from night team to day team
- from emergency department to ward

- from ward to ICU
- from ICU to ward
- from hospital to primary care
- from hospital to rehabilitation
- from hospital to nursing home
- from one specialist team to another
- from one clinic to another
- from clinician to patient and caregiver at discharge

A handover should transfer:

- who the patient is
- why the patient is under care
- what is happening now
- what is dangerous
- what remains uncertain
- what has been done
- what needs to happen next
- what should trigger escalation
- who owns pending tasks

Handover is a bridge.

If the bridge is weak, the patient falls between systems.

2. Handover Is Not the Same as Documentation

Documentation is written continuity.

Handover is active transfer.

A note may contain information, but the receiving clinician may not know what matters most.

A handover highlights:

- urgency
- risk
- priorities
- pending decisions
- uncertainty
- escalation triggers
- patient-specific concerns

Documentation supports handover.

It does not replace it when active risk exists.

If the patient is unstable, deteriorating, complex, or awaiting important results, “it is in the notes” is not enough.

3. Handover Is Not a Data Dump

A data dump overwhelms the listener.

Example:

“Bed 6 is 82, diabetes, CKD, COPD, hypertension, dementia, admitted with pneumonia, on antibiotics, creatinine 160, sodium 132, had a fall, daughter called, needs physio, maybe discharge.”

This gives facts, but not safety.

A better handover is:

“Bed 6 is an 82-year-old frail woman with dementia, diabetes, and CKD, admitted with pneumonia complicated by delirium and AKI. Pneumonia is improving, but she remains intermittently confused, weak, and at high falls risk. Please review if she becomes more drowsy, febrile, hypoxic, has reduced urine output, or falls. Repeat renal function is due tomorrow before deciding whether to restart her diuretic. Daughter needs update before discharge.”

This transfers meaning.

Good handover is selective, structured, and risk-focused.

4. The First Question: Is There Immediate Danger?

Before handing over details, identify immediate danger.

Ask:

- Is the patient unstable?
- Is oxygen need rising?
- Is blood pressure falling?
- Is there chest pain?
- Is there new confusion?
- Is there bleeding?
- Is there severe pain?
- Is there severe electrolyte abnormality?
- Is there AKI with danger?
- Is there sepsis concern?
- Is there hypoglycemia risk?
- Is there suicidal risk?
- Is there agitation or safety risk?
- Is discharge unsafe?
- Is an urgent result pending?

The danger-first handover question is:

What must the receiving clinician know immediately to prevent harm?

Danger should be handed over first, not last.

5. Immediate Red Flags in Handover

A handover must clearly flag:

- unstable vital signs
- rising oxygen requirement
- recent deterioration
- sepsis concern
- chest pain pathway
- stroke concern
- severe electrolyte abnormality
- AKI or reduced urine output
- major bleeding or falling hemoglobin
- recurrent hypoglycemia
- new delirium or agitation
- fall or high fall risk
- anticoagulation risk
- severe pain
- withdrawal risk
- suicidal thoughts
- unsafe discharge concerns
- pending urgent imaging or labs
- goals-of-care uncertainty in serious illness
- family conflict or safeguarding concern

These should not be hidden in routine patient lists.

The receiving clinician should know which patients need attention first.

6. The Core Handover Structure

A practical handover structure is:

- patient identity and location
- main syndrome or reason for care
- current status
- immediate danger or risk
- relevant background
- treatment so far
- response to treatment
- active problems
- pending tasks or results
- escalation triggers
- patient or family issues
- what you need the receiver to do

This structure can be brief or detailed depending on risk.

The key is to transfer responsibility clearly.

7. Start With the Main Syndrome

Do not begin with a long list of chronic diagnoses.

Begin with the active clinical pattern.

Examples:

“Admitted with pneumonia complicated by hypoxia and delirium.”

“Recovering from heart failure exacerbation with renal function still unstable.”

“New AKI after poor intake and NSAID use.”

“Fall with possible syncope; telemetry review pending.”

“Advanced cancer with uncontrolled pain and possible bowel obstruction.”

“Chest pain under serial assessment; next troponin due.”

The main syndrome tells the receiver how to think.

8. State Current Status Clearly

The receiving clinician needs to know the patient’s current condition.

Use clear status phrases:

- improving
- deteriorating
- stable but high risk
- diagnosis uncertain
- treatment response incomplete
- discharge planned but unsafe issue remains
- awaiting urgent result
- comfort-focused care
- for active escalation if worsens
- not for escalation beyond agreed limits

Avoid vague phrases like:

“Fine.”
“Stable.”
“Doing okay.”
“Just keep an eye.”

Better:

“Afebrile and off oxygen, but still delirious and not safe to mobilize alone.”

“Breathlessness improved, but creatinine is rising after diuresis.”

“Currently comfortable, dying phase recognized, family aware, focus is comfort.”

Status should mean something.

9. Include Relevant Background

Relevant background is what changes risk or action.

Examples:

- CKD affecting medicine safety
- diabetes affecting glucose risk
- heart failure affecting fluid decisions
- COPD affecting oxygenation
- dementia affecting delirium and consent
- frailty affecting recovery and discharge
- anticoagulation affecting fall or bleeding
- immunosuppression affecting infection
- cancer affecting pain, clot, prognosis, and goals
- addiction affecting withdrawal risk
- allergies affecting treatment options
- baseline function affecting discharge readiness

Do not list every diagnosis.

Include what the next clinician needs to interpret risk.

10. Handover Medicines That Matter

Medication issues are often lost at handover.

Mention:

- high-risk medicines started
- medicines stopped
- medicines held
- medicines needing restart decision
- anticoagulants
- insulin
- opioids
- sedatives
- diuretics
- antibiotics
- steroids
- NSAIDs
- antihypertensives
- medicines needing renal or liver adjustment
- allergies affecting urgent treatment

- medication errors or discrepancies

Example:

“Diuretic and ACE inhibitor are held because of AKI. Please do not restart overnight unless senior review; renal function is due tomorrow.”

Or:

“Insulin was reduced after hypoglycemia and poor intake. Please review glucose if she eats poorly or becomes confused.”

Medicine handover prevents avoidable harm.

11. Handover Pending Results

Pending results must have ownership.

Include:

- what result is pending
- when it is expected
- who should check it
- what action is needed if abnormal
- whether the patient needs review
- whether the result affects discharge or treatment

Examples:

“Repeat potassium is due at 22:00 after treatment. Please review and call senior if still elevated.”

“Blood cultures are pending; if positive overnight, review antibiotics and inform senior.”

“CT report is pending; discharge should wait until final report is reviewed.”

A pending result without ownership is unsafe.

12. Handover Reassessment Needs

If the patient needs reassessment, state:

- why
- when
- what to check
- what would change the plan
- what to do if worse

Examples:

“Please reassess respiratory status in two hours after diuresis; escalate if oxygen need rises or blood pressure falls.”

“Please recheck glucose before bed because she ate poorly and had hypoglycemia earlier.”

“Please review pain after opioid adjustment and monitor for drowsiness and constipation.”

A handover is incomplete if it says “review later” without purpose.

13. Handover Escalation Triggers

Escalation triggers tell the next clinician when to act.

Examples:

- oxygen requirement increases
- respiratory rate rises
- blood pressure falls
- consciousness reduces
- chest pain returns
- fever with systemic signs
- urine output falls
- potassium remains high
- glucose repeatedly low
- bleeding occurs
- confusion worsens
- agitation becomes unsafe
- pain remains uncontrolled
- patient tries to leave
- family reports major change
- patient falls

A good handover includes:

“If X happens, do Y.”

Example:

“If oxygen requirement increases again, please review immediately and call senior because PE and heart failure remain possible.”

14. Handover Uncertainty

Uncertainty must not be hidden.

Say:

“The diagnosis is not fully clear.”

But be specific:

“The main uncertainty is whether breathlessness is pneumonia alone or mixed with heart failure. Fever is improving, but edema and orthopnea persist.”

Or:

“The cause of delirium is not fully identified. Infection is treated, but constipation, sedative burden, and urinary retention still need review.”

Or:

“Chest pain workup is incomplete. Next result determines whether discharge is possible.”

Uncertainty without handover becomes danger.

15. Handover Patient Values and Goals

When values affect care, hand them over.

Examples:

- patient refuses certain treatment
- patient prioritizes home
- patient wants full escalation
- patient does not want ICU if recovery unlikely
- patient is comfort-focused
- family meeting planned
- advance directive exists
- capacity is impaired
- legal proxy or substitute decision-maker involved
- spiritual or cultural needs affect care

Example:

“Patient understands COPD is advanced and prefers comfort-focused care at home if possible. Not for ICU escalation; comfort plan documented. Please call family if deterioration occurs.”

Goals of care are safety information.

16. Handover Capacity and Consent Issues

Hand over:

- capacity concerns
- decision-specific capacity assessment
- refusal of treatment
- best-interest decisions
- family or legal representative involvement
- safeguarding concerns
- patient attempting to leave
- delirium affecting decision-making

Example:

“Patient wants to leave but remains delirious and does not understand fall and AKI risk. Capacity assessment documented; senior review planned if she continues to insist.”

Capacity issues are time-sensitive.

They should not be rediscovered from the beginning by the next team.

17. Handover Discharge Risk

If discharge is planned or possible, hand over:

- what must happen before discharge

- unresolved barriers
- medicine reconciliation
- mobility status
- cognition
- caregiver readiness
- equipment
- follow-up
- pending results
- safety-netting
- transport

Example:

“Possible discharge tomorrow only if renal function stable, physiotherapy clears stairs, daughter confirms supervision, and medication list is reconciled. Not safe to discharge tonight.”

This prevents premature discharge.

18. Handover in Frailty

Frailty handover must include function.

Mention:

- baseline mobility
- current mobility
- cognition baseline
- current confusion
- falls risk
- nutrition
- hydration
- medicines
- caregiver support
- discharge safety
- goals of care

Example:

“Baseline: walks with stick and normally forgetful but not confused. Currently needs one-person assist and remains intermittently delirious. Daughter says not baseline. High falls risk.”

Without baseline, the next clinician may mistake acute decline for normal aging.

19. Handover in Delirium

Delirium handover should include:

- baseline cognition
- current mental state

- suspected triggers
- safety risks
- medicines contributing
- non-drug measures
- family involvement
- escalation plan
- sedation only if necessary and according to local guidance
- monitoring needs

Example:

“Delirium is fluctuating. Infection improving, but constipation and opioid exposure may be contributing. Avoid sedatives if possible. Call if unsafe agitation, reduced consciousness, hypoxia, or new neurological signs.”

Delirium handover protects the brain and body.

20. Handover in AKI

AKI handover should include:

- baseline kidney function
- current trend
- urine output
- likely cause
- fluid status
- potassium or electrolyte risk
- medicines held
- medicines to avoid
- repeat blood test timing
- escalation triggers

Example:

“AKI likely from poor intake and NSAID use. NSAIDs stopped; diuretic and ACE inhibitor held. Creatinine improving but potassium needs repeat tonight. Avoid nephrotoxic medicines. Escalate if reduced urine, rising potassium, or fluid overload.”

AKI handover is medicine safety handover.

21. Handover in Heart Failure

Heart failure handover should include:

- current breathlessness
- oxygen need
- fluid status
- weight trend where used

- renal function
- electrolytes
- diuretic plan
- blood pressure
- dizziness
- escalation triggers
- goals if advanced disease

Example:

“Diuresed for pulmonary edema; breathing improved but creatinine rose and BP is borderline. No further diuretic overnight unless reviewed. Escalate if breathlessness worsens, oxygen need rises, or urine output falls.”

Heart failure handover must balance circulation and clearance.

22. Handover in Infection

Infection handover should include:

- suspected source
- severity
- cultures taken
- antibiotics started
- allergies
- response so far
- sepsis concern
- source control issues
- pending culture results
- escalation triggers

Example:

“Pneumonia treated with antibiotics; fever settling and oxygen lower. Cultures pending. Please review if fever spikes with hypotension, oxygen requirement rises, or confusion worsens.”

Infection handover should make review points clear.

23. Handover in Palliative and End-of-Life Care

Palliative handover should include:

- diagnosis and trajectory
- goals of care
- symptom priorities
- medicines available
- route of administration
- family awareness

- escalation limits
- spiritual or cultural needs
- what to do if symptoms worsen
- who to call if death occurs or is expected

Example:

“Patient is dying from advanced cancer; focus is comfort. Family aware and present. Main symptoms are pain and breathlessness. Comfort medicines are prescribed according to local protocol. Not for escalation to ICU. Please review urgently if distress, agitation, or uncontrolled pain.”

End-of-life handover must be compassionate and precise.

24. Handover in Chest Pain

Chest pain handover should include:

- pain history
- current symptoms
- ECG findings
- pathway status
- pending troponin or repeat assessment
- risk factors
- treatment given
- what result changes plan
- escalation triggers

Example:

“Chest pain under assessment. Initial ECG without acute change; first blood test reassuring but second due at midnight. Do not discharge until pathway complete and reviewed. Escalate if pain recurs, ECG changes, syncope, or instability.”

This prevents incomplete chest pain evaluation.

25. Handover in Falls

Falls handover should include:

- injury status
- head strike
- anticoagulant use
- loss of consciousness
- suspected cause
- mobility status
- falls precautions
- medicines reviewed
- imaging or observation plan

- family concern
- discharge implications

Example:

“Unwitnessed fall today, on anticoagulant, no obvious injury but head strike uncertain. Neuro observations started according to local policy. High falls risk; do not mobilize alone. Review if headache, vomiting, drowsiness, confusion, or neuro signs.”

Falls handover must include future risk, not just past event.

26. Handover Across Settings

Hospital-to-community handover must include:

- diagnosis
- hospital course
- medicine changes
- pending results
- follow-up plan
- functional status
- cognitive status
- support needs
- warning signs
- goals of care
- monitoring tasks
- who owns what

The primary care clinician or receiving facility needs the repair trajectory.

A discharge summary that says only:

“Admitted with pneumonia, treated, discharged.”

is not enough.

Better:

“Pneumonia complicated by delirium and AKI. Oxygen no longer needed, but cognition improving gradually and mobility below baseline. Diuretic and ACE inhibitor held pending renal function review. Repeat blood test due in three days. Daughter supervising. Urgent review if confusion worsens, urine output falls, breathlessness returns, or falls occur.”

That is safe cross-setting handover.

27. Handover to the Patient and Caregiver

Patients and caregivers also receive handover.

They need to know:

- what happened
- what diagnosis or uncertainty remains

- what medicines to take
- what medicines to stop
- what warning signs matter
- what follow-up is arranged
- what results are pending
- what help is available
- what recovery should look like
- who to contact

Use teach-back.

Ask:

“Can you tell me what you will do if breathlessness worsens?”

“Which medicines have been stopped?”

“When is the repeat blood test?”

Patient handover is safety-netting.

28. Handover and Closed-Loop Communication

Closed-loop communication means the receiver confirms understanding.

Example:

Clinician:

“Please repeat potassium at 22:00 and call me if it remains high.”

Receiver:

“I will repeat potassium at 22:00 and call if it is still high.”

Closed-loop communication reduces assumptions.

It is especially important for:

- urgent results
- medication changes
- escalation triggers
- time-critical tasks
- unstable patients
- procedures
- transfers
- discharge-critical tasks

When risk is high, confirm the loop.

29. Handover and Task Ownership

Every task needs an owner.

Poor:

“Needs renal function checking.”

Better:

“Night doctor to review renal function result at 22:00 and decide whether further treatment is needed. Day team to review diuretic restart tomorrow.”

Poor:

“Family needs update.”

Better:

“Day team to call daughter before discharge because she provides baseline and will supervise medicines.”

Tasks without owners become lost tasks.

30. Handover and Prioritization

Handover should tell the receiving clinician what matters most.

Use categories:

Must See First

Unstable or high-risk patients.

Must Review Results

Critical pending labs or imaging.

Must Reassess

Patients after treatment or deterioration.

Must Not Miss

Risks, escalation triggers, capacity issues, safeguarding.

Can Wait

Routine tasks without immediate risk.

This helps the receiving clinician manage workload safely.

31. Handover and Unfinished Work

Unfinished work is normal.

Unsafe unfinished work is not.

When handing over unfinished work, state:

- what remains undone
- why it matters
- how urgent it is
- what action is needed
- who owns it
- what happens if it cannot be completed

Example:

“I was unable to speak with daughter before end of shift. This matters because she knows baseline cognition and discharge depends on her support. Please prioritize call tomorrow before discharge decision.”

Honesty about unfinished work protects the patient.

32. Handover and Professional Humility

Good handover includes humility.

Say:

“I am not fully sure.”
“This diagnosis needs reassessment.”
“This patient worries me.”
“The plan may need changing if results worsen.”
“Please review if anything does not fit.”

Overconfident handover can mislead.

Humility helps the next clinician keep thinking.

33. Handover Failure Patterns

Common failures include:

- no handover given
- handover too vague
- handover too long and unfocused
- danger not highlighted
- pending results not assigned
- medication changes unclear
- uncertainty hidden
- patient values omitted
- escalation triggers absent
- discharge barriers ignored
- family concern not passed on
- receiving clinician distracted
- no opportunity for questions
- no documentation

Each failure creates a gap where harm can enter.

34. Worked Case 1: Pneumonia With Delirium

An 83-year-old woman with frailty, dementia, CKD, and diabetes is admitted with pneumonia, hypoxia, delirium, poor intake, and AKI. She is improving but remains confused.

Weak Handover

“Bed 8, pneumonia, on antibiotics, improving.”

Strong Handover

“Bed 8 is an 83-year-old frail woman with dementia, CKD, and diabetes, admitted with pneumonia complicated by hypoxia, delirium, poor intake, and AKI. Fever and oxygenation are improving, but she remains intermittently confused, eating poorly, and at high falls risk. Diuretic and ACE inhibitor are held while renal function recovers; insulin has been reduced because intake is poor. Please review if confusion worsens, oxygen need rises, urine output falls, glucose is low, or she falls. Repeat renal function is due tomorrow, and daughter should be updated before discharge.”

Why This Works

It transfers syndrome, improvement, active risks, medicines, monitoring, escalation, and family issue.

35. Worked Case 2: Heart Failure With Rising Creatinine

A 76-year-old man treated for acute heart failure is less breathless, but creatinine has risen and blood pressure is borderline.

Weak Handover

“Heart failure, diuresed, check labs.”

Strong Handover

“Mr. Thomas was admitted with decompensated heart failure and pulmonary congestion. He improved after diuresis, but creatinine has risen and blood pressure is borderline. No further diuretic overnight unless reviewed. Repeat renal function and electrolytes are due in the morning. Please review urgently if breathlessness worsens, oxygen requirement rises, urine output falls, dizziness worsens, or potassium is abnormal.”

Why This Works

It identifies the heart-kidney balance and prevents automatic continuation of treatment without review.

36. Worked Case 3: Chest Pain Pathway

A 58-year-old man presented with chest pain. Initial assessment is reassuring, but serial assessment is incomplete.

Weak Handover

“Chest pain, first test okay.”

Strong Handover

“Mr. Lewis is under chest pain assessment. Initial ECG and first blood test are reassuring, but serial pathway is incomplete. Second blood test is due at midnight and must be reviewed before any discharge decision. Escalate immediately if chest pain recurs, ECG changes, syncope, breathlessness, sweating, or instability develops.”

Why This Works

It prevents premature reassurance and incomplete assessment.

37. Worked Case 4: Patient Trying to Leave

A patient admitted with AKI and delirium wants to leave.

Weak Handover

“Patient wants to go home; talk to him if needed.”

Strong Handover

“Mr. Grant has AKI and fluctuating delirium. He repeatedly says he wants to leave but does not consistently understand the kidney risk, falls risk, or medication changes. Capacity concern is documented. If he tries to leave overnight, please assess decision-specific capacity, check for reversible distress such as pain or fear, involve senior help, and call his daughter with consent or best-interest process as appropriate.”

Why This Works

It transfers legal, ethical, clinical, and safety risk.

38. Worked Case 5: Palliative Patient Overnight

A patient with advanced cancer is dying, and family is present.

Weak Handover

“Palliative, no escalation.”

Strong Handover

“Mrs. Adams is dying from advanced cancer. Goals are comfort-focused and family is aware and present. Main risks overnight are pain, breathlessness, and agitation. Comfort medicines are prescribed according to local protocol. Please review promptly if distress occurs. Not for ICU or CPR; escalation plan documented. Family may need explanation and support if breathing changes.”

Why This Works

It protects comfort and prevents both neglect and inappropriate escalation.

39. Worked Case 6: Pending Culture Result

A patient with sepsis is improving, but cultures are pending.

Weak Handover

“Cultures pending.”

Strong Handover

“Mr. Singh is improving after treatment for suspected sepsis, likely urinary source. Blood and urine cultures are pending. If cultures return positive or resistant overnight, please review antibiotics with senior or microbiology advice according to local pathway. Escalate if fever returns with hypotension, confusion, reduced urine output, or rising oxygen need.”

Why This Works

It assigns meaning and action to pending results.

40. Common Student Pitfalls

Pitfall 1: Handing Over Diagnoses Without Risk

The receiver needs to know what could go wrong.

Pitfall 2: Saying “Stable” Without Detail

Stable in what way? Stable compared with what? What remains risky?

Pitfall 3: Forgetting Pending Results

Pending results need ownership.

Pitfall 4: Omitting Medicine Changes

Held, stopped, and high-risk medicines must be clear.

Pitfall 5: Hiding Uncertainty

Uncertainty must be handed over so it can be managed.

Pitfall 6: Forgetting Escalation Triggers

The next clinician needs to know when to act.

Pitfall 7: Ignoring Function and Discharge Barriers

Mobility, cognition, and support often determine safety.

Pitfall 8: Not Confirming Understanding

Closed-loop communication prevents assumptions.

41. Clinical Practice Box

When handing over, complete this structure:

Patient and location:
Who and where?

Main syndrome:
Why is the patient under care?

Current status:
Improving, worsening, stable but high risk, uncertain, comfort-focused?

Immediate danger:
What could harm the patient now or overnight?

Relevant background:
Conditions that change risk or treatment.

Treatment and response:
What has been done, and did it help or harm?

Medicines:
High-risk medicines, held medicines, stopped medicines, restart decisions, allergies.

Pending results or tasks:
What must be checked, by whom, and when?

Uncertainty:
What remains unclear, and what would change the plan?

Escalation triggers:
What changes require urgent review or senior help?

Patient values, capacity, or family issues:
Anything that affects decisions or safety?

Receiver action:
What exactly do you need the next person to do?

Closed loop:
Has the receiver understood and accepted responsibility?

42. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain was admitted with pneumonia complicated by hypoxia, delirium, AKI, hypoglycemia, and falls. She is now afebrile and off oxygen. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin has been reduced. NSAIDs were stopped. She remains weak, intermittently confused, constipated, and afraid to walk. Her daughter says she is not back to baseline and is worried about stairs at home. Discharge is being considered tomorrow.

Prepare a handover to the night team.

Strong Handover

"Mrs. Roberts is a 78-year-old frail woman with diabetes, CKD, heart failure, mild dementia, and chronic pain, admitted with pneumonia complicated by hypoxia, delirium, AKI, hypoglycemia, and falls.

She is improving from the pneumonia: afebrile and off oxygen. However, she remains high risk because her creatinine is improving but not back to baseline, she is intermittently confused, weak, constipated, and afraid to walk. Her daughter says she is normally forgetful but not this confused and is worried about stairs at home.

Medication issues are important: diuretic and ACE inhibitor remain held because of AKI; insulin has been reduced because of hypoglycemia and poor intake; NSAIDs were stopped because of kidney and heart failure risk. Please avoid NSAIDs and avoid sedatives if possible because of delirium and falls risk.

Overnight, please review urgently if she becomes more confused or drowsy, has low glucose, reduced urine output, worsening breathlessness, chest pain, fever, a fall, severe pain, or unsafe agitation. Please reinforce falls precautions and monitor bowels, pain, oral intake, glucose, and urine output.

Discharge should not happen until renal function, medication reconciliation, mobility, cognition, constipation, and daughter's ability to support stairs and medicines are clarified. Day team should update daughter before any discharge decision."

Why This Works

It transfers the main syndrome, current improvement, remaining risks, medicine issues, escalation triggers, discharge barriers, and family concern.

43. Student Takeaway

Clinical handover becomes easier when the clinician asks:

Who is the patient, and what is the main syndrome?
What is the current status?
What is dangerous now or likely to become dangerous?
What background changes risk?
What treatments have been given, and what was the response?
What medicines are high-risk, held, stopped, or awaiting restart decision?

What results or tasks are pending?
What remains uncertain?
What should trigger escalation?
What patient values, capacity issues, family concerns, or discharge barriers matter?
What exactly does the receiving clinician need to do?

A good handover is not a list of facts.

It is the safe transfer of clinical responsibility.

The safe clinician hands over danger, syndrome, active capacity failures, uncertainty, pending tasks, medication risk, patient values, escalation triggers, and the repair trajectory — so the patient remains protected even when teams change.

Chapter 83. Clinical Referral Made Easy

Clinical referral is the structured request for another clinician, service, or team to help with diagnosis, treatment, risk management, procedure, follow-up, rehabilitation, support, or shared decision-making.

Patients do not usually say:

“Please make a high-quality clinical referral.”

They say:

“Do I need to see a specialist?”
“Why are you sending me there?”
“How urgent is this?”
“What should I expect?”
“Will they know what has already been done?”
“What happens while I am waiting?”
“Who is still responsible for me?”
“What do I do if I get worse before the appointment?”

Clinicians may think:

“I need specialist advice.”
“This is beyond my scope.”
“The diagnosis is uncertain.”
“The patient is not improving.”
“This test result needs action.”
“I need help balancing risks.”
“This patient needs a procedure.”
“The referral letter must be clear.”

Referral is central to Internal Medicine because modern care is shared across clinicians, specialties, professions, institutions, and levels of care.

A good referral can speed diagnosis.
A poor referral can delay care.
A good referral states a clear question.
A poor referral sends information without purpose.
A good referral transfers risk safely.
A poor referral leaves responsibility unclear.
A good referral includes what has been tried.
A poor referral makes the patient repeat everything.
A good referral explains urgency.
A poor referral allows danger to wait unnoticed.

The first task is not simply to “send the patient.”

The deeper question is:

What help is needed, from whom, how urgently, and what must be communicated so that the patient remains safe before, during, and after the referral?

Clinical referral becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is a Clinical Referral?

A clinical referral is a deliberate request for help.

It may be made to:

- a specialist physician
- a surgeon
- emergency department
- hospital team
- primary care clinician
- nurse specialist
- pharmacist
- physiotherapist
- occupational therapist
- dietitian
- speech and language therapist
- mental health team
- palliative care team
- social worker
- rehabilitation service
- community nursing team
- diagnostic service
- procedure service
- public health service
- safeguarding service

Referral is not abandonment.

It is shared responsibility.

The referring clinician should remain responsible for safety until the receiving service accepts and assumes the agreed role.

2. Referral Is Not a Dumping Ground

A referral should not mean:

“I do not know what to do, so someone else can take over.”

Sometimes uncertainty is exactly why referral is needed. But the referral must still be clear.

A safe referral says:

- what is happening
- why help is needed
- how urgent it is
- what has been done
- what remains uncertain
- what decision is requested

- what risk exists while waiting
- what follow-up is needed

Referral should reduce confusion, not transfer it.

3. Referral Is a Clinical Intervention

A referral can help or harm.

It can help by:

- providing expertise
- confirming diagnosis
- offering procedures
- improving treatment
- reducing risk
- coordinating care
- supporting function
- relieving suffering
- clarifying goals
- improving discharge safety

It can harm by:

- delaying care
- fragmenting responsibility
- increasing anxiety
- causing unnecessary tests
- duplicating medicines
- creating conflicting advice
- over-medicalizing stable problems
- overwhelming frail patients
- adding treatment burden
- losing pending results

Therefore, referral should be purposeful.

The question is:

Will this referral improve safety, clarity, treatment, function, comfort, or repair?

4. The First Question: Is the Referral Urgent?

Before writing a routine referral, ask whether the patient needs urgent care.

Referral urgency depends on danger.

Immediate or urgent referral may be needed for:

- severe breathlessness

- chest pain with concerning features
- stroke symptoms
- sepsis
- severe abdominal pain
- major bleeding
- severe AKI or electrolyte abnormality
- new neurological deficit
- spinal cord compression concern
- suicidal intent
- severe withdrawal
- severe uncontrolled pain
- suspected malignancy with red flags
- rapidly progressive weakness
- acute vision loss
- unstable arrhythmia
- high-risk pregnancy issue where relevant
- safeguarding danger
- unsafe discharge

The danger-first question is:

Can this safely wait, or does the patient need urgent assessment now?

If danger is present, do not send a routine referral and hope.

Escalate through the urgent pathway.

5. Immediate Red Flags Requiring Escalation

Red flags include:

- unstable vital signs
- rising oxygen need
- hypotension
- new confusion
- reduced consciousness
- severe chest pain
- syncope with concerning features
- new neurological deficit
- severe headache with red flags
- severe abdominal pain
- GI bleeding with weakness or collapse
- severe anemia symptoms

- severe electrolyte abnormality
- reduced urine output with AKI
- fever with systemic illness
- suspected sepsis
- severe pain with neurological signs
- suicidal thoughts with plan or intent
- violent agitation or withdrawal risk
- suspected abuse or neglect
- frailty with acute inability to walk, eat, drink, or think clearly

These should be handled through urgent clinical pathways, not slow routine referral.

6. Why Are You Referring?

Every referral should have a clear reason.

Common reasons include:

Diagnostic Help

The diagnosis is uncertain, rare, serious, or requires specialized tests.

Treatment Advice

Treatment is complex, high-risk, failing, or outside usual scope.

Procedure

The patient needs endoscopy, biopsy, drainage, surgery, catheterization, imaging-guided procedure, or other intervention.

Risk Management

The patient has high-risk medicine, severe abnormal result, recurrent deterioration, or competing disease risks.

Functional Support

The patient needs rehabilitation, mobility assessment, swallowing assessment, nutrition support, equipment, or home safety planning.

Symptom Relief

The patient needs specialist pain, palliative, respiratory, cardiac, neurological, renal, or mental health support.

Goals of Care

The patient needs help aligning care with serious illness trajectory and values.

A referral without a reason becomes a request for someone else to guess the problem.

7. The Referral Question

The referral question is the heart of the referral.

Weak:

“Please see and advise.”

Better:

“Please advise on whether this AKI is due to volume depletion, obstruction, or intrinsic renal disease, and whether held heart failure medicines can be safely restarted.”

Weak:

“Refer cardiology.”

Better:

“Please assess recurrent exertional chest tightness despite reassuring initial emergency review, and advise on further cardiac investigation and treatment.”

Weak:

“Please review pain.”

Better:

“Please advise on safe pain control in metastatic cancer with constipation, drowsiness, CKD, and poor response to current opioid regimen.”

A good referral question tells the receiving clinician exactly what decision is needed.

8. Referral Urgency Categories

A simple urgency structure is:

Emergency

The patient needs immediate assessment or transfer because life, limb, brain, or major organ function is at risk.

Urgent

The patient needs assessment soon because delay may cause harm, deterioration, or missed serious disease.

Soon

The patient is stable but requires timely specialist input to guide diagnosis or treatment.

Routine

The issue is important but stable and not time-critical.

Advice Only

The referring clinician can continue care but needs guidance.

The urgency should be justified.

Do not mark everything urgent.

Do not mark dangerous problems routine.

Urgency should match risk.

9. Referral Begins With a Good Clinical Synthesis

A referral should not be a pile of notes.

It should contain a synthesis.

Example:

“This is a 72-year-old man with heart failure and CKD admitted with worsening breathlessness and edema. He improved with diuresis, but creatinine has risen and blood pressure is borderline. The question is how to balance ongoing decongestion with renal safety and which medicines should remain held.”

This tells the receiving team:

- who the patient is
- what happened

- what is active
- what was tried
- what help is needed

Referral without synthesis creates delay.

10. Include the Patient's Baseline

Baseline is especially important in referrals involving:

- frailty
- dementia
- falls
- delirium
- rehabilitation
- discharge planning
- chronic disease deterioration
- palliative care
- functional decline
- kidney disease
- COPD or oxygen needs
- heart failure
- neurological disease

Include:

- usual mobility
- usual cognition
- usual activities
- living situation
- caregiver support
- usual oxygen requirement where relevant
- baseline kidney function where relevant
- baseline symptoms
- recent trajectory

Example:

"At baseline she walks with a stick, lives with her daughter, is forgetful but not confused, and usually manages basic self-care with prompting."

This helps the receiving team understand what recovery means.

11. Include Relevant Medicines

Many referrals fail because medicine context is missing.

Mention:

- anticoagulants
- antiplatelets
- insulin
- diabetes medicines
- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- opioids
- sedatives
- steroids
- antibiotics
- immunosuppressants
- chemotherapy or cancer medicines
- anti-seizure medicines
- Parkinson's medicines
- psychiatric medicines with safety implications
- recent medicine changes
- allergies and adverse reactions

Example:

"Recent medication concerns include NSAID use for knee pain, diuretic increase, insulin despite poor intake, and sleeping tablet exposure before falls and confusion."

Medicines are often central to the referral question.

12. Include What Has Already Been Done

The receiving clinician needs to know:

- what diagnosis has been considered
- what tests were done
- what treatment was tried
- what response occurred
- what complications occurred
- what advice has already been received
- what is pending

Example:

"She has had chest X-ray, ECG, basic blood tests, cultures, and initial antibiotics. Oxygen requirement improved, but delirium and AKI persist."

This prevents duplication.

It also helps the receiving clinician see the trajectory.

13. Include What Has Not Yet Been Done

Sometimes it is helpful to state what remains incomplete.

Examples:

- no imaging yet available
- cultures pending
- medication reconciliation incomplete
- collateral history not yet obtained
- baseline kidney function unknown
- final radiology report pending
- swallowing assessment not yet done
- capacity assessment pending
- family meeting not yet held

This is not a confession of failure.

It is clarity.

The receiving clinician can then decide what matters.

14. Include Patient Values Where Relevant

Referral should include values when they affect decisions.

Examples:

- patient wants to avoid hospital
- patient prioritizes comfort
- patient wants active treatment
- patient refuses blood products
- patient does not want ICU if recovery unlikely
- patient is sole caregiver at home
- patient values independence above longevity
- patient wants symptom relief more than further investigation
- family conflict exists
- capacity is impaired

Example:

“The patient understands that COPD is advanced and prioritizes staying at home if symptoms can be controlled. Referral is for palliative breathlessness support and crisis planning.”

Values help the receiving team recommend proportionate care.

15. Include Capacity and Consent Issues

Mention:

- whether the patient consents to referral
- whether capacity is uncertain
- whether substitute decision-making is involved
- whether family should be contacted
- whether patient refuses part of the plan
- whether legal or safeguarding processes are relevant

Example:

“Patient has fluctuating delirium and does not currently demonstrate capacity to refuse admission; daughter is main collateral contact and has been informed.”

This prevents ethical confusion.

16. Include Safety While Waiting

Referral does not protect the patient by itself.

Ask:

- What happens while waiting?
- What should the patient do if worse?
- What monitoring is needed?
- Who reviews results?
- What medicines continue?
- What medicines are held?
- When should referral be upgraded?
- Who remains responsible?

Example:

“While awaiting cardiology review, patient has been advised to seek urgent care for rest chest pain, syncope, worsening breathlessness, or sweating. Primary care will review blood pressure and medicines in one week.”

A referral without a waiting plan may leave danger unmanaged.

17. Referral to Emergency Care

Refer urgently to emergency care when the patient needs immediate assessment, monitoring, imaging, treatment, or admission.

Provide:

- main danger
- vital signs
- current symptoms
- relevant history
- medicines
- allergies

what has been done

what you are concerned about

family or capacity issues

Example:

“I am sending this patient urgently because of chest pain with exertional features, breathlessness, and near-syncope. He has diabetes and CKD and is on anticoagulation. ECG here is abnormal compared with prior. He needs urgent chest pain assessment.”

The emergency team should know why the patient cannot wait.

18. Referral to Specialist Physician

Specialist referral should ask a precise question.

Examples:

Cardiology

Chest pain, arrhythmia, heart failure, syncope, difficult blood pressure, complex anticoagulation.

Nephrology

AKI, CKD progression, electrolyte issues, proteinuria, difficult medicine decisions in kidney disease.

Respiratory

Persistent breathlessness, COPD complexity, unexplained hypoxia, lung nodules, recurrent pneumonia.

Gastroenterology

GI bleeding, weight loss, anemia, dysphagia, chronic diarrhea, liver disease.

Neurology

New weakness, seizure, complex headache, neuropathy, movement disorder, unexplained falls with neurological concern.

Endocrinology

Complex diabetes, adrenal, thyroid, calcium, pituitary, recurrent hypoglycemia.

The referral should include the clinical question, severity, relevant tests, treatment tried, and urgency.

19. Referral to Surgery

Surgical referrals should include:

symptom onset

pain location and character

vital signs

abdominal or relevant examination

imaging and labs

sepsis or bleeding signs

anticoagulant use

surgical history

fasting status where relevant

allergies

resuscitation status where relevant

patient goals and frailty if relevant

The question may be:

Does this patient need operation?

Is there obstruction, perforation, ischemia, abscess, bleeding, or source control need?

Is this procedure proportionate given frailty or serious illness?

Surgical referral should be timely when acute abdomen or source control is possible.

20. Referral to Palliative Care

Palliative care referral is appropriate for:

uncontrolled pain

refractory breathlessness

nausea, agitation, or complex symptoms

serious illness decision-making

repeated admissions

advanced organ failure

cancer symptom burden

frailty with decline

end-of-life care planning

family distress

goals-of-care conversations

home support planning

Referral question examples:

“Please help with breathlessness control and crisis planning in advanced COPD with repeated admissions.”

“Please advise on pain and constipation management in metastatic cancer with drowsiness and CKD.”

“Please support goals-of-care discussion in advanced heart failure with declining function and high treatment burden.”

Palliative referral is not giving up.

It is adding expertise in comfort, communication, and serious illness care.

21. Referral to Mental Health Services

Mental health referral may be needed for:

suicidal thoughts or intent

self-harm

psychosis

severe depression

severe anxiety impairing function

- eating disorder risk
- substance dependence
- withdrawal risk
- delirium versus psychiatric illness uncertainty
- capacity concerns
- medically unexplained symptoms with distress
- trauma-related presentations
- behavioral crisis

Always assess medical causes of altered behavior.

Confusion may be delirium.
Agitation may be hypoxia, pain, withdrawal, sepsis, or hypoglycemia.
Low mood may be depression, demoralization, hypothyroidism, medication effect, chronic pain, or serious illness response.

A mental health referral should include medical context and immediate safety risk.

22. Referral to Rehabilitation and Therapy

Rehabilitation referral should include:

- baseline function
- current function
- illness event
- mobility limitations
- falls risk
- cognition
- pain
- home environment
- goals
- caregiver support
- equipment needs
- discharge destination
- precautions

Referral may go to:

- physiotherapy
- occupational therapy
- speech and language therapy
- dietitian
- rehabilitation medicine
- community rehabilitation
- falls clinic

cardiac or pulmonary rehabilitation where available

Example:

“Please assess mobility and stairs before discharge. Baseline walks with stick and manages stairs slowly; currently needs assistance to transfer after pneumonia and delirium.”

Therapy referral should be specific.

“PT/OT please review” is often not enough.

23. Referral to Pharmacy

Pharmacy referral is helpful for:

polypharmacy

medication reconciliation

high-risk medicines

renal or liver dosing

anticoagulation

insulin safety

opioid conversion or safety

antibiotic review

adherence problems

cost or access issues

discharge medicine explanation

suspected medication harm

Example:

“Please review discharge medicines after AKI and hypoglycemia. Diuretic and ACE inhibitor held, insulin reduced, NSAIDs stopped; patient has mild dementia and daughter will supervise.”

Pharmacists are essential to medication safety.

24. Referral to Social Work or Safeguarding

Refer when there are concerns about:

unsafe home

neglect

abuse

caregiver collapse

food insecurity

homelessness

inability to afford care

lack of transport

domestic violence

exploitation

- unsafe discharge
- child or vulnerable adult safeguarding
- legal or benefits support
- placement needs

The referral should include:

- clinical context
- functional status
- cognitive status
- risk
- home situation
- caregiver concerns
- urgency
- patient consent or capacity context

Social referral is not separate from medicine.

Unsafe living conditions can undo the best clinical plan.

25. Referral to Diagnostic Services

When referring for imaging, endoscopy, biopsy, or testing, include:

- clinical question
- relevant history
- red flags
- examination findings
- previous results
- contraindications
- kidney function if contrast may be involved
- anticoagulation if procedure risk exists
- allergies
- pregnancy status where relevant
- urgency
- how result will be followed

Example:

“CT abdomen requested to investigate weight loss, iron deficiency anemia, and abdominal pain; concern for malignancy or chronic blood loss source. Patient has CKD, so renal function and contrast risk need review.”

Diagnostic referral should not simply say:

“Abdominal pain.”

It should ask a question.

26. Referral and Responsibility

Referral does not erase responsibility.

Until the receiving team accepts, the referring clinician must ensure:

- danger is managed
- patient knows what to do
- urgent results are followed
- medicines are safe
- monitoring is arranged
- referral is actually sent
- urgency is appropriate
- patient has access information
- follow-up exists

If a referral is rejected, delayed, or redirected, the referring clinician must reassess.

The patient should not disappear into the referral system.

27. Referral and Feedback

A good referral system includes feedback.

Ask:

- Was the referral accepted?
- Was the urgency appropriate?
- Did the receiving team answer the question?
- Did the patient attend?
- Were recommendations implemented?
- Did advice conflict with current care?
- Was the patient confused by multiple plans?
- What follow-up is needed?
- What can I learn for future referrals?

Referral is a loop.

It is not complete until the answer returns and care is updated.

28. Referral and Communication With the Patient

Before referral, explain:

- why referral is needed
- how urgent it is
- what the receiving team may do
- what has already been done
- what to do while waiting

what warning signs require urgent care

whether medicines change

whether tests are needed before referral

who remains responsible

how they will receive appointment or advice

Example:

“I am referring you because your anemia and weight loss need specialist investigation. This does not mean we know the cause yet, but we should not ignore these signs. While waiting, seek urgent care if you develop black stools, fainting, worsening weakness, chest pain, or severe abdominal pain.”

Referral should reduce confusion, not increase fear.

29. Referral and Communication With the Receiving Clinician

For urgent referrals, direct clinician-to-clinician communication is often needed.

Do not rely only on a form when danger is present.

A verbal referral should include:

who you are

patient identity and location

reason for referral

urgency

main syndrome

current status

key background

key findings

treatment so far

specific question

what you need from them

whether they accept responsibility or advice role

Example:

“I am calling about a 70-year-old man with CKD and heart failure admitted with worsening breathlessness. He improved with diuresis but now has rising creatinine and borderline blood pressure. I need advice today on balancing further diuresis against renal risk and which medicines to hold.”

This is clear and respectful.

30. Referral Letters

A good referral letter includes:

patient identifiers

date

referring clinician and contact

- receiving service
- urgency
- referral question
- concise clinical synthesis
- relevant history
- relevant examination
- relevant investigations
- medicines and allergies
- treatment tried and response
- patient values or capacity issues
- safety-net and current plan
- attached results if available

A referral letter should not be a copied chart dump.

It should be a focused clinical request.

31. Referral Rejection or Delay

If referral is declined or delayed, ask:

- Was the question clear?
- Was the urgency justified?
- Is another pathway more appropriate?
- Does the patient need urgent care instead?
- What should be done while waiting?
- Who will monitor?
- What safety-net is needed?
- Should senior discussion occur?
- Should the referral be upgraded?
- Should the patient be reassessed?

Do not simply accept rejection if danger remains.

Referral systems are imperfect.

Clinical responsibility continues.

32. Referral in Resource-Limited Settings

In resource-limited settings, referral must be especially thoughtful.

Ask:

- Is referral available?
- Is transport possible?
- Is cost a barrier?

- Can the patient safely travel?
- Is the receiving facility prepared?
- Is stabilization needed before transfer?
- What must accompany the patient?
- What can be done locally?
- What risks arise from delay?
- What follow-up is realistic?
- What family support is needed?

A referral that the patient cannot access is not a complete plan.

Adaptation may include:

- teleconsultation
- staged testing
- shared care
- local monitoring
- clear danger thresholds
- community support
- written instructions
- prioritizing the highest-risk issue

Resource limitation requires clarity, not resignation.

33. Referral and Multimorbidity

Patients with multimorbidity often receive many referrals.

This can cause fragmentation.

Ask:

- Who is coordinating care?
- Are recommendations compatible?
- Are medicines conflicting?
- Is the patient overwhelmed?
- Are appointments realistic?
- Which referral is most urgent?
- Which can wait?
- What matters most to the patient?
- Is one integrated discussion better than several separate referrals?

Sometimes the best referral is not another specialist visit.

It may be a case conference, medication review, palliative care review, or comprehensive geriatric assessment where available.

Referral should reduce fragmentation, not worsen it.

34. Referral and Frailty

In frailty, referral should consider:

- benefit
- burden
- transport
- waiting time
- delirium risk
- procedure risk
- function
- caregiver support
- goals of care
- time-to-benefit
- patient preference

Example:

A frail patient with advanced dementia and weight loss may need careful discussion before invasive investigation. The question may not be only:

“Can we investigate?”

but:

“Will investigation change care in a way that serves this patient’s goals and dignity?”

Frailty does not mean no referral.

It means proportionate referral.

35. Referral and Serious Illness

In serious illness, referral should be aligned with goals.

Ask:

- Is the referral for cure, control, symptom relief, support, or planning?
- Does the patient understand the purpose?
- Will the referral change management?
- Is the burden proportionate?
- Is palliative support also needed?
- Are family and caregivers involved?
- What happens if the referral does not offer disease-directed treatment?

A serious illness referral should not create false hope or false abandonment.

It should be honest and purposeful.

36. Worked Case 1: Nephrology Referral

A 76-year-old man with heart failure and CKD is admitted with fluid overload. Diuresis improves breathlessness, but creatinine rises.

Weak Referral

“Please review renal function.”

Strong Referral

“Please advise on AKI in a patient with known CKD and decompensated heart failure. He improved clinically with diuresis, but creatinine has risen and blood pressure is borderline. The clinical question is how to balance ongoing decongestion with renal safety, what monitoring is needed, and when to restart held heart failure medicines.”

Why This Works

It states the syndrome, treatment response, conflict, and decision needed.

37. Worked Case 2: Cardiology Referral

A 58-year-old man has recurrent exertional chest tightness. Initial emergency assessment was reassuring, but symptoms persist.

Weak Referral

“Chest pain, please see.”

Strong Referral

“Please assess recurrent exertional chest tightness in a 58-year-old man with diabetes and hypertension. Initial emergency ECG and blood tests were reassuring, but symptoms remain exertional and relieved by rest. The question is whether further cardiac investigation or treatment is needed and how urgently.”

Why This Works

It explains why reassurance is incomplete and what help is requested.

38. Worked Case 3: Palliative Care Referral

A 70-year-old woman with metastatic cancer has severe pain, constipation, nausea, and drowsiness from escalating opioids.

Weak Referral

“Palliative care review.”

Strong Referral

“Please assist with symptom control in metastatic cancer. Pain remains severe despite opioids, but she is now constipated, nauseated, and drowsy. The question is how to improve pain while reducing opioid-related harm, and how to support goals-of-care discussion with patient and family.”

Why This Works

It frames comfort, harm, and communication needs.

39. Worked Case 4: Physiotherapy Referral

An 84-year-old woman recovering from pneumonia is off oxygen but weak and afraid to walk. She had delirium and falls.

Weak Referral

“PT to mobilize.”

Strong Referral

“Please assess mobility, transfers, and stairs before discharge. Baseline: walks with stick and manages stairs slowly at home. Current: weak after pneumonia and delirium, afraid to walk, recent falls. Daughter is concerned about home safety.”

Why This Works

It gives baseline, current function, goal, and discharge relevance.

40. Worked Case 5: Mental Health Referral

A 52-year-old man with chronic pain and alcohol dependence expresses hopelessness and says his family would be better off without him.

Weak Referral

“Low mood, please review.”

Strong Referral

“Please urgently assess suicide risk in a 52-year-old man with chronic pain, alcohol dependence, poor sleep, and escalating hopelessness. He has expressed passive death wishes and possible suicidal thoughts. Medical contributors and withdrawal risk are being assessed, but immediate mental health risk assessment and safety planning are needed.”

Why This Works

It identifies risk, context, urgency, and the specific request.

41. Worked Case 6: Gastroenterology Referral

A 66-year-old man has weight loss, iron deficiency anemia, fatigue, and intermittent abdominal discomfort.

Weak Referral

“Anemia.”

Strong Referral

“Please investigate iron deficiency anemia with weight loss and abdominal symptoms in a 66-year-old man. Concern is chronic GI blood loss or malignancy. He is symptomatic with fatigue but currently hemodynamically stable. The question is appropriate endoscopic or imaging pathway and urgency.”

Why This Works

It names the danger, syndrome, stability, and diagnostic question.

42. Common Student Pitfalls

Pitfall 1: Referring Without a Question

Always state what help is needed.

Pitfall 2: Making Dangerous Referrals Routine

Urgency must match risk.

Pitfall 3: Sending Too Much Unorganized Information

A concise synthesis is better than a copied chart dump.

Pitfall 4: Omitting Medicines

Medication context often changes the answer.

Pitfall 5: Omitting Baseline Function

Function matters for frailty, rehab, discharge, dementia, and serious illness.

Pitfall 6: Thinking Referral Ends Responsibility

Safety must be managed until the referral is accepted and acted on.

Pitfall 7: Not Explaining the Referral to the Patient

Patients need to know why, how urgent, and what to do while waiting.

Pitfall 8: Not Following the Referral Loop

Recommendations must be received, understood, implemented, or questioned.

43. Clinical Practice Box

When making a referral, complete this structure:

Reason for referral:
Why is help needed?

Urgency:
Emergency, urgent, soon, routine, or advice only? Why?

Referral question:
What exact decision, diagnosis, treatment, procedure, or support is requested?

Clinical synthesis:
Who is the patient, what is happening, and why does it matter?

Danger:
What must not be missed or delayed?

Timeline:
When did symptoms start, change, worsen, or respond?

Relevant background:
Conditions, baseline function, cognition, social support, goals.

Medicines and allergies:
High-risk medicines, recent changes, held medicines, adverse reactions.

Findings and results:
Key examination, tests, imaging, trends, pending results.

Treatment tried and response:
What was done, what helped, what failed, what harmed?

Patient values and capacity:
Consent, goals, refusal, family involvement, decision-making concerns.

Safety while waiting:
Monitoring, medicines, warning signs, follow-up, escalation plan.

Responsibility:
Who owns care before and after referral?

44. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recurrent falls was admitted with pneumonia complicated by hypoxia, delirium, AKI, hypoglycemia, and weakness. Pneumonia is improving. She remains intermittently confused, constipated, weak, afraid to walk, and below baseline. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin has been reduced. NSAIDs were stopped, and knee pain is worse. Her daughter says she is not safe on stairs at home.

Prepare three referrals: pharmacy, physiotherapy, and palliative or pain support if available.

Pharmacy Referral

“Please review medication safety before discharge in a 78-year-old frail woman with diabetes, CKD, heart failure, mild dementia, chronic pain, and recent pneumonia complicated by AKI, hypoglycemia, delirium, and falls. Diuretic and ACE inhibitor remain held because renal function is improving but not baseline. Insulin has been reduced due to poor intake and hypoglycemia. NSAIDs were stopped because of CKD, AKI, and heart failure risk. She remains intermittently confused, and daughter will help supervise medicines. The question is how to simplify and clarify the discharge medicine plan, reduce fall and delirium risk, and identify monitoring and restart instructions.”

Physiotherapy Referral

“Please assess mobility, transfers, and stairs before discharge. Baseline: walks with a stick, mildly forgetful but not confused, and manages stairs slowly at home. Current: recovering from pneumonia and delirium, weak, afraid to walk, recent falls, and daughter concerned about stairs. The question is whether she can safely return home with support or needs further rehabilitation, equipment, or increased assistance.”

Pain or Palliative Support Referral

“Please advise on safe pain control for chronic knee pain in a frail patient with CKD, heart failure, recent AKI, delirium, constipation, and falls. NSAIDs were stopped due to kidney and heart failure risk. Opioids may worsen constipation, confusion, and falls. The question is how to improve comfort and mobility while minimizing medication harm and supporting realistic goals for recovery.”

Why These Referrals Work

Each referral states the reason, clinical context, current risk, relevant baseline, medicine issues, and specific question. They are not vague requests to “review.” They ask each discipline to contribute to the repair trajectory.

45. Student Takeaway

Clinical referral becomes easier when the clinician asks:

Why am I referring?
What exact question do I need answered?
How urgent is this, and why?

What danger must not wait?
What is the main syndrome?
What background, baseline, medicines, and results matter?
What has already been done?
What remains uncertain?
What does the patient want or understand?
What should happen while waiting?
Who remains responsible?
How will the referral loop close?

A good referral is not a formality.

It is a focused act of clinical communication.

The safe clinician refers with purpose, urgency, synthesis, patient context, medicine clarity, safety-netting, and responsibility — so that specialist or team help becomes part of a coherent repair trajectory rather than another source of fragmentation.

Chapter 84. Clinical Escalation Made Easy

Clinical escalation is the structured act of calling for more urgent review, higher expertise, greater monitoring, stronger treatment, or a higher level of care when a patient's condition, risk, uncertainty, or treatment failure exceeds the current plan.

Patients do not usually say:

"Please escalate my care appropriately."

They say:

"I feel worse."
"I cannot breathe."
"The pain is unbearable."
"Something is wrong."
"Why is no one coming?"
"Do I need to go to hospital?"
"Do I need a specialist?"
"Please do not wait until it is too late."

Nurses may say:

"Doctor, I am worried."
"The oxygen requirement is going up."
"The blood pressure is dropping."
"The patient is more confused."
"The urine output is poor."
"The pain is not controlled."
"This patient is not safe here."

Clinicians may think:

"Should I call senior help?"
"Is this sick enough?"
"Am I overreacting?"
"Can this wait?"
"What level of care does this patient need?"
"Will escalation help or harm?"
"What if the patient would not want intensive treatment?"

Clinical escalation is central to Internal Medicine because patients can deteriorate quickly, and early recognition changes outcomes. Escalation is not panic. It is not failure. It is not weakness. It is a disciplined safety response when the patient's needs exceed the current level of attention, treatment, monitoring, or expertise.

The first task is not to appear confident.

The deeper question is:

What additional help, treatment, monitoring, expertise, or decision-making is needed now to protect this patient from avoidable harm?

Clinical escalation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical Escalation?

Clinical escalation means moving care to a higher level of response.

This may include:

- asking a senior clinician to review
- calling an emergency response team
- referring urgently to a specialist
- transferring to a monitored bed
- transferring to high-dependency care or ICU
- increasing observation frequency
- starting urgent treatment
- activating a local emergency pathway
- involving palliative care urgently for uncontrolled suffering
- involving mental health services urgently for safety risk
- involving safeguarding services
- arranging urgent imaging or procedure
- calling family for urgent goals-of-care discussion
- clarifying resuscitation or escalation limits

Escalation is not always “more aggressive treatment.”

Sometimes escalation means calling for help to clarify whether further aggressive treatment is appropriate.

Sometimes escalation means urgent comfort-focused care because suffering is uncontrolled.

Sometimes escalation means recognizing that the patient is dying and needs a different level of attention.

The common principle is this:

The current plan is not enough.

2. Escalation Is a Safety Skill

Escalation protects patients from:

- delayed recognition of deterioration
- missed sepsis
- missed respiratory failure
- missed stroke
- missed myocardial infarction
- untreated severe pain
- unmanaged delirium
- treatment failure
- medication toxicity
- unsafe discharge
- inappropriate care setting
- unrecognized dying
- unsupported ethical decisions

clinician isolation

A clinician who escalates appropriately is not “bothering” others.

They are using the care system correctly.

Medicine is a team activity.

No clinician should carry dangerous uncertainty alone.

3. Escalation Is Not Always ICU

Many learners think escalation means ICU.

That is only one form.

Escalation may mean:

- urgent bedside review by a senior doctor
- urgent pharmacist review for dangerous medicines
- urgent physiotherapy review before unsafe discharge
- urgent palliative review for severe breathlessness
- urgent mental health review for suicidality
- urgent family meeting for serious illness decisions
- urgent imaging for possible cord compression
- urgent surgical review for acute abdomen
- urgent antibiotics and monitoring for suspected sepsis
- urgent glucose treatment for hypoglycemia
- urgent reassessment after treatment failure

Escalation means matching response to need.

The right escalation is the one that protects the threatened capacity.

4. The First Question: Is There Immediate Danger?

Escalation begins with danger recognition.

Ask:

- Is the airway unsafe?
- Is breathing worsening?
- Is oxygen requirement increasing?
- Is circulation unstable?
- Is consciousness reduced?
- Is glucose dangerously abnormal?
- Is there sepsis?
- Is there major bleeding?
- Is there chest pain with concerning features?
- Is there new neurological deficit?

Is there severe AKI or electrolyte abnormality?

Is there severe pain?

Is there suicidal risk?

Is the patient agitated and unsafe?

Is the patient in uncontrolled distress?

Is discharge unsafe?

Is the current location unable to provide needed monitoring?

The danger-first question is:

What could seriously harm this patient if I do not obtain more help or a higher level of care now?

If the answer is clear, escalate.

5. Immediate Red Flags for Escalation

Escalate urgently when there is:

severe breathlessness

rising oxygen requirement

respiratory exhaustion

low blood pressure

persistent tachycardia with illness

chest pain with instability or concerning features

new neurological deficit

seizure

reduced consciousness

new or worsening confusion

suspected sepsis

major bleeding

rapidly falling hemoglobin

severe abdominal pain

reduced urine output with AKI

dangerous potassium, sodium, glucose, or other critical result

recurrent hypoglycemia

severe hyperglycemia with dehydration or drowsiness

fall with head injury or anticoagulation risk

severe uncontrolled pain

agitation threatening safety

overdose or withdrawal risk

suicidal intent

treatment failure despite appropriate first steps

- nurse, family, or clinician concern that the patient is “not right”
- uncertainty about whether aggressive treatment is appropriate in serious illness

These signs mean the current level of response may not be enough.

6. The Escalation Pathway

A practical escalation pathway is:

- recognize danger or failure of current plan
- assess the patient rapidly
- name the syndrome
- identify the threatened capacity
- start immediate stabilizing action if appropriate
- call the right help early
- communicate clearly
- clarify goals and limits where relevant
- reassess response
- document and hand over

This pathway protects against two errors:

- delaying escalation because of uncertainty
- escalating chaotically without clear information

Escalation should be early and structured.

7. Step 1: Recognize Failure of the Current Plan

Escalation is needed when the current plan is not working or no longer fits.

Examples:

- pneumonia treated, but oxygen requirement rising
- heart failure treated, but blood pressure falling and kidneys worsening
- pain medicine increased, but pain remains severe and patient is drowsy
- delirium persists despite infection treatment
- glucose repeatedly low despite dose reduction
- discharge planned, but patient cannot transfer safely
- patient on ward requires monitoring not available there
- family reports patient is not at baseline despite “normal” tests
- chest pain recurs after initial reassurance
- AKI worsens despite holding harmful medicines

Ask:

What evidence shows that the current plan is failing, incomplete, or unsafe?

That evidence should trigger escalation.

8. Step 2: Assess Rapidly

Before escalating, gather essential information if doing so does not delay urgent help.

Assess:

- appearance
- airway
- breathing
- circulation
- consciousness
- glucose where relevant
- vital signs
- pain or distress
- current symptoms
- relevant focused examination
- recent treatment
- response to treatment
- recent labs or imaging
- medicine chart
- baseline and goals where relevant

Do not delay calling for help to complete a perfect assessment if the patient is unstable.

You can call and assess simultaneously.

9. Step 3: Name the Syndrome

Escalation communication should name the syndrome.

Examples:

- acute breathlessness with rising oxygen requirement
- chest pain with hypotension
- fever with confusion and low blood pressure
- AKI with hyperkalemia
- fall with head injury on anticoagulation
- severe abdominal pain with vomiting
- uncontrolled cancer pain with drowsiness and constipation
- acute agitation likely delirium or withdrawal
- frailty with acute functional collapse and unsafe discharge
- advanced illness with possible dying phase

Naming the syndrome gives the receiving clinician a mental map.

Do not simply say:

“Please come, the patient is unwell.”

Say what kind of unwell.

10. Step 4: Identify the Threatened Capacity

Escalation should identify what life-capacity is failing.

Examples:

Oxygenation

Rising oxygen need, severe breathlessness, respiratory exhaustion.

Circulation

Shock, chest pain, arrhythmia, heart failure, syncope.

Brain Coordination

Delirium, seizure, reduced consciousness, stroke, agitation.

Clearance

AKI, hyperkalemia, toxin accumulation, reduced urine.

Defense

Sepsis, severe infection, immunosuppression.

Energy Regulation

Hypoglycemia, hyperglycemic crisis, starvation, severe metabolic stress.

Comfort

Severe pain, breathlessness, agitation, nausea, terminal distress.

Mobility and Safety

Falls, inability to transfer, unsafe discharge.

Agency

Capacity concern, refusal of urgent care, suicidal risk.

Escalation becomes clearer when the failing capacity is named.

11. Step 5: Start Immediate Stabilizing Action

While awaiting help, begin appropriate immediate actions according to local guidance and competence.

Examples:

- oxygen for hypoxia
- glucose treatment for hypoglycemia
- local sepsis pathway for suspected sepsis
- ECG for chest pain or arrhythmia
- urgent treatment pathway for dangerous hyperkalemia
- bleeding management and urgent senior review
- seizure management according to protocol
- pain relief while assessing cause
- falls precautions after fall
- stop or hold suspected harmful medicine where appropriate

call for urgent imaging if indicated

protect patient from self-harm

comfort measures in dying patient

Escalation does not mean doing nothing until help arrives.

It means acting within safe scope while obtaining help.

12. Step 6: Call the Right Help Early

The right help depends on the problem.

Call:

senior clinician for deterioration, uncertainty, or high-risk decisions

emergency response team for unstable patient

ICU or high-dependency team for organ failure or need for advanced monitoring

cardiology for high-risk cardiac problems

nephrology for severe AKI, electrolyte danger, dialysis consideration, or complex kidney decisions

respiratory team for severe respiratory failure

surgery for acute abdomen, bleeding, obstruction, perforation, or source control

neurology or stroke team for new neurological deficit or seizure complexity

palliative care for uncontrolled symptoms or complex goals

mental health team for suicidality, severe self-harm risk, or psychiatric crisis

safeguarding team for abuse, neglect, or immediate vulnerability

pharmacist for medication toxicity or complex high-risk medicines

Do not call “anyone.”

Call the team that can help with the threatened capacity.

13. Step 7: Communicate Clearly

Use a structured escalation statement.

A useful pattern is:

“I am calling because I am worried about…”

Then include:

patient identity and location

main syndrome

current danger

relevant background

vital signs or key findings

what has changed

what has been done

response

what help is needed

how urgent

Example:

“I am calling because I am worried about respiratory deterioration in Mr. Brown, a 72-year-old with COPD and heart failure admitted with pneumonia. His oxygen requirement has increased over the last hour, respiratory rate is rising, he is more confused, and blood pressure is lower than before. Antibiotics were started earlier. I need urgent senior review now because I am concerned about sepsis, respiratory failure, or heart failure.”

This is clear, specific, and actionable.

14. Step 8: Clarify Goals and Limits Where Relevant

Escalation must be aligned with patient goals, especially in serious illness.

Before or during escalation, ask when relevant:

Does the patient have capacity?

What does the patient understand?

What are the patient’s known wishes?

Is there an advance care plan?

Is resuscitation status documented?

Is ICU escalation appropriate?

Would burdensome treatment offer realistic benefit?

Is the patient dying?

Does the family need urgent discussion?

Is palliative care needed?

Escalation without goals can cause burdensome treatment.

Failure to escalate comfort can cause suffering.

Escalation should serve the patient’s life, dignity, and values.

15. Step 9: Reassess Response

After escalation and intervention, reassess:

oxygenation

breathing effort

blood pressure

heart rate

consciousness

pain

urine output

glucose

agitation

- bleeding
- lab response
- patient comfort
- family understanding

Ask:

Did the patient improve, worsen, or remain unsafe?

If the patient does not improve, escalate further or revise the plan.

Escalation is a loop, not a single call.

16. Step 10: Document and Hand Over

Document:

- time of concern
- reason for escalation
- assessment
- key findings
- treatment given
- who was called
- advice received
- patient response
- goals-of-care context where relevant
- ongoing plan
- escalation triggers
- family communication
- handover requirements

Then hand over clearly to the next clinician or team.

A patient who required escalation remains at risk even after initial improvement.

17. Escalation for Respiratory Deterioration

Escalate respiratory deterioration when there is:

- rising oxygen requirement
- severe breathlessness
- respiratory fatigue
- altered consciousness
- cyanosis
- inability to speak full sentences
- worsening respiratory rate
- poor response to initial treatment

- suspected PE, pneumothorax, severe pneumonia, pulmonary edema, or severe asthma/COPD
- need for ventilatory support assessment

Do not wait until oxygen saturation collapses.

Increasing oxygen requirement is already a warning.

Respiratory escalation should ask:

What is failing: airway, ventilation, oxygenation, circulation, or all of these?

18. Escalation for Circulatory Deterioration

Escalate when there is:

- hypotension
- shock features
- persistent tachycardia
- chest pain with instability
- syncope with concerning features
- arrhythmia with symptoms
- reduced urine output
- cool peripheries
- altered consciousness
- major bleeding
- suspected sepsis
- worsening heart failure

Circulatory deterioration can be subtle.

A blood pressure that is “normal” but much lower than the patient’s baseline may still be concerning.

Ask:

Is perfusion adequate?

19. Escalation for New Confusion or Reduced Consciousness

Escalate when confusion is:

- sudden
- worsening
- associated with abnormal vital signs
- associated with hypoxia
- associated with low or high glucose
- associated with new neurological signs
- associated with head injury
- associated with sepsis
- associated with AKI or electrolyte disturbance

- associated with overdose or withdrawal
- causing unsafe behavior
- unexplained after initial assessment

Do not dismiss confusion as dementia, age, anxiety, or “behavior.”

Acute brain failure needs urgent assessment.

20. Escalation for AKI and Electrolyte Danger

Escalate AKI when there is:

- reduced urine output
- rapidly worsening creatinine
- dangerous potassium
- severe acidosis where relevant
- fluid overload
- hypotension
- sepsis
- obstruction concern
- medication toxicity
- need for urgent specialist advice
- uncertainty about fluids versus diuretics
- severe CKD background
- symptoms of uremia or severe illness

AKI escalation is often escalation for medicine safety.

Ask:

- What medicines must stop?
- What medicines are essential?
- What monitoring is needed?
- Is obstruction possible?
- Is fluid status clear?
- Is kidney specialist advice needed?

21. Escalation for Sepsis or Severe Infection

Escalate when infection is associated with:

- hypotension
- confusion
- rising oxygen requirement
- reduced urine output
- persistent tachycardia

- high or low temperature with systemic illness
- immunosuppression
- rapidly worsening condition
- poor response to antibiotics
- source control need
- severe pain
- lactate concern where used
- organ dysfunction

In suspected sepsis, do not wait for perfect proof.

Treat and escalate according to local pathway.

Sepsis is a syndrome of infection plus life-capacity failure.

22. Escalation for Severe Pain

Escalate severe pain when:

- pain is sudden or severe
- pain is unexplained
- pain has red flags
- pain is not responding to appropriate treatment
- pain causes immobility, distress, or delirium
- pain is associated with neurological signs
- cancer patient has new back pain
- limb pain suggests ischemia
- abdominal pain suggests acute abdomen
- headache has red flags
- analgesia is causing sedation, falls, or respiratory risk

Escalation for pain is not only about stronger analgesia.

It is about diagnosis, safety, comfort, and proportional treatment.

23. Escalation for Agitation, Self-Harm, or Safety Risk

Escalate when there is:

- suicidal intent
- violent behavior
- severe agitation
- delirium with unsafe behavior
- withdrawal risk
- psychosis with danger
- patient attempting to leave despite serious risk

- inability to maintain safety on ward
- safeguarding concern
- lack of capacity with immediate risk

Safety escalation may involve:

- senior medical review
- mental health team
- security according to local policy
- family support
- de-escalation
- treatment of medical causes
- safeguarding services
- legal or ethical advice

Agitation is a symptom, not a diagnosis.

Find the cause while protecting safety.

24. Escalation for Unsafe Discharge

Escalate discharge concerns when:

- patient cannot walk or transfer safely
- cognition is unsafe
- medicines are unclear
- caregiver support is absent
- home environment is unsafe
- pending results may change management
- follow-up cannot happen
- patient refuses needed care
- family says they cannot cope
- nurse or therapist raises concern
- bed pressure is overriding clinical risk

Escalation may mean senior review, multidisciplinary meeting, social work, therapy, pharmacy, family meeting, or delaying discharge.

Unsafe discharge is a clinical risk, not merely a logistical problem.

25. Escalation in Serious Illness

In serious illness, escalation should include the question:

Escalate toward what goal?

Possible goals include:

- reversal of acute illness

- symptom relief
- time-limited trial of treatment
- transfer to higher care
- avoidance of burdensome treatment
- comfort-focused care
- family preparation
- preferred place of care
- spiritual or cultural support

Escalation may be needed because:

- the patient is deteriorating
- prognosis is unclear
- treatment burden is high
- family and team need urgent conversation
- symptoms are uncontrolled
- dying is possible
- escalation limits are undocumented

Escalation is not always “do more.”

Sometimes escalation is “decide wisely.”

26. Time-Limited Trials as Escalation

When benefit is uncertain, a time-limited trial can be useful.

A time-limited trial should define:

- treatment being tried
- goal of treatment
- expected improvement
- timeframe
- monitoring
- stopping criteria
- what happens if treatment fails
- patient and family understanding

Example:

“We will treat the infection and support breathing over the next 24 to 48 hours. We hope oxygen need, alertness, and blood pressure improve. If these worsen despite treatment, we will discuss whether further escalation would help or only increase burden.”

Time-limited trials prevent indefinite treatment drift.

27. Escalation and Communication With the Patient

When escalating, explain when possible:

“Your breathing has worsened, so I am calling the senior doctor to review you urgently.”

“Your blood test shows a dangerous potassium level, so we need to treat it now and monitor your heart.”

“Your pain is not controlled, and I am asking the palliative care team to help us make you more comfortable.”

“You are more confused today, and we need to check for causes such as infection, sugar, oxygen, medicines, or kidney problems.”

Patients should not experience escalation as unexplained alarm.

Clear explanation preserves dignity.

28. Escalation and Communication With Family

Family should be informed urgently when:

- patient is seriously deteriorating
- ICU or higher care is being considered
- goals-of-care decisions are needed
- patient lacks capacity
- dying is possible
- patient is refusing care
- family input is needed for baseline or wishes
- major change in condition occurs

Explain:

- what has changed
- what the team is worried about
- what is being done
- what decisions may be needed
- what remains uncertain
- when the next update will occur

Avoid vague reassurance when risk is real.

Families need clarity, not false certainty.

29. Escalation and the Nurse’s Concern

Nurse concern should trigger review.

If a nurse says:

“I am worried,”

ask:

- What is different?
- When did it change?
- What are the observations?
- What does the patient look like?

What does the family say?

What treatment has already been given?

What do you think is most concerning?

The nurse may notice deterioration before a score or lab result becomes abnormal.

Escalation should honor bedside observation.

30. Escalation and Moral Courage

Sometimes escalation requires moral courage.

Examples:

calling senior help despite fear of criticism

delaying unsafe discharge despite bed pressure

challenging premature closure

asking for ICU review when needed

asking for palliative review when suffering is ignored

raising safeguarding concerns

saying a patient is dying when others avoid the conversation

questioning burdensome treatment

speaking up when a plan feels unsafe

Moral courage is not aggression.

It is respectful commitment to patient safety and dignity.

31. Barriers to Escalation

Common barriers include:

fear of looking incompetent

fear of bothering seniors

uncertainty about severity

hierarchical culture

previous criticism

workload

fatigue

assuming someone else will escalate

normalizing abnormal signs

over-reliance on one reassuring test

patient appears calm despite danger

family pressure

bed pressure

unclear escalation pathway

Recognize these barriers.

Then return to the patient:

What does this patient need now?

32. Over-Escalation and Proportionality

Escalation can also be excessive.

Over-escalation may occur when:

- treatment is burdensome and unlikely to help
- patient goals are ignored
- frailty or dying is not recognized
- investigations are pursued without benefit
- ICU is considered without realistic recovery goal
- anxiety drives action rather than patient need
- every abnormality triggers specialist review without synthesis

The answer is not to avoid escalation.

The answer is proportionate escalation.

Ask:

Will this escalation likely help this patient, given their condition, goals, and burdens?

33. Escalation Failure Patterns

Common failures include:

- waiting too long
- calling the wrong person
- vague communication
- not stating urgency
- not giving vital signs
- not naming the syndrome
- not mentioning treatment failure
- not mentioning goals-of-care limits
- not documenting advice
- not reassessing after help arrives
- assuming escalation means responsibility has transferred
- ignoring patient or family communication

Each failure can cause harm.

Escalation must be clear, timely, and followed through.

34. Worked Case 1: Rising Oxygen Requirement

A 74-year-old man with COPD, heart failure, and pneumonia requires increasing oxygen overnight.

Danger
Respiratory deterioration, sepsis, heart failure, PE, respiratory exhaustion.

Syndrome
Acute breathlessness with rising oxygen requirement in multimorbidity.

Threatened Capacity
Oxygenation, possibly circulation and clearance.

Wise Escalation
Review urgently, start immediate supportive care according to local pathway, reassess chest and fluid status, check ECG and relevant tests, call senior help early, and consider higher level of care if worsening.

Repair Trajectory
Oxygen stabilizes, cause clarified, treatment adjusted, escalation plan documented.

35. Worked Case 2: AKI With Hyperkalemia

A patient with CKD develops AKI and dangerous potassium after dehydration and NSAID use.

Danger
Arrhythmia, worsening clearance failure, medication toxicity.

Syndrome
AKI with severe electrolyte danger.

Threatened Capacity
Clearance and electrical stability.

Wise Escalation
Treat according to local hyperkalemia protocol, review ECG, stop harmful medicines, assess fluid status and urine output, call senior or renal advice urgently, monitor response, repeat labs, and document escalation triggers.

Repair Trajectory
Potassium improves, kidney function stabilizes, harmful medicines stopped, monitoring assigned.

36. Worked Case 3: Delirium With Unsafe Agitation

An 86-year-old woman with dementia and infection becomes severely agitated, tries to climb out of bed, and pulls at lines.

Danger
Falls, injury, delirium worsening, distress, treatment disruption.

Syndrome
Severe agitation likely due to delirium until proven otherwise.

Threatened Capacity
Brain coordination, safety, comfort.

Wise Escalation
Review urgently for hypoxia, glucose, infection, pain, retention, constipation, medicine toxicity, withdrawal, and environmental triggers. Use non-drug de-escalation, involve family if possible, call senior help if unsafe, and use medication only if necessary and proportionate according to local guidance.

Repair Trajectory

Patient safer and less distressed, causes treated, sedative harm minimized, monitoring clear.

37. Worked Case 4: Severe Cancer Pain

A patient with metastatic cancer has severe back pain, new leg weakness, constipation, and drowsiness from opioids.

Danger

Possible spinal cord compression, uncontrolled suffering, opioid toxicity, constipation.

Syndrome

Severe cancer pain with neurological red flags and treatment harm.

Threatened Capacity

Comfort, mobility, bowel clearance, neurological function, consciousness.

Wise Escalation

Escalate urgently for senior review, imaging or specialist pathway according to local guidance, palliative input for symptom control, bowel management, opioid safety review, and discussion of goals.

Repair Trajectory

Neurological danger assessed, pain relieved, constipation treated, drowsiness reduced, care aligned with goals.

38. Worked Case 5: Unsafe Discharge

A frail patient recovering from pneumonia is medically improved but still delirious at night, weak, and unable to manage stairs. Bed pressure is high.

Danger

Falls, medication error, caregiver collapse, readmission.

Syndrome

Incomplete recovery with functional and cognitive capacity failure.

Threatened Capacity

Mobility, cognition, agency, support.

Wise Escalation

Escalate discharge concern to senior clinician and multidisciplinary team. Involve physiotherapy, nursing, pharmacy, family, and social support. Clarify discharge criteria and document why discharge is unsafe now.

Repair Trajectory

Discharge delayed or supported appropriately, mobility and cognition addressed, medicines clarified, caregiver prepared.

39. Worked Case 6: Serious Illness and Possible ICU

A patient with advanced heart failure and CKD deteriorates despite treatment. ICU transfer is being considered, but prognosis is poor and the patient previously said they would not want machines if recovery was unlikely.

Danger

Dying, respiratory or circulatory failure, burdensome non-beneficial treatment, family distress.

Syndrome

Acute deterioration in advanced organ failure with limited reserve.

Threatened Capacity

Oxygenation, circulation, comfort, agency, dignity.

Wise Escalation

Escalate to senior clinician for urgent goals-of-care review, consider ICU opinion if benefit is uncertain, involve family, clarify patient wishes, treat reversible distress, and involve palliative care. Consider time-limited trial only if goals and criteria are clear.

Repair Trajectory

Care becomes aligned with realistic benefit and patient values; symptoms controlled; family informed; escalation plan documented.

40. Common Student Pitfalls

Pitfall 1: Waiting Until the Patient Crashes

Escalate when deterioration begins, not only after collapse.

Pitfall 2: Thinking Escalation Means Failure

Escalation is good clinical judgment.

Pitfall 3: Communicating Vaguely

Say what you are worried about and why.

Pitfall 4: Not Stating Urgency

The receiving clinician must know whether this is now, soon, or routine.

Pitfall 5: Forgetting Goals of Care

Escalation must match patient values and realistic benefit.

Pitfall 6: Ignoring Nurse or Family Concern

They may detect deterioration early.

Pitfall 7: Not Reassessing After Escalation

Calling for help does not end responsibility.

Pitfall 8: Not Documenting the Plan

Escalation advice must be recorded and handed over.

41. Clinical Practice Box

When escalating care, complete this structure:

Reason for escalation:
What has changed or failed?

Immediate danger:
What could harm the patient now?

Main syndrome:
What clinical pattern is present?

Threatened capacity:
Oxygenation, circulation, consciousness, glucose, clearance, defense, comfort, mobility, agency, support.

Current status:
Vitals, symptoms, examination, key results, trajectory.

Relevant background:
Frailty, CKD, heart failure, COPD, dementia, medicines, goals, baseline.

Immediate actions taken:
What has already been done?

Response:
Improved, worse, unchanged, unknown?

Help needed:
Who do you need, how urgently, and for what decision?

Goals and limits:
What does the patient want? Are escalation limits documented?

Next monitoring:
What should be reassessed, when, and by whom?

Escalation triggers:
What changes require further escalation?

Documentation and handover:
What advice was given, what plan agreed, and who now owns what?

42. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia is recovering on the ward. Overnight she becomes more confused, dizzy when standing, and nearly falls. She has eaten poorly. Her creatinine was rising earlier. Diuretic and ACE inhibitor are held. Insulin was reduced. NSAIDs were stopped. She received opioid pain medicine and a sleeping tablet. The nurse says, “I am worried. She is not herself.”

Apply the clinical escalation approach.

Reason for Escalation

Acute worsening confusion, dizziness, near fall, poor intake, kidney vulnerability, and high medication risk in a frail patient.

Immediate Danger

Hypoglycemia, hypoxia, delirium, hypotension, AKI worsening, medication toxicity, dehydration, infection progression, fall injury, stroke, urinary retention, constipation.

Main Syndrome

Acute brain and mobility safety deterioration in frailty after pneumonia, with clearance and medication vulnerability.

Threatened Capacities

Brain coordination, mobility safety, glucose regulation, clearance, circulation regulation, comfort, agency.

Immediate Actions

Review urgently. Check glucose, oxygen saturation, vital signs, hydration, pain, neurological status, bowel and bladder, urine output, medication chart, and recent labs. Reinforce falls precautions. Avoid further sedatives unless essential for immediate safety.

Help Needed

Escalate to senior clinician if vital signs are abnormal, glucose is unsafe, oxygen need rises, consciousness is reduced, focal neurological signs appear, renal function or electrolytes are dangerous, agitation is unsafe, or the cause remains unclear after initial review.

Goals and Limits

Clarify baseline with daughter if needed. If deterioration is serious, ensure goals of care and escalation limits are known.

Monitoring

Monitor glucose, mental state, blood pressure, oxygenation, urine output, pain, bowels, and falls risk overnight.

Repair Trajectory

Confusion improves, dizziness reduces, no fall occurs, glucose remains safe, kidney function is reviewed, sedative and opioid harm are minimized, pain is controlled safely, and the day team receives a clear handover for medication review, delirium care, renal review, and discharge safety.

43. Student Takeaway

Clinical escalation becomes easier when the clinician asks:

What has changed?
What is dangerous now?
What syndrome is present?
Which capacity is failing?
Is the current plan enough?
What immediate action is needed?
Who can help with this problem?
How urgent is the help?
What does the patient want, and are escalation limits clear?
How will response be reassessed?
What must be documented and handed over?

Escalation is not a sign of weakness.

It is a sign that the clinician recognizes the limits of the current plan and is willing to protect the patient through timely help, clearer decisions, higher monitoring, more appropriate treatment, or better-aligned goals.

The safe clinician escalates early, clearly, proportionately, and respectfully — not to hand off responsibility, but to ensure the patient receives the level of care their condition now requires.

Chapter 85. Clinical De-Escalation Made Easy

Clinical de-escalation is the structured act of reducing, stopping, simplifying, narrowing, or redirecting treatment when danger has passed, the diagnosis is clearer, treatment burden is too high, harms outweigh benefits, or the goals of care have changed.

Patients do not usually say:

“Please de-escalate my care appropriately.”

They say:

“Do I still need all these medicines?”
“Can I come off the oxygen?”
“Do I still need this drip?”
“Why am I still on antibiotics?”
“Can I go home?”
“Do I need more tests?”
“Is this treatment still helping?”
“Can we focus on comfort now?”
“I am tired of all this.”

Clinicians may think:

“The patient is improving.”
“The cultures are back.”
“The diagnosis is clearer.”
“The test was negative.”
“The patient is stable.”
“This medicine may now be causing harm.”
“The treatment burden is too high.”
“The goal of care has shifted.”

Clinical de-escalation is central to Internal Medicine because good care is not only knowing when to start treatment. It is also knowing when to stop, narrow, reduce, simplify, or redirect treatment.

A good clinician escalates when danger rises.
A good clinician de-escalates when intensity is no longer needed.
Escalation without de-escalation creates harm.
De-escalation without safety creates neglect.
The art is knowing the difference.

The first task is not simply to “do less.”

The deeper question is:

What can now be safely reduced, stopped, simplified, narrowed, or redirected so that care continues to help more than it harms?

Clinical de-escalation becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical De-Escalation?

Clinical de-escalation means reducing the intensity or burden of care when it is safe, appropriate, and aligned with the patient’s condition and goals.

It may include:

- reducing monitoring frequency

- stopping oxygen when no longer needed
- removing IV lines or catheters
- switching IV medicines to oral medicines
- narrowing antibiotics
- stopping unnecessary antibiotics
- reducing steroids
- lowering sedative burden
- reducing opioid dose if harms emerge
- stopping unnecessary investigations
- deprescribing medicines
- simplifying diabetes treatment
- stopping non-beneficial preventive medicines in serious illness
- stepping down from ICU or monitored care
- changing from curative to comfort-focused care
- discharging when repair can continue safely outside hospital

De-escalation is not abandonment.

It is proportionate care.

2. De-Escalation Is Not "Doing Nothing"

De-escalation is an active clinical decision.

It asks:

- What has improved?
- What danger has passed?
- What diagnosis is now clearer?
- What treatment is no longer needed?
- What treatment is causing harm?
- What monitoring is still required?
- What can be safely simplified?
- What should continue?
- What should stop?
- What should be watched after stopping?
- What does the patient want?

Doing nothing may be passive drift.

De-escalation is deliberate repair.

3. Why De-Escalation Matters

Unnecessary treatment can harm.

Examples:

- antibiotics can cause side effects, resistance, diarrhea, allergy, and drug interactions
- oxygen can restrict mobility and delay discharge if used unnecessarily
- IV lines can cause infection, pain, and immobility
- urinary catheters can cause infection and delirium
- sedatives can cause falls and confusion
- opioids can cause constipation, drowsiness, falls, and respiratory depression
- insulin can cause hypoglycemia when intake is poor
- diuretics can worsen AKI and dizziness
- blood pressure medicines can cause falls in frailty
- repeated tests can cause anxiety, blood loss, incidental findings, and delays
- hospital care itself can cause delirium, immobility, sleep disruption, infection, and loss of independence

Treatment should continue only while it still serves the patient.

4. The First Question: Is It Safe to De-Escalate?

Before reducing treatment, ask whether danger is truly controlled.

De-escalation may be unsafe if:

- oxygenation remains unstable
- blood pressure remains unstable
- infection is uncontrolled
- fever persists with systemic illness
- chest pain risk remains unresolved
- neurological symptoms are evolving
- glucose remains unstable
- kidney function is worsening
- electrolyte danger remains
- pain is uncontrolled
- delirium is unsafe
- bleeding risk remains active
- diagnosis is unclear and dangerous possibilities remain
- monitoring is still needed
- patient cannot take oral medicines
- home support is unsafe
- follow-up is unreliable

The danger-first question is:

What could worsen if we reduce intensity now?

If danger remains active, de-escalation may need to wait.

5. Immediate Red Flags Against De-Escalation

Be cautious about de-escalating when there is:

- rising oxygen requirement
- respiratory distress
- hypotension
- persistent tachycardia with illness
- new confusion
- reduced consciousness
- severe pain
- uncontrolled vomiting
- reduced urine output
- worsening creatinine
- dangerous potassium or sodium
- recurrent hypoglycemia
- recurrent fever with deterioration
- ongoing bleeding
- new neurological deficit
- recent seizure
- unstable arrhythmia
- unsafe agitation
- suicidal risk
- unsafe mobility
- no clear follow-up plan
- family or nurse concern that the patient is worse
- unclear goals in serious illness

Do not de-escalate because the team is tired, the bed is needed, or the chart looks better while the patient is not better.

6. The De-Escalation Pathway

A practical de-escalation pathway is:

- confirm danger is controlled
- confirm the syndrome and diagnosis
- review treatment response
- identify treatment harms and burdens
- decide what still serves repair
- reduce, stop, narrow, switch, or simplify

- monitor after de-escalation
- explain to patient and family
- document reasoning
- safety-net and follow up

De-escalation should be structured.

This prevents both over-treatment and unsafe withdrawal.

7. Step 1: Confirm Danger Is Controlled

Ask:

- Are vital signs stable?
- Is breathing safe?
- Is circulation safe?
- Is consciousness safe?
- Is glucose safe?
- Is infection improving?
- Is bleeding controlled?
- Is pain controlled?
- Is urine output safe?
- Are electrolytes safe?
- Is the patient safer than before?
- Is the patient improving clinically, not just numerically?

Do not de-escalate based on one isolated result.

Look at the whole pattern.

8. Step 2: Confirm the Syndrome and Diagnosis

De-escalation depends on knowing what is being treated.

Examples:

If pneumonia is confirmed and cultures support a narrower antibiotic, antibiotics can often be narrowed according to local guidance.

If heart failure is improving after diuresis, monitoring can be adjusted, but renal function may still need close review.

If delirium was driven by infection and sedatives, de-escalation may include stopping sedatives and removing lines.

If chest pain assessment is complete and reassuring, monitoring may be reduced and outpatient follow-up arranged.

If the diagnosis remains uncertain and dangerous alternatives remain possible, de-escalation should be cautious.

Ask:

What exactly are we de-escalating from, and why is that safe now?

9. Step 3: Review Treatment Response

Before de-escalating, ask:

- What treatment was started?
- What was the intended benefit?
- Did the patient improve?
- What improved first?
- What remains unresolved?
- Did treatment cause harm?
- Is treatment still needed?
- What will happen if it is stopped?
- What would show relapse?

Treatment response helps decide whether de-escalation is safe.

Example:

If fever, oxygenation, appetite, and confusion improve after pneumonia treatment, de-escalation may be reasonable.

But if fever settles while confusion worsens, the infection may not be the whole problem.

De-escalation requires synthesis.

10. Step 4: Identify Treatment Harm and Burden

Ask:

- Is the treatment causing side effects?
- Is it limiting mobility?
- Is it worsening delirium?
- Is it harming kidneys?
- Is it causing bleeding risk?
- Is it causing hypoglycemia?
- Is it causing constipation?
- Is it increasing falls?
- Is it causing anxiety or sleep disruption?
- Is it preventing discharge?
- Is it inconsistent with goals?
- Is it too burdensome for the expected benefit?

A treatment may have been right yesterday and wrong today.

Clinical judgment must change with the patient.

11. Step 5: Decide What Still Serves Repair

For every intervention, ask:

Does this still protect life?

Does this still relieve suffering?

Does this still restore capacity?

Does this still prevent likely harm?

Does this still match the patient's goals?

Does this still justify its burden?

Is there a simpler safer option?

Can this be stopped, narrowed, reduced, or switched?

This question is the heart of life-coherent de-escalation:

Does this intervention still serve the patient's living repair?

12. Step 6: Reduce, Stop, Narrow, Switch, or Simplify

De-escalation can take several forms.

Reduce

Lower the intensity, dose, frequency, or monitoring level.

Stop

Discontinue treatment that is complete, harmful, or no longer indicated.

Narrow

Use a more targeted treatment once diagnosis or organism is clearer.

Switch

Move from IV to oral, hospital to home, acute pathway to follow-up, disease-directed to comfort-focused.

Simplify

Reduce complexity so the patient can understand and follow the plan.

The right form depends on the case.

13. Step 7: Monitor After De-Escalation

Stopping treatment is still an intervention.

After de-escalation, ask:

What could recur?

What should be monitored?

When should we reassess?

What warning signs matter?

What result should be repeated?

Who owns follow-up?

What should patient or nurse report?

What would trigger re-escalation?

Examples:

After stopping oxygen, monitor breathlessness and oxygenation.

After reducing insulin, monitor glucose.

After holding diuretics, monitor breathlessness, edema, weight where used, urine output, renal function, and dizziness.

After stopping antibiotics, monitor fever, symptoms, and clinical status.

De-escalation without monitoring can become neglect.

14. Step 8: Explain De-Escalation to the Patient

Patients may fear that stopping treatment means the team has given up.

Explain clearly:

“Your oxygen level has remained safe without extra oxygen, so we can stop it and help you move more.”

“The culture result allows us to use a narrower antibiotic that is safer and still treats the infection.”

“This sleeping tablet may be worsening confusion and falls risk, so we are stopping it.”

“Your kidneys were stressed, so we are not restarting the anti-inflammatory pain medicine.”

“The scans and blood tests are reassuring, so more hospital tests are not needed today, but we will give clear warning signs and follow-up.”

Explanation prevents misunderstanding.

15. Step 9: Document the Reason

Document:

- what is being de-escalated
- why it is safe
- what risk remains
- what monitoring is needed
- what would trigger re-escalation
- patient discussion
- follow-up plan

Example:

“Oxygen stopped as saturations stable on room air and patient less breathless. Monitor respiratory symptoms and observations. Reassess if breathlessness worsens or oxygen saturation falls.”

Or:

“Antibiotics narrowed after culture result and clinical improvement. Continue monitoring fever, oxygen requirement, and mental state.”

A clear note prevents the next team from restarting treatment by confusion.

16. Step 10: Safety-Net and Follow Up

De-escalation should end with safety-netting.

Explain:

- what improvement should continue
- what relapse looks like
- what symptoms require review
- what medicines should not be restarted without advice
- when blood tests or follow-up are needed
- who to contact
- when to return urgently

De-escalation is safe when the next step is clear.

17. De-Escalating Oxygen

Oxygen should be used when needed and reduced when safe.

Ask:

- Is oxygen saturation safe at rest?
- Is breathing comfortable?
- Is the patient at baseline?
- Is exertional desaturation relevant?
- Is there a chronic oxygen target or baseline?
- Is oxygen limiting mobility unnecessarily?
- Does the patient still need monitoring?
- What caused the oxygen need?
- Has that cause improved?

Do not leave oxygen running automatically.

Unnecessary oxygen can delay mobility and discharge.

But do not stop oxygen if the patient remains hypoxic, breathless, unstable, or not at baseline without a plan.

18. De-Escalating Antibiotics

Antibiotic de-escalation includes:

- stopping if infection is unlikely
- narrowing when organism or source is known
- switching from IV to oral when safe
- defining duration according to local guidance
- reviewing cultures
- considering source control
- monitoring response

Ask:

- Was infection truly present?

- What is the source?
- Are cultures available?
- Is the patient clinically improving?
- Is oral absorption safe?
- Are there allergies?
- Is kidney or liver dosing needed?
- Is the antibiotic causing harm?
- Is continued broad coverage necessary?

Antibiotics should not continue only because they were started.

19. De-Escalating IV Fluids

IV fluids should be reviewed frequently.

Ask:

- Is the patient still dehydrated?
- Can they drink?
- Is blood pressure stable?
- Is urine output adequate?
- Is kidney function improving?
- Is there heart failure or edema?
- Is sodium worsening?
- Is fluid overload developing?
- Is the IV line still needed?
- What is the endpoint?

Fluids can save life.

They can also cause harm, especially in heart failure, CKD, frailty, and lung disease.

Stop or reduce IV fluids when oral intake is adequate or fluid overload risk rises.

20. De-Escalating Diuretics

Diuretics may be needed for congestion but can cause:

- AKI
- dizziness
- hypotension
- electrolyte disturbance
- falls
- dehydration

Ask:

- Is congestion improving?

Is breathlessness better?

Is edema reducing?

Is blood pressure safe?

Is renal function stable?

Is dizziness present?

Is urine output appropriate?

What is the discharge plan?

What monitoring is needed?

De-escalation may mean reducing dose, holding temporarily, or switching to a maintenance plan.

Do not continue aggressive diuresis after congestion is controlled without monitoring.

21. De-Escalating Insulin and Glucose Treatment

In acute illness, glucose treatment often changes.

De-escalation may be needed when:

oral intake is poor

hypoglycemia occurs

steroid dose changes

infection improves

kidney function worsens

patient is frail

goals of care change

patient cannot self-manage safely

Ask:

Is glucose too low?

Is intake reliable?

Is kidney function changing?

Is patient cognitively able to manage?

Are targets appropriate for frailty and prognosis?

Is caregiver support available?

What monitoring is realistic?

Avoid rigid glucose control when it creates hypoglycemia, falls, confusion, or fear.

The goal is safe regulation, not numerical perfection.

22. De-Escalating Opioids and Sedatives

Opioids and sedatives may help, but can harm.

Harms include:

drowsiness

- delirium
- falls
- constipation
- nausea
- respiratory depression
- dependence
- reduced participation in rehabilitation

Ask:

- Is pain controlled?
- Is function improving?
- Is the patient too drowsy?
- Is delirium worse?
- Are bowels open?
- Is breathing safe?
- Is the dose still needed?
- Can non-drug or non-opioid approaches help?
- Is this end-of-life comfort care, where priorities differ?

Do not abruptly stop medicines that require tapering or careful withdrawal planning.

But do not continue sedation by inertia.

23. De-Escalating Monitoring

Monitoring can be reduced when stable, but only after asking:

- What was being monitored?
- What danger has passed?
- What trend is stable?
- What would be missed if monitoring stops?
- Does the patient still need frequent observations?
- Is the patient at night-time risk?
- Are high-risk medicines being adjusted?
- Are electrolyte or glucose issues ongoing?
- Is delirium or fall risk present?

Unnecessary monitoring can disturb sleep and worsen delirium.

Insufficient monitoring can miss deterioration.

De-escalate monitoring when the risk profile supports it.

24. De-Escalating Lines, Tubes, and Catheters

Every line, tube, and catheter should have a current reason.

Ask daily:

- Is this still needed?
- Is it causing infection risk?
- Is it limiting mobility?
- Is it causing discomfort?
- Is it worsening delirium?
- Can medicines be given orally?
- Can the catheter be removed?
- Can the drain be removed?
- Does the feeding tube still match goals?
- Can monitoring equipment be reduced?

Removing unnecessary devices is active care.

It restores mobility, dignity, sleep, and comfort.

25. De-Escalating Investigations

More tests are not always better.

Ask:

- What question does this test answer?
- Will it change management?
- Is the patient stable?
- Is the result likely to be useful?
- What harm could the test cause?
- Could it produce incidental findings?
- Does it fit goals of care?
- Is observation or follow-up safer?
- Has the patient already had enough evaluation to proceed?

De-escalating investigations is not ignoring disease.

It is avoiding tests that do not help the patient.

26. De-Escalating Specialist Input

Specialist input may be essential during acute uncertainty.

But as the plan becomes clear, too many teams can fragment care.

Ask:

- Who is leading?
- Which recommendations remain active?
- Are there conflicts?
- Does the patient understand the plan?

Are follow-ups excessive?

Can care return to primary or generalist management?

Are recommendations still aligned with goals?

Has the referral question been answered?

De-escalation may mean simplifying the team structure.

The patient should not be left with five separate plans and no coherent direction.

27. De-Escalating Hospital Care

A patient can leave hospital when repair can continue safely elsewhere.

Ask:

Is immediate danger controlled?

Is diagnosis clear enough?

Are medicines reconciled?

Is function safe?

Is cognition safe or supported?

Is oral intake adequate?

Is pain controlled?

Are pending results owned?

Is follow-up arranged?

Is home support adequate?

Does the patient understand warning signs?

Discharge is a form of de-escalation.

It must be safe, not rushed.

28. De-Escalating ICU or High-Dependency Care

Step-down from higher care requires:

stable airway and breathing

stable circulation

reduced monitoring needs

clear treatment plan

manageable nursing needs

goals of care clarified

ward team handover

escalation triggers

family communication

rehabilitation plan

The patient may survive the acute crisis but remain vulnerable.

Step-down is not the end of risk.

It is transfer to a lower level of support with a clear plan.

29. De-Escalation in Frailty

In frailty, de-escalation often protects function.

Consider reducing:

- unnecessary lines
- sedatives
- anticholinergic medicines
- strict glucose treatment
- excessive blood pressure lowering
- repeated overnight observations when stable
- non-beneficial investigations
- burdensome preventive medicines
- prolonged hospitalization
- unnecessary fasting
- bed rest

Frailty de-escalation asks:

What can we remove so that this patient can eat, sleep, think, move, and participate again?

The goal is not less care.

The goal is better care.

30. De-Escalation in Multimorbidity

In multimorbidity, de-escalation reduces conflict and burden.

Ask:

- Which treatments are competing?
- Which medicines duplicate effects?
- Which disease targets are too aggressive?
- Which preventive medicines no longer fit time horizon?
- Which monitoring is unrealistic?
- Which referrals fragment care?
- Which plan overwhelms the patient?
- Which intervention matters most now?

A multimorbid patient may improve more from simplification than from adding another medicine.

31. De-Escalation in Serious Illness

In serious illness, de-escalation may mean shifting from disease control to comfort, dignity, and meaning.

Ask:

- Is disease-directed treatment still helping?
- Is treatment burden increasing?
- Is the patient deteriorating despite treatment?
- Does the patient understand the trajectory?
- What matters most now?
- Are we prolonging recovery or prolonging dying?
- Are symptoms controlled?
- Does the family understand?
- Is palliative care involved?
- Are escalation limits documented?

De-escalation in serious illness is not abandonment.

It is the removal of burdens that no longer serve the patient.

32. De-Escalation and Goals of Care

Goals of care guide de-escalation.

Examples:

If the goal is recovery, de-escalation may remove unnecessary devices and simplify medicines to promote mobility.

If the goal is chronic stability, de-escalation may reduce risky medicines and monitoring burden.

If the goal is comfort, de-escalation may stop burdensome tests, preventive medicines, and hospital transfers while escalating symptom relief.

If the goal is home time, de-escalation may prioritize discharge support and crisis planning.

Always ask:

What are we trying to achieve now?

The answer determines what can stop and what must continue.

33. De-Escalation and Deprescribing

Deprescribing is medicine de-escalation.

It asks:

- What is the medicine for?
- Is it still needed?
- Is it helping?
- Is it harming?
- Does it match the patient's goals?
- Is time-to-benefit appropriate?
- Is the patient taking too many medicines?
- Can it be stopped safely?

Does it need tapering?

What monitoring is needed after stopping?

Deprescribing is especially important in:

frailty

falls

delirium

dementia

AKI

palliative care

polypharmacy

recurrent admissions

medication side effects

low blood pressure

hypoglycemia

Stopping a medicine can be as therapeutic as starting one.

34. De-Escalation and Re-Escalation

De-escalation must include the possibility of re-escalation.

Ask:

What if symptoms return?

What if fever recurs?

What if oxygen drops?

What if pain worsens?

What if glucose rises or falls?

What if kidney function worsens?

What if confusion returns?

What if the patient cannot cope at home?

A safe plan says:

“We are reducing this now because it is safe, but here is what would make us increase support again.”

De-escalation is not irreversible.

It is responsive.

35. Communication Challenges in De-Escalation

Patients and families may think stopping treatment means:

the team is giving up

the illness is not serious

the patient is being denied care

cost is driving the decision

the patient is dying

the clinician does not care

Explain carefully.

Examples:

“We are stopping this because it has done its job.”

“We are narrowing the antibiotic because we now know the likely organism.”

“We are reducing monitoring so you can sleep and recover.”

“We are stopping this medicine because it may be causing falls.”

“We are not stopping care. We are changing the focus to comfort and dignity because further hospital treatment is more likely to burden than help.”

Good de-escalation requires good communication.

36. Worked Case 1: Antibiotic De-Escalation

A patient admitted with pneumonia was started on broad antibiotics. Cultures and clinical course support a narrower treatment.

Danger

Infection initially serious, but now improving.

Syndrome

Pneumonia with improving oxygenation and fever.

De-Escalation Decision

Narrow antibiotics according to culture, clinical response, allergy, kidney function, and local guidance.

Monitoring

Watch fever, oxygen need, breathlessness, mental state, renal function, and clinical trajectory.

Repair Trajectory

Infection continues improving while antibiotic harm and resistance pressure are reduced.

37. Worked Case 2: Stopping Oxygen

A patient with pneumonia is now comfortable, walking to the bathroom, and maintaining safe oxygenation without support.

Danger

Initial hypoxia now resolved.

Syndrome

Recovering pneumonia.

De-Escalation Decision

Stop oxygen if safe, continue monitoring according to local practice, encourage mobilization.

Monitoring

Breathlessness, oxygenation, exertional tolerance, fatigue.

Repair Trajectory

Patient moves more, sleeps better, discharge becomes closer.

38. Worked Case 3: Reducing Sedative Burden

An older patient with delirium is receiving a sleeping tablet and opioid. They are drowsy and nearly fell.

Danger

Falls, worsening delirium, reduced consciousness, constipation, respiratory risk.

Syndrome

Delirium and mobility risk worsened by medication burden.

De-Escalation Decision

Stop or reduce sedative exposure where safe, review opioid need, treat pain differently, address sleep non-pharmacologically, treat constipation.

Monitoring

Mental state, pain, sleep, falls, bowels, mobility.

Repair Trajectory

Patient becomes more alert, safer, more mobile, and less constipated.

39. Worked Case 4: De-Escalating Diabetes Treatment in Frailty

A frail older adult has recurrent hypoglycemia after poor intake during illness.

Danger

Hypoglycemia, falls, confusion, fear, reduced intake.

Syndrome

Glucose treatment burden exceeding physiologic reserve.

De-Escalation Decision

Simplify diabetes regimen and reduce hypoglycemia risk according to local guidance and patient context.

Monitoring

Glucose symptoms, intake, caregiver ability, follow-up.

Repair Trajectory

Fewer low sugars, safer function, less fear, simpler care.

40. Worked Case 5: Stopping Non-Beneficial Tests in Serious Illness

A patient with advanced cancer and declining function is undergoing repeated blood tests and scans, but results no longer change treatment. The patient wants comfort and home time.

Danger

Treatment burden, anxiety, hospital dependence, loss of meaningful time.

Syndrome

Advanced serious illness with shifting goals.

De-Escalation Decision

Stop investigations that do not change care. Focus on symptom control, home planning, family support, and crisis plan.

Monitoring

Pain, breathlessness, nausea, bowels, family coping, goals.

Repair Trajectory

Less burden, more comfort, clearer plan, patient's values honored.

41. Worked Case 6: Discharge as De-Escalation

A patient treated for heart failure is now breathing comfortably, walking safely, and understands medicine changes. Renal function needs outpatient monitoring.

Danger

Hospital harm if admitted longer; risk of relapse if discharged poorly.

Syndrome

Recovering heart failure with ongoing monitoring need.

De-Escalation Decision

Discharge with clear medicine plan, renal function follow-up, warning signs, and primary care review.

Monitoring

Breathlessness, swelling, dizziness, urine output, kidney function, medicine adherence.

Repair Trajectory

Recovery continues at home with safe follow-up and reduced hospital burden.

42. Common Student Pitfalls

Pitfall 1: Thinking More Treatment Always Means Better Care

More treatment can create more harm.

Pitfall 2: Stopping Too Early

De-escalation is unsafe if danger is still active.

Pitfall 3: Forgetting to Monitor After Stopping

Stopping is an intervention and requires follow-up.

Pitfall 4: Not Explaining the Change

Patients may think stopping means abandonment.

Pitfall 5: Continuing Antibiotics by Inertia

Antibiotics need review, narrowing, duration, or stopping.

Pitfall 6: Leaving Lines and Catheters In Place

Devices should have a current reason.

Pitfall 7: Ignoring Frailty

De-escalation may be essential to restore mobility, cognition, and dignity.

Pitfall 8: Confusing Comfort-Focused Care With No Care

Comfort care often requires active, skilled escalation of symptom relief.

43. Clinical Practice Box

When considering de-escalation, complete this structure:

What is being de-escalated?
Medicine, oxygen, monitoring, fluids, antibiotics, tests, devices, hospital care, escalation level?

Why was it started?
What danger or capacity failure was it addressing?

Is danger now controlled?
Vitals, symptoms, labs, function, diagnosis, response.

What has improved?
Which signs show repair?

What harm or burden exists?
Side effects, falls, delirium, AKI, bleeding, constipation, anxiety, immobility, treatment burden.

What still needs to continue?
What remains necessary for safety or repair?

What can be reduced, stopped, narrowed, switched, or simplified?

What monitoring is needed after de-escalation?
Symptoms, vitals, labs, function, follow-up.

What would trigger re-escalation?
Warning signs and thresholds.

What does the patient understand and want?
Goals, fears, preferences, consent.

Documentation and handover:
Reason, plan, monitoring, safety-net, responsibility.

44. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia was admitted with hypoxia, delirium, AKI, hypoglycemia, and falls. She was treated with oxygen, antibiotics, IV fluids initially, reduced insulin, held diuretic and ACE inhibitor, stopped NSAIDs, and received opioids for knee pain. She is now afebrile and off oxygen. Creatinine is improving but not baseline. She is eating better but still intermittently confused, constipated, weak, and afraid to walk. Her daughter is worried about stairs at home.

Apply clinical de-escalation.

What Can Be De-Escalated?

Oxygen can remain stopped if oxygenation is safe. Antibiotics should be reviewed for duration, route, and narrowing according to clinical response and local guidance. IV fluids should be stopped if oral intake is adequate and heart failure risk is present. Sedatives should be avoided. Opioids should be reviewed because

constipation, delirium, and falls risk remain. NSAIDs should remain stopped because of CKD, AKI, and heart failure risk.

What Should Not Be De-Escalated Too Soon?

Renal monitoring should continue until kidney function is clearly stable. Falls precautions should continue. Delirium monitoring should continue. Insulin should not be returned to the old regimen until intake, glucose trends, cognition, and caregiver support are safe. Diuretic and ACE inhibitor restart should not occur automatically; volume status, blood pressure, renal function, potassium, and breathlessness must guide review.

Capacity Failures Still Active

Cognition, mobility, bowel clearance, kidney clearance, comfort, glucose regulation, caregiver-supported safety.

De-Escalation Plan

Remove unnecessary devices, simplify medicines, avoid sedatives, treat constipation, create a safer pain plan, continue renal and glucose monitoring, mobilize with support, and delay discharge until mobility, cognition, medicines, and daughter's support are clear.

Monitoring

Watch confusion, falls, bowels, pain, oral intake, glucose, urine output, renal function, swelling, breathlessness, and dizziness.

Re-Escalation Triggers

Worsening breathlessness, fever, recurrent confusion, low glucose, reduced urine, worsening kidney function, chest pain, falls, severe pain, vomiting, or inability to eat or drink.

Repair Trajectory

The patient becomes more alert, less constipated, safer on her feet, clearer in her medicine plan, stable in kidney function and glucose, and able to continue recovery safely at home with daughter's support and follow-up.

45. Student Takeaway

Clinical de-escalation becomes easier when the clinician asks:

Why was this treatment started?
Is the danger now controlled?
What has improved?
What still needs support?
What is now causing harm or burden?
What can be reduced, stopped, narrowed, switched, or simplified?
What monitoring is needed after de-escalation?
What would trigger re-escalation?
Does this match the patient's goals?
Have we explained, documented, and handed over the change?

Good medicine is not maximum medicine.

Good medicine is proportionate medicine.

The safe clinician escalates when danger rises and de-escalates when intensity no longer serves repair. De-escalation protects patients from treatment burden, medication harm, hospital harm, unnecessary testing, and care that no longer matches their goals. It is not less care. It is wiser care.

Chapter 86. Clinical Safety-Netting Made Easy

Clinical safety-netting is the structured process of telling the patient, caregiver, or receiving clinician what to watch for, what to expect, what would be worrying, what to do if things worsen, and who is responsible for follow-up.

Patients do not usually say:

“Please safety-net me.”

They say:

“What should I look out for?”
“How do I know if this is getting worse?”
“When should I come back?”
“What is normal recovery?”
“What is not normal?”
“Who do I call?”
“What if the medicine causes problems?”
“What if the result comes back abnormal?”
“Can I wait, or is it urgent?”

Clinicians may think:

“The patient looks well enough to go home.”
“The tests are reassuring.”
“The diagnosis is likely benign.”
“The treatment should work.”
“Follow-up is arranged.”
“They can come back if worse.”

But vague reassurance is not enough.

Safety-netting is not saying:

“Come back if worse.”

Safety-netting is explaining:

- what “worse” means
- what symptoms are expected
- what symptoms are dangerous
- what timeframe matters
- who to contact
- what to do overnight or over the weekend
- what follow-up is needed
- who checks pending results
- what medicines may cause harm
- what uncertainty remains

The first task is not to predict the future perfectly.

The deeper question is:

How can we protect the patient between clinical contacts, especially when uncertainty, deterioration, treatment harm, or follow-up gaps are possible?

Clinical safety-netting becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical Safety-Netting?

Clinical safety-netting is a planned protection against missed deterioration, diagnostic uncertainty, treatment failure, medication harm, or system delay.

It includes:

- expected recovery
- warning signs
- urgent red flags
- what to do if symptoms worsen
- how soon to seek help
- who to contact
- follow-up arrangements
- pending results ownership
- medicine risks
- practical barriers
- caregiver instructions
- documentation

Safety-netting is a bridge between uncertainty and safety.

It acknowledges that:

- diagnoses may evolve
- symptoms may declare themselves later
- early tests may be reassuring but incomplete
- treatment may fail
- side effects may occur
- patients may misunderstand
- follow-up systems may fail
- disease may worsen after leaving care

Safety-netting protects the patient when the clinician is no longer in the room.

2. Safety-Netting Is Not Defensive Medicine

Safety-netting is not simply protecting the clinician.

It protects the patient.

A defensive safety-net says:

“Return if worse.”

A clinical safety-net says:

“Your chest discomfort is reassuring today, but if it becomes severe, occurs with exertion, spreads to your arm or jaw, comes with sweating, fainting, or breathlessness, or does not settle, seek urgent care immediately.”

The difference is specificity.

The patient must know what danger looks like.

3. Safety-Netting Is Part of Clinical Reasoning

Safety-netting depends on the clinician’s reasoning.

To safety-net well, ask:

- What is the working diagnosis?
- What dangerous alternatives remain possible?
- What is expected to improve?
- What would be unexpected?
- What treatment harm could occur?
- What result is pending?
- What follow-up might fail?
- What capacity is vulnerable?
- What does the patient or caregiver need to recognize?

Safety-netting is not an afterthought.

It is reasoning made practical for the patient.

4. The First Question: What Danger Could Develop?

Safety-netting begins by naming possible danger.

Ask:

- Could breathing worsen?
- Could infection progress?
- Could chest pain become cardiac?
- Could abdominal pain become surgical?
- Could headache become neurological emergency?
- Could confusion worsen?
- Could dehydration or AKI develop?
- Could bleeding occur?
- Could glucose become too low or too high?
- Could a medicine cause harm?
- Could a fall occur?
- Could suicidal risk increase?
- Could the patient fail to eat, drink, walk, or take medicines?
- Could a pending result require action?

The danger-first question is:

What would make this patient unsafe if it happened after they leave my direct care?

That is what the safety-net must cover.

5. Immediate Red Flags to Safety-Net

Common red flags include:

- worsening breathlessness
- chest pain
- fainting
- new weakness, speech difficulty, or facial droop
- confusion or drowsiness
- fever returning or worsening
- severe headache with concerning features
- severe abdominal pain
- persistent vomiting
- inability to drink
- reduced urine output
- black stool or bleeding
- severe dizziness
- repeated low glucose
- very high glucose with dehydration or drowsiness
- swelling of face or tongue after medicine
- severe rash or allergic symptoms
- severe pain not controlled
- fall with injury or head strike
- suicidal thoughts or intent
- worsening agitation or unsafe behavior
- rapid decline in walking, eating, or self-care

The safety-net should be tailored to the syndrome.

Do not give every warning sign to every patient.

Give the signs that matter most for that patient.

6. The Safety-Netting Pathway

A practical safety-netting pathway is:

- explain the working diagnosis
- explain uncertainty
- explain expected recovery

explain warning signs

explain urgent red flags

explain what to do

explain medicines and side effects

explain follow-up

assign pending result ownership

check understanding

document the safety-net

This pathway turns “come back if worse” into a usable plan.

7. Step 1: Explain the Working Diagnosis

Patients need to know what the clinician thinks is happening.

Example:

“The most likely cause of your cough and fever is a chest infection.”

“Your dizziness today appears most consistent with dehydration and low blood pressure when standing.”

“Your abdominal pain is not showing signs of a surgical emergency today, but early abdominal problems can change.”

“Your chest pain assessment today is reassuring, but it is important to watch for certain symptoms.”

The patient does not need a lecture.

They need a clear working explanation.

8. Step 2: Explain Uncertainty

Safety-netting is especially important when uncertainty remains.

Say:

“At the moment, the findings are reassuring, but some illnesses become clearer over time.”

“The tests today do not show a heart attack, but if symptoms change, you need reassessment.”

“This looks like a viral illness now, but if breathing worsens or fever persists, we need to reconsider.”

“The scan does not show a fracture, but if pain worsens or you cannot walk, you need review.”

Naming uncertainty builds trust.

False certainty can be dangerous.

9. Step 3: Explain Expected Recovery

Patients need to know what normal improvement should look like.

Examples:

Viral Illness

Fever and aches should gradually settle, hydration should improve, breathing should remain comfortable.

Pneumonia

Breathlessness, fever, appetite, and energy should gradually improve, though fatigue may last.

Minor Head Injury

Headache may occur, but drowsiness, confusion, vomiting, or weakness is not expected.

AKI Recovery

Urine output, hydration, and blood tests should improve; worsening vomiting, reduced urine, or confusion is concerning.

Pain Flare

Pain should become more manageable, movement should gradually improve, and medicine side effects should not dominate.

Expected recovery creates a comparison point.

Without it, patients do not know whether they are improving or deteriorating.

10. Step 4: Explain Warning Signs

Warning signs are symptoms that require earlier review.

They may not require emergency care immediately, but they should not be ignored.

Examples:

- symptoms not improving as expected
- fever lasting longer than expected
- pain worsening rather than improving
- increasing weakness
- poor oral intake
- medicine side effects
- new swelling
- worsening sleep or confusion
- repeated falls
- blood sugar instability
- wound redness or discharge
- worsening mood or anxiety

Warning signs answer:

When should I contact my doctor sooner than planned?

11. Step 5: Explain Urgent Red Flags

Urgent red flags require immediate care.

Examples:

- severe breathlessness
- chest pain with concerning features
- fainting
- new neurological deficit
- severe allergic reaction

- severe bleeding
- confusion
- inability to drink
- markedly reduced urine
- severe abdominal pain
- repeated vomiting
- suicidal intent
- severe uncontrolled pain
- fall with head injury on anticoagulants

Urgent red flags answer:

When should I seek emergency help now?

Make the difference between “call clinic soon” and “seek urgent care immediately” clear.

12. Step 6: Explain What to Do

Safety-netting should include action.

Not just:

“Watch for fever.”

Better:

“If fever returns with breathlessness, confusion, chest pain, or inability to drink, seek urgent care the same day.”

Not just:

“Monitor your sugar.”

Better:

“If your sugar is repeatedly low, or you feel sweaty, shaky, confused, or faint, treat it according to your plan and seek help if it does not improve or keeps recurring.”

Patients need instructions, not only warnings.

13. Step 7: Explain Medicine Safety

Many safety-nets should include medicines.

Discuss:

- what medicine is being started
- what medicine is stopped
- what was held temporarily
- what side effects matter
- what interactions to avoid
- what monitoring is needed
- when to seek help
- when not to restart old medicines

Examples:

“Do not restart the anti-inflammatory pain medicine unless your doctor says it is safe, because your kidneys were stressed.”

“This antibiotic may cause rash, severe diarrhea, or allergy. Seek help if these occur.”

“This pain medicine can cause drowsiness, constipation, and falls. Do not take extra doses, and seek help if you become very sleepy or confused.”

“Because your insulin was changed, watch for low sugars, especially if you are eating less.”

Medicine safety-netting prevents treatment harm.

14. Step 8: Explain Follow-Up

Follow-up should be specific.

Include:

- who
- when
- where
- why
- what will be checked
- what results are needed
- what to do if appointment does not happen

Weak:

“Follow up with your doctor.”

Better:

“Please see your doctor within one week to review your breathing, kidney function, blood pressure, and medicine changes. If you cannot get an appointment, contact the clinic because these need review.”

Follow-up is not safe unless the patient understands its purpose.

15. Step 9: Assign Pending Result Ownership

Pending results require safety-netting.

Tell the patient:

- what result is pending
- who will check it
- when it is expected
- how they will be contacted
- what to do if they hear nothing
- whether it affects treatment

Example:

“A culture result is still pending. The hospital team will check it. If it shows that your antibiotic needs changing, you will be contacted. If you have not heard but feel worse, do not wait for the result; seek review.”

Do not leave pending results floating.

16. Step 10: Use Teach-Back

Ask the patient or caregiver to repeat the plan.

Examples:

“Just to make sure I explained it clearly, what symptoms would make you come back urgently?”

“Can you tell me which medicines you are stopping?”

“When is your blood test?”

“What will you do if your breathing worsens?”

Teach-back checks the explanation.

It does not blame the patient.

If they cannot repeat the plan, explain again more simply.

17. Step 11: Document the Safety-Net

Documentation should include:

- diagnosis or working diagnosis
- uncertainty discussed
- expected course explained
- red flags explained
- follow-up arranged
- pending results ownership
- medicines explained
- patient or caregiver understanding
- written information given if available

Example:

“Safety-net discussed: return urgently for worsening breathlessness, chest pain, confusion, persistent vomiting, reduced urine output, fever recurrence, or inability to drink. Follow-up with primary care in one week for renal function and medicine review. Daughter present and understood plan.”

If it is not documented, the safety-net may be lost.

18. Safety-Netting After Reassuring Tests

Reassuring tests reduce risk but do not eliminate all risk.

Example:

After chest pain assessment:

“Your tests today are reassuring, but seek urgent care if chest pain returns, becomes severe, occurs with exertion, spreads to arm, jaw, or back, comes with breathlessness, sweating, fainting, or does not settle.”

After abdominal pain assessment:

“Your examination today is reassuring, but abdominal problems can evolve. Seek urgent care if pain becomes severe or localized, you develop fever, persistent vomiting, swelling, black stool, blood, or cannot drink.”

After headache assessment:

“Today’s assessment is reassuring, but seek urgent care if headache becomes sudden and severe, you develop weakness, confusion, seizure, fever with neck stiffness, vision changes, or persistent vomiting.”

A reassuring test is not a guarantee.

Safety-netting protects the remaining uncertainty.

19. Safety-Netting After Discharge

Discharge safety-netting should include:

- what happened in hospital
- what has improved
- what still needs recovery
- medicine changes
- warning signs
- follow-up
- pending results
- function and support
- what to do if unable to cope

Example:

“You are leaving hospital because your pneumonia has improved and you no longer need oxygen. However, you are still recovering. Seek urgent help if breathlessness worsens, fever returns, confusion develops, you cannot drink, urine becomes very low, chest pain occurs, or you fall.”

Discharge is a high-risk transition.

Safety-netting should be clear and practical.

20. Safety-Netting in Frailty

Frailty safety-netting should include function and cognition.

Warn about:

- new confusion
- reduced eating or drinking
- falls
- inability to stand or walk
- worsening weakness
- reduced urine

- breathlessness
- medication side effects
- caregiver inability to cope
- sudden change from baseline

Caregivers should know:

“If they become more confused, stop eating or drinking, fall, cannot get to the toilet, or are much weaker than usual, seek medical review.”

In frailty, deterioration may appear as loss of function rather than classic symptoms.

21. Safety-Netting in Delirium

After delirium, explain:

- confusion may fluctuate
- recovery may take time
- worsening confusion is not normal recovery
- infection, dehydration, medicines, constipation, pain, or poor sleep can trigger relapse

Red flags:

- increasing drowsiness
- agitation unsafe at home
- hallucinations worsening
- fever
- poor intake
- falls
- reduced urine
- new weakness
- medication error
- caregiver unable to cope

Delirium safety-netting should involve family or caregiver whenever possible.

22. Safety-Netting in AKI

After AKI, safety-net for:

- reduced urine output
- vomiting or diarrhea
- inability to drink
- worsening dizziness
- confusion
- swelling or breathlessness
- restarting harmful medicines

abnormal follow-up blood test

dehydration during future illness

Explain held medicines clearly.

Example:

“Your kidney function is improving but still needs monitoring. Do not restart the medicines we stopped until your doctor reviews your blood test. Seek urgent help if you pass much less urine, become confused, cannot drink, vomit repeatedly, or become very breathless.”

AKI safety-netting is medicine safety-netting.

23. Safety-Netting in Heart Failure

Safety-net for:

worsening breathlessness

waking at night breathless

needing more pillows

rapid swelling

sudden weight gain where patient monitors weight

dizziness or fainting

chest pain

reduced urine

confusion

medication side effects

kidney blood test changes

Explain the follow-up plan for diuretics and kidney function.

Heart failure safety-netting must balance fluid overload and dehydration risk.

24. Safety-Netting in Diabetes

Safety-net for:

low sugar symptoms

repeated low readings

high sugar with dehydration

vomiting

inability to eat

confusion

drowsiness

infection signs

foot wounds

medicine changes during illness according to local guidance

insulin errors

Explain:

“If you are eating less than usual, your usual diabetes medicines may behave differently. Watch for low sugars and seek advice early.”

Diabetes safety-netting protects energy regulation.

25. Safety-Netting With Anticoagulation

Safety-net for bleeding and clot risk.

Warn about:

- black stools
- vomiting blood
- coughing blood
- severe headache
- head injury
- unexplained bruising
- persistent nosebleeds
- blood in urine
- sudden weakness or speech trouble
- chest pain or breathlessness
- calf swelling or pain
- missed doses where relevant

Explain the indication and duration where known.

Patients should understand why they take anticoagulation and what bleeding danger looks like.

26. Safety-Netting With Opioids and Sedatives

Warn about:

- severe drowsiness
- confusion
- falls
- constipation
- nausea
- slow breathing
- taking extra doses
- combining with alcohol or other sedatives
- unsafe driving or machinery
- worsening sleepiness in frailty

Explain bowel care where appropriate.

Example:

“This medicine can help pain, but it can also cause constipation, drowsiness, and falls. Seek help if you become very sleepy, confused, or your bowels do not open.”

Comfort treatment must still be safe.

27. Safety-Netting After Falls

Safety-net for:

- headache
- vomiting
- drowsiness
- confusion
- weakness
- difficulty walking
- worsening pain
- swelling or deformity
- another fall
- fainting
- chest pain or palpitations
- dizziness
- anticoagulant use
- inability to manage at home

After a fall, explain that the goal is not only injury recovery but preventing the next fall.

28. Safety-Netting in Palliative Care

Palliative safety-netting is not only about emergency return.

It includes:

- what symptoms may occur
- what medicines are available
- who to call
- what to do for pain
- what to do for breathlessness
- what to do for agitation
- what to do for nausea
- what to do if swallowing becomes difficult
- what to do if family is frightened
- when hospital care is desired or not desired
- crisis plan
- after-hours contact where available

Families need permission to call for help.

They should not feel abandoned.

29. Safety-Netting in Mental Health Risk

For depression, self-harm, anxiety crisis, psychosis, substance use, or demoralization, safety-netting should include:

- warning signs of worsening risk
- crisis contacts according to local pathway
- removal or reduction of means where appropriate
- support person involvement where safe
- follow-up timing
- medication side effects
- substance withdrawal warnings
- what to do if suicidal thoughts intensify

Ask directly about safety.

A vague “come back if worse” is unsafe in mental health risk.

30. Safety-Netting With Children, Older Adults, and Vulnerable Patients

When the patient may not reliably self-monitor, include the caregiver.

This applies to:

- older adults with frailty
- dementia
- delirium recovery
- serious mental illness
- learning disability
- children and adolescents
- language barriers
- low health literacy
- sensory impairment
- severe illness
- social vulnerability
- medication complexity

The safety-net must be understandable to the person who will actually notice deterioration.

31. Written Safety-Netting

Written instructions help, especially when:

- the patient is anxious

- the plan is complex
- medicines changed
- caregiver is involved
- warning signs are important
- language or memory barriers exist
- discharge follows admission
- diagnosis is uncertain
- follow-up is essential

Written instructions should be simple:

- diagnosis or working diagnosis
- medicines
- warning signs
- follow-up
- contact instructions
- pending results

Written information does not replace verbal explanation.

It reinforces it.

32. Safety-Netting and Health Literacy

Avoid vague medical language.

Instead of:

“Return if dyspnea worsens.”

Say:

“Seek urgent help if breathing becomes harder, you cannot speak full sentences, or you feel faint.”

Instead of:

“Watch for GI bleeding.”

Say:

“Seek urgent help if your stool becomes black like tar, you vomit blood, or you feel faint with bleeding.”

Instead of:

“Monitor for neurological symptoms.”

Say:

“Seek urgent help if your face droops, your speech becomes slurred, one arm or leg becomes weak, you have a seizure, or you become confused.”

The safety-net must fit the patient’s language.

33. Safety-Netting and Access Barriers

Ask:

Can the patient call for help?

Do they have transport?

Can they afford medicines?

Can they attend follow-up?

Can they read instructions?

Do they have a phone?

Is there someone at home?

Are they leaving over a weekend or holiday?

Is the clinic available?

What happens at night?

A safety-net that cannot be used is not safe.

Adapt the plan to real life.

34. Safety-Netting and Uncertainty

When uncertainty remains, say what uncertainty is being watched.

Example:

“This looks like a viral chest infection today, but if breathlessness worsens, fever persists, or you become confused, we need to reassess for pneumonia or another cause.”

“The abdominal pain is not clearly surgical today, but if it becomes severe, localized, or associated with vomiting, fever, or inability to pass stool, seek urgent care.”

“The dizziness may be from dehydration, but if you faint, have chest pain, palpitations, weakness, or black stool, seek urgent care.”

Specific uncertainty produces specific safety-netting.

35. Safety-Netting and Pending Diagnosis

Sometimes diagnosis cannot be made in one visit.

Safety-netting should include:

current working diagnosis

dangerous alternatives

tests or follow-up planned

timeframe for review

red flags that override routine follow-up

what to do if symptoms persist

Example:

“We do not have the final answer today. The current plan is to repeat blood tests and review you in one week. But if you develop fever, worsening pain, vomiting, black stool, fainting, or increasing weakness, do not wait for the appointment.”

This makes uncertainty safer.

36. Safety-Netting and Treatment Failure

Tell the patient what failure looks like.

Examples:

For antibiotics:

“You should gradually feel better. Seek review if fever persists, breathing worsens, confusion develops, or you cannot drink.”

For pain treatment:

“Pain should become manageable enough to move and sleep. Seek help if pain rapidly worsens, you become weak, numb, drowsy, confused, or constipated.”

For diuretics:

“Breathlessness and swelling should improve. Seek help if dizziness, fainting, reduced urine, or worsening breathlessness occurs.”

Treatment failure should not be discovered only at the next routine appointment.

37. Safety-Netting and Documentation Examples

Useful documentation phrases include:

“Safety-net discussed with patient and daughter: urgent review for worsening breathlessness, chest pain, confusion, fever recurrence, poor intake, reduced urine output, falls, or recurrent hypoglycemia.”

“Pending culture result to be reviewed by hospital team; patient advised they will be contacted if antibiotic change required.”

“Medication changes explained using teach-back; patient correctly described stopped NSAID and follow-up renal blood test.”

“Diagnosis uncertain; advised urgent reassessment if abdominal pain localizes, worsens, fever develops, vomiting persists, or black stool occurs.”

Documentation should show that the safety-net was specific.

38. Worked Case 1: Reassuring Chest Pain Assessment

A 55-year-old man has chest pain. Initial assessment is reassuring according to local pathway, and he is discharged with follow-up.

Safety-Net

Explain that current findings are reassuring, but urgent reassessment is needed if:

- chest pain returns or worsens
- pain occurs with exertion
- pain spreads to arm, jaw, back, or neck
- breathlessness, sweating, nausea, fainting, or palpitations occur
- pain does not settle
- new weakness or collapse occurs

Follow-Up

Clarify primary care or cardiology review if symptoms persist or risk remains.

Repair Trajectory

No recurrence of concerning pain, follow-up completed, risk factors addressed.

39. Worked Case 2: Pneumonia Discharge

A 72-year-old woman is discharged after pneumonia. She is afebrile and off oxygen but tired.

Safety-Net

Expected: gradual improvement in cough, appetite, energy, and breathlessness.

Urgent review if:

- breathlessness worsens
- fever returns
- confusion develops
- chest pain occurs
- unable to drink
- urine output drops
- coughing blood occurs
- weakness suddenly worsens
- oxygen need returns where applicable

Medicines

Explain antibiotics, side effects, and completion if prescribed.

Follow-Up

Review according to local guidance, especially if frail, persistent symptoms, or comorbidity.

40. Worked Case 3: AKI Follow-Up

A patient with AKI from dehydration is improving and going home. Several medicines are held.

Safety-Net

Explain:

- kidney function is improving but needs repeat blood test
- avoid restarting held medicines until reviewed
- maintain hydration if able
- seek urgent help if vomiting, diarrhea, unable to drink, reduced urine, confusion, breathlessness, severe dizziness, or swelling occurs

Follow-Up

Blood test and clinician review must be arranged.

Repair Trajectory

Renal function improves, medicines reviewed, recurrence avoided.

41. Worked Case 4: Fall With No Fracture

An older adult had a fall. Imaging shows no fracture, but they remain sore and anxious.

Safety-Net

Seek urgent review if:

- new or worsening pain
- inability to walk
- another fall
- head injury symptoms
- confusion
- vomiting
- weakness
- dizziness or fainting
- chest pain or palpitations
- severe bruising or swelling
- caregiver cannot manage

Follow-Up

Falls risk, medicines, vision, mobility, and home safety should be reviewed.

Repair Trajectory

Pain improves, walking confidence returns, no further falls occur.

42. Worked Case 5: New Opioid Prescription

A patient is prescribed opioid medicine for severe pain.

Safety-Net

Explain:

- take only as prescribed
- avoid alcohol or extra sedatives
- watch for drowsiness, confusion, falls, constipation, nausea, slow breathing
- seek help if very sleepy, confused, breathless, or bowels do not open
- do not drive or perform unsafe activities if drowsy

Follow-Up

Pain and side effects must be reviewed.

Repair Trajectory

Pain improves without unacceptable sedation, constipation, or falls.

43. Worked Case 6: Serious Illness at Home

A patient with advanced heart failure wishes to remain at home if possible.

Safety-Net

Explain:

- what breathlessness changes are expected
- what worsening looks like
- who to call for symptom crisis

when hospital is desired

when comfort care at home is preferred

what medicines are available

how family can get help

what to do if patient becomes very distressed

Follow-Up

Primary care, heart failure team, palliative care, or community nursing as available.

Repair Trajectory

Symptoms controlled, family supported, crisis plan clear, care aligned with patient wishes.

44. Common Student Pitfalls

Pitfall 1: Saying "Come Back If Worse"

Always define "worse."

Pitfall 2: Giving Too Many Generic Warnings

Tailor warning signs to the syndrome.

Pitfall 3: Failing to Explain Expected Recovery

Patients need to know what improvement should look like.

Pitfall 4: Forgetting Medicine Safety

Many harms occur after new, stopped, or changed medicines.

Pitfall 5: Forgetting Pending Results

Pending results need ownership and patient instructions.

Pitfall 6: Not Checking Understanding

Teach-back prevents false reassurance.

Pitfall 7: Ignoring Access Barriers

A safety-net must be usable.

Pitfall 8: Not Documenting

Specific safety-netting should be recorded.

45. Clinical Practice Box

When safety-netting, complete this structure:

Working diagnosis:
What do we think is happening?

Uncertainty:
What remains possible or unresolved?

Expected recovery:
What should improve, and over what general timeframe?

Warning signs:
What should trigger earlier review?

Urgent red flags:
What should trigger immediate care?

Action plan:
Who to call, where to go, what to do, and how urgently?

Medicines:
What was started, stopped, held, changed, and what side effects matter?

Follow-up:
Who, when, where, why, and what happens if appointment does not occur?

Pending results:
What is pending, who checks it, and how will the patient be contacted?

Practical barriers:
Transport, phone, caregiver, cost, literacy, language, home safety.

Teach-back:
Can patient or caregiver explain the warning signs and plan?

Documentation:
Was the safety-net recorded clearly?

46. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain is being discharged after pneumonia complicated by hypoxia, delirium, AKI, hypoglycemia, and falls. She is now afebrile and off oxygen. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin has been reduced. NSAIDs were stopped. She remains weak but can mobilize with supervision. Her daughter will stay with her. Follow-up blood test is arranged.

Create a safety-net.

Working Diagnosis

Pneumonia improving, complicated by delirium, AKI, hypoglycemia, weakness, and falls risk in frailty.

Expected Recovery

Breathing should remain stable, fever should not return, appetite and strength should gradually improve, confusion should continue to settle, and walking should become safer with supervision.

Urgent Red Flags

Seek urgent care if she develops worsening breathlessness, chest pain, fever returning, worsening confusion, severe drowsiness, a fall, inability to drink, repeated vomiting, reduced urine output, recurrent low sugars, severe dizziness, swelling with breathlessness, severe pain, or black stool or bleeding.

Medicine Safety

Do not restart NSAIDs because of kidney and heart failure risk. Diuretic and ACE inhibitor remain held until blood test and clinician review. Insulin is reduced because of low sugar risk while appetite is recovering. Watch for low sugars, especially if she eats poorly.

Follow-Up

Repeat kidney function and electrolytes as arranged. Primary care or responsible clinician should review renal function, blood pressure, breathlessness, swelling, glucose, pain, mobility, and whether held medicines can be restarted.

Pending Results

Any pending hospital results should have a named owner. If contacted about an abnormal result, follow instructions promptly.

Caregiver Role

Daughter should supervise medicines, walking, food and fluid intake, glucose monitoring if used, and watch for confusion, falls, urine output, breathlessness, swelling, and pain.

Teach-Back

Ask daughter:

“Can you tell me which medicines should not be restarted yet?”
“What symptoms would make you seek urgent help?”
“When is the blood test?”
“Who will review the medicines?”

Repair Trajectory

She remains stable at home, avoids falls and low sugars, kidney function continues improving, medicines are restarted only when safe, strength returns, and daughter knows how to respond if deterioration occurs.

47. Student Takeaway

Clinical safety-netting becomes easier when the clinician asks:

What diagnosis or working diagnosis have I explained?
What uncertainty remains?
What should recovery look like?
What warning signs mean earlier review?
What red flags mean urgent care?
What exactly should the patient or caregiver do?
What medicine harms should they watch for?
What follow-up is arranged?
What pending results need ownership?
Can the patient or caregiver repeat the plan?
Is the safety-net documented?

Safety-netting is not a phrase.

It is a protective clinical structure.

The safe clinician does not simply reassure, discharge, refer, or prescribe. The safe clinician also teaches the patient how to recognize danger, understand uncertainty, use follow-up, avoid medicine harm, and return early

when repair fails. Safety-netting carries care beyond the consultation and protects the patient in the vulnerable space between clinical encounters.

Chapter 87. Clinical Review and Reassessment Made Easy

Clinical review and reassessment is the structured process of returning to the patient after time, treatment, investigation, deterioration, handover, or uncertainty to ask whether the original assessment still fits and whether the current plan is still safe.

Patients do not usually say:

“Please reassess me clinically.”

They say:

“I am not getting better.”
“I feel worse than before.”
“The medicine helped at first, but now I feel strange.”
“The pain is back.”
“I am still short of breath.”
“I feel weaker.”
“The nurse said my blood pressure is low.”
“The result came back abnormal.”
“Are we still sure this is the right diagnosis?”

Clinicians may think:

“I already saw this patient.”
“The plan was made this morning.”
“The diagnosis is known.”
“The treatment has started.”
“We are just waiting.”
“The patient is stable.”

But illness changes.

Patients improve, deteriorate, plateau, relapse, develop complications, experience medicine harm, or reveal a different diagnosis over time.

Clinical review is not repetition.

It is active re-seeing.

The first task is not to ask mechanically, “Any change?”

The deeper question is:

Has the patient’s condition, risk, diagnosis, treatment response, or life-capacity changed enough that the plan must now be revised?

Clinical review and reassessment becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Clinical Review and Reassessment?

Clinical review is the act of seeing the patient again with a specific purpose.

Reassessment asks whether the original understanding still fits.

It includes:

- checking current symptoms
- comparing with previous status
- reassessing danger

- reviewing vital signs and trends
- repeating focused examination
- reviewing investigations
- assessing treatment response
- identifying treatment harm
- revisiting diagnosis
- checking function and cognition
- reviewing medicines
- assessing patient and family concerns
- deciding whether to continue, escalate, de-escalate, or change plan
- documenting the new assessment

Review is not simply “checking in.”

It is a fresh clinical judgment.

2. Why Reassessment Matters

Many errors happen because clinicians fail to reassess.

They continue the old plan even when the patient has changed.

Examples:

- pneumonia treated, but oxygen requirement rises
- chest pain initially reassuring, but pain recurs with exertion
- AKI improving, but potassium becomes dangerous
- delirium attributed to infection, but sedative burden worsens
- heart failure treated, but renal function deteriorates
- abdominal pain initially mild, but becomes localized and severe
- patient planned for discharge, but cannot walk safely
- glucose controlled yesterday, but recurrent hypoglycemia occurs today
- pain relieved, but opioid toxicity appears

Reassessment asks:

Is the story still the same story?

Often, the answer is no.

3. Reassessment Is Not Distrust of the Previous Clinician

Reassessment does not mean the first assessment was wrong.

It means time has passed.

The patient may have changed.
New information may be available.
Treatment response may clarify the diagnosis.
A complication may have appeared.

A family member may give new baseline information.
A result may return.
A medicine side effect may emerge.
The patient's goals may shift.

Good clinicians expect plans to evolve.

Reassessment is clinical humility in action.

4. The First Question: Is There New Danger?

Every reassessment begins with danger.

Ask:

- Is the patient more breathless?
- Is oxygen requirement rising?
- Is blood pressure falling?
- Is heart rate rising?
- Is consciousness changed?
- Is confusion new or worse?
- Is glucose low or dangerously high?
- Is pain worse?
- Is bleeding present?
- Is urine output reduced?
- Are electrolytes dangerous?
- Is fever returning?
- Is there new chest pain?
- Is there new neurological deficit?
- Has the patient fallen?
- Is the patient unsafe to leave?
- Is the patient suffering despite the plan?

The danger-first reassessment question is:

What is newly unsafe compared with before?

New danger changes priority.

5. Immediate Red Flags During Reassessment

Red flags include:

- new or worsening breathlessness
- rising oxygen requirement
- low blood pressure
- persistent tachycardia
- chest pain

- fainting
- new confusion
- reduced consciousness
- seizure
- new neurological deficit
- severe pain
- worsening abdominal pain
- persistent vomiting
- reduced urine output
- severe electrolyte abnormality
- recurrent hypoglycemia
- bleeding
- fever with deterioration
- fall or near fall
- worsening agitation
- suicidal thoughts
- family says patient is not baseline
- nurse says patient is worse
- treatment not working
- discharge no longer safe

These signs should trigger urgent review, escalation, or plan revision.

6. The Reassessment Pathway

A practical reassessment pathway is:

- clarify why reassessment is needed
- compare with previous status
- reassess danger
- restate the syndrome
- review treatment response
- review new results
- reassess capacity failures
- look for treatment harm
- revisit the diagnosis
- review medicines
- reassess function, cognition, and support
- decide whether to continue, escalate, de-escalate, or change plan
- safety-net and document

This pathway prevents superficial review.

7. Step 1: Clarify Why You Are Reassessing

Reassessment should have a purpose.

Common reasons include:

- patient feels worse
- nurse is worried
- abnormal vital signs
- abnormal result
- after treatment was given
- after a fall
- before discharge
- after new symptom
- after medicine change
- after specialist advice
- after family concern
- after handover
- after a period of observation
- when expected improvement has not occurred

Ask:

Why am I reviewing this patient now?

The reason focuses the assessment.

8. Step 2: Compare With Previous Status

Reassessment depends on comparison.

Ask:

- Better, worse, or unchanged?
- Compared with when?
- Compared with baseline?
- Compared with last ward round?
- Compared with after treatment?
- Compared with discharge plan?
- Compared with family's usual knowledge of the patient?

Useful comparison questions include:

"How are you compared with this morning?"
"Are you more or less breathless?"
"Is the pain better, worse, or different?"
"Are you eating more than yesterday?"

“Are you walking as you normally do?”
“Does your daughter think you are back to baseline?”

Without comparison, review becomes vague.

9. Step 3: Reassess Vital Signs and Trends

Do not look only at one set of observations.

Look at the trend.

Ask:

- Is respiratory rate rising?
- Is oxygen requirement increasing?
- Is blood pressure falling?
- Is heart rate rising?
- Is fever settling or recurring?
- Is urine output changing?
- Is glucose stable?
- Is pain score changing?
- Is mental state fluctuating?
- Are observations improving after treatment?

A single “normal” number can hide deterioration.

A trend tells the story.

10. Step 4: Restate the Syndrome

Ask:

What syndrome is present now?

It may not be the same as before.

Example:

Earlier:

“Pneumonia with fever and cough.”

Now:

“Recovering pneumonia with persistent delirium, poor intake, and AKI.”

Earlier:

“Heart failure with edema and breathlessness.”

Now:

“Improved congestion but worsening renal function and dizziness after diuresis.”

Earlier:

“Fall with no fracture.”

Now:

“Post-fall fear, weakness, and unsafe mobility.”

Reassessment updates the syndrome.

11. Step 5: Review Treatment Response

Treatment response is one of the most important reassessment tools.

Ask:

- Did the treatment help?
- How quickly?
- What improved?
- What did not improve?
- What worsened?
- Did treatment cause side effects?
- Does the response support the diagnosis?
- Does the response suggest another diagnosis?
- Should treatment continue, stop, narrow, escalate, or change?

Examples:

- antibiotics improved fever but not hypoxia
- diuretics improved breathlessness but worsened AKI
- insulin reduced glucose but caused hypoglycemia
- opioid improved pain but caused confusion
- fluids improved blood pressure but worsened breathlessness
- sedative reduced agitation but worsened falls risk

Treatment response is clinical information.

Use it.

12. Step 6: Review New Results

New results may change everything.

Review:

- blood tests
- imaging
- ECGs
- cultures
- pathology
- urine results
- glucose trends
- fluid balance
- observations

specialist opinions

therapy assessments

nursing reports

Ask:

Does this result fit the current diagnosis?

Is it improving or worsening?

Does it require urgent action?

Does it change treatment?

Does it allow de-escalation?

Does it require escalation?

Does it affect discharge?

Who needs to know?

Results should not be collected.

They should be interpreted.

13. Step 7: Reassess Capacity Failures

Ask which life-capacities are better, worse, or still failing.

Oxygenation

Breathing, oxygen need, exercise tolerance.

Circulation

Blood pressure, pulse, perfusion, edema, dizziness.

Clearance

Kidney function, urine output, electrolytes, medicine accumulation.

Defense

Fever, infection markers, cultures, source control.

Brain Coordination

Attention, consciousness, delirium, sleep, orientation.

Energy Regulation

Glucose, nutrition, fatigue, metabolic stability.

Mobility

Walking, transfers, falls, strength.

Comfort

Pain, breathlessness, nausea, constipation, anxiety.

Agency

Understanding, capacity, adherence, confidence.

Support

Caregiver readiness, home safety, follow-up access.

This makes reassessment whole-person rather than disease-only.

14. Step 8: Look for Treatment Harm

Always ask:

Could the treatment be causing the new problem?

Examples:

- antibiotics causing diarrhea or allergy
- fluids causing pulmonary edema
- diuretics causing AKI or dizziness
- insulin causing hypoglycemia
- steroids causing delirium or hyperglycemia
- opioids causing constipation, drowsiness, falls
- sedatives causing delirium or respiratory depression
- anticoagulants causing bleeding
- antihypertensives causing falls
- NSAIDs causing AKI or bleeding

A patient may be worse because treatment is harming them.

Reassessment must detect this.

15. Step 9: Revisit the Diagnosis

Ask:

- Does the diagnosis still fit?
- What evidence supports it?
- What evidence argues against it?
- What dangerous alternative remains?
- Could there be more than one diagnosis?
- Could a complication have occurred?
- Could a medicine be causing symptoms?
- Has the clinical course behaved as expected?
- What does not fit?

Reassessment protects against premature closure.

A diagnosis is not a prison.

It is a working model that must answer to the patient's trajectory.

16. Step 10: Review Medicines Again

Medicine review is essential during reassessment.

Ask:

- What has been started?
- What has been stopped?

- What is held?
- What was restarted?
- What was missed?
- What is high-risk?
- What needs renal or liver adjustment?
- What could worsen delirium or falls?
- What could worsen kidney function?
- What could cause bleeding?
- What could cause low glucose?
- What does the patient actually take?

Medicine plans often drift.

Reassessment catches drift before harm occurs.

17. Step 11: Reassess Function

Function often tells the truth before labs do.

Ask:

- Can the patient get out of bed?
- Can they stand?
- Can they walk?
- Can they toilet?
- Can they eat?
- Can they drink?
- Can they manage stairs?
- Can they sleep?
- Can they self-care?
- Are they weaker than before?
- Are they afraid to move?
- Do they need rehabilitation?

A patient may be “medically better” but functionally unsafe.

Reassessment must include life-capacity.

18. Step 12: Reassess Cognition

Ask:

- Is the patient alert?
- Is attention normal?
- Is confusion improving?
- Is delirium fluctuating?

Is sleep reversed?

Is family concerned?

Are medicines worsening cognition?

Is pain contributing?

Are bowels, bladder, oxygen, glucose, infection, and electrolytes addressed?

Do not assume confusion is baseline.

Compare with family, caregivers, and previous documentation.

Brain recovery is a major repair marker.

19. Step 13: Reassess Support and Context

A plan may fail because circumstances changed.

Ask:

Is the caregiver still able to help?

Is transport available?

Can the patient afford medicines?

Is follow-up arranged?

Is the home safe?

Has family received the plan?

Has the patient understood the plan?

Did a receiving facility accept the patient?

Did discharge equipment arrive?

Are there new social concerns?

Reassessment includes the conditions of recovery.

20. Decide: Continue, Escalate, De-Escalate, or Change Direction

After reassessment, decide.

Continue

If the patient is improving as expected and treatment remains appropriate.

Escalate

If danger is rising, treatment is failing, or higher care is needed.

De-Escalate

If danger is controlled and treatment burden can be safely reduced.

Change Direction

If diagnosis is wrong, goals have shifted, treatment harms outweigh benefits, or the repair trajectory is different from expected.

A reassessment without a decision is incomplete.

21. Reassessment After Starting Treatment

After starting treatment, ask:

- Did the patient improve?
- Did the expected capacity recover?
- Did side effects occur?
- Is the dose or route still appropriate?
- Should treatment continue?
- Should treatment be narrowed?
- Should treatment stop?
- Is further investigation needed?
- What should be monitored next?

Example:

After antibiotics, reassess fever, breathing, mental state, cultures, renal function, and clinical trajectory.

After diuresis, reassess breathlessness, edema, blood pressure, urine output, renal function, electrolytes, and dizziness.

After opioids, reassess pain, alertness, breathing, bowels, nausea, falls, and function.

22. Reassessment After Abnormal Results

An abnormal result should trigger clinical reassessment, not only result management.

Example:

High potassium:

- Is the patient symptomatic?
- Is ECG needed?
- Is kidney function worse?
- Are medicines contributing?
- Is the result real?
- Is urgent treatment needed?
- Who should be called?
- What repeat testing is needed?

Low hemoglobin:

- Is there bleeding?
- Is the patient breathless or dizzy?
- Is there chest pain?
- Is anticoagulation involved?
- What is the trend?
- What is the cause?

Abnormal results require clinical context.

23. Reassessment After a Fall

After a fall, reassess:

- injury
- head strike
- anticoagulation
- loss of consciousness
- pain
- neurological signs
- glucose
- blood pressure
- infection
- medicines
- mobility
- delirium
- toileting needs
- supervision
- future falls risk

Do not stop at:

“No injury.”

Ask:

Why did the fall happen, and how do we prevent the next one?

24. Reassessment After Delirium

Delirium requires repeated reassessment.

Ask:

- Is attention better?
- Is sleep better?
- Is agitation reduced?
- Is consciousness safe?
- Are triggers corrected?
- Are sedatives reduced?
- Is pain controlled?
- Are bowels and bladder addressed?
- Is hydration adequate?
- Is infection improving?
- Is family helping with orientation?
- Is discharge safe?

Delirium is dynamic.

A calm patient may still be delirious.

A settled night does not always mean recovery.

25. Reassessment Before Discharge

Before discharge, reassess:

- diagnosis
- clinical stability
- medicines
- function
- cognition
- nutrition
- pain
- devices
- follow-up
- pending results
- caregiver support
- safety-net
- patient understanding

Ask:

Can repair continue safely outside hospital?

If not, discharge is premature.

26. Reassessment After Handover

After receiving handover, reassess high-risk patients.

Ask:

- What was I told to watch?
- Has that changed?
- What results returned?
- What tasks are pending?
- What danger remains?
- What should trigger escalation?
- Is the plan still valid?

Handover is not passive information receipt.

The receiving clinician must actively maintain the repair trajectory.

27. Reassessment When the Patient Says “I Feel Worse”

Take this seriously.

Ask:

- Worse how?
- Since when?
- What changed?
- What is new?
- What is different from before?
- Is pain worse?
- Is breathing worse?
- Is weakness worse?
- Is dizziness worse?
- Is confusion worse?
- Did a medicine change?
- Did treatment stop?
- Did a new symptom appear?

Patient perception is clinical data.

Do not dismiss it because the chart looks reassuring.

28. Reassessment When the Nurse Says “I Am Worried”

Ask:

- What are you seeing?
- What changed?
- Is this different from earlier?
- What are the vital signs?
- What does the patient look like?
- What does the family say?
- What do you think is wrong?
- Is the patient safe where they are?

Nursing concern often detects deterioration before the diagnosis is clear.

The safe clinician listens.

29. Reassessment When the Family Says “This Is Not Baseline”

Family baseline information is crucial, especially in:

- dementia
- delirium
- frailty
- disability

- chronic illness
- mental health
- palliative care

Ask:

- What is different?
- When did it change?
- What is usual for them?
- What can they normally do?
- How do they normally speak, walk, eat, sleep, or think?
- What worries you most?

Family concern may reveal acute change that the team mislabels as chronic.

30. Reassessment in Frailty

Frailty reassessment must include:

- eating
- drinking
- walking
- transfers
- toileting
- cognition
- falls
- pain
- sleep
- bowels
- urine
- medicines
- caregiver capacity
- discharge readiness

In frailty, improvement may be seen as:

- sitting out of bed
- eating breakfast
- recognizing family
- walking to bathroom
- sleeping at night
- fewer falls
- less fear
- less delirium

Small functional changes are major clinical signals.

31. Reassessment in Multimorbidity

In multimorbidity, reassessment must check for trade-offs.

Examples:

- heart failure better, kidneys worse
- pain better, delirium worse
- glucose lower, hypoglycemia risk higher
- blood pressure controlled, falls worse
- infection better, diarrhea from antibiotics
- agitation calmer, sedation excessive
- oxygenation better, mobility worse from equipment

Ask:

Which capacity improved, and which capacity was harmed?

This prevents single-target medicine.

32. Reassessment in Palliative Care

In palliative care, reassessment asks:

- Is pain controlled?
- Is breathlessness controlled?
- Is nausea controlled?
- Are bowels managed?
- Is agitation present?
- Is family supported?
- Are medicines causing burden?
- Is the patient comfortable?
- Are goals still clear?
- Has the phase of illness changed?
- Is dying now likely?
- Does the plan need to shift?

Palliative reassessment is active care.

Comfort must be reviewed as carefully as blood pressure or oxygen.

33. Reassessment and Bias

Reassessment should challenge bias.

Ask:

- Am I anchored on the first diagnosis?

- Am I dismissing symptoms because the patient is old, anxious, or complex?
- Am I ignoring family concern?
- Am I over-reassured by one normal test?
- Am I blaming non-adherence without asking why?
- Am I treating the label rather than the patient?
- Am I continuing a plan because it is easier?
- Am I avoiding escalation because I fear criticism?

Reassessment is a chance to correct thinking.

34. Reassessment and Documentation

Document:

- reason for reassessment
- comparison with previous status
- current symptoms
- vital signs and trends
- focused examination
- new results
- treatment response
- medicine review
- revised assessment
- plan change
- escalation or de-escalation
- monitoring
- safety-net
- communication with patient, family, nurse, or senior
- follow-up

A reassessment note should show what changed and what you did about it.

35. Worked Case 1: Pneumonia Not Improving

A 72-year-old man treated for pneumonia has persistent breathlessness and rising oxygen requirement after 24 hours.

Reassessment Trigger

Treatment response is not as expected.

Danger

Respiratory deterioration.

Updated Syndrome

Acute breathlessness with worsening oxygenation despite pneumonia treatment.

Reassessment

Review vitals, oxygen requirement, chest, fluid status, ECG, imaging, cultures, antibiotics, PE risk, heart failure, aspiration, pneumothorax, anemia, and sepsis.

Decision

Escalate senior review. Adjust plan based on findings.

Repair Trajectory

Oxygen stabilizes, diagnosis clarified, treatment revised.

36. Worked Case 2: AKI Improving but Patient Dizzy

A patient with AKI from dehydration has improving creatinine but now feels dizzy standing.

Reassessment Trigger

New symptom despite improving lab.

Danger

Falls, hypotension, over-diuresis, poor intake, medication effect.

Updated Syndrome

Recovering AKI with possible circulation regulation failure.

Reassessment

Check blood pressure, hydration, urine output, medicines, diuretics, antihypertensives, intake, electrolytes, and mobility.

Decision

Adjust medicines or fluids according to findings. Prevent falls.

Repair Trajectory

Dizziness resolves, kidney recovery continues, mobility safe.

37. Worked Case 3: Pain Improved but Confusion Worse

A patient with severe pain receives opioids. Pain improves, but they become drowsy and confused.

Reassessment Trigger

Treatment harm.

Danger

Delirium, falls, respiratory depression, constipation.

Updated Syndrome

Pain partially controlled but brain coordination and safety harmed by treatment.

Reassessment

Check consciousness, breathing, glucose, renal function, constipation, other sedatives, pain cause, opioid dosing, and goals.

Decision

Adjust pain plan, reduce sedative burden, treat constipation, escalate if unsafe.

Repair Trajectory

Comfort maintained, alertness improves, falls prevented.

38. Worked Case 4: Discharge Reassessment

A patient planned for discharge after heart failure treatment is less breathless, but cannot climb stairs and lives alone.

Reassessment Trigger
Discharge safety.

Danger
Falls, inability to cope, readmission.

Updated Syndrome
Medical improvement with persistent functional capacity failure.

Reassessment
Assess mobility, stairs, dizziness, medicines, renal function, home environment, support, follow-up, and patient understanding.

Decision
Delay discharge, arrange support, or modify destination.

Repair Trajectory
Discharge occurs only when the next setting can support recovery.

39. Worked Case 5: Family Says “Not Baseline”

An older patient with dementia is said by the team to be “back to normal,” but family says they remain far more confused.

Reassessment Trigger
Family baseline concern.

Danger
Persistent delirium, missed cause, unsafe discharge.

Updated Syndrome
Possible unresolved delirium on background dementia.

Reassessment
Ask family for baseline. Review attention, sleep, infection, oxygen, glucose, medicines, pain, bowels, bladder, hydration, electrolytes, and environment.

Decision
Continue delirium management and delay unsafe discharge if needed.

Repair Trajectory
Cognition moves toward baseline, family concern addressed, discharge safer.

40. Worked Case 6: Palliative Breathlessness

A patient with advanced COPD on comfort-focused care becomes more breathless.

Reassessment Trigger
Symptom worsening.

Danger
Severe distress, family fear, possible reversible trigger.

Updated Syndrome
Advanced respiratory disease with acute breathlessness crisis.

Reassessment

Assess comfort, oxygenation if relevant to goals, anxiety, secretions, infection symptoms, fluid overload, medicines, family understanding, and crisis plan.

Decision

Escalate symptom control, involve palliative support where available, update family, clarify goals.

Repair Trajectory

Breathlessness relieved, patient calmer, family supported.

41. Common Student Pitfalls

Pitfall 1: Repeating the Original Assessment Without Thinking

Reassessment must ask what has changed.

Pitfall 2: Looking Only at Labs

Symptoms, function, cognition, and family concern matter.

Pitfall 3: Ignoring Treatment Harm

Treatment can become the new problem.

Pitfall 4: Not Revisiting Diagnosis

If the course does not fit, rethink.

Pitfall 5: Forgetting Medicines

Medication drift is common after admission, discharge, and handover.

Pitfall 6: Not Comparing With Baseline

Baseline defines recovery.

Pitfall 7: Not Making a Decision

Reassessment should lead to continue, escalate, de-escalate, or change plan.

Pitfall 8: Not Documenting the Change

The next clinician needs the updated synthesis.

42. Clinical Practice Box

When reviewing or reassessing, complete this structure:

Why reassess now?
Symptom change, nurse concern, family concern, abnormal result, treatment response, fall, discharge, handover?

Compared with before:
Better, worse, unchanged, or different?

Danger now:
What is newly unsafe?

Updated syndrome:
What is the clinical pattern now?

Vital trends:
Breathing, oxygen, blood pressure, pulse, temperature, urine, glucose, pain, consciousness.

Treatment response:
What helped, failed, or harmed?

New results:
What results changed understanding or risk?

Capacity failures:
Oxygenation, circulation, clearance, defense, brain, energy, mobility, comfort, agency, support.

Medicine review:
Started, stopped, held, restarted, side effects, high-risk medicines.

Diagnosis check:
Does the original diagnosis still fit? What does not fit?

Function and cognition:
Can the patient eat, drink, walk, think, sleep, toilet, and manage safely?

Decision:
Continue, escalate, de-escalate, change direction, or seek help?

Monitoring and safety-net:
What should be watched next? What triggers action?

Documentation and communication:
Who needs to know the updated assessment?

43. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia is being reviewed before possible discharge. She is afebrile and off oxygen. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin was reduced. NSAIDs were stopped. She is eating better but still intermittently confused, constipated, weak, and afraid to walk. Her daughter says she is not back to baseline and is worried about stairs.

Apply clinical review and reassessment.

Why Reassess Now?

Discharge is being considered, but cognition, mobility, renal recovery, medicine safety, pain, constipation, and caregiver concern remain active.

Compared With Before

Pneumonia and oxygenation improved. Kidney function improving. However, cognition, mobility, bowel function, pain, and discharge confidence are not fully repaired.

Danger Now

Falls, medication error, recurrent hypoglycemia, AKI recurrence, heart failure worsening while medicines are held, delirium persistence, unsafe stairs, caregiver strain.

Updated Syndrome

Recovering pneumonia with incomplete whole-person repair: persistent delirium vulnerability, renal recovery, frailty-related weakness, constipation, pain, medication complexity, and discharge safety concern.

Capacity Failures

Cognition, mobility, bowel clearance, kidney clearance, glucose regulation, comfort, caregiver-supported safety.

Medicine Review

Diuretic and ACE inhibitor should not restart automatically. NSAIDs should remain stopped. Insulin needs review against food intake and glucose trend. Opioids or sedatives should be minimized if contributing to confusion, constipation, or falls.

Diagnosis Check

Pneumonia improved, but persistent confusion and weakness require reassessment for delirium triggers: medicines, constipation, urinary retention, pain, dehydration, glucose instability, infection persistence, sleep disruption, and metabolic abnormalities.

Function and Cognition

Assess walking, transfers, stairs, toileting, attention, sleep, and daughter's report of baseline.

Decision

Do not discharge merely because fever and oxygen improved. Continue or intensify rehabilitation and delirium care, treat constipation, review pain plan, complete medication reconciliation, clarify renal follow-up, and involve daughter before discharge.

Monitoring and Safety-Net

Monitor confusion, falls, bowels, pain, glucose, urine output, renal function, breathlessness, swelling, dizziness, oral intake, and ability to mobilize.

Repair Trajectory

Discharge becomes safe when cognition is stable or supervised, mobility and stairs are safe or supported, constipation and pain are controlled without harmful medicines, renal and glucose plans are clear, daughter understands medicines and warning signs, and follow-up is arranged.

44. Student Takeaway

Clinical review and reassessment becomes easier when the clinician asks:

Why am I reassessing now?
What has changed compared with before?
Is there new danger?
What is the updated syndrome?
Are the vital signs and trends improving or worsening?
Did treatment help, fail, or harm?
Do new results change the picture?
Which capacities remain fragile?
Could medicines be causing harm?

Does the diagnosis still fit?
Is function, cognition, comfort, and support improving?
Should I continue, escalate, de-escalate, or change direction?
What must be monitored, documented, communicated, and safety-netted?

Reassessment is the discipline of not being trapped by the first impression.

The safe clinician keeps returning to the patient, comparing the expected repair trajectory with the actual one. When the patient improves, care can be simplified. When the patient worsens, care must escalate. When the pattern changes, diagnosis must be revised. When treatment harms, the plan must change. Reassessment keeps medicine alive, responsive, humble, and safe.

Chapter 88. Clinical Reflection After Action Made Easy

Clinical reflection after action is the structured process of looking back after a clinical event, decision, consultation, ward round, admission, deterioration, discharge, error, near miss, or difficult conversation to understand what happened, what was learned, what should be repaired, and how future care can be safer.

Patients do not usually say:

“Please reflect after caring for me.”

They say:

“Why did this happen?”
“Could this have been prevented?”
“Why was my diagnosis delayed?”
“Why did I get worse?”
“Did anyone learn from this?”
“Will this happen to someone else?”
“I want the truth.”
“I want this to be fixed.”

Clinicians may think:

“That was a difficult case.”
“I should have called earlier.”
“I missed something.”
“The system made this hard.”
“The patient deteriorated despite treatment.”
“The family was upset.”
“The discharge did not go well.”
“I feel guilty.”
“I need to learn from this.”

Clinical reflection after action is central to Internal Medicine because no clinician practices perfectly. Illness is complex. Systems are imperfect. Time is limited. Patients may deteriorate despite appropriate care. Decisions are made under uncertainty. Communication fails. Medicines cause harm. Diagnoses evolve. Human beings are fallible.

Reflection is not self-punishment.

Reflection is disciplined learning.

The first task is not to ask, “Who is to blame?”

The deeper question is:

What happened, why did it happen, what harm or risk resulted, what can be repaired, and what must change so that future care becomes safer and more life-serving?

Clinical reflection after action becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

In reflection, the loop is turned backward and forward:

What danger was present? What syndrome did we see? What capacities failed? What conditions shaped the outcome? What action did we take? What repair is now needed?

1. What Is Clinical Reflection After Action?

Clinical reflection after action is a structured review of care after something important has happened.

It may follow:

- patient deterioration
- clinical escalation
- difficult diagnosis
- delayed diagnosis
- treatment failure
- medication error
- fall
- readmission
- unsafe discharge
- death
- complaint
- conflict with family
- difficult consultation
- ethical dilemma
- unexpected recovery
- successful teamwork
- near miss
- emotionally difficult case
- excellent care worth learning from

Reflection asks:

- What happened?
- What did we think was happening?
- What did we do?
- What helped?
- What harmed?
- What was missed?
- What system conditions shaped the event?
- What did the patient experience?
- What did the team experience?
- What should be repaired now?
- What should change next time?

Reflection turns experience into wisdom.

2. Reflection Is Not Rumination

Rumination repeats distress.

Reflection creates learning and repair.

Rumination

“I am terrible.”
“I should have known.”
“Everything went wrong.”
“I cannot stop replaying it.”

Reflection

“What information was available?”
“What was uncertain?”
“What did I prioritize?”
“What did I miss?”
“What system factors contributed?”
“What can I do differently next time?”
“What repair is needed now?”

Rumination traps the clinician.

Reflection develops the clinician.

3. Reflection Is Not Blame Avoidance

Reflection should not become self-protection.

It must be honest.

Avoid:

“Nothing could have been done.”
“The patient was difficult.”
“The family was demanding.”
“The nurse should have called earlier.”
“The system is broken, so what can we do?”

Sometimes care was appropriate.
Sometimes harm was unavoidable.
Sometimes the system failed.
Sometimes the clinician missed something.
Sometimes several factors interacted.

Reflection should be truthful without cruelty.

The goal is accountability and repair, not shame.

4. The First Question: Was There Harm or Ongoing Danger?

Reflection begins with patient safety.

Ask:

Was the patient harmed?

Is the patient still at risk?

Does anyone need urgent review now?

Was a medicine error made?

Was a diagnosis delayed?

Was a result missed?

Was discharge unsafe?

Was a family not informed?

Is a pending result still unowned?

Does the patient need apology, explanation, or follow-up?

Does the team need to act now?

The danger-first reflection question is:

Is there anything that still needs to be repaired for this patient right now?

Learning matters, but immediate repair comes first.

5. Immediate Red Flags After an Event

After a clinical event, act urgently if:

patient remains unstable

treatment error continues

wrong medicine is still prescribed

pending result remains unreviewed

discharge plan remains unsafe

family has not been informed of serious deterioration

patient lacks follow-up after high-risk event

documentation is missing for critical decision

capacity or consent issue remains unresolved

safeguarding concern is active

staff are distressed and unable to continue safely

the same error could affect other patients

Reflection should not delay urgent correction.

Repair first, then analyze.

6. The Reflection Pathway

A practical reflection pathway is:

stabilize and repair immediate risk

describe what happened

reconstruct the timeline

identify the working diagnosis and reasoning

identify danger and capacity failures

review actions and response

identify what helped

identify what harmed or nearly harmed

examine cognitive factors

examine communication factors

examine system factors

include patient and family experience

identify learning

decide repair actions

change future practice

close the loop

This pathway keeps reflection balanced.

It includes the patient, clinician, team, and system.

7. Step 1: Stabilize and Repair Immediate Risk

Before reflecting deeply, ask:

Does the patient need review?

Does a medicine need correction?

Does a result need action?

Does the family need updating?

Does the discharge plan need changing?

Does the patient need transfer?

Does the team need help?

Does documentation need urgent completion?

Does another patient face the same risk?

Example:

If an anticoagulant was omitted, correct the medicine plan and assess patient risk.

If a critical potassium result was missed, review and treat immediately.

If a frail patient was discharged without support and returned after a fall, address current injury and support needs first.

Reflection should be safe, not detached.

8. Step 2: Describe What Happened

Start with facts.

Ask:

Who was involved?

What happened?

When did it happen?

Where did it happen?

What was the patient's condition?

What decisions were made?

What information was available?

What information was missing?

What was the outcome?

Use neutral language.

Instead of:

“The team ignored the patient.”

Say:

“The patient’s worsening breathlessness was documented at 10 p.m., but senior review occurred at 2 a.m.”

Instead of:

“The discharge was careless.”

Say:

“The patient was discharged before physiotherapy assessment, despite new difficulty with stairs.”

Facts create a foundation for learning.

9. Step 3: Reconstruct the Timeline

The timeline is essential.

Ask:

When was the patient last stable?

What was the first sign of change?

Who noticed?

When was the team informed?

What action was taken?

When did results return?

When were medicines changed?

When did deterioration occur?

When was escalation made?

When was family informed?

When did the outcome become clear?

A timeline often reveals delay, misunderstanding, missing ownership, or system pressure.

It may also show that care was timely and appropriate despite poor outcome.

Reflection should follow time, not memory emotion.

10. Step 4: Identify the Working Diagnosis and Reasoning

Ask:

What did we think was happening?

Why did we think that?

- What evidence supported it?
- What evidence argued against it?
- What dangerous alternatives were considered?
- What uncertainty was named?
- What uncertainty was hidden?
- Did the diagnosis evolve?
- Did the treatment response fit?

Example:

A patient treated for pneumonia worsened. Reflection asks:

- Did we consider heart failure, PE, aspiration, pneumothorax, resistant infection, or fluid overload?
- Did oxygen requirement rise before escalation?
- Did we recognize treatment failure?

The goal is to understand reasoning, not shame the clinician.

11. Step 5: Identify Danger and Capacity Failures

Ask:

- What danger was present?
- Was it recognized?
- Which life-capacity was failing?
- Oxygenation?
- Circulation?
- Brain coordination?
- Clearance?
- Defense?
- Glucose regulation?
- Mobility?
- Comfort?
- Agency?
- Support?

Example:

A fall after discharge may involve:

- mobility failure
- cognition failure
- medicine safety failure
- caregiver support failure
- discharge planning failure

A missed AKI may involve:

- clearance failure
- medicine reconciliation failure
- monitoring failure
- follow-up ownership failure

Capacity mapping prevents narrow blame.

It reveals what repair failed to protect.

12. Step 6: Review Actions and Response

Ask:

- What did we do?
- Why did we do it?
- Did it help?
- Did it harm?
- Was response reassessed?
- Was the plan updated?
- Was escalation timely?
- Was de-escalation appropriate?
- Was safety-netting clear?

Example:

If fluids were given to a patient with sepsis and heart failure:

- Did blood pressure improve?
- Did breathing worsen?
- Was fluid status reassessed?
- Was senior help called?
- Was the trade-off recognized?

Reflection should evaluate response, not only initial action.

13. Step 7: Identify What Went Well

Reflection should include strengths.

Ask:

- What was recognized early?
- Who spoke up?
- What communication worked?
- What treatment helped?
- What system protected the patient?
- What documentation was useful?
- What teamwork was effective?

What patient or family input helped?

What should we repeat next time?

Learning from success is as important as learning from error.

A good team reinforces good practice.

14. Step 8: Identify What Went Wrong or Nearly Went Wrong

Ask:

What was missed?

What was delayed?

What was unclear?

What assumption was made?

What result was not followed?

What medicine was wrong?

What handover failed?

What communication failed?

What discharge barrier was ignored?

What patient value was missed?

What system pressure contributed?

What nearly harmed the patient?

Focus on specific failures.

Avoid vague conclusions like:

“Communication was poor.”

Better:

“The night team was told the patient was stable, but rising oxygen requirement and pending blood gas were not handed over.”

Specific reflection allows specific repair.

15. Step 9: Examine Cognitive Factors

Clinical reasoning can be distorted by bias.

Ask:

Did we anchor on the first diagnosis?

Did we close the diagnosis too early?

Did we ignore evidence that did not fit?

Did we accept a label without reassessment?

Did we stop searching after one abnormal result?

Did recent experience influence us too strongly?

Did we blame the patient?

Did we underestimate risk because the patient looked comfortable?

Did we over-rely on one normal test?

Did we miss a second diagnosis?

The goal is not to eliminate bias completely.

The goal is to recognize patterns and build safeguards.

16. Step 10: Examine Communication Factors

Ask:

Was the concern communicated clearly?

Did the receiver understand urgency?

Was closed-loop communication used?

Was the patient informed?

Was the family informed?

Were nurses heard?

Was baseline information obtained?

Was uncertainty communicated?

Was handover complete?

Were pending tasks assigned?

Were safety-net instructions specific?

Did documentation match verbal communication?

Many clinical failures are communication failures.

Communication should be treated as a clinical skill.

17. Step 11: Examine System Factors

Systems shape decisions.

Ask:

Was staffing adequate?

Was workload excessive?

Was the ward crowded?

Were protocols clear?

Were results easy to access?

Was equipment available?

Was transport delayed?

Was there bed pressure?

Was follow-up available?

Were medicines available?

Was the electronic record confusing?

Was there a culture of fear around escalation?

Were junior staff supported?

Did time pressure affect decisions?

System factors do not remove individual responsibility.

But ignoring them guarantees repetition.

18. Step 12: Include Patient and Family Experience

Reflection should ask:

What did the patient experience?

Did they feel heard?

Did they understand the plan?

Did they suffer avoidably?

Did they receive explanation?

Did the family provide key information?

Did the family feel dismissed?

Was there apology where needed?

Were cultural, spiritual, or emotional needs considered?

Was dignity preserved?

The patient's experience may reveal harms invisible in the chart.

A technically correct plan can still fail relationally.

19. Step 13: Identify Learning

Learning should be specific.

Weak learning:

"Be more careful."

Better learning:

"In frail patients with infection, I will check baseline cognition and mobility early, because discharge safety depends on function as much as fever and oxygen."

Weak learning:

"Improve handover."

Better learning:

"When handing over AKI, I will specify held medicines, repeat blood test time, potassium risk, and who decides restart."

Weak learning:

"Call earlier."

Better learning:

"I will escalate when oxygen requirement is rising, even if saturation remains temporarily acceptable."

Specific learning changes future behavior.

20. Step 14: Decide Repair Actions

Reflection should lead to repair.

Repair actions may include:

- review the patient again
- correct medicine list
- call family
- apologize or explain
- arrange follow-up
- assign pending result ownership
- update discharge summary
- clarify escalation plan
- revise local checklist
- teach team about a risk
- change handover structure
- report incident according to policy
- discuss in morbidity meeting
- support staff after distressing event
- improve patient information sheet
- simplify pathway

Learning without repair remains incomplete.

21. Step 15: Change Future Practice

Ask:

- What will I do differently next time?
- What will our team do differently?
- What checklist or prompt would help?
- What escalation trigger should be clearer?
- What documentation template should change?
- What teaching is needed?
- What system issue should be raised?
- What follow-up loop should be built?

Reflection becomes meaningful when it changes practice.

A lesson that does not alter behavior may fade.

22. Step 16: Close the Loop

After reflection, close the loop.

Ask:

- Was the patient repaired or protected?
- Was the family informed?
- Was the team informed?
- Was documentation completed?
- Was the incident reported if needed?
- Was the learning shared?
- Was the system change made?
- Was follow-up arranged?
- Was staff support offered?
- Did we check whether the change worked?

Closing the loop prevents reflection from becoming a private exercise with no effect.

23. Reflection After a Good Outcome

Do not reflect only after problems.

Reflect after excellent care.

Ask:

- What made this go well?
- What information was recognized early?
- How did the team communicate?
- What did the patient contribute?
- What did the family contribute?
- What system supported success?
- What can be repeated?
- What can be taught?

Good outcomes teach patterns worth preserving.

Example:

A nurse noticed subtle confusion, glucose was checked early, hypoglycemia was treated, insulin plan was changed, and a fall was prevented.

That success deserves reflection.

24. Reflection After a Near Miss

A near miss is a gift.

No harm occurred, but harm could have occurred.

Examples:

- wrong medicine caught before administration
- critical result found late but before harm

- unsafe discharge stopped by physiotherapist
- delirium recognized before fall
- allergy identified before antibiotic
- duplicate anticoagulant caught by pharmacist
- pending scan result reviewed before discharge

Ask:

- What almost happened?
- What caught it?
- Why did the risk exist?
- How can the system catch it earlier next time?

Near misses reveal weak points before tragedy.

25. Reflection After Error

After error, reflection must include honesty and repair.

Ask:

- What happened?
- What harm occurred or could occur?
- Has the patient been protected now?
- Who needs to know?
- What explanation or apology is needed?
- What documentation is required?
- What reporting pathway applies?
- What support does the clinician need?
- What system change is needed?

Error reflection should not be cruel.

But it must be truthful.

Patients deserve honesty.

Clinicians deserve learning and support.

Systems deserve correction.

26. Reflection After Patient Death

After death, reflection may ask:

- Was the death expected or unexpected?
- Were symptoms controlled?
- Was escalation appropriate?
- Were goals understood?
- Was family informed and supported?

- Was the patient's dignity preserved?
- Were cultural or spiritual needs addressed?
- Did the team recognize dying?
- Was there avoidable suffering?
- Was there avoidable treatment burden?
- What can we learn?

A death may be clinically unavoidable but still contain lessons about comfort, communication, dignity, and timing.

27. Reflection After Difficult Conversation

Reflect after conversations involving:

- bad news
- prognosis
- treatment refusal
- conflict
- capacity
- end-of-life care
- complaint
- uncertainty
- apology
- family disagreement

Ask:

- What did the patient understand?
- What emotion was present?
- Did I listen enough?
- Did I use clear language?
- Did I avoid false reassurance?
- Did I check understanding?
- Did I include the right people?
- Did I leave a plan?
- What would I say differently next time?

Communication improves through reflection.

28. Reflection After Discharge Failure

If a patient is readmitted soon after discharge, ask:

- Was discharge clinically safe?
- Was function assessed?

- Was cognition assessed?
- Were medicines reconciled?
- Did the patient understand the plan?
- Was caregiver support real?
- Were pending results owned?
- Was follow-up realistic?
- Were warning signs explained?
- Did deterioration occur despite good planning?
- What could change next time?

Readmission is not always failure.

But every readmission deserves curiosity.

29. Reflection After Diagnostic Delay

Ask:

- What was the first presentation?
- What was the initial working diagnosis?
- What evidence supported it?
- What red flags were present?
- What did not fit?
- Was safety-netting adequate?
- Was follow-up timely?
- Did the patient re-present?
- Were symptoms normalized or dismissed?
- Did bias contribute?
- Did access barriers delay care?
- What earlier action might have changed the trajectory?

Diagnostic delay reflection should focus on learning.

It should not pretend that all diagnoses are obvious in retrospect.

30. Reflection After Medication Harm

Ask:

- What medicine caused harm?
- Why was it started?
- Was dose, kidney function, liver function, age, frailty, or interaction considered?
- Was monitoring arranged?
- Was patient educated?
- Was side effect recognized early?

- Were medicines reconciled at admission or discharge?
- Was there duplication?
- Was the medicine still needed?
- Could deprescribing have prevented harm?

Medication harm often reflects both individual and system factors.

31. Reflection After Escalation

After escalation, ask:

- Was escalation timely?
- Was danger recognized early?
- Was communication clear?
- Was the right person called?
- Were immediate actions appropriate?
- Was response reassessed?
- Were goals of care considered?
- Was family informed?
- Was handover complete?
- What should trigger escalation next time?

Escalation reflection improves future response.

32. Reflection After De-Escalation

After de-escalation, ask:

- Was danger truly controlled?
- Was treatment stopped safely?
- Was monitoring arranged?
- Did symptoms recur?
- Did the patient understand?
- Was de-escalation aligned with goals?
- Did stopping reduce harm?
- Did stopping create risk?
- Was re-escalation plan clear?

De-escalation requires reflection because doing less is still a clinical decision.

33. Reflection and Emotional Processing

Clinical events affect clinicians.

After difficult cases, ask:

- What am I feeling?

Fear?

Guilt?

sadness?

anger?

shame?

helplessness?

relief?

numbness?

What part of the event is staying with me?

Do I need to speak with someone?

Am I safe to continue working?

Is the team affected?

Emotional processing is not indulgence.

It protects future care.

Unprocessed distress can become burnout, cynicism, avoidance, or overcorrection.

34. Reflection Without Self-Destruction

A clinician can take responsibility without self-destruction.

Use balanced language:

“I missed an opportunity to reassess earlier.”

not

“I am useless.”

“I need to improve how I hand over pending results.”

not

“I should not be a doctor.”

“This system made safe care difficult, and I still need to know how to escalate within it.”

not

“Nothing can be done.”

Reflection should increase responsibility and capacity.

It should not collapse the clinician.

35. Reflection and Team Culture

A healthy team culture asks:

What happened?

What did we learn?

How do we prevent repetition?

Who needs support?

What system factor needs changing?

What went well?

An unhealthy culture asks only:

Who is at fault?

Who can we shame?

How do we protect reputation?

How do we move on quickly?

Fear-based culture suppresses learning.

Life-coherent culture repairs harm, supports truth, and improves systems.

36. Reflection and Documentation

A personal reflection note may include:

situation

feelings

clinical reasoning

what went well

what could improve

patient impact

system factors

learning

action plan

A clinical record note should be factual and patient-care focused.

Do not put private emotional processing into the patient chart.

Document clinical facts, decisions, communication, and plans.

Use appropriate professional reflection spaces for deeper learning.

37. Reflection and Confidentiality

When reflecting, protect patient confidentiality.

Avoid unnecessary identifiers in teaching, portfolios, or informal discussions.

Share only what is needed for learning and improvement.

Reflection must respect patient dignity.

A patient's suffering is not raw material for casual storytelling.

38. Worked Case 1: Delayed Escalation

A patient with pneumonia developed rising oxygen requirement overnight. Senior review was delayed until the patient was severely hypoxic.

What Happened

Oxygen need increased gradually, but the patient initially maintained saturation with more oxygen. The worsening trend was not escalated early.

Capacity Failure
Oxygenation and defense.

Cognitive Factor
Over-reassurance by temporary saturation.

Communication Factor
Handover did not specify rising oxygen requirement as an escalation trigger.

System Factor
Busy night shift and unclear escalation threshold.

Learning
Increasing oxygen requirement is itself a danger sign, even before collapse.

Repair Action
Add escalation trigger to handover: call senior if oxygen requirement rises or work of breathing increases.

39. Worked Case 2: Unsafe Discharge Prevented

A frail patient was planned for discharge after infection improved. Physiotherapy raised concern that the patient could not manage stairs. Discharge was paused.

What Went Well
Therapy voice was heard. Discharge safety included function, not only infection markers.

Capacity Failure
Mobility and support.

Learning
Discharge readiness requires functional safety.

Repair Action
Include mobility, cognition, medicines, and caregiver readiness in discharge checklist.

40. Worked Case 3: Medication Harm

A patient with CKD and chronic pain restarted NSAIDs after discharge and returned with AKI.

What Happened
NSAIDs were stopped in hospital, but discharge explanation was unclear. Patient restarted old medicine at home.

Capacity Failure
Clearance and medication safety.

Communication Factor
Medicine stop reason and restart warning were not clearly explained.

System Factor
Old medicines remained at home.

Learning
Stopped medicines require explicit explanation and teach-back.

Repair Action

Discharge instructions should include “do not restart” medicines and reasons.

41. Worked Case 4: Family Baseline Missed

An older patient with dementia was thought to be back to baseline, but family later explained the patient remained much more confused than usual.

What Happened

Team assumed confusion was chronic dementia. Collateral baseline was obtained late.

Capacity Failure

Brain coordination and agency.

Cognitive Factor

Attribution bias: acute change attributed to dementia.

Learning

Family baseline is essential in dementia and frailty.

Repair Action

Obtain collateral early and document baseline cognition and function.

42. Worked Case 5: Good Safety-Netting Prevented Harm

A patient discharged after AKI was told to seek help for vomiting, poor intake, reduced urine, confusion, or breathlessness. Two days later, vomiting returned, and family brought patient back early before severe deterioration.

What Went Well

Specific safety-netting was understood and used.

Capacity Protected

Clearance, hydration, cognition.

Learning

Safety-netting works when warnings are concrete and caregivers understand them.

Repair Action

Continue using teach-back for high-risk discharges.

43. Worked Case 6: Difficult End-of-Life Decision

A patient with advanced heart failure deteriorated. The team initially continued repeated investigations and transfers. Later, a goals-of-care discussion clarified the patient wanted comfort and home time.

What Happened

Trajectory was recognized late.

Capacity Failure

Comfort, dignity, agency.

Cognitive Factor

Treatment momentum.

Communication Factor

Prognosis and values were not discussed early.

Learning

Repeated admissions and declining reserve should trigger earlier goals-of-care conversations.

Repair Action

Flag repeated admissions in advanced organ failure for serious illness review and palliative support.

44. Common Student Pitfalls

Pitfall 1: Reflecting Only When Something Goes Wrong

Good care also teaches.

Pitfall 2: Confusing Reflection With Self-Blame

Reflection should produce learning, not collapse.

Pitfall 3: Avoiding Responsibility by Blaming the System

System factors matter, but individual practice still matters.

Pitfall 4: Blaming Individuals While Ignoring the System

Individual error often occurs inside weak systems.

Pitfall 5: Forgetting the Patient's Experience

Harm is not only physiological; it may be emotional, relational, or dignity-related.

Pitfall 6: Learning Vaguely

"Be careful" is not enough. Define specific future behavior.

Pitfall 7: Failing to Repair

Reflection should lead to action.

Pitfall 8: Not Closing the Loop

Learning must be communicated, implemented, and checked.

45. Clinical Practice Box

After a significant clinical event, use this reflection structure:

What happened?
Describe facts neutrally.

Was there harm or ongoing danger?
What must be repaired now?

Timeline:
What happened first, next, and after action?

Working diagnosis and reasoning:
What did we think, and why?

Danger and capacity failures:
What life-capacities were threatened or failed?

Actions and response:
What was done? Did it help, fail, or harm?

What went well?
What should be repeated?

What went wrong or nearly went wrong?
What should be changed?

Cognitive factors:
Anchoring, premature closure, attribution, over-reassurance, diagnostic momentum?

Communication factors:
Handover, escalation, documentation, patient explanation, family update, team listening?

System factors:
Workload, staffing, access, equipment, protocols, culture, follow-up, bed pressure?

Patient and family experience:
Were they heard, informed, respected, supported?

Learning:
What specific lesson changes future behavior?

Repair action:
What must be done now or changed for next time?

Close the loop:
Who needs to know, and how will improvement be checked?

46. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic pain was discharged after pneumonia complicated by delirium, AKI, hypoglycemia, and falls. Pneumonia had improved, but she remained weak. Diuretic and ACE inhibitor were held. Insulin was reduced. NSAIDs were stopped. Two days later, she was readmitted after a fall at home. Her daughter says she did not fully understand the medicine changes and felt unsure about stairs. The patient had restarted an old pain medicine because her knee pain was severe.

Apply clinical reflection after action.

What Happened?

The patient was discharged after pneumonia improvement but returned after a fall. Medicine instructions and mobility safety may not have been fully understood. Pain control was inadequate, leading to restart of an old medicine.

Harm or Ongoing Danger

Fall injury must be assessed. Kidney function must be checked because old NSAID use may worsen AKI or CKD. Medication list must be corrected. Pain and mobility must be reassessed. Daughter needs clear explanation and support.

Timeline

Pneumonia improved in hospital. Discharge occurred while weakness and medicine complexity remained. At home, knee pain worsened. Patient restarted old pain medicine. Daughter was uncertain about stairs and medicines. Fall occurred within two days.

Capacity Failures

Mobility, comfort, clearance, cognition, medicine safety, caregiver-supported agency.

Reasoning Review

The team may have equated infection improvement with discharge readiness. Functional and caregiver readiness may have been underweighted.

Communication Factors

Medicine changes may not have been explained with teach-back. Daughter's concern about stairs may not have been fully integrated. Safety-net may not have included pain plan and "do not restart NSAIDs."

System Factors

Discharge pressure, limited therapy time, complex medication list, possible lack of written instructions, old medicines at home.

Patient and Family Experience

Patient wanted pain relief. Daughter felt unsure. Both may have experienced discharge as a transfer of responsibility without enough support.

What Went Well?

Pneumonia was treated, AKI recognized, high-risk medicines were held or stopped, insulin was reduced.

What Could Improve?

Discharge should include explicit pain plan, mobility/stairs assessment, medicine teach-back, caregiver readiness check, and warning against restarting old NSAIDs.

Learning

A high-risk discharge is not safe until function, comfort, medicines, cognition, caregiver support, and safety-netting are all coherent.

Repair Actions

Assess fall and kidney function. Stop harmful medicine. Create safe pain plan. Reconcile medicines. Reassess mobility and stairs. Involve physiotherapy, pharmacy, and daughter. Use teach-back before any future discharge.

Future Practice Change

For frail patients discharged after AKI, delirium, hypoglycemia, and falls, use a discharge checklist that includes medicines, function, caregiver support, pain plan, pending results, and explicit "do not restart" instructions.

47. Student Takeaway

Clinical reflection after action becomes easier when the clinician asks:

What happened?
Was there harm or ongoing danger?
What was the timeline?
What did we think was happening?
Which capacities were threatened or failed?
What did we do, and how did the patient respond?
What went well?
What went wrong or nearly went wrong?
What cognitive, communication, and system factors contributed?
What did the patient and family experience?
What specific learning follows?
What repair is needed now?
What will change next time?
How will we close the loop?

Reflection is how clinical experience becomes clinical wisdom.

The safe clinician does not hide from difficult events, drown in guilt, or blame others too quickly. The safe clinician returns to the event with honesty, humility, structure, and courage — repairing what can be repaired, learning what must be learned, supporting those affected, and changing future practice so that care becomes safer, wiser, and more life-coherent.

Chapter 89. Integrated Clinical Judgment Made Easy

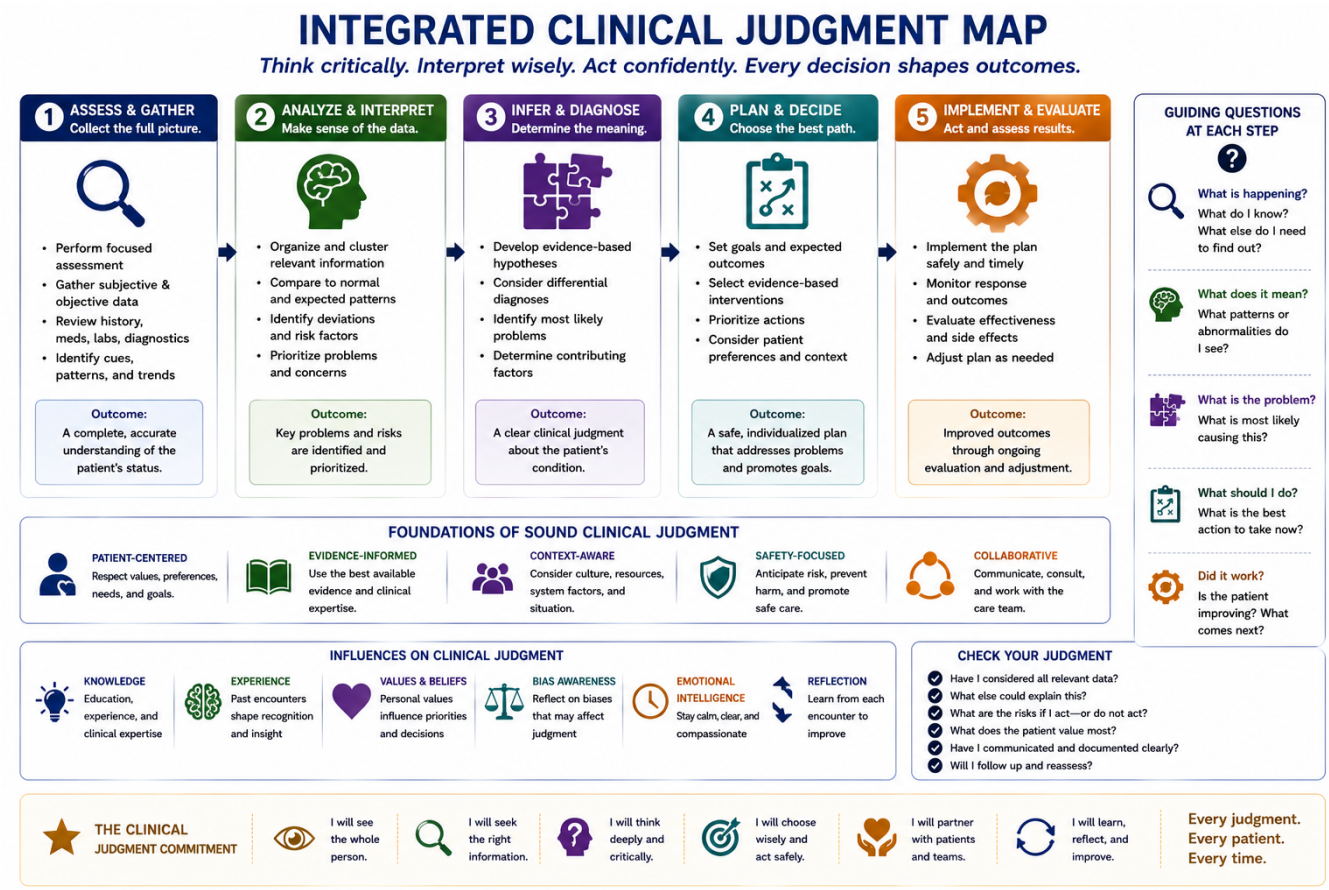

Figure 12. Integrated Clinical Judgment Map

Integrated clinical judgment combines assessment, interpretation, diagnosis, planning, action, evaluation, evidence, context, values, safety, collaboration, reflection, and accountability in service of the living patient.

Integrated clinical judgment is the ability to bring together diagnosis, danger, physiology, evidence, patient values, function, medicines, context, uncertainty, and timing into a wise clinical decision.

Patients do not usually say:

"Please exercise integrated clinical judgment."

They say:

"What do you think is best?"
"What would you recommend?"
"Is this serious?"
"Do I need treatment now?"
"Can I safely go home?"
"Are the risks worth it?"
"Will this help me?"
"What happens if we wait?"
"What matters most now?"

Clinicians may think:

“The diagnosis is not straightforward.”
“The guideline does not fit perfectly.”
“The patient has many conditions.”
“Treatment helps one problem but worsens another.”
“The patient’s goals change the plan.”
“The test result is abnormal, but I am not sure it matters.”
“This patient is stable, but something feels unsafe.”
“I need to make a judgment.”

Integrated clinical judgment is the heart of Internal Medicine.

It is what allows a clinician to move beyond isolated facts.

It connects:

- symptoms
- signs
- investigations
- physiology
- diagnosis
- risk
- prognosis
- treatment benefit
- treatment harm
- patient goals
- function
- frailty
- medicines
- social reality
- timing
- uncertainty

A clinician with knowledge may know many diseases.
A clinician with judgment knows what matters now for this patient.
A clinician with knowledge may know the guideline.
A clinician with judgment knows when the guideline fits, when it must be adapted, and when it may harm.
A clinician with knowledge may treat a number.
A clinician with judgment treats a person.

The first task is not simply to choose an option.

The deeper question is:

Which decision best protects life, reduces harm, respects the patient, and supports the most realistic repair trajectory in this situation?

Integrated clinical judgment becomes easier when approached through the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. What Is Integrated Clinical Judgment?

Integrated clinical judgment is the practical wisdom of medicine.

It includes:

- recognizing danger
- defining the main syndrome
- understanding physiology
- forming a working diagnosis
- considering dangerous alternatives
- interpreting tests in context
- weighing benefit and harm
- adapting evidence to the patient
- considering function and frailty
- reviewing medicines
- including values and goals
- managing uncertainty
- choosing proportionate action
- reassessing response
- communicating clearly

Integrated judgment is not guessing.

It is structured reasoning under real-world conditions.

2. Judgment Is More Than Knowledge

Knowledge asks:

“What diseases cause this symptom?”

Judgment asks:

“Which cause is most likely, most dangerous, most reversible, and most relevant to this patient now?”

Knowledge asks:

“What is the recommended treatment?”

Judgment asks:

“Will this treatment help this patient more than it harms them, given their physiology, frailty, medicines, goals, and context?”

Knowledge asks:

“What test can diagnose this?”

Judgment asks:

“Will this test change management, and is it worth the burden?”

Knowledge is necessary.

Judgment makes knowledge safe.

3. Judgment Is Not Personal Opinion Alone

Clinical judgment should not mean:

“I just feel this is right.”

Good judgment uses:

- clinical evidence
- physiology
- pattern recognition
- patient history
- examination
- test results
- treatment response
- guidelines
- patient values
- team input
- experience
- humility
- reassessment

Intuition can be useful, especially when experienced clinicians sense danger.

But intuition must be tested.

Ask:

What am I seeing?
What supports this feeling?
What does not fit?
What could I be missing?

Judgment becomes safer when intuition and structure work together.

4. The First Question: What Is Dangerous?

Integrated judgment always begins with danger.

Ask:

- What could kill the patient?
- What could permanently harm the patient?
- What could rapidly deteriorate?
- What is time-sensitive?
- What must not be missed?
- What requires immediate treatment?
- What requires urgent escalation?
- What makes discharge unsafe?

Danger does not always mean the most likely diagnosis.

Sometimes the most likely diagnosis is benign, but the dangerous alternative must still be considered.

Example:

Most chest pain may not be myocardial infarction, but dangerous cardiac disease must be assessed.

Most headaches are not catastrophic, but red flags must be recognized.

Most dizziness is not stroke, but stroke, arrhythmia, bleeding, and hypoglycemia must not be missed.

The danger-first question is:

What must I rule out, treat, or safety-net before I can safely relax?

5. Immediate Red Flags Requiring Strong Judgment

Red flags include:

- unstable vital signs
- severe breathlessness
- rising oxygen requirement
- chest pain with concerning features
- new neurological deficit
- reduced consciousness
- new confusion
- severe hypoglycemia
- severe hyperglycemia with dehydration or drowsiness
- suspected sepsis
- major bleeding
- severe abdominal pain
- reduced urine output
- severe electrolyte abnormality
- severe uncontrolled pain
- fall with anticoagulation or head injury
- suicidal intent
- unsafe agitation
- unsafe discharge
- treatment failure
- family or nurse says patient is not baseline
- goals of care are unclear in serious illness

When red flags are present, judgment must become urgent, structured, and humble.

6. The Integrated Judgment Pathway

A practical pathway is:

- identify danger

define the syndrome

map capacity failure

identify coupling conditions

build a working diagnosis

consider dangerous alternatives

interpret evidence in context

weigh benefit, harm, burden, and feasibility

include patient values

choose proportionate action

define repair trajectory

reassess and revise

This pathway is the mature form of clinical reasoning.

It keeps the clinician from being trapped by disease labels, isolated numbers, or rigid protocols.

7. Step 1: Identify Danger

Integrated judgment asks:

Is the patient unstable?

Could they become unstable?

Is there a hidden danger?

Is the danger physiological, functional, psychological, social, or ethical?

Does the danger require immediate action?

Does the danger require safety-netting?

Examples:

hypoxia in pneumonia

hyperkalemia in AKI

delirium in frailty

anticoagulation after a fall

unsafe stairs after discharge

suicidal intent in depression

uncontrolled pain in cancer

missed pending biopsy result

family unable to care at home

Danger is not only disease danger.

Danger includes any serious threat to the patient's life-capacity.

8. Step 2: Define the Syndrome

A syndrome organizes clinical reality.

Examples:

- fever with confusion
- breathlessness with edema
- chest pain with exertional features
- falls with dizziness
- weight loss with anemia
- AKI with poor intake
- frailty with acute functional decline
- chronic pain with opioid harm
- advanced illness with repeated admissions

The syndrome should include the pattern, not only the label.

Weak:

“UTI.”

Better:

“Fever, delirium, poor intake, and falls in a frail older adult, with urinary infection possible but medication harm and dehydration also needing review.”

Integrated judgment begins with pattern recognition.

9. Step 3: Map Capacity Failure

Ask which life-capacities are failing.

- oxygenation
- circulation
- clearance
- defense
- brain coordination
- energy regulation
- mobility
- nutrition
- comfort
- agency
- support

This helps the clinician decide what matters most.

Example:

A patient with pneumonia may have oxygenation failure, defense activation, delirium, poor intake, AKI, weakness, and unsafe mobility.

Treating infection alone may not be enough.

Capacity mapping tells the clinician what must repair before the patient is safe.

10. Step 4: Identify Coupling Conditions

Coupling conditions shape whether treatment works.

They include:

- age
- frailty
- multimorbidity
- CKD
- heart failure
- COPD
- dementia
- depression
- addiction
- chronic pain
- medicines
- allergies
- social support
- poverty
- transport
- health literacy
- culture
- patient goals
- caregiver capacity
- system resources

A plan can be medically correct but practically impossible.

Example:

Starting insulin may be clinically logical, but unsafe if the patient has poor vision, irregular meals, dementia, no caregiver, and recurrent hypoglycemia.

Integrated judgment asks:

Will this plan work in this patient's actual life?

11. Step 5: Build a Working Diagnosis

A working diagnosis is the best current explanation.

It should be specific but flexible.

Example:

"Pneumonia causing hypoxia and delirium, complicated by poor intake and AKI."

Not merely:

"Infection."

Example:

“Mixed breathlessness from heart failure and COPD, with anemia and anxiety reducing reserve.”

Not merely:

“Shortness of breath.”

Example:

“Medication-associated falls and AKI after NSAID use, diuretic exposure, poor intake, and sedative burden.”

Not merely:

“Falls.”

A working diagnosis should guide action while remaining open to revision.

12. Step 6: Consider Dangerous Alternatives

For each working diagnosis, ask:

- What else could this be?
- What would be dangerous to miss?
- What diagnosis would change management today?
- What evidence argues against my current view?
- What does not fit?
- Is there more than one process?
- Could treatment itself be causing harm?

Example:

In pneumonia not improving, consider heart failure, PE, aspiration, resistant infection, empyema, pneumothorax, anemia, or fluid overload.

In “anxiety” with palpitations, consider arrhythmia, thyroid disease, hypoglycemia, stimulant use, anemia, PE, or cardiac disease.

In “dementia worsening,” consider delirium, infection, dehydration, medication toxicity, pain, constipation, urinary retention, depression, or stroke.

Integrated judgment resists premature closure.

13. Step 7: Interpret Evidence in Context

Evidence includes:

- history
- examination
- vital signs
- labs
- imaging
- ECG
- cultures
- pathology

- treatment response
- collateral history
- baseline function
- patient values
- nursing observation
- family concern

No result interprets itself.

A high creatinine means different things in:

- dehydration
- heart failure
- obstruction
- sepsis
- NSAID exposure
- advanced CKD
- diuresis
- contrast exposure
- medication toxicity

A normal test may be reassuring, but only in context.

A mildly abnormal test may be dangerous in the wrong patient.

Judgment interprets results inside the clinical story.

14. Step 8: Weigh Benefit, Harm, Burden, and Feasibility

Every decision has trade-offs.

Ask:

- What benefit is expected?
- How likely is the benefit?
- How soon will benefit occur?
- What harm is possible?
- How serious is the harm?
- What burden does the plan impose?
- What monitoring is needed?
- Is the plan feasible?
- Does the patient understand?
- Does the patient want this?
- What happens if we do nothing?
- What happens if we wait?

A treatment that is beneficial in general may be harmful in this patient.

A test that is diagnostically useful may not change care.

A discharge that is medically reasonable may be functionally unsafe.

Integrated judgment lives in trade-offs.

15. Step 9: Include Patient Values

Clinical judgment is incomplete without patient values.

Ask:

- What does the patient understand?
- What matters most?
- What are they hoping for?
- What are they afraid of?
- What outcome would be unacceptable?
- What burden are they willing to accept?
- Who should be involved?
- What has the patient previously said?
- What does dignity mean here?

Examples:

A patient with advanced COPD may value home time more than repeated admissions.

A patient with early cancer may accept burdensome investigation for possible cure.

A frail patient may prioritize avoiding delirium and preserving independence.

A patient with chronic pain may value function more than complete pain elimination.

Values do not replace medical reasoning.

They complete it.

16. Step 10: Choose Proportionate Action

Proportionate action means the response fits:

- danger
- likelihood
- reversibility
- patient reserve
- treatment burden
- patient goals
- available resources
- timing
- uncertainty

Examples:

- urgent escalation for rising oxygen need

- careful observation with safety-net for low-risk symptoms
- antibiotic narrowing when infection is improving and cultures guide treatment
- avoiding sedatives in delirium unless safety demands
- stopping NSAIDs after AKI
- palliative symptom focus when disease treatment no longer helps
- delaying discharge when function is unsafe
- using a time-limited trial when benefit is uncertain

Proportionate action is neither neglect nor over-treatment.

It is fit.

17. Step 11: Define the Repair Trajectory

Every judgment should define what improvement would look like.

Ask:

- What should improve?
- In what order?
- What should remain stable?
- What would show harm?
- What would show treatment failure?
- What would trigger escalation?
- What would allow de-escalation?
- What would make discharge safe?
- What follow-up closes the loop?

Example:

For pneumonia with AKI and delirium:

- fever settles
- oxygen improves
- attention improves
- appetite returns
- kidney function stabilizes
- glucose remains safe
- mobility improves
- medicines clarified
- discharge support arranged

Without repair trajectory, the team cannot know whether judgment was correct.

18. Step 12: Reassess and Revise

Integrated judgment is never final.

After action, reassess:

- Did the patient improve?
- Did treatment cause harm?
- Did new results change the diagnosis?
- Did the patient's goals shift?
- Did the plan work in real life?
- Does the next step still fit?

Good judgment is responsive.

It changes when the patient changes.

19. Judgment in Diagnostic Uncertainty

When diagnosis is uncertain, judgment asks:

- What is most likely?
- What is most dangerous?
- What is most reversible?
- What must be done now?
- What can wait?
- What observation will clarify?
- What test will change management?
- What safety-net is needed?
- Who should review?

Example:

A patient has abdominal pain, normal initial tests, and mild tenderness. If they are stable, close review and safety-net may be reasonable. If pain worsens, localizes, fever appears, vomiting persists, or the patient becomes unstable, urgent reassessment is needed.

Uncertainty is not failure.

Unmanaged uncertainty is dangerous.

20. Judgment in Multimorbidity

Multimorbidity requires balancing competing risks.

Example:

A patient with heart failure and CKD is breathless and edematous.

Diuresis may improve breathing but worsen kidney function.
Fluids may improve kidney perfusion but worsen lungs.
Blood pressure medicines may protect long-term organs but worsen dizziness and falls.
Strict diabetes control may reduce long-term complications but cause acute hypoglycemia.

Integrated judgment asks:

Which capacity is most threatened today, and what trade-off is acceptable?

In multimorbidity, the best plan often changes daily.

21. Judgment in Frailty

Frailty changes the meaning of treatment.

Ask:

- What is the baseline?
- What reserve remains?
- What stressor caused decline?
- What function has been lost?
- What treatment burden can the patient tolerate?
- What medicine risks are amplified?
- What does recovery realistically mean?
- What support is available?
- What goals matter most?

Frailty does not mean “do nothing.”

It means:

- diagnose carefully
- treat proportionately
- avoid harm
- protect mobility
- protect cognition
- simplify medicines
- involve caregivers
- plan discharge realistically
- discuss goals early

In frailty, small harms can produce large losses.

Judgment must be gentle and precise.

22. Judgment in Serious Illness

In serious illness, judgment asks:

- Is this reversible?
- Is this part of the dying process?
- What benefit can treatment realistically offer?
- What burden will treatment impose?
- What does the patient understand?
- What matters most now?
- Should care escalate, de-escalate, or shift focus?

Is symptom control adequate?

Does family need support?

Is palliative care needed?

The hardest judgment may be recognizing when more treatment no longer serves life.

This is not abandonment.

It is alignment with reality, dignity, and the patient's values.

23. Judgment in Medication Decisions

Medicine decisions require integrated judgment.

Ask:

What is the medicine for?

Is it still needed?

Is it helping?

Is it harming?

Is kidney or liver function changing?

Is the patient eating?

Is the patient falling?

Is cognition affected?

Is the patient taking it correctly?

Does it interact with other medicines?

Does it match goals?

Is monitoring possible?

Examples:

stop NSAIDs in AKI and heart failure risk

reduce sedatives in delirium and falls

simplify diabetes treatment in recurrent hypoglycemia

review diuretics in dizziness and renal worsening

avoid opioid escalation when drowsiness and constipation dominate

deprescribe preventive medicines when time-to-benefit no longer fits goals

Medicine judgment is often the difference between healing and harm.

24. Judgment in Investigation Decisions

Before ordering a test, ask:

What question am I asking?

Will the result change management?

Is the test urgent?

Is the patient safe enough for the test?

- What harm could the test cause?
- What will I do if positive?
- What will I do if negative?
- What will I do if unclear?
- Does the patient want the consequences of diagnosis?
- Is observation safer?
- Is the result likely to create more uncertainty?

Testing is not automatically good care.

Not testing is not automatically neglect.

Judgment decides whether the test serves repair.

25. Judgment in Admission Decisions

Admission is needed when the patient requires:

- urgent treatment
- monitoring
- oxygen
- IV therapy
- diagnostic clarification
- safety assessment
- functional support
- medicine stabilization
- specialist input
- protection from unsafe home situation
- symptom control
- palliative stabilization
- mental health safety

Admission may harm when:

- hospital environment worsens delirium
- infection risk is high
- sleep and mobility are disrupted
- patient goals favor home
- care can be safely delivered outside hospital
- treatment burden outweighs benefit

Judgment asks:

Where can repair occur most safely?

26. Judgment in Discharge Decisions

Discharge is safe when:

- danger is controlled
- diagnosis is clear enough
- medicines are reconciled
- function is safe or supported
- cognition is safe or supported
- pain and symptoms are controlled
- nutrition and hydration are adequate
- follow-up is arranged
- pending results are owned
- safety-net is understood
- caregiver support is real

Discharge is unsafe when:

- function is below safe threshold
- delirium persists without support
- medicines are unclear
- follow-up is not possible
- family cannot cope
- serious pending results are unowned
- patient does not understand danger
- system pressure is replacing clinical reasoning

Judgment protects the patient from both unnecessary hospitalization and unsafe discharge.

27. Judgment and Guidelines

Guidelines are essential.

They summarize evidence, reduce variation, and support safety.

But guidelines are not the patient.

Ask:

- Does this patient fit the guideline population?
- Are there exclusions or cautions?
- Does frailty change the risk?
- Does CKD change the medicine?
- Does multimorbidity create conflict?
- Does patient preference alter the plan?
- Is this an emergency?
- Is local resource availability different?
- Is specialist advice needed?

Good judgment does not ignore guidelines.

Good judgment applies them intelligently.

28. Judgment and Team Input

Integrated judgment is strengthened by team perspectives.

Ask:

- What does nursing observe?
- What does pharmacy notice?
- What does physiotherapy see?
- What does occupational therapy see?
- What does social work know?
- What does the family report?
- What does the patient say?
- What does the specialist recommend?
- What does the junior clinician worry about?

The physician may know the physiology.

The nurse may know the overnight pattern.
The therapist may know discharge safety.
The pharmacist may know medicine risk.
The family may know baseline.
The patient knows lived experience.

Integrated judgment listens.

29. Judgment and Time

Timing changes decisions.

Ask:

- Does this need action now?
- Can this wait safely?
- Will delay reduce options?
- Will acting now cause unnecessary harm?
- Is this a reversible window?
- Is this a time-limited trial?
- When should we reassess?
- What happens over the weekend or overnight?
- Is follow-up reliable?

The same clinical problem may require different action at 10 a.m., 10 p.m., before discharge, or after deterioration.

Judgment includes timing.

30. Judgment and Proportionality

Proportionality asks:

Does the intensity of care match the patient's need, risk, and goals?

Under-treatment is harmful.
Over-treatment is harmful.
Delayed treatment is harmful.
Burdensome treatment may be harmful.
Premature stopping may be harmful.
Failure to stop may be harmful.

The wise clinician asks repeatedly:

Is this too little, too much, too soon, too late, or just right for this patient now?

31. Judgment and Humility

Integrated judgment requires humility.

Say:

"I may be wrong."
"Let us reassess."
"This does not fit."
"I need help."
"The patient's family knows something important."
"The diagnosis is provisional."
"The plan should change if the trajectory changes."

Humility is not weakness.

It is protection against error.

32. Judgment and Courage

Judgment also requires courage.

Courage may mean:

- escalating early
- delaying unsafe discharge
- stopping harmful treatment
- having a goals-of-care conversation
- questioning a diagnosis
- speaking up against hierarchy
- admitting uncertainty
- apologizing after error
- refusing inappropriate treatment
- advocating for comfort
- listening to a nurse's concern

telling the truth kindly

Clinical courage is not drama.

It is fidelity to the patient's real need.

33. Judgment Under Pressure

Under pressure, integrated judgment becomes simpler:

What is dangerous?

What syndrome is this?

Which capacity is failing?

What is the safest next step?

Who needs to help?

What must be reassessed?

What must be handed over?

Do not try to solve everything at once.

Protect the patient first.

Then widen the reasoning.

34. Judgment and Communication

A wise decision must be communicated well.

Explain:

what you think is happening

what you are worried about

what options exist

what you recommend

why

what risks remain

what the patient can expect

what would change the plan

what follow-up is needed

A decision that the patient does not understand may fail.

Clinical judgment must become shared understanding.

35. Worked Case 1: Pneumonia in Frailty

An 84-year-old woman with dementia, CKD, diabetes, and frailty has pneumonia. Oxygen and fever improve, but she remains confused, weak, and eating poorly.

Narrow Judgment

"Pneumonia improved. Discharge."

Integrated Judgment

Pneumonia has improved, but cognition, nutrition, mobility, renal safety, glucose safety, medicine safety, and caregiver support remain fragile. Discharge is not safe until repair can continue outside hospital.

Decision

Continue delirium care, nutrition support, mobility assessment, renal and glucose monitoring, medicine reconciliation, and family involvement.

Repair Trajectory

Confusion clears, intake improves, kidney function stabilizes, mobility becomes safe or supported, medicines clear, caregiver prepared.

36. Worked Case 2: Heart Failure and CKD

A 76-year-old man has heart failure with pulmonary edema and CKD. Diuresis improves breathing but creatinine rises.

Narrow Judgment

“Creatinine up. Stop diuretics.”

or

“Still swollen. Keep diuresing.”

Integrated Judgment

This is a heart-kidney trade-off. The decision must weigh breathlessness, congestion, blood pressure, renal trend, urine output, potassium, dizziness, and goals.

Decision

Reassess fluid status, renal function, electrolytes, perfusion, symptoms, and treatment response. Adjust diuresis proportionately and seek senior or renal/cardiology input if uncertain.

Repair Trajectory

Breathing improves without dangerous renal or electrolyte deterioration.

37. Worked Case 3: Reassuring Test but Persistent Symptoms

A 55-year-old man has chest pain. Initial tests are reassuring, but he describes recurrent exertional tightness.

Narrow Judgment

“Tests normal. Reassure.”

Integrated Judgment

Initial assessment reduces immediate risk but does not fully explain exertional symptoms. Persistent exertional chest tightness needs follow-up and safety-netting.

Decision

Arrange appropriate cardiac review or pathway according to local practice, provide safety-net, and address risk factors.

Repair Trajectory

Dangerous cardiac disease is excluded or treated; patient knows when to seek urgent help.

38. Worked Case 4: Chronic Pain and Opioid Harm

A patient with chronic pain receives opioids. Pain improves slightly, but constipation, drowsiness, falls, and low mood worsen.

Narrow Judgment

“Pain persists. Increase opioid.”

Integrated Judgment

Comfort remains impaired, but opioid harm is worsening cognition, bowel function, mobility, and safety. The treatment is not restoring life-capacity.

Decision

Reassess pain mechanism, mood, sleep, function, opioid harms, bowel plan, non-opioid approaches, rehabilitation, and goals. Reduce harm while supporting comfort.

Repair Trajectory

Pain becomes more manageable, alertness improves, bowels recover, falls decrease, function increases.

39. Worked Case 5: Advanced Illness and ICU Question

A patient with advanced COPD, severe heart failure, repeated admissions, and worsening frailty deteriorates. ICU is possible but recovery is uncertain.

Narrow Judgment

“Deteriorating. ICU.”

or

“Too frail. No escalation.”

Integrated Judgment

The decision must consider reversibility, likely benefit, treatment burden, patient wishes, current suffering, family understanding, and possibility of a time-limited trial.

Decision

Call senior review, clarify goals, discuss with patient or family, treat reversible distress, consider ICU opinion if benefit uncertain, and involve palliative care.

Repair Trajectory

Care aligns with realistic benefit and patient values; suffering is relieved; family understands the plan.

40. Worked Case 6: Unsafe Home Despite Medical Stability

A patient with infection is afebrile and blood tests are improving. They cannot walk safely, live alone, and do not understand medicine changes.

Narrow Judgment

“Medically fit. Discharge.”

Integrated Judgment

Clinical inflammation improved, but mobility, agency, medicine safety, and support are insufficient. Discharge would transfer danger to home.

Decision

Delay discharge or arrange support. Involve therapy, pharmacy, family, and social services. Complete safety-net and follow-up.

Repair Trajectory

The next care setting can safely sustain recovery.

41. Common Student Pitfalls

Pitfall 1: Treating the Diagnosis Instead of the Patient

The diagnosis is only part of the situation.

Pitfall 2: Treating Numbers Without Context

Numbers must be interpreted inside the clinical story.

Pitfall 3: Following Guidelines Mechanically

Guidelines require patient-specific application.

Pitfall 4: Ignoring Function

Function often determines safety.

Pitfall 5: Ignoring Medicines

Medicines may be cure, cause, or complication.

Pitfall 6: Avoiding Uncertainty

Uncertainty must be named and managed.

Pitfall 7: Forgetting Values

Patient goals change what counts as good care.

Pitfall 8: Not Reassessing

Judgment must evolve with the patient.

42. Clinical Practice Box

When making an integrated clinical judgment, use this structure:

Danger:
What could seriously harm the patient now or soon?

Syndrome:
What clinical pattern organizes the case?

Capacity failure:
Which life-capacities are threatened?

Coupling conditions:
Frailty, multimorbidity, medicines, cognition, social support, goals, resources.

Working diagnosis:
What is the best current explanation?

Dangerous alternatives:
What must not be missed?

Evidence in context:
What do the history, exam, tests, trends, response, family, and team show?

Benefit-harm-burden-feasibility:
What helps, what harms, what burdens, and what is realistic?

Patient values:
What matters most to the patient?

Proportionate action:
Admit, discharge, test, treat, stop, escalate, de-escalate, refer, observe, palliate?

Repair trajectory:
What should improve, what should be monitored, and what would change the plan?

Reassessment:
When will we review, and who owns the next step?

43. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia is being considered for discharge. Pneumonia has improved. She is afebrile and off oxygen. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin has been reduced. NSAIDs were stopped. She is eating better but remains intermittently confused, constipated, weak, and afraid to walk. Her daughter says she is not back to baseline and is worried about stairs.

Apply integrated clinical judgment.

Danger

Falls, medication error, recurrent hypoglycemia, AKI recurrence, heart failure worsening while medicines are held, delirium persistence, unsafe stairs, caregiver strain, readmission.

Syndrome

Recovering pneumonia with incomplete repair in frailty: persistent delirium vulnerability, renal recovery, medication complexity, pain, constipation, weakness, and discharge safety concern.

Capacity Failure

Cognition, mobility, clearance, glucose regulation, comfort, bowel function, agency, caregiver-supported safety.

Coupling Conditions

CKD, heart failure, diabetes, dementia, frailty, chronic pain, daughter's support, home stairs, polypharmacy, recent delirium, recent AKI.

Working Diagnosis

Pneumonia has improved, but the patient remains in a vulnerable recovery phase with unresolved functional, cognitive, renal, pain, bowel, and medication risks.

Dangerous Alternatives

Persistent delirium trigger, medication toxicity, hypoglycemia, dehydration, heart failure recurrence, AKI worsening, unsafe discharge, occult fall injury, uncontrolled pain leading to unsafe medicine restart.

Evidence in Context

Improved fever and oxygen are reassuring but not sufficient. Family says cognition is not baseline. Weakness and fear of walking suggest discharge danger. Renal function and medicines still need careful review.

Benefit-Harm-Burden-Feasibility

Discharge may reduce hospital harm but could increase falls, medication error, and caregiver overload if premature. Continued hospitalization may worsen delirium and deconditioning if unnecessary. The decision depends on whether safe supports and medicine clarity can be created.

Patient Values

The patient may want home, but daughter's concern and possible fluctuating delirium mean capacity, understanding, and support must be assessed.

Proportionate Action

Do not discharge solely because pneumonia improved. Reassess cognition, mobility, stairs, constipation, pain, renal function, glucose trends, and medicines. Involve physiotherapy, pharmacy, daughter, and primary care follow-up. Discharge only when the home plan can sustain repair.

Repair Trajectory

Safe discharge requires stable cognition or supervision, safe transfers and stairs or adequate support, kidney and glucose plan, clear medicine list, constipation and pain controlled without harmful medicines, daughter taught warning signs, and follow-up arranged.

Judgment

The integrated judgment is that the patient is medically improving but not yet automatically discharge-safe. The decision should be based on whole-person repair, not infection markers alone.

44. Student Takeaway

Integrated clinical judgment becomes easier when the clinician asks:

What is dangerous?
What syndrome organizes the case?
Which capacities are failing?
What conditions shape this patient's recovery?
What is the working diagnosis?
What dangerous alternatives remain?
What does the evidence mean in context?
What are the benefits, harms, burdens, and feasibility of each option?
What matters to the patient?
What action is proportionate now?
What repair trajectory should follow?
When will I reassess and revise?

Integrated clinical judgment is the mature center of Internal Medicine.

The safe clinician does not treat diseases, numbers, guidelines, or protocols in isolation. The safe clinician integrates them around the living patient — protecting danger, interpreting physiology, adapting evidence, respecting values, reducing harm, supporting function, managing uncertainty, and guiding care toward the most realistic and humane repair trajectory.

Chapter 90. Becoming a Life-Coherent Clinician Made Easy

Becoming a life-coherent clinician means becoming the kind of doctor who can bring knowledge, skill, compassion, judgment, humility, courage, and practical wisdom into the service of living persons.

Patients do not usually say:

“Please be a life-coherent clinician.”

They say:

“Please listen to me.”
“Please do not reduce me to a number.”
“Please explain what is happening.”
“Please help me breathe.”
“Please relieve my pain.”
“Please do not miss something serious.”
“Please do not give me treatment that harms me.”
“Please help me get home safely.”
“Please tell me the truth.”
“Please remember that I am a person.”

Clinicians may think:

“I want to help.”
“I want to be competent.”
“I do not want to miss danger.”
“I want to use evidence well.”
“I want to communicate better.”
“I want to make wise decisions.”
“I want to remain human in a pressured system.”
“I want my practice to serve life.”

Becoming a life-coherent clinician is not becoming perfect.

It is becoming oriented.

The life-coherent clinician asks again and again:

What is happening to this person’s living capacities, what is threatening them, what conditions are shaping them, and what action would most wisely protect, restore, relieve, or accompany life here?

This is the deepest integration of the whole book.

The clinician has learned to move from symptoms to syndromes, from syndromes to physiology, from physiology to danger, from danger to wise action, from action to reassessment, and from reassessment to repair.

The final task is not simply to know more medicine.

The deeper task is to become the kind of person who can practice medicine in a way that remains faithful to life.

1. What Is a Life-Coherent Clinician?

A life-coherent clinician is a clinician whose knowledge, decisions, communication, and actions are oriented toward the patient’s living reality.

This clinician asks:

What is dangerous?

What is the syndrome?

Which capacity is failing?

What is the patient's baseline?

What is the patient's context?

What is the patient's goal?

What treatment helps?

What treatment harms?

What can be repaired?

What must be accepted?

What must be communicated?

What must be followed up?

What must be handed over?

What must be learned?

A life-coherent clinician does not treat the chart instead of the patient.

They do not treat the guideline instead of the patient.

They do not treat the number instead of the patient.

They use charts, guidelines, and numbers in service of the patient.

2. The Life-Coherent Orientation

The life-coherent orientation can be summarized as:

Protect life.
Restore capacity.
Reduce harm.
Relieve suffering.
Respect agency.
Support dignity.
Strengthen repair.
Learn continuously.

This orientation applies in every part of medicine:

acute illness

chronic disease

frailty

multimorbidity

palliative care

discharge planning

diagnosis

prescribing

communication

teamwork

reflection

public health

The clinician is always asking:

Does this action serve the patient's life-capacity, or does it merely serve the system, the protocol, the clinician's anxiety, or the appearance of activity?

3. The Core Loop of Life-Coherent Medicine

The core loop is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This loop can guide almost every clinical situation.

Danger

What could seriously harm the patient?

Syndrome

What pattern is present?

Capacity Failure

Which life-capacity is threatened?

Coupling Conditions

What context shapes vulnerability and recovery?

Wise Perturbation

What action is proportionate, timely, and likely to help?

Repair Trajectory

What should improve, what must be monitored, and what would change the plan?

The life-coherent clinician does not memorize this as a slogan.

They practice it until it becomes a clinical habit.

4. Medicine Begins With Attention

The first act of care is attention.

Attention means noticing:

the symptom

the silence

the fear

the trend

the baseline

the change

the medication risk

the family concern

the nurse's worry

the patient's value

the treatment burden

the system pressure

A clinician who does not attend cannot reason well.

Attention is clinical.

Attention is ethical.

Attention is therapeutic.

Patients can often feel whether the clinician is truly present.

5. Listen Before You Label

A diagnostic label can help.

But premature labels can harm.

The life-coherent clinician listens before labeling.

They ask:

- What is the patient actually experiencing?
- What words do they use?
- What changed?
- What matters most to them?
- What are they afraid of?
- What have others missed?
- What is their baseline?
- What does family notice?
- What does the nurse notice?
- What does not fit?

Labels should arise from careful listening.

The patient is not “a COPD,” “a diabetic,” “a failure to thrive,” “a frequent flyer,” or “a difficult patient.”

The patient is a person whose life-capacities are under strain.

6. See the Whole Person Without Losing the Acute Danger

Whole-person care does not mean ignoring danger.

It means seeing danger inside the whole person.

A patient with chest pain needs urgent assessment.
A patient with sepsis needs rapid treatment.
A patient with stroke symptoms needs urgent pathway care.
A patient with hypoglycemia needs immediate correction.
A patient with suicidal intent needs safety now.

But after immediate danger, the clinician must widen the view.

Ask:

- Why did this happen now?
- What reserve has been lost?
- What medicines contributed?

What support is missing?

What function has changed?

What does recovery require?

What matters to the patient?

The life-coherent clinician is both urgent and spacious.

7. Treat Physiology, Not Just Disease Names

Disease names are useful, but physiology explains danger.

Pneumonia may threaten oxygenation, defense, cognition, hydration, kidney function, mobility, and appetite.

Heart failure may threaten circulation, oxygenation, kidney clearance, sleep, mobility, and confidence.

Diabetes may threaten energy regulation, kidneys, nerves, eyes, wounds, and daily agency.

Delirium may threaten brain coordination, safety, dignity, communication, and discharge.

Frailty may threaten reserve across multiple systems.

The life-coherent clinician asks:

What function is failing?

This makes treatment more precise.

8. Use Evidence Wisely

Evidence matters.

Guidelines matter.

Trials matter.

Protocols matter.

But evidence must be applied to a living person.

Ask:

Does this evidence apply to this patient?

Does this guideline fit this physiology?

Does frailty alter benefit or harm?

Does CKD alter medicine safety?

Does multimorbidity create conflict?

Does the patient's goal change the decision?

Is the intervention feasible?

Is the time-to-benefit meaningful?

Is the burden proportionate?

Evidence becomes wise when joined to judgment.

9. Respect the Patient's Agency

Agency means the patient is not merely a body to be treated.

The patient is a person who understands, chooses, fears, hopes, refuses, accepts, and lives with consequences.

Respecting agency means:

- explaining clearly
- asking what matters
- checking understanding
- seeking consent
- assessing capacity when needed
- honoring informed refusal
- involving family when appropriate
- avoiding coercion
- supporting decision-making
- telling the truth kindly

Agency does not mean the clinician simply does whatever the patient asks.

It means decisions are made with respect for the patient's personhood.

10. Preserve Dignity

Dignity is not an optional extra.

Dignity is part of healing.

Preserve dignity by:

- introducing yourself
- explaining before examining
- protecting privacy
- avoiding humiliating language
- speaking to the patient, not only about the patient
- involving them in decisions
- treating pain and breathlessness seriously
- recognizing fear
- respecting culture and faith
- honoring end-of-life needs
- avoiding unnecessary burdens
- not reducing the person to disease, age, or bed number

A patient may forget the exact diagnosis.

They may remember whether they were treated with dignity.

11. Understand That Medicines Are Powerful Perturbations

Medicines are not merely prescriptions.

They are perturbations of living systems.

They can heal.
They can harm.
They can interact.
They can accumulate.
They can confuse.
They can restore function.
They can remove function.

The life-coherent clinician asks:

- What is this medicine for?
- Is it still needed?
- Is it helping?
- Is it harming?
- Does kidney or liver function change safety?
- Does frailty increase risk?
- Does the patient understand it?
- Can the patient afford it?
- Can the patient take it correctly?
- What should be monitored?
- When should it stop?

Prescribing is a moral act because it changes the patient's body and life.

12. Do Not Worship Numbers

Numbers are useful.

But numbers are not the patient.

A blood pressure may be "normal" but too low for a frail patient who is dizzy and falling.

A glucose may be "controlled" but at the cost of recurrent hypoglycemia.

A creatinine may be improving while the patient is becoming fluid overloaded.

An oxygen saturation may look acceptable while oxygen requirement is rising.

A hemoglobin may be mildly low but dangerous in a patient with chest pain and frailty.

The life-coherent clinician asks:

What does this number mean in this person, at this time, with this trajectory?

13. Learn to Live With Uncertainty

Medicine is full of uncertainty.

The diagnosis may be unclear.
The test may be imperfect.
The patient may present early.
The guideline may not fit.
The treatment response may surprise.

The prognosis may be uncertain.
The patient's goals may evolve.

The life-coherent clinician does not pretend certainty.

They manage uncertainty.

They say:

"This is our working diagnosis."
"This is what we are watching."
"This is what would change the plan."
"This is when you must seek urgent help."
"We will reassess."

Honest uncertainty is safer than false certainty.

14. Escalate Early When Danger Exceeds the Plan

The life-coherent clinician escalates when the patient's need exceeds current capacity.

Escalate for:

- deterioration
- treatment failure
- unstable physiology
- severe pain
- uncontrolled symptoms
- complex decisions
- unsafe discharge
- capacity concerns
- serious illness uncertainty
- ethical conflict
- clinician uncertainty beyond safe scope

Escalation is not weakness.

It is patient protection.

A clinician who never asks for help is not strong.

They are unsafe.

15. De-Escalate When Burden Exceeds Benefit

The life-coherent clinician also de-escalates.

They stop what no longer helps.

They simplify what has become too complex.

They narrow treatment when possible.

They remove unnecessary lines, catheters, monitoring, tests, and medicines.

They shift goals when cure is no longer realistic.

They ask:

Is this still serving the patient's living repair?

De-escalation is not abandonment.

It is wise proportion.

16. Safety-Net Every Unfinished Story

Many clinical stories are unfinished.

The diagnosis is probable but not certain.
The patient is improving but still vulnerable.
The medicine should help but may harm.
The result is pending.
The referral is waiting.
The follow-up is needed.
The caregiver is learning.
The illness may evolve.

The life-coherent clinician safety-nets unfinished stories.

They explain:

- what to expect
- what to watch
- what is dangerous
- what to do
- who to contact
- when follow-up occurs
- what results remain pending
- what medicines require caution

Safety-netting carries care beyond the room.

17. Handover Risk, Not Just Information

Life-coherent handover transfers:

- danger
- syndrome
- current status
- active capacity failures
- pending results
- medicine risks
- uncertainty
- escalation triggers
- patient values
- family concerns

follow-up needs

A handover that lists facts but hides risk is unsafe.

The receiving clinician should know:

What must I not miss?

18. Review and Reassess

The life-coherent clinician keeps returning to the patient.

They ask:

Is the patient better?

Worse?

Different?

Did treatment help?

Did treatment harm?

Does the diagnosis still fit?

Is function improving?

Is cognition improving?

Is pain controlled?

Are medicines safe?

Is discharge safe?

What has the patient or family noticed?

Reassessment prevents the plan from becoming stale.

Medicine is not a single decision.

It is a living conversation with reality.

19. Reflect After Action

After difficult events, the life-coherent clinician reflects.

They ask:

What happened?

Was there harm?

What was the timeline?

What did we think was happening?

What did we miss?

What went well?

What system factors mattered?

What did the patient experience?

What should be repaired?

What will change next time?

Reflection turns experience into wisdom.

Without reflection, experience may merely repeat itself.

20. Practice With Humility

Humility means knowing that:

- the patient may surprise you
- the diagnosis may change
- the test may mislead
- the guideline may not fit
- the nurse may notice what you missed
- the family may know the baseline better
- the junior may raise the right concern
- the medicine may harm
- the patient may value something different
- you may be wrong

Humility does not weaken authority.

It makes authority safer.

21. Practice With Courage

Courage means:

- calling for help
- speaking up
- delaying unsafe discharge
- admitting uncertainty
- correcting error
- apologizing when needed
- stopping harmful treatment
- telling the truth
- advocating for comfort
- challenging dehumanizing language
- protecting the patient under system pressure

Courage is not loud.

It is faithful.

It stays oriented to the patient when convenience, fear, hierarchy, or pressure pull elsewhere.

22. Practice With Compassion

Compassion is not sentimentality.

Compassion is the disciplined recognition that the patient's suffering matters.

Compassion asks:

- Is the patient in pain?
- Are they afraid?
- Are they confused?
- Are they lonely?
- Do they understand?
- Are they ashamed?
- Are they exhausted?
- Are they dying?
- Are they unsupported?
- What would reduce suffering now?

Compassion does not replace diagnosis.

It deepens diagnosis.

It reminds the clinician why medicine exists.

23. Practice With Boundaries

Life-coherent care does not mean self-erasure.

Clinicians are human.

They need rest, support, limits, colleagues, supervision, and recovery.

Without boundaries, compassion can become exhaustion.

Without support, responsibility can become burnout.

Without reflection, exposure to suffering can become numbness.

The clinician must ask:

- Am I safe to keep working?
- Do I need help?
- Am I too tired to rely on memory?
- Do I need to hand over?
- Do I need supervision?
- Do I need emotional support after this case?
- What can I do sustainably?

A depleted clinician cannot indefinitely sustain life-coherent care.

24. Resist Dehumanizing Language

Language shapes care.

Avoid:

- "bed blocker"

- “frequent flyer”
- “non-compliant”
- “difficult family”
- “social admission”
- “just old”
- “poor historian”
- “failed discharge” as blame
- “nothing more to do”

Use more precise and humane language:

- “awaiting safe discharge support”
- “recurrent admissions due to unresolved needs”
- “unable to follow plan because of barriers”
- “family is distressed and needs communication”
- “frail older adult with acute functional decline”
- “communication limited by illness, cognition, language, or distress”
- “focus now is comfort and dignity”

Language can either reveal or conceal life.

25. Understand the System Without Being Captured by It

Healthcare systems create pressure.

They may prioritize:

- throughput
- beds
- targets
- documentation
- billing
- risk avoidance
- protocols
- speed
- metrics

These are not always wrong.

But they can displace the patient.

The life-coherent clinician must work within systems without becoming captured by them.

Ask:

Is this system demand serving the patient, or is it overriding patient safety and dignity?

Examples:

- bed pressure should not cause unsafe discharge

- protocol should not replace judgment
- documentation should not replace conversation
- test targets should not create unnecessary harm
- efficiency should not erase listening
- risk avoidance should not produce burdensome care

The clinician must remain anchored to life.

26. Work With the Team

Life-coherent care is team care.

The physician is not the whole system.

Listen to:

- nurses
- pharmacists
- physiotherapists
- occupational therapists
- dietitians
- speech and language therapists
- social workers
- mental health clinicians
- palliative care teams
- healthcare assistants
- administrative staff
- patients
- families

Each sees a different part of the patient's life.

The clinician who listens to the team sees more.

27. Learn From Patients

Patients teach medicine.

They teach:

- what symptoms feel like
- what treatment burden means
- what it means to be afraid
- what matters at home
- what medicines are hard to take
- what pain does to dignity
- what breathlessness does to identity

what fatigue does to hope

what uncertainty feels like

what a good explanation can repair

The life-coherent clinician remains a learner before the patient.

28. Learn From Families and Caregivers

Families and caregivers often know:

baseline cognition

baseline mobility

usual mood

usual appetite

medication habits

home barriers

cultural needs

patient values

early signs of decline

what support is realistic

They may also be exhausted, frightened, angry, or grieving.

The life-coherent clinician asks:

What do you notice that we may not see?

This question can change the whole plan.

29. Learn From Mistakes

Mistakes are painful.

But hidden mistakes become repeated harm.

The life-coherent clinician learns to say:

I missed this.

I need to repair this.

I need help understanding what happened.

I need to change my practice.

The system needs to change.

The patient deserves honesty.

The team deserves learning, not shame.

A culture of concealment protects reputation.

A culture of reflection protects patients.

30. Learn From Good Care

Do not only study failure.

Study what went well.

Ask:

- Why did this patient recover?
- What was recognized early?
- Which communication helped?
- What team action mattered?
- What did the family contribute?
- What did the patient understand?
- What did we do that we should repeat?

Good care contains patterns worth preserving.

31. The Life-Coherent Consultation

A life-coherent consultation asks:

- What brings you here?
- What worries you most?
- What has changed?
- What is dangerous?
- What syndrome is present?
- What capacity is failing?
- What is the likely diagnosis?
- What must not be missed?
- What matters to you?
- What plan fits your life?
- What should you watch for?
- When will we reassess?

This consultation is not long because it is unfocused.

It is efficient because it is oriented.

32. The Life-Coherent Ward Round

A life-coherent ward round asks:

- Is the patient better, worse, or different?
- What danger remains?
- What is the updated syndrome?
- Which capacities are repairing?
- Which capacities are still failing?
- What medicines need review?

What can be escalated or de-escalated?

What does the patient understand?

What does the team notice?

What must happen before discharge?

What must be handed over?

The ward round becomes a daily repair review.

33. The Life-Coherent Discharge

A life-coherent discharge asks:

Is danger controlled?

Is function safe?

Is cognition safe?

Are medicines clear?

Are stopped medicines explained?

Are pending results owned?

Is follow-up realistic?

Is the caregiver ready?

Is safety-netting understood?

Can repair continue safely outside hospital?

Discharge is not the end of care.

It is the transfer of repair to another setting.

34. The Life-Coherent On-Call Shift

A life-coherent on-call shift asks:

Who is unstable?

Who is at risk?

What result is dangerous?

What task is time-sensitive?

What can wait?

Who needs escalation?

What treatment needs reassessment?

What risk must be handed over?

On call, the clinician protects patients through vulnerable hours.

35. The Life-Coherent End-of-Life Encounter

A life-coherent end-of-life encounter asks:

Is the patient dying?

Is suffering controlled?

What does the patient understand?

What does the patient want?

What does family understand?

What treatment helps?

What treatment burdens?

What should stop?

What should continue?

What spiritual, cultural, or relational needs matter?

How can dignity be protected?

When cure is no longer possible, care remains essential.

The life-coherent clinician does not abandon the dying.

36. Becoming Clinically Wise

Clinical wisdom grows through:

repeated attention

structured reasoning

honest feedback

patient stories

team learning

reflection

humility

courage

study

practice

compassion

seeing consequences

Wisdom is not automatic with age.

It must be cultivated.

A clinician can repeat the same year of practice many times without becoming wiser.

Wisdom comes when experience is examined and integrated.

37. The Student's Developmental Path

A student often begins by asking:

"What is the diagnosis?"

Then learns to ask:

"What is dangerous?"

Then:

“What is the syndrome?”

Then:

“What physiology is failing?”

Then:

“What treatment is needed?”

Then:

“What harm could treatment cause?”

Then:

“What matters to this patient?”

Then:

“What repair trajectory is realistic?”

Then:

“What must I learn from this?”

This is the movement from disease knowledge to clinical wisdom.

38. The Clinician’s Daily Compass

At the end of a day, the life-coherent clinician may ask:

Did I listen?

Did I recognize danger?

Did I treat suffering?

Did I communicate clearly?

Did I respect dignity?

Did I ask for help when needed?

Did I reduce unnecessary harm?

Did I safety-net uncertainty?

Did I hand over risk?

Did I learn?

Did I remain human?

These questions are not for self-condemnation.

They are for orientation.

39. When the System Is Not Life-Coherent

Sometimes the system will not support life-coherent care.

There may be too few staff.
Too many patients.
Too much paperwork.
Too little time.

Too few beds.
Too many protocols.
Too little continuity.
Too much fear.
Too little listening.
Too much pressure to discharge.
Too little support after discharge.

The life-coherent clinician cannot fix everything alone.

But they can still ask:

- What can I protect here?
- What risk must I name?
- Who can help?
- What must be documented?
- What must be escalated?
- What can be repaired now?
- What system issue must be raised?

Do not confuse inability to fix everything with permission to stop caring.

Small acts of coherence matter.

40. The Life-Coherent Clinician and Public Health

Internal Medicine does not stop at the bedside.

Patients return to conditions that shape disease:

- food
- water
- housing
- work
- pollution
- poverty
- isolation
- education
- violence
- transportation
- climate
- access to care
- medicine affordability
- community support

A life-coherent clinician sees that illness is not only inside the body.

It is also in the conditions around the body.

This does not mean every consultation becomes political.

It means the clinician understands that repair often requires conditions of life, not just prescriptions.

41. The Life-Coherent Clinician and Prevention

Prevention is not scolding.

Prevention is helping patients protect future capacity.

It includes:

- blood pressure control
- diabetes safety
- smoking cessation support
- vaccination
- movement
- nutrition
- sleep
- mental health
- fall prevention
- medicine review
- cancer screening where appropriate
- kidney protection
- cardiovascular risk reduction
- social support
- early symptom recognition

Prevention works best when it respects the patient's reality.

Advice that cannot be lived becomes noise.

42. The Life-Coherent Clinician and Chronic Disease

Chronic disease care asks:

- What capacity is slowly being lost?
- What can be stabilized?
- What can be restored?
- What complications can be prevented?
- What burden is treatment creating?
- What does the patient understand?
- What support is needed?
- What matters most now?

Chronic disease care is not merely achieving targets.

It is preserving life over time.

43. The Life-Coherent Clinician and Acute Care

Acute care asks:

- What is dangerous now?
- What must be done immediately?
- What can wait?
- What help is needed?
- What response must be reassessed?
- What information must be handed over?

Acute care is not frantic action.

It is focused protection.

44. The Life-Coherent Clinician and Palliative Care

Palliative care asks:

- What suffering is present?
- What treatment still helps?
- What treatment now burdens?
- What does the patient know?
- What does the patient want?
- What does family need?
- What comfort plan exists?
- What crisis plan exists?
- What dignity needs protecting?

Palliative care is not the failure of medicine.

It is medicine returning to its deepest purpose when cure is not possible.

45. The Life-Coherent Clinician and Self-Formation

The clinician is shaped by every patient.

Each encounter teaches habits.

Habits can become:

- attentiveness or distraction
- humility or arrogance
- courage or avoidance
- compassion or numbness
- precision or vagueness
- reflection or repetition
- patient-centeredness or system capture

Becoming a life-coherent clinician is not only acquiring knowledge.

It is forming character.

The question is:

What kind of clinician am I becoming through the way I practice today?

46. Common Student Pitfalls

Pitfall 1: Thinking Medicine Is Only Diagnosis

Diagnosis is essential, but care also requires function, values, context, treatment burden, and repair.

Pitfall 2: Thinking Compassion Is Separate From Competence

Compassion and competence belong together.

Pitfall 3: Treating Guidelines as Substitutes for Judgment

Guidelines guide; clinicians judge.

Pitfall 4: Ignoring Function

Patients live through function, not laboratory values alone.

Pitfall 5: Avoiding Uncertainty

Uncertainty must be named, managed, safety-netted, and reassessed.

Pitfall 6: Confusing More Care With Better Care

Sometimes better care means stopping, simplifying, or shifting focus.

Pitfall 7: Becoming System-Captured

Efficiency matters, but not at the expense of safety, dignity, and life.

Pitfall 8: Forgetting to Reflect

Without reflection, experience may harden rather than deepen.

47. Clinical Practice Box

To practice as a life-coherent clinician, ask:

Danger:
What could seriously harm this patient now or soon?

Syndrome:
What clinical pattern is present?

Capacity failure:
Which life-capacities are threatened?

Context:
What conditions shape vulnerability and recovery?

Evidence:
What do history, examination, tests, trends, treatment response, patient report, family input, and team observation show?

Treatment:
What action helps? What action harms? What action is proportionate?

Medicines:
What should start, stop, continue, reduce, or be monitored?

Agency and values:
What does the patient understand, want, fear, or refuse?

Function:
Can the patient breathe, think, eat, drink, move, sleep, toilet, communicate, and cope?

Repair trajectory:
What should improve? What would show deterioration?

Escalation and de-escalation:
When do we need more help? When can we safely simplify?

Safety-net:
What should the patient, caregiver, or team watch for?

Handover:
What risk must not be lost?

Reflection:
What did I learn, and what must change?

48. Mini-Case for Practice

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia is recovering in hospital. Pneumonia has improved. She is afebrile and off oxygen. Creatinine is improving but not baseline. Diuretic and ACE inhibitor remain held. Insulin has been reduced. NSAIDs were stopped. She is eating better but remains intermittently confused, constipated, weak, and afraid to walk. Her daughter says she is not back to baseline and is worried about stairs.

Apply the life-coherent clinician's full approach.

Danger

Falls, medication error, recurrent hypoglycemia, AKI recurrence, heart failure worsening, persistent delirium, unsafe stairs, caregiver strain, pain-driven unsafe medicine use, readmission.

Syndrome

Recovering pneumonia with incomplete repair in frailty: ongoing cognitive, mobility, kidney, glucose, bowel, pain, medicine, and support vulnerabilities.

Capacity Failure

Brain coordination, mobility, clearance, glucose regulation, comfort, bowel function, agency, caregiver-supported safety.

Coupling Conditions

Frailty, dementia, CKD, heart failure, diabetes, chronic pain, home stairs, daughter support, polypharmacy, recent infection, recent delirium, recent AKI.

Wise Perturbations

Continue delirium care. Review medicines. Avoid NSAIDs and sedatives. Create safe pain plan. Treat constipation. Monitor renal function and glucose. Assess mobility and stairs. Involve daughter, physiotherapy, pharmacy, nursing, and primary care. Do not restart held medicines automatically. Do not discharge until repair can continue safely.

Patient and Family Agency

Ask the patient what she wants and understands. Ask daughter what baseline looks like, what support she can provide, and what worries her most. Use teach-back for medicines and warning signs.

Escalation

Escalate if confusion worsens, oxygen need returns, glucose becomes low, urine output falls, renal function worsens, severe pain persists, fall occurs, or discharge remains contested and unsafe.

De-Escalation

Keep oxygen off if safe. Remove unnecessary devices. Simplify medicines. Avoid unnecessary tests. Reduce treatment burden while preserving monitoring that still matters.

Safety-Net

Before discharge, explain warning signs: worsening breathlessness, fever, confusion, low sugars, reduced urine, falls, severe dizziness, chest pain, swelling with breathlessness, uncontrolled pain, vomiting, inability to drink, or medication uncertainty.

Repair Trajectory

Safe repair means cognition near baseline or supervised, mobility safe or supported, bowels open, pain manageable without kidney-harming medicines, kidney function stable, glucose safe, medicines understood, daughter prepared, and follow-up arranged.

Life-Coherent Judgment

The patient is improving medically but not yet automatically safe. The decision must serve whole-person repair, not simply infection resolution. The goal is not to keep her in hospital unnecessarily or discharge her prematurely. The goal is to create the conditions in which recovery can continue safely, with dignity, clarity, and support.

49. Final Student Takeaway

Becoming a life-coherent clinician means learning to ask, in every clinical situation:

What is dangerous?
What is the syndrome?
Which capacities are failing?
What conditions shape this patient's vulnerability and repair?
What action will help more than harm?
What does the patient understand and value?
What must be escalated?
What can be de-escalated?
What must be safety-netted?
What must be handed over?

What must be reassessed?
What must be learned?

Medicine is not merely the application of knowledge to disease.

Medicine is the disciplined, compassionate, evidence-informed, context-sensitive, ethically grounded, and reflective care of living persons.

The life-coherent clinician protects danger without becoming mechanical, uses evidence without becoming rigid, treats physiology without forgetting personhood, communicates truth without cruelty, reduces suffering without false promises, respects agency without abandoning responsibility, and learns from every encounter without collapsing into shame.

To become such a clinician is a lifelong task.

It is never complete.

But every consultation, every ward round, every admission, every discharge, every handover, every escalation, every de-escalation, every safety-net, every reassessment, and every reflection is an opportunity to practice medicine in a way that remains faithful to life.

Appendices

Quick tools for students, clinicians, and teachers

Appendix A. The Life-Coherent Clinical Reasoning Template

This template is designed to help students, junior doctors, and clinicians organize clinical reasoning in a clear, safe, whole-person way.

It can be used during:

- history taking
- ward rounds
- admissions
- case presentations
- discharge planning
- referrals
- handovers
- clinical reassessment
- exam preparation
- reflective practice

The central loop is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

This means:

- Identify what is dangerous.
- Name the clinical pattern.
- Identify which life-capacity is failing.
- Understand the patient's context.
- Choose a proportionate intervention.
- Define what improvement should look like.

1. Danger

Ask first:

What could seriously harm this patient now or soon?

Consider:

- airway compromise
- severe breathlessness
- rising oxygen requirement
- shock or hypotension
- chest pain with concerning features
- new neurological deficit
- seizure
- reduced consciousness
- new confusion

- hypoglycemia
- severe hyperglycemia with dehydration or drowsiness
- suspected sepsis
- major bleeding
- severe abdominal pain
- AKI with reduced urine or dangerous electrolytes
- overdose or withdrawal
- severe uncontrolled pain
- suicidal intent
- agitation with safety risk
- unsafe discharge
- treatment failure
- family or nurse concern that the patient is “not right”

Write the danger here:

2. Syndrome

Do not jump too quickly to a final diagnosis.

First name the clinical pattern.

Examples:

- acute breathlessness with hypoxia
- fever with confusion
- chest pain with exertional features
- AKI with poor intake
- falls with dizziness
- abdominal pain with vomiting
- frailty with acute functional decline
- weight loss with anemia
- severe pain with opioid side effects
- advanced illness with repeated admissions

The syndrome is:

3. Capacity Failure

Ask:

Which life-capacity is threatened or failing?

Tick or describe the relevant capacities.

Oxygenation

Breathlessness, hypoxia, rising oxygen requirement, respiratory fatigue.

Notes:

Circulation
Hypotension, shock, chest pain, syncope, heart failure, arrhythmia.

Notes:

Brain Coordination
Confusion, delirium, reduced consciousness, seizure, agitation, stroke symptoms.

Notes:

Clearance
AKI, reduced urine output, electrolyte disturbance, toxin or medicine accumulation.

Notes:

Defense
Infection, sepsis, fever, immune compromise, inflammatory deterioration.

Notes:

Energy Regulation
Hypoglycemia, hyperglycemia, poor intake, metabolic stress, severe fatigue.

Notes:

Mobility
Falls, weakness, unsafe transfers, inability to walk, unsafe stairs.

Notes:

Comfort
Pain, breathlessness, nausea, constipation, anxiety, distress.

Notes:

Agency
Capacity, understanding, consent, refusal, adherence, confidence, decision-making.

Notes:

Support
Caregiver readiness, home safety, transport, follow-up access, medicine access.

Notes:

4. Coupling Conditions

Ask:

What conditions shape this patient's vulnerability, treatment risk, and recovery?

Consider:

- age
- frailty
- multimorbidity
- CKD
- heart failure
- COPD or asthma
- diabetes
- dementia
- delirium risk
- chronic pain
- cancer or serious illness
- immunosuppression
- anticoagulation
- polypharmacy
- recent medicine changes
- poor oral intake
- falls risk
- baseline mobility
- baseline cognition
- home environment
- caregiver support
- health literacy
- access to follow-up
- patient goals
- cultural or spiritual needs
- financial or transport barriers

Important coupling conditions:

5. Working Diagnosis

Ask:

What is the best current explanation for the syndrome?

A good working diagnosis includes:

- the likely disease process
- the affected capacities

the relevant context

any important complications

Weak:

“Pneumonia.”

Stronger:

“Pneumonia causing hypoxia and delirium in a frail older adult, complicated by poor intake and AKI.”

Weak:

“Falls.”

Stronger:

“Recurrent falls likely related to frailty, postural dizziness, sedative burden, knee pain, and unsafe mobility after recent infection.”

Working diagnosis:

6. Dangerous Alternatives

Ask:

What must not be missed?

For each working diagnosis, list the dangerous alternatives.

Examples:

Breathlessness

pulmonary embolism

heart failure

pneumonia

pneumothorax

asthma or COPD exacerbation

myocardial ischemia

anemia

metabolic acidosis

Chest Pain

myocardial infarction

pulmonary embolism

aortic disease

pneumothorax

pericarditis

serious GI or musculoskeletal mimics

Confusion

hypoglycemia

hypoxia

sepsis

- stroke
- medication toxicity
- AKI or electrolyte disturbance
- withdrawal
- head injury
- pain, constipation, or urinary retention

Falls

- syncope
- arrhythmia
- stroke
- hypoglycemia
- infection
- postural hypotension
- medication harm
- fracture or head injury

Dangerous alternatives in this case:

7. Evidence in Context

Ask:

What supports or challenges the working diagnosis?

Use:

- history
- examination
- vital signs
- trends
- blood tests
- imaging
- ECG
- cultures
- urine results
- treatment response
- medicine review
- family or caregiver information
- nursing concern
- baseline function
- patient values

Evidence supporting the working diagnosis:

Evidence against or not fitting:

Information still needed:

8. Wise Perturbation

A wise perturbation is a clinical action that helps restore or protect life-capacity while minimizing harm.

It may include:

- oxygen
- fluids
- diuresis
- antibiotics
- glucose correction
- pain relief
- stopping harmful medicines
- adjusting medicines
- urgent imaging
- referral
- escalation
- de-escalation
- rehabilitation
- nutrition support
- delirium care
- palliative symptom control
- safety-netting
- discharge support
- goals-of-care conversation

Ask:

What action is most likely to help this patient now?

What action may harm this patient?

Helpful actions:

Possible harms or burdens:

Most proportionate next step:

9. Repair Trajectory

Ask:

What should improvement look like?

Define expected repair.

Examples:

Pneumonia

- fever settles
- oxygen requirement falls
- breathing improves
- appetite returns
- confusion improves
- mobility returns
- kidney function stabilizes

Heart Failure

- breathlessness improves
- edema reduces
- weight or fluid status improves where monitored
- blood pressure remains safe
- renal function and electrolytes remain acceptable
- walking improves

Delirium

- attention improves
- sleep-wake cycle normalizes
- agitation reduces
- family recognizes return toward baseline
- triggers are corrected
- sedative burden reduced

AKI

- urine output improves
- creatinine stabilizes or improves
- potassium safe
- harmful medicines stopped or adjusted
- hydration and fluid status appropriate
- follow-up arranged

Expected repair trajectory:

10. Monitoring Plan

Ask:

What must be watched to know whether the patient is improving or deteriorating?

Monitor:

- symptoms
- vital signs
- oxygen requirement
- mental state
- pain
- urine output
- fluid balance
- glucose
- electrolytes
- renal function
- bowel function
- mobility
- nutrition
- medicine side effects
- patient or family concerns

Monitoring required:

Frequency or timing:

11. Escalation Triggers

Ask:

What would make this unsafe?

Examples:

- worsening breathlessness
- rising oxygen requirement
- hypotension
- chest pain
- new confusion
- reduced consciousness
- low glucose
- reduced urine output
- worsening AKI or potassium
- fever with deterioration
- severe pain
- fall
- bleeding

- suicidal thoughts
- unsafe agitation
- caregiver unable to cope
- treatment not working

Escalation triggers:

Who to call:

12. De-Escalation Opportunities

Ask:

What can be safely reduced, stopped, narrowed, switched, or simplified?

Consider:

- oxygen
- antibiotics
- IV fluids
- monitoring
- catheters
- IV lines
- sedatives
- opioids
- NSAIDs
- unnecessary tests
- high-risk medicines
- hospital care
- specialist follow-up
- disease-directed treatment when goals shift

Possible de-escalation:

Monitoring after de-escalation:

13. Patient Values and Agency

Ask:

What matters most to the patient?

Consider:

- understanding
- fears
- hopes

- preferred place of care
- treatment burden
- willingness to accept risk
- family involvement
- spiritual or cultural needs
- capacity
- consent
- refusal
- quality of life
- dignity

Patient values:

Capacity or consent issues:

Family or caregiver role:

14. Communication Plan

Ask:

Who needs to know what?

Communicate with:

- patient
- family or caregiver
- nurse
- senior clinician
- specialist
- pharmacy
- therapy team
- primary care
- receiving team
- community services

Key message to patient:

Key message to family or caregiver:

Key message to team:

15. Safety-Net

Ask:

What should the patient, caregiver, or team watch for?

Include:

- expected recovery
- warning signs
- urgent red flags
- medicine side effects
- pending results
- follow-up
- what to do if worse
- who to contact

Safety-net instructions:

Teach-back completed?

Yes / No

16. Handover

Ask:

What risk must not be lost when care transfers?

Handover:

- main syndrome
- current status
- active danger
- pending results
- medicine changes
- escalation triggers
- uncertainty
- patient values
- family concerns
- follow-up needs

Handover statement:

17. Reflection

After the case, ask:

- What happened?
- What went well?
- What was missed?

What changed the plan?

What did the patient experience?

What did the team learn?

What should be done differently next time?

Reflection notes:

One-Page Summary Template

Patient

Name / age / location:

Main Syndrome

Danger

Capacity Failure

Coupling Conditions

Working Diagnosis

Dangerous Alternatives

Wise Perturbation

Repair Trajectory

Monitoring

Escalation Triggers

De-Escalation Opportunities

Patient Values

Safety-Net

Handover

Worked Example

Patient

78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia.

Main Syndrome
Recovering pneumonia with persistent delirium vulnerability, AKI recovery, weakness, constipation, pain, medication complexity, and discharge safety concern.

Danger
Falls, recurrent hypoglycemia, AKI recurrence, unsafe medicine restart, heart failure worsening, persistent delirium, unsafe stairs, caregiver strain.

Capacity Failure
Brain coordination, mobility, clearance, glucose regulation, comfort, bowel function, agency, caregiver-supported safety.

Coupling Conditions
Frailty, dementia, CKD, heart failure, diabetes, chronic pain, polypharmacy, daughter support, stairs at home, recent infection, recent delirium.

Working Diagnosis
Pneumonia has improved, but whole-person repair is incomplete because cognition, mobility, kidney function, glucose safety, constipation, pain, and medicines remain fragile.

Dangerous Alternatives
Persistent delirium trigger, hypoglycemia, dehydration, medication toxicity, worsening AKI, heart failure relapse, occult fall injury, unsafe discharge.

Wise Perturbation
Reassess cognition, mobility, pain, constipation, renal function, glucose, and medicines. Involve physiotherapy, pharmacy, daughter, and primary care follow-up. Avoid NSAIDs and sedatives. Do not restart diuretic or ACE inhibitor automatically.

Repair Trajectory
Safe discharge when cognition is stable or supervised, mobility and stairs are safe or supported, bowels open, pain controlled without kidney-harming medicines, renal function stable, glucose safe, daughter understands plan, and follow-up is arranged.

Monitoring
Confusion, falls, bowels, pain, oral intake, glucose, urine output, renal function, breathlessness, swelling, dizziness.

Escalation Triggers
Worsening confusion, fever, breathlessness, chest pain, fall, low glucose, reduced urine, severe dizziness, uncontrolled pain, vomiting, inability to drink.

Safety-Net
Daughter understands medicine changes, warning signs, blood test follow-up, and when to seek urgent care.

Handover
Patient is medically improving but not automatically discharge-safe. Active risks are cognition, mobility, renal recovery, medicine safety, pain, constipation, glucose, and daughter-supported discharge.

Final Reminder
The life-coherent clinical reasoning template asks:

What is dangerous?
What is the syndrome?
Which capacities are failing?

What context shapes the patient's vulnerability and repair?
What action helps more than it harms?
What should improvement look like?
What must be watched, communicated, handed over, and learned?

This is the core structure of safe Internal Medicine.

Appendix B. Complete History-Taking Template

History-taking is the structured process of listening to the patient's story, identifying danger, organizing symptoms into a syndrome, understanding the patient's context, and building a safe working diagnosis.

A good history is not a checklist alone.

It is a guided conversation.

The clinician listens for:

- what happened
- when it happened
- how it changed
- what the patient fears
- what is dangerous
- what capacity is failing
- what context matters
- what medicines may be helping or harming
- what the patient needs next

The life-coherent history asks:

What is threatening this person's life-capacity, and what story explains it?

1. Opening the Consultation

Begin with respect, identity, and permission.

Useful opening:

"Hello, my name is _____. I am part of the medical team. Can I confirm your name and date of birth? I would like to ask you some questions about what brought you in today, then examine you and discuss the plan."

Ask:

"What brought you here today?"

Then allow the patient to speak.

Initial patient story:

2. Presenting Complaint

Record the main problem in the patient's own words.

Examples:

- chest pain
- shortness of breath
- fever
- abdominal pain
- confusion
- weakness

- dizziness
- fall
- swelling
- fatigue
- weight loss
- vomiting
- diarrhea
- pain
- poor appetite
- low mood

Presenting complaint:

Duration:

3. First Danger Screen

Before exploring fully, check for immediate danger.

Ask or assess quickly for:

- severe breathlessness
- chest pain
- collapse or fainting
- new weakness, speech difficulty, or facial droop
- severe pain
- confusion or drowsiness
- major bleeding
- vomiting blood or black stool
- seizure
- suicidal thoughts
- inability to drink
- reduced urine output
- severe allergic reaction
- rapidly worsening symptoms

Immediate danger present?

Yes / No

Details:

Action needed now:

4. History of Presenting Complaint

Use a structured symptom analysis.

For pain or focal symptoms, use:

Site

Where is it?

Onset

When did it start? Sudden or gradual?

Character

What does it feel like?

Radiation

Does it move anywhere?

Associated Symptoms

What else comes with it?

Timing

Constant, intermittent, worsening, improving, recurrent?

Exacerbating and Relieving Factors

What makes it worse or better?

Severity

How bad is it? How does it affect function?

Trajectory

Better, worse, unchanged, or different over time?

5. The Timeline

Create a timeline.

Ask:

- When were you last well?
- What was the first symptom?
- What happened next?
- What changed today?
- What made you seek help now?
- Have you had this before?

What treatment have you already tried?

Did it help or harm?

Timeline:

6. Patient's Main Concern

Ask directly:

"What worries you most about this?"

or

"Is there anything in particular you are afraid this could be?"

Patient concern:

7. Ideas, Concerns, and Expectations

Ideas

"What do you think may be causing this?"

Concerns

"What are you most worried about?"

Expectations

"What were you hoping we could help with today?"

These questions reveal the patient's meaning, fears, and goals.

8. Functional Impact

Ask:

Can you walk as usual?

Can you climb stairs?

Can you wash and dress?

Can you eat and drink?

Can you sleep?

Can you work or study?

Can you care for yourself?

Are you more dependent than usual?

Are you afraid to move?

Have you fallen?

Functional impact:

9. Baseline Function

Especially in older adults, frailty, chronic illness, disability, and discharge planning, ask:

- How were you functioning before this illness?
- How far could you walk?
- Did you use a stick, walker, wheelchair, or assistance?
- Could you manage stairs?
- Could you wash, dress, toilet, and feed yourself?
- Did you cook, shop, clean, drive, work, or manage finances?
- Who helps you at home?

Baseline mobility:

Baseline self-care:

Baseline independence:

Support at baseline:

10. Baseline Cognition

Ask patient, family, or caregiver:

- Is memory usually normal?
- Is the patient usually confused?
- Is this confusion new?
- Can the patient usually hold a conversation?
- Can the patient recognize family?
- Can the patient manage medicines?
- Can the patient make decisions?
- Has there been a recent change?

Baseline cognition:

Current change:

Collateral source:

11. Review of Systems

Use a focused review based on the presenting problem, then screen for major systems.

General

- fever

- chills
- weight loss
- night sweats
- fatigue
- appetite change

Notes:

Cardiovascular

- chest pain
- palpitations
- fainting
- dizziness
- ankle swelling
- orthopnea
- paroxysmal nocturnal dyspnea
- exercise limitation

Notes:

Respiratory

- cough
- sputum
- breathlessness
- wheeze
- chest pain on breathing
- coughing blood
- oxygen use
- smoking or exposures

Notes:

Gastrointestinal

- abdominal pain
- nausea
- vomiting
- diarrhea
- constipation
- black stool
- blood in stool
- swallowing difficulty

- jaundice
- appetite and weight change

Notes:

Genitourinary

- dysuria
- frequency
- urgency
- flank pain
- blood in urine
- urine output
- incontinence
- catheter issues

Notes:

Neurological

- headache
- weakness
- numbness
- speech difficulty
- facial droop
- seizure
- confusion
- dizziness
- falls
- vision change

Notes:

Musculoskeletal

- joint pain
- swelling
- stiffness
- back pain
- muscle weakness
- falls
- mobility limitation

Notes:

Skin

- rash
- ulcers
- wounds
- bruising
- itching
- infection signs

Notes:

Endocrine and Metabolic

- thirst
- urination change
- heat or cold intolerance
- tremor
- weight change
- hypoglycemia symptoms
- appetite change

Notes:

Mental Health

- low mood
- anxiety
- sleep
- hopelessness
- self-harm thoughts
- hallucinations
- substance use
- stressors

Notes:

12. Past Medical History

Ask:

- What medical conditions have you been diagnosed with?
- Have you ever been admitted to hospital?
- Any operations?
- Any serious infections?
- Any heart, lung, kidney, liver, brain, diabetes, cancer, autoimmune, or mental health conditions?
- Any previous similar episodes?

- Any complications from treatment?

Past medical history:

Previous admissions:

Operations or procedures:

Previous similar episodes:

13. Medication History

Medication history is essential.

Ask:

- What medicines do you take?
- Prescription medicines?
- Over-the-counter medicines?
- Herbal or traditional medicines?
- Supplements?
- Painkillers?
- Sleeping tablets?
- Blood thinners?
- Diabetes medicines?
- Inhalers?
- Steroids?
- Recent antibiotics?
- Any recent medicine changes?
- Any missed doses?
- Any medicines stopped recently?
- Any old medicines restarted?
- Who manages your medicines?

Medication list:

Recent changes:

Medicines stopped or held:

Over-the-counter / herbal / supplements:

Adherence or access problems:

Who manages medicines:

14. High-Risk Medicine Screen

Specifically ask about:

- anticoagulants
- antiplatelets
- insulin
- sulfonylureas or other hypoglycemia-risk medicines
- opioids
- sedatives
- antipsychotics
- steroids
- NSAIDs
- diuretics
- ACE inhibitors or ARBs
- immunosuppressants
- chemotherapy
- antibiotics
- lithium or narrow-therapeutic-index medicines where relevant

High-risk medicines present:

Possible medicine harm:

Monitoring needed:

15. Allergies and Adverse Reactions

Ask:

- Are you allergic to any medicines?
- What happened when you took it?
- Was it rash, swelling, breathing difficulty, fainting, vomiting, intolerance, or unknown?
- Any food, latex, or contrast allergy?

Allergy:

Reaction:

Severity:

16. Family History

Ask where relevant:

- heart disease
- stroke
- diabetes
- hypertension
- kidney disease
- cancer
- autoimmune disease
- clotting disorders
- sudden death
- neurological disease
- mental illness

Family history:

17. Social History

Social history explains the patient's conditions of recovery.

Ask:

- Where do you live?
- Who lives with you?
- Who helps you?
- Are there stairs?
- Do you have transport?
- Do you work?
- What is your occupation?
- Can you afford medicines?
- Do you have food security?
- Do you feel safe at home?
- Any caregiving responsibilities?
- Any recent stress?
- Any housing concerns?

Living situation:

Home layout / stairs:

Caregiver support:

Work / occupation:

Transport:

Financial or medicine access concerns:

Safety at home:

18. Lifestyle History

Ask respectfully:

Smoking

Current / former / never:

Amount and duration:

Alcohol

Type, amount, frequency:

Withdrawal history:

Recreational Drug Use

Type, route, frequency, last use:

Nutrition

Appetite, meals, weight change, restrictions:

Physical Activity

Usual activity and recent change:

Sleep

Sleep quantity, quality, disturbance:

19. Sexual and Reproductive History

Ask when relevant and with permission.

Useful opening:

“Some conditions can be affected by sexual or reproductive health. Would it be okay if I ask a few questions?”

Consider:

- pregnancy possibility
- last menstrual period where relevant
- contraception
- sexual partners
- STI risk
- sexual function
- intimate partner violence risk where appropriate
- menopause symptoms where relevant

Relevant history:

20. Travel, Exposure, and Infection History

Ask when relevant:

- recent travel
- sick contacts
- animal exposure
- insect bites
- occupational exposures
- water or food exposures
- tuberculosis exposure
- COVID or respiratory exposures
- vaccination history
- recent hospitalization
- recent antibiotics
- indwelling lines or devices

Exposure history:

21. Frailty Screen

Consider frailty when there is older age, multimorbidity, recurrent admissions, falls, weight loss, weakness, delirium, or functional decline.

Ask:

- Have you lost weight unintentionally?
- Are you more exhausted than usual?
- Has walking slowed?
- Have you reduced activity?
- Are you weaker?
- Have you fallen?

Do you need more help than before?

Have you been confused?

Are you eating poorly?

Frailty concerns:

Functional reserve:

22. Delirium Screen

Ask patient, family, or nurse:

Is confusion new?

Does it fluctuate?

Is attention poor?

Is the patient more sleepy or agitated?

Has sleep-wake cycle changed?

Are there hallucinations?

Has there been infection, pain, constipation, urinary retention, dehydration, hypoxia, hypoglycemia, or medicine change?

Delirium suspected?

Yes / No

Details:

Possible triggers:

23. Falls History

For falls, ask:

When did you fall?

What were you doing?

Did you trip?

Did you feel dizzy?

Did you black out?

Any chest pain or palpitations?

Any weakness or numbness?

Did you hit your head?

Any injury?

Are you on blood thinners?

Have you fallen before?

Do you fear falling?

- What footwear and walking aids do you use?
- Any alcohol, sedative, or medicine change?

Fall details:

Loss of consciousness:

Head strike / anticoagulation:

Previous falls:

Likely contributors:

24. Pain History

For pain, ask:

- Where is the pain?
- When did it start?
- What does it feel like?
- Does it spread?
- What makes it better or worse?
- How severe is it?
- Is it constant or intermittent?
- Does it affect sleep, walking, eating, mood, breathing, or self-care?
- What medicines have you tried?
- Any side effects?
- What is your goal: complete relief, function, sleep, comfort?

Pain syndrome:

Functional impact:

Treatment tried:

Side effects:

Patient goal:

25. Mental Health and Safety Screen

Ask respectfully when relevant:

How has your mood been?

Have you felt hopeless?

Have you lost interest in things?

How is your sleep?

Any anxiety or panic?

Any thoughts of harming yourself?

Any thoughts that life is not worth living?

Any plan or intent?

Any previous self-harm?

Any support person?

Any substance use or withdrawal risk?

Suicide or self-harm concern:

Yes / No

Details:

Immediate safety plan needed:

26. Capacity and Decision-Making

When decisions are complex, ask:

Does the patient understand the information?

Can the patient retain it long enough to decide?

Can the patient weigh benefits and risks?

Can the patient communicate a choice?

Is confusion, delirium, intoxication, pain, fear, or language barrier affecting capacity?

Is capacity decision-specific?

Who is the substitute decision-maker or legal proxy where relevant?

Decision needing capacity assessment:

Capacity concerns:

Support needed:

27. Patient Values and Goals

Ask:

What matters most to you now?

What are you hoping for?

What are you afraid of?

- What would be an unacceptable outcome?
- What does a good recovery mean to you?
- Who should be involved in decisions?
- Do you have advance care wishes?
- Where would you prefer care if illness worsens?
- What level of treatment would you want if recovery were unlikely?

Patient goals:

Fears:

Preferred decision-makers:

Advance care wishes:

28. Collateral History

Collateral history is essential when the patient is confused, frail, seriously ill, unable to communicate, or not at baseline.

Sources:

- family
- caregiver
- nurse
- care home
- GP or primary care clinician
- pharmacy
- previous records
- ambulance crew
- community nurse

Ask collateral source:

- What is the patient usually like?
- What changed?
- When did it change?
- What can they normally do?
- What medicines do they actually take?
- What support is available?
- What worries you most?
- What would the patient want?

Collateral source:

Baseline from collateral:

Main concerns:

29. Life-Coherent History Summary

After taking the history, summarize using the core loop.

Danger

What could seriously harm this patient?

Syndrome

What pattern organizes the story?

Capacity Failure

Which life-capacities are failing?

Coupling Conditions

What context shapes vulnerability and recovery?

Working Diagnosis

What is the best current explanation?

Dangerous Alternatives

What must not be missed?

Wise Next Step

What action is needed now?

Repair Trajectory

What should improvement look like?

30. Presenting the History

A clear history presentation follows this structure:

- patient identity and key background
- presenting complaint and duration
- danger features
- timeline
- key positive symptoms
- key negative symptoms

relevant past history

medicines and allergies

functional and social context

patient concerns and goals

summary syndrome

working diagnosis and differentials

immediate plan

Example:

“Mrs. Roberts is a 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, and chronic knee pain, presenting with three days of cough, fever, poor intake, and worsening confusion. She is now weaker than baseline and nearly fell at home. Her daughter says she is usually forgetful but not confused and normally walks with a stick. She has reduced urine output and has been taking NSAIDs for knee pain. The main syndrome is fever with delirium, poor intake, AKI risk, and functional decline in frailty. Working diagnosis is pneumonia or another infection complicated by dehydration, medication harm, and delirium. Dangerous alternatives include sepsis, hypoglycemia, stroke, heart failure, and AKI with electrolyte disturbance.”

31. Common Student Pitfalls

Pitfall 1: Interrupting Too Early

Let the patient tell the story before narrowing.

Pitfall 2: Forgetting Danger

Always screen for immediate red flags.

Pitfall 3: Taking Symptoms Without Timeline

Timeline reveals trajectory.

Pitfall 4: Ignoring Function

Function shows how illness affects life.

Pitfall 5: Forgetting Medicines

Medicines may cause, worsen, or treat the problem.

Pitfall 6: Missing Baseline

Especially in frailty, dementia, and disability, baseline defines change.

Pitfall 7: Ignoring Patient Concerns

The patient’s fear may reveal important diagnostic or emotional information.

Pitfall 8: Not Getting Collateral

If the patient is confused or frail, collateral may be essential.

One-Page Complete History Template

Opening

Name, role, identity confirmed, permission.

Presenting Complaint

Immediate Danger Screen

History of Presenting Complaint
Site / onset / character / radiation / associated symptoms / timing / exacerbating-relieving factors / severity / trajectory.

Timeline

Ideas, Concerns, Expectations

Functional Impact

Review of Systems

Past Medical and Surgical History

Medicines

Allergies

Family History

Social History

Lifestyle

Baseline Function and Cognition

Frailty / Falls / Delirium Screen Where Relevant

Mental Health and Safety Screen Where Relevant

Patient Values and Goals

Collateral History

Life-Coherent Summary
Danger:

Syndrome:

Capacity failure:

Coupling conditions:

Working diagnosis:

Dangerous alternatives:

Wise next step:

Repair trajectory:

Final Reminder

A complete history is not complete because every possible question was asked.

It is complete when the clinician understands:

What happened.
What is dangerous.
What syndrome is present.
Which capacities are failing.
What context matters.
What the patient fears and hopes.
What diagnosis is likely.
What must not be missed.
What action is needed next.

History-taking is the first act of clinical reasoning.

Appendix C. Complete Examination Template

Clinical examination is the structured process of looking, listening, touching, measuring, and interpreting the patient's body in context.

A good examination does not simply collect signs.

It asks:

What is the body showing us about danger, syndrome, capacity failure, and repair?

The examination should help answer:

- Is the patient safe now?
- Which system is most threatened?
- What syndrome is present?
- Which life-capacity is failing?
- What diagnosis is likely?
- What must not be missed?
- What treatment or escalation is needed?
- What should be monitored?

The life-coherent examination begins with the whole patient before narrowing to the system.

1. Before You Begin

Confirm:

- patient identity
- consent
- comfort
- privacy
- infection control needs
- chaperone where appropriate
- pain or distress
- ability to sit, stand, speak, or cooperate
- need for urgent help before completing examination

Suggested opening:

"I would like to examine you now. I will explain what I am doing as I go along. Please tell me if anything is painful or if you need me to stop."

Consent obtained:

Yes / No

Chaperone needed or offered:

Yes / No / Not applicable

Patient comfort addressed:

Yes / No

2. First Look: The End-of-the-Bed Assessment

Before touching the patient, look.

Ask:

Does this patient look sick?

Observe:

- alert or drowsy
- distressed or comfortable
- breathless or speaking normally
- pale, cyanosed, flushed, jaundiced
- sweating or clammy
- cachectic, frail, edematous, dehydrated
- agitated, confused, withdrawn
- using accessory muscles
- posture
- mobility
- pain behavior
- oxygen, IV lines, catheters, drains, monitors
- medication patches, inhalers, devices
- surroundings, family, walking aids

Initial impression:

Immediate danger signs:

3. Vital Signs

Vital signs are not “routine numbers.”

They are signs of life-capacity.

Record:

Temperature

Possible meaning:

- infection
- inflammation
- drug reaction
- hypothermia in frailty or sepsis
- environmental exposure

Pulse

Assess:

- rate
- rhythm
- volume
- regularity

Possible meaning:

- pain
- fever
- dehydration
- arrhythmia
- shock
- anxiety
- anemia
- medication effect

Blood Pressure

Consider:

- hypotension
- hypertension
- postural symptoms
- shock
- dehydration
- sepsis
- bleeding
- medication effect
- autonomic dysfunction

Respiratory Rate

Respiratory rate is a major danger sign.

A rising respiratory rate may indicate:

- hypoxia
- sepsis
- metabolic acidosis
- pain
- pulmonary embolism
- pneumonia
- heart failure
- anxiety after danger assessed

Oxygen Saturation

Also record oxygen device and flow if used:

Ask:

- Is oxygen requirement increasing?
- Is this baseline?
- Is the patient working hard to breathe?

Pain Score or Pain Severity

Pain affects physiology, mobility, sleep, cognition, and dignity.

Glucose Where Relevant

Check especially in:

- confusion
- drowsiness
- diabetes
- seizure
- collapse
- poor intake
- acute illness

Vital sign interpretation:

4. General Examination

Look for:

- pallor
- cyanosis
- jaundice
- clubbing
- lymphadenopathy
- edema
- dehydration
- cachexia
- obesity
- rash
- bruising
- wounds
- pressure injury

- tremor
- asterixis
- needle marks
- signs of pain
- signs of neglect or poor self-care
- signs of frailty

General findings:

5. Hydration and Perfusion

Assess:

- mucous membranes
- skin turgor where useful
- capillary refill
- peripheral temperature
- pulse volume
- blood pressure
- postural symptoms
- urine output
- edema
- jugular venous pressure where appropriate
- lung crackles if fluid overload possible

Hydration status:

Perfusion status:

Fluid overload signs:

Clinical interpretation:

6. Cardiovascular Examination

Use: inspect, palpate, auscultate, assess fluid status and perfusion.

Inspection

Look for:

- distress
- breathlessness
- cyanosis
- edema

- surgical scars
- pacemaker or devices
- cachexia
- oxygen use

Findings:

Hands and Arms

Assess:

- temperature
- capillary refill
- clubbing
- peripheral cyanosis
- pulse rate and rhythm
- tremor
- signs of infective endocarditis where relevant

Findings:

Pulse

Assess:

- rate
- rhythm
- volume
- equality if relevant

Findings:

Blood Pressure

Record and interpret in context:

Jugular Venous Pressure

Assess if relevant:

Precordium

Inspect and palpate:

- scars
- visible pulsation
- apex beat
- heaves or thrills

Findings:

Heart Sounds

Auscultate:

- S1 and S2
- added sounds
- murmurs
- radiation
- rhythm

Findings:

Peripheral Edema

Assess:

- ankle edema
- sacral edema where relevant
- asymmetry
- tenderness

Findings:

Cardiovascular Interpretation

Consider:

- heart failure
- arrhythmia
- valve disease
- shock
- dehydration
- fluid overload
- endocarditis
- ischemia
- medication effect

Summary:

7. Respiratory Examination

Use: inspect, palpate, percuss, auscultate, assess work of breathing.

Inspection

Look for:

- respiratory distress
- respiratory rate
- accessory muscle use

- inability to speak full sentences
- cyanosis
- cough
- sputum
- chest shape
- scars
- oxygen device
- pursed-lip breathing
- asymmetrical chest movement

Findings:

Palpation

Assess:

- tracheal position
- chest expansion
- tenderness
- tactile vocal fremitus where used

Findings:

Percussion

Assess for:

- dullness
- hyperresonance
- asymmetry

Findings:

Auscultation

Listen for:

- breath sounds
- crackles
- wheeze
- bronchial breathing
- reduced air entry
- pleural rub
- vocal resonance where relevant

Findings:

Respiratory Interpretation

Consider:

- pneumonia
- heart failure
- COPD or asthma exacerbation
- pulmonary embolism
- pneumothorax
- pleural effusion
- interstitial disease
- aspiration
- respiratory failure

Summary:

8. Abdominal Examination

Use: inspect, palpate, percuss, auscultate where appropriate.

Inspection

Look for:

- distension
- scars
- hernias
- visible pulsation
- bruising
- jaundice
- wasting
- stomas
- drains

Findings:

Palpation

Assess:

- tenderness
- guarding
- rigidity
- rebound where appropriate
- masses
- organ enlargement
- bladder distension
- hernias
- aortic pulsation where appropriate

Findings:

Percussion

Assess:

- ascites
- organ size
- gas pattern
- bladder dullness where relevant

Findings:

Bowel Sounds

If relevant:

Rectal Examination

Only when clinically indicated, with consent and chaperone.

Consider for:

- GI bleeding
- constipation or impaction
- cauda equina concern
- prostate or rectal pathology where relevant

Performed?

Yes / No / Not indicated

Findings:

Abdominal Interpretation

Consider:

- acute abdomen
- obstruction
- perforation
- pancreatitis
- biliary disease
- appendicitis
- diverticulitis
- GI bleeding
- constipation
- urinary retention
- ascites
- malignancy

- medication effect

Summary:

9. Neurological Examination

The neurological examination should be guided by the presenting syndrome.

Begin with danger:

- new weakness
- speech change
- facial droop
- seizure
- reduced consciousness
- severe headache
- acute confusion
- spinal cord symptoms
- cauda equina symptoms

Mental Status

Assess:

- alertness
- orientation
- attention
- speech
- comprehension
- behavior
- hallucinations
- mood
- delirium features

Findings:

Cranial Nerves

Assess as relevant:

- pupils
- eye movements
- visual fields
- facial movement
- facial sensation
- hearing
- palate
- tongue

- swallowing or speech where relevant

Findings:

Motor System

Assess:

- tone
- power
- pronator drift
- involuntary movements
- symmetry
- functional movement

Findings:

Reflexes

Assess where relevant:

Sensation

Assess:

- light touch
- pain
- vibration
- proprioception
- sensory level if spinal concern

Findings:

Coordination

Assess:

- finger-nose
- heel-shin
- tremor
- dysmetria
- gait where safe

Findings:

Gait

Assess only if safe.

Look for:

- unsteadiness

- shuffling
- wide-based gait
- foot drop
- pain-limited gait
- need for aid
- fear of falling

Findings:

Neurological Interpretation

Consider:

- stroke
- seizure
- delirium
- dementia
- neuropathy
- spinal cord compression
- Parkinsonism
- medication toxicity
- metabolic encephalopathy
- infection
- hypoglycemia
- falls risk

Summary:

10. Musculoskeletal Examination

Focus on the painful or functionally impaired area.

Use: look, feel, move, function.

Look

Assess:

- swelling
- redness
- deformity
- wasting
- bruising
- wounds
- posture
- gait
- asymmetry

Findings:

Feel

Assess:

- tenderness
- warmth
- effusion
- crepitus
- pulses where limb ischemia possible
- sensation where relevant

Findings:

Move

Assess:

- active movement
- passive movement
- range
- pain
- strength
- stability where appropriate

Findings:

Function

Assess:

- walking
- transferring
- gripping
- dressing
- stairs
- weight-bearing
- self-care

Findings:

Musculoskeletal Interpretation

Consider:

- fracture
- inflammatory arthritis
- septic arthritis

- gout or crystal arthritis
- osteoarthritis
- tendon injury
- bursitis
- cellulitis
- ischemia
- neuropathy
- medication-related falls
- functional decline

Summary:

11. Skin Examination

Skin often reveals systemic illness.

Look for:

- rash
- cellulitis
- ulcers
- wounds
- pressure injury
- bruising
- petechiae or purpura
- jaundice
- cyanosis
- pallor
- dehydration
- edema
- track marks
- surgical wounds
- diabetic foot changes
- signs of neglect or injury

Skin findings:

Interpretation:

12. Diabetic Foot Examination

For patients with diabetes, foot symptoms, wounds, infection, neuropathy, or vascular disease.

Assess:

- skin breaks
- ulcers
- callus
- deformity
- infection
- temperature
- pulses
- capillary refill
- sensation
- footwear
- pain
- ability to inspect feet
- previous amputations or ulcers

Findings:

Risk concerns:

Action needed:

13. Frailty and Functional Examination

A life-coherent examination includes function.

Assess:

- sitting balance
- standing ability
- transfers
- walking
- gait speed impression
- grip strength impression
- ability to turn
- stairs if relevant and safe
- fear of falling
- fatigue after movement
- need for walking aid
- ability to eat and drink
- ability to use toilet
- pressure area risk

Functional findings:

Discharge implications:

14. Delirium and Cognition Examination

Assess:

- alertness
- attention
- orientation
- fluctuation
- speech
- behavior
- sleep-wake disturbance
- hallucinations
- agitation or drowsiness
- baseline comparison
- ability to understand current situation

Simple attention test used:

Findings:

Collateral baseline:

Delirium suspected?

Yes / No

Possible triggers:

15. Mental State Examination

When relevant, assess:

- appearance
- behavior
- speech
- mood
- affect
- thought content
- thought form
- perception
- cognition

- insight
- judgment
- risk to self
- risk to others
- capacity

Findings:

Risk concerns:

Immediate safety plan:

16. Volume Status Examination

Volume status is especially important in:

- heart failure
- AKI
- CKD
- sepsis
- dehydration
- vomiting or diarrhea
- diuretic use
- frailty
- liver disease

Assess:

- mucous membranes
- JVP
- edema
- lung crackles
- blood pressure
- postural symptoms
- pulse
- urine output
- weight trend where available
- fluid balance chart
- skin temperature
- capillary refill
- mental state

Volume assessment:

Dry / euvolemic / overloaded / mixed / uncertain:

Clinical implication:

17. Examination of Lines, Tubes, and Devices

Check:

- IV cannulas
- central lines
- urinary catheter
- drains
- feeding tubes
- oxygen devices
- monitoring devices
- wound drains
- stomas
- dialysis access
- pacemaker or implant sites

For each, ask:

- Is it needed?
- Is it working?
- Is there infection?
- Is it causing discomfort?
- Is it limiting mobility?
- Can it be removed?

Findings:

Devices that may be removed or reviewed:

18. Examination for Medication Harm

Look specifically for medicine-related harm.

Examples:

Opioids or Sedatives

- drowsiness
- confusion
- slow breathing
- constipation

falls

Diuretics or Antihypertensives

dizziness

hypotension

dehydration

falls

AKI

Anticoagulants

bruising

bleeding

black stool

neurological signs after fall

Insulin or Glucose-Lowering Medicines

sweating

tremor

confusion

drowsiness

falls

low glucose

Steroids

infection signs

hyperglycemia

delirium

weakness

fluid retention

Possible medication harm:

Medicines to review:

19. Examination Before Discharge

Before discharge, examine for safety, not only disease improvement.

Assess:

vital signs stable

breathing safe

circulation safe

pain controlled

cognition safe or supported

mobility safe or supported

- hydration adequate
- eating and drinking
- urine output
- bowels
- wounds
- devices removed or managed
- medicine side effects
- ability to self-care
- caregiver readiness

Discharge examination findings:

Remaining risks:

Safe to discharge?

Yes / No / Needs further assessment

20. Focused Emergency Examination

When the patient is acutely unwell, use an emergency structure such as ABCDE according to local practice.

Airway

Patent / threatened:

Breathing

Respiratory rate, oxygen saturation, work of breathing, chest signs:

Circulation

Pulse, blood pressure, perfusion, bleeding, fluid status:

Disability

Consciousness, glucose, pupils, neurological signs:

Exposure

Temperature, rash, abdomen, wounds, injury, devices:

Immediate action:

Escalation needed:

21. Examination Summary

After examining, summarize.

General Impression

Key Positive Findings

Key Negative Findings

Danger Signs

Capacity Failures

Most Likely Syndrome

Working Diagnosis

Dangerous Alternatives

Immediate Plan

22. Presenting Examination Findings

A clear presentation is concise and interpreted.

Weak:

“Chest had crackles, heart sounds normal, abdomen soft.”

Stronger:

“She is alert but mildly breathless at rest. Respiratory rate is elevated, oxygen requirement has increased, and there are right basal crackles. Blood pressure is stable and there are no signs of fluid overload. This supports pneumonia with worsening oxygenation, though PE and heart failure still need consideration because symptoms have deteriorated.”

A good examination presentation includes meaning.

23. Common Student Pitfalls

Pitfall 1: Examining the System but Not the Patient

Always begin with the whole patient.

Pitfall 2: Ignoring Vital Sign Trends

Trends often reveal deterioration before diagnosis is clear.

Pitfall 3: Not Checking Function

Function determines safety, especially before discharge.

Pitfall 4: Missing Delirium

A quiet patient may still be delirious.

Pitfall 5: Forgetting Medication Harm

Examination should look for treatment complications.

Pitfall 6: Over-Interpreting One Sign

Signs must be interpreted in context.

Pitfall 7: Not Re-Examining After Treatment

Treatment response is clinical data.

Pitfall 8: Not Explaining Findings

Patients deserve to know what the examination suggests.

One-Page Examination Template

Consent, Comfort, Privacy

First Look

Sick or not sick? Distress? Breathing? Consciousness? Pain? Devices?

Vital Signs

Temperature:

Pulse:

Blood pressure:

Respiratory rate:

Oxygen saturation and oxygen device:

Pain:

Glucose where relevant:

General Examination

Pallor / cyanosis / jaundice / edema / hydration / rash / frailty / distress:

Cardiovascular

Pulse, JVP, heart sounds, murmurs, edema, perfusion:

Respiratory

Work of breathing, expansion, percussion, breath sounds, crackles, wheeze:

Abdomen
Distension, tenderness, guarding, masses, organomegaly, bowels, bladder:

Neurological
Mental state, cranial nerves, power, sensation, reflexes, coordination, gait:

Musculoskeletal
Look, feel, move, function:

Skin and Wounds

Function
Transfers, walking, stairs, eating, drinking, toileting, falls risk:

Cognition and Delirium
Attention, orientation, fluctuation, baseline comparison:

Devices
Lines, catheters, drains, oxygen, monitoring:

Medication Harm Signs

Examination Interpretation
Danger:

Syndrome:

Capacity failure:

Working diagnosis:

Dangerous alternatives:

Immediate action:

Worked Example

Patient
78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia.

First Look

Sitting in chair, tired, mildly confused, not breathless at rest, no oxygen, daughter present.

Vital Signs

Afebrile, oxygenation safe on room air, blood pressure lower than usual but not shock, pulse regular, glucose stable today.

Respiratory

Right basal crackles improving, no increased work of breathing.

Cardiovascular and Volume

Mild ankle edema, no severe fluid overload, no obvious dehydration, urine output needs monitoring.

Neurological and Cognition

Attention fluctuates. Daughter says she is still not baseline. No focal neurological deficit.

Abdomen

Soft, mildly distended, constipation likely.

Musculoskeletal and Function

Weak sit-to-stand, afraid to walk, needs supervision, knee pain limits mobility.

Medication Harm Screen

NSAIDs stopped. Avoid sedatives. Opioid use may worsen constipation and confusion.

Interpretation

Pneumonia and oxygenation have improved, but cognition, mobility, bowel clearance, pain, renal safety, and discharge function remain fragile.

Plan

Continue delirium care, treat constipation, review pain plan, monitor renal function and glucose, involve physiotherapy and pharmacy, confirm daughter support, and do not discharge until mobility and medicines are safe.

Final Reminder

A complete examination is not complete because every body system was touched.

It is complete when the clinician can answer:

Is the patient safe now?
What signs confirm the syndrome?
Which capacities are failing?
What diagnosis is likely?
What must not be missed?
What treatment, escalation, de-escalation, monitoring, or discharge decision follows?

Examination is clinical reasoning through the body.

Appendix D. Common Presenting Complaint Frameworks

This appendix provides practical frameworks for common clinical presentations in Internal Medicine.

Each framework follows the same life-coherent structure:

Danger → Syndrome → Capacity Failure → Key Questions → Examination Focus → Initial Tests → Wise Next Step → Safety-Net

The purpose is not to memorize every possible diagnosis.

The purpose is to reason safely.

For every presenting complaint, ask:

What is dangerous?
What syndrome is present?
Which life-capacity is failing?
What must not be missed?
What does this patient need next?

1. Chest Pain

Chest pain must be treated as dangerous until serious causes are considered.

Immediate Danger

Do not miss:

- myocardial infarction or acute coronary syndrome
- pulmonary embolism
- aortic disease
- pneumothorax
- pericarditis with complications
- severe pneumonia
- esophageal rupture where relevant
- serious abdominal causes mimicking chest pain

Syndrome Questions

Ask:

- When did it start?
- Sudden or gradual?
- Where is the pain?
- What does it feel like?
- Does it radiate to arm, jaw, back, shoulder, or epigastrium?
- Is it exertional?
- Does it occur at rest?
- Is it pleuritic?
- Is it positional?
- Is it associated with breathlessness, sweating, nausea, fainting, palpitations, cough, fever, or leg swelling?
- Any previous heart disease?

- Any clot risk?
- Any trauma?
- Any cocaine or stimulant use where relevant?
- What medicines are taken, especially anticoagulants?

Capacity Failure

Consider:

- circulation
- oxygenation
- perfusion
- pain and distress
- anxiety after danger assessed

Examination Focus

Assess:

- general appearance
- vital signs
- oxygen saturation
- pulse rhythm
- blood pressure
- signs of shock
- heart sounds
- murmurs
- chest signs
- calf swelling or tenderness
- chest wall tenderness
- abdominal tenderness where relevant

Initial Tests

According to local pathway, consider:

- ECG
- troponin or cardiac markers
- chest imaging
- blood tests
- oxygenation assessment
- PE pathway tests where indicated

Wise Next Step

If unstable, escalate urgently.

If stable but concerning, follow local chest pain pathway.

If reassuring, safety-net clearly and arrange follow-up if symptoms persist or risk remains.

Safety-Net

Seek urgent help if:

- chest pain returns or worsens
- pain occurs with exertion
- pain spreads to arm, jaw, back, or neck
- breathlessness, sweating, fainting, nausea, or palpitations occur
- pain does not settle
- new weakness or collapse occurs

2. Breathlessness

Breathlessness is a high-risk symptom because oxygenation, ventilation, circulation, and anxiety may all be involved.

Immediate Danger

Do not miss:

- asthma or COPD exacerbation
- pneumonia
- heart failure
- pulmonary embolism
- pneumothorax
- myocardial ischemia
- arrhythmia
- anaphylaxis
- sepsis
- anemia
- metabolic acidosis
- airway obstruction

Syndrome Questions

Ask:

- When did breathlessness start?
- Sudden or gradual?
- At rest or exertion?
- Can the patient speak full sentences?
- Is there wheeze?
- Is there cough or sputum?
- Fever?
- Chest pain?
- Leg swelling?
- Orthopnea or waking breathless?
- Recent immobilization, surgery, travel, cancer, pregnancy, or clot history?

- Smoking history?
- Known COPD, asthma, heart failure, anemia, kidney disease?
- Any inhaler use?
- Any oxygen use at baseline?
- Any new medicine or allergy exposure?

Capacity Failure

Consider:

- oxygenation
- ventilation
- circulation
- defense
- clearance
- comfort
- mobility

Examination Focus

Assess:

- respiratory rate
- oxygen saturation and oxygen requirement
- work of breathing
- ability to speak
- wheeze
- crackles
- reduced air entry
- signs of pneumothorax or effusion
- heart rate and rhythm
- blood pressure
- fluid status
- edema
- JVP where appropriate
- fever or sepsis signs

Initial Tests

According to local pathway, consider:

- oxygen saturation and blood gas where needed
- chest imaging
- ECG
- blood tests
- infection markers
- renal function and electrolytes

hemoglobin

PE pathway tests where indicated

Wise Next Step

Treat hypoxia immediately.

Escalate if severe, worsening, tiring, confused, hypotensive, or requiring increasing oxygen.

Identify whether the main driver is lung, heart, blood, clot, infection, metabolic, or airway.

Safety-Net

Seek urgent help if:

breathing worsens

unable to speak full sentences

chest pain occurs

lips or fingers turn blue

confusion or drowsiness develops

fainting occurs

oxygen requirement rises

fever returns with breathlessness

3. Fever

Fever may be simple, but fever with capacity failure is dangerous.

Immediate Danger

Do not miss:

sepsis

meningitis or encephalitis

pneumonia

pyelonephritis

intra-abdominal infection

cellulitis with systemic illness

endocarditis

infected line or device

neutropenic sepsis

tropical or travel-related infection

drug fever

inflammatory disease

Syndrome Questions

Ask:

How long has there been fever?

Highest temperature?

Chills or rigors?

- Confusion?
- Breathlessness?
- Cough?
- Urinary symptoms?
- Abdominal pain?
- diarrhea or vomiting?
- Headache or neck stiffness?
- Rash?
- Wounds?
- Recent surgery or procedure?
- Indwelling catheter, line, drain, prosthesis?
- Recent antibiotics?
- Immunosuppression?
- Travel or sick contacts?
- Animal, insect, food, water, or occupational exposure?

Capacity Failure

Consider:

- defense
- circulation
- oxygenation
- brain coordination
- clearance
- energy regulation

Examination Focus

Assess:

- vital signs
- mental state
- hydration
- perfusion
- respiratory system
- abdomen
- urinary tract signs
- skin and wounds
- joints
- neck stiffness where relevant
- lines and devices
- lymph nodes
- signs of shock

Initial Tests

According to local pathway, consider:

- blood tests
- cultures before antibiotics where appropriate and safe
- urine testing
- chest imaging
- lactate or sepsis markers where used
- renal function and electrolytes
- source-specific testing

Wise Next Step

If systemic illness, hypotension, confusion, hypoxia, reduced urine, or immunosuppression is present, escalate and treat urgently according to local sepsis or infection pathway.

If stable, identify source, treat appropriately, and safety-net.

Safety-Net

Seek urgent help if:

- fever persists or worsens
- confusion develops
- breathlessness occurs
- chest pain occurs
- severe headache or neck stiffness occurs
- rash with severe illness appears
- unable to drink
- urine output falls
- severe weakness or dizziness occurs

4. Confusion

New confusion is acute brain dysfunction until proven otherwise.

Immediate Danger

Do not miss:

- hypoglycemia
- hypoxia
- sepsis
- stroke
- seizure
- head injury
- medication toxicity
- AKI or electrolyte disturbance
- alcohol or sedative withdrawal

- meningitis or encephalitis
- urinary retention
- constipation
- severe pain
- delirium
- poisoning or overdose

Syndrome Questions

Ask patient, family, or caregiver:

- Is confusion new?
- When did it start?
- Does it fluctuate?
- Is attention poor?
- More sleepy or more agitated?
- Any hallucinations?
- Fever?
- Breathlessness?
- Fall or head injury?
- New weakness or speech change?
- Poor intake?
- Reduced urine?
- Pain?
- Constipation?
- Urinary retention?
- New medicines?
- Sedatives, opioids, anticholinergics, steroids, antibiotics?
- Alcohol or drug withdrawal risk?
- What is baseline cognition?

Capacity Failure

Consider:

- brain coordination
- energy regulation
- oxygenation
- defense
- clearance
- comfort
- mobility and safety
- agency

Examination Focus

Assess:

- vital signs
- oxygen saturation
- glucose
- alertness
- attention
- orientation
- neurological signs
- hydration
- chest
- abdomen
- bladder distension
- constipation
- pain
- skin and wounds
- medication chart
- falls or injury signs

Initial Tests

According to local pathway, consider:

- glucose
- oxygenation assessment
- blood tests
- renal function and electrolytes
- infection screen
- urine testing where appropriate
- ECG where relevant
- imaging if head injury, focal neurology, or concern exists
- medication review

Wise Next Step

Treat reversible dangers first: glucose, oxygen, infection, pain, retention, constipation, medicine harm, dehydration, electrolytes.

Avoid reflex sedation.

Escalate if reduced consciousness, focal neurology, unsafe agitation, sepsis, hypoxia, or diagnosis uncertain with danger.

Safety-Net

Seek urgent help if:

- confusion worsens
- drowsiness develops

- agitation becomes unsafe
- fever develops
- poor intake occurs
- reduced urine occurs
- fall occurs
- new weakness, speech change, or seizure occurs
- caregiver cannot cope

5. Falls

A fall is not automatically mechanical.

It may be a symptom of acute illness, syncope, medicine harm, weakness, delirium, or environmental danger.

Immediate Danger

Do not miss:

- head injury
- fracture
- intracranial bleeding, especially with anticoagulation
- syncope
- arrhythmia
- stroke
- hypoglycemia
- sepsis
- postural hypotension
- medication toxicity
- delirium
- alcohol or sedative effect

Syndrome Questions

Ask:

- What happened before the fall?
- Trip or collapse?
- Any dizziness?
- Any blackout?
- Any chest pain or palpitations?
- Any weakness or speech change?
- Any seizure features?
- Any head strike?
- Any pain after the fall?
- Can the patient stand or walk now?
- Any anticoagulants?

- Any previous falls?
- Any new medicines?
- Any sedatives, opioids, antihypertensives, diuretics, or hypoglycemia-risk medicines?
- Any poor intake, fever, or confusion?
- What is baseline mobility?

Capacity Failure

Consider:

- mobility
- circulation regulation
- brain coordination
- energy regulation
- clearance
- comfort
- support

Examination Focus

Assess:

- injury
- head and neck
- neurological exam
- pain sites
- hips and limbs
- gait if safe
- blood pressure and postural symptoms where appropriate
- pulse rhythm
- glucose
- hydration
- mental state
- medication effects
- vision, feet, footwear, walking aid

Initial Tests

According to local pathway, consider:

- glucose
- ECG
- blood tests
- imaging if injury or head injury risk
- orthostatic assessment where appropriate
- medication review

Wise Next Step

Treat injuries and identify cause.

Do not discharge after a fall without assessing mobility, cognition, medicines, anticoagulation, home safety, and recurrence risk.

Safety-Net

Seek urgent help if:

- headache, vomiting, confusion, drowsiness, weakness, or seizure occurs after head injury
- pain worsens
- unable to walk
- another fall occurs
- dizziness, fainting, chest pain, or palpitations occur
- caregiver cannot manage

6. Abdominal Pain

Abdominal pain may be benign, but serious causes can evolve.

Immediate Danger

Do not miss:

- perforation
- obstruction
- ischemic bowel
- appendicitis
- cholecystitis or cholangitis
- pancreatitis
- ectopic pregnancy where relevant
- ruptured aneurysm
- GI bleeding
- severe constipation with obstruction
- urinary retention
- pyelonephritis
- sepsis
- malignancy

Syndrome Questions

Ask:

- Where is the pain?
- Sudden or gradual?
- Constant or colicky?
- Severity?
- Radiation to back, shoulder, groin?
- Vomiting?

- Diarrhea?
- Constipation?
- Blood in stool?
- Black stool?
- Fever?
- Urinary symptoms?
- Jaundice?
- Weight loss?
- Appetite loss?
- Last bowel movement?
- Passing wind?
- Previous surgery?
- Pregnancy possibility where relevant?
- Alcohol use?
- NSAIDs or anticoagulants?
- Similar episodes?

Capacity Failure

Consider:

- digestion and absorption
- circulation
- defense
- clearance
- comfort
- hydration
- nutrition

Examination Focus

Assess:

- vital signs
- general appearance
- hydration
- abdominal distension
- tenderness
- guarding or rigidity
- rebound where appropriate
- bowel sounds where relevant
- hernias
- scars
- jaundice

- rectal exam where indicated
- urinary retention signs
- pelvic or testicular examination where relevant and appropriate

Initial Tests

According to local pathway, consider:

- blood tests
- liver and pancreatic tests
- renal function and electrolytes
- urine testing
- pregnancy test where relevant
- imaging
- stool or bleeding assessment where indicated

Wise Next Step

Escalate urgently if severe pain, peritonism, shock, persistent vomiting, GI bleeding, obstruction signs, fever with systemic illness, or high-risk pregnancy concern.

If stable, investigate according to syndrome and safety-net clearly.

Safety-Net

Seek urgent help if:

- pain becomes severe or localized
- fever develops
- persistent vomiting occurs
- abdomen becomes swollen
- unable to pass stool or wind
- black stool or bleeding occurs
- fainting or severe weakness occurs
- unable to drink
- jaundice appears

7. Dizziness and Syncope

Dizziness may be benign, but syncope and presyncope require danger assessment.

Immediate Danger

Do not miss:

- arrhythmia
- myocardial infarction
- pulmonary embolism
- stroke or posterior circulation event
- hypoglycemia
- bleeding

- sepsis
- dehydration
- postural hypotension
- medication effect
- seizure
- severe anemia

Syndrome Questions

Ask:

- Is it spinning, lightheadedness, imbalance, faintness, or weakness?
- Did the patient lose consciousness?
- How long did it last?
- What was the patient doing?
- Any standing trigger?
- Any chest pain?
- Palpitations?
- Breathlessness?
- Black stool or bleeding?
- Vomiting or diarrhea?
- Poor intake?
- New medicines?
- Diuretics or blood pressure medicines?
- Diabetes medicines?
- Any neurological symptoms?
- Any hearing symptoms?
- Any head injury?
- Previous episodes?

Capacity Failure

Consider:

- circulation regulation
- brain perfusion
- vestibular function
- energy regulation
- mobility
- medication safety

Examination Focus

Assess:

- vital signs
- pulse rhythm

- postural symptoms and blood pressure where appropriate
- hydration
- cardiac exam
- neurological exam
- gait
- ear or vestibular features where relevant
- glucose
- signs of bleeding

Initial Tests

According to local pathway, consider:

- ECG
- glucose
- blood tests
- hemoglobin
- renal function and electrolytes
- pregnancy test where relevant
- imaging if neurological concern
- rhythm monitoring where indicated

Wise Next Step

Syncope with chest pain, palpitations, exertion, injury, abnormal ECG, hypotension, breathlessness, neurological signs, or serious comorbidity requires urgent assessment.

Safety-Net

Seek urgent help if:

- fainting recurs
- chest pain occurs
- palpitations occur
- breathlessness occurs
- weakness or speech difficulty occurs
- black stool or bleeding occurs
- severe headache occurs
- fall or injury occurs

8. Weakness and Fatigue

Weakness and fatigue are common and often multifactorial.

The danger is missing serious illness while also avoiding premature dismissal.

Immediate Danger

Do not miss:

- sepsis

- anemia
- heart failure
- malignancy
- endocrine disease
- renal failure
- electrolyte disturbance
- hypoglycemia or hyperglycemia
- depression with suicidality
- neurological disease
- medication toxicity
- inflammatory disease
- malnutrition
- sleep disorder
- chronic infection

Syndrome Questions

Ask:

- Fatigue or true muscle weakness?
- Sudden or gradual?
- Generalized or focal?
- Worse with exertion?
- Better with rest?
- Weight loss?
- Fever or night sweats?
- Breathlessness?
- Chest pain?
- Mood change?
- Sleep quality?
- Appetite?
- Bleeding?
- Pain?
- New medicines?
- Alcohol or substance use?
- Functional impact?
- Work, stress, caregiving burden?
- Any focal neurological symptoms?

Capacity Failure

Consider:

- energy regulation

- oxygen delivery
- circulation
- endocrine-metabolic balance
- muscle function
- sleep restoration
- mood and agency
- nutrition

Examination Focus

Assess:

- general appearance
- pallor
- weight loss
- lymph nodes
- thyroid signs
- heart and lungs
- abdomen
- neurological power
- gait
- edema
- skin and nails
- mood and affect

Initial Tests

According to local pathway and context, consider:

- blood count
- renal and liver function
- electrolytes
- glucose
- thyroid testing
- inflammatory markers
- iron, B12, or other nutritional tests where indicated
- urine testing
- ECG or imaging when indicated

Wise Next Step

Look for danger, define pattern, assess function, review medicines, screen mood and sleep, and arrange follow-up if initial assessment is unclear.

Safety-Net

Seek urgent help if:

- sudden weakness occurs

- one-sided weakness or speech problem occurs
- chest pain or breathlessness occurs
- fainting occurs
- black stool or bleeding occurs
- severe weight loss or fever occurs
- confusion develops
- suicidal thoughts occur

9. Edema and Swelling

Swelling may reflect heart, kidney, liver, vein, lymphatic, medicine, inflammation, or local injury.

Immediate Danger

Do not miss:

- heart failure
- nephrotic syndrome or renal failure
- liver failure
- deep vein thrombosis
- pulmonary embolism
- cellulitis
- compartment syndrome
- severe allergic swelling
- medication-induced edema
- malignancy-related obstruction

Syndrome Questions

Ask:

- Where is the swelling?
- One-sided or both sides?
- Sudden or gradual?
- Painful or painless?
- Worse by evening?
- Better with elevation?
- Breathlessness?
- Orthopnea?
- Weight gain?
- Reduced urine?
- Frothy urine?
- Abdominal swelling?
- Jaundice?
- Fever?

- Recent travel or immobility?
- Cancer history?
- New medicines such as calcium-channel blockers, NSAIDs, steroids, or hormones?
- Pregnancy possibility where relevant?

Capacity Failure

Consider:

- circulation
- clearance
- protein balance
- venous return
- lymphatic drainage
- skin integrity
- mobility

Examination Focus

Assess:

- distribution of edema
- pitting or non-pitting
- symmetry
- tenderness
- redness or warmth
- calf size difference
- JVP
- lung crackles
- heart signs
- abdominal ascites
- liver signs
- skin breakdown
- blood pressure
- urine output

Initial Tests

According to local pathway, consider:

- renal function and electrolytes
- urine protein
- liver function
- albumin
- cardiac markers where indicated
- chest imaging
- ECG

- venous ultrasound if DVT suspected

Wise Next Step

If breathless, hypoxic, unilateral painful swelling, infection signs, or severe renal/cardiac/liver concerns, escalate.

If stable, identify systemic versus local cause and review medicines.

Safety-Net

Seek urgent help if:

- breathlessness worsens
- chest pain occurs
- one leg becomes painful, red, or suddenly swollen
- urine output falls
- confusion develops
- fever occurs
- swelling rapidly worsens
- skin breaks down or becomes infected

10. Weight Loss

Unintentional weight loss requires careful assessment.

Immediate Danger

Do not miss:

- malignancy
- chronic infection
- endocrine disease
- inflammatory disease
- malabsorption
- depression
- dementia
- eating disorder
- heart failure or COPD cachexia
- medication side effects
- food insecurity
- dysphagia
- alcohol or substance use

Syndrome Questions

Ask:

- How much weight loss?
- Over what timeframe?
- Intentional or unintentional?

- Appetite change?
- Early satiety?
- Swallowing difficulty?
- Vomiting?
- diarrhea?
- Blood in stool?
- Cough or coughing blood?
- Fever or night sweats?
- Pain?
- Mood symptoms?
- Memory change?
- Alcohol or substance use?
- Food access?
- New medicines?
- Cancer screening history where relevant?
- Functional decline?

Capacity Failure

Consider:

- nutrition
- energy regulation
- digestion and absorption
- defense
- mood and agency
- social support

Examination Focus

Assess:

- general appearance
- BMI or weight trend where available
- lymph nodes
- mouth and swallowing clues
- thyroid signs
- chest
- abdomen
- rectal exam where indicated
- breast, prostate, pelvic, or testicular exam where relevant and appropriate
- skin
- mood and cognition

Initial Tests

According to local pathway and symptoms, consider:

- blood count
- renal and liver function
- inflammatory markers
- thyroid testing
- glucose
- stool testing where indicated
- chest imaging
- age-appropriate cancer investigation pathways
- nutritional markers where useful

Wise Next Step

Do not dismiss weight loss as aging.

Identify red flags, investigate proportionately, review mood and food access, and arrange follow-up.

Safety-Net

Seek urgent review if:

- weight loss continues
- vomiting or swallowing difficulty develops
- black stool or bleeding occurs
- severe weakness develops
- fever or night sweats persist
- new pain appears
- breathlessness or coughing blood occurs

11. Headache

Most headaches are not dangerous, but red flags matter.

Immediate Danger

Do not miss:

- subarachnoid hemorrhage
- meningitis or encephalitis
- stroke
- intracranial mass
- temporal arteritis where relevant
- hypertensive emergency where relevant
- venous sinus thrombosis
- head injury complications
- carbon monoxide exposure
- glaucoma where relevant

Syndrome Questions

Ask:

- Sudden or gradual?
- Thunderclap onset?
- Worst headache ever?
- New headache?
- Change in pattern?
- Fever?
- Neck stiffness?
- Rash?
- Confusion?
- Seizure?
- Weakness or speech change?
- Visual symptoms?
- Jaw pain or scalp tenderness where relevant?
- Head injury?
- Pregnancy or postpartum where relevant?
- Cancer or immunosuppression?
- Anticoagulation?
- Triggered by exertion, cough, or sex?
- Morning vomiting?
- Previous migraine history?

Capacity Failure

Consider:

- brain coordination
- circulation
- defense
- vision
- comfort
- agency

Examination Focus

Assess:

- vital signs
- mental state
- neck stiffness
- neurological exam
- fundoscopy where appropriate and available
- temporal artery tenderness where relevant
- rash

- eye redness or vision change
- signs of trauma

Initial Tests

According to local pathway, consider:

- urgent imaging where red flags
- blood tests where infection, inflammation, or systemic disease suspected
- lumbar puncture only where appropriate and according to pathway
- eye assessment where indicated

Wise Next Step

Urgent assessment is needed for thunderclap headache, neurological deficit, fever with neck stiffness, confusion, seizure, papilledema concern, pregnancy-related severe headache, immunosuppression, cancer, head injury with risk, or new severe headache in older patient.

Safety-Net

Seek urgent help if:

- headache is sudden and severe
- weakness, speech trouble, confusion, or seizure occurs
- fever or neck stiffness develops
- vomiting persists
- vision changes occur
- drowsiness occurs
- headache worsens rapidly
- headache follows head injury with concerning symptoms

12. Vomiting and Diarrhea

Vomiting and diarrhea can be simple gastroenteritis or serious illness.

Immediate Danger

Do not miss:

- dehydration
- AKI
- sepsis
- bowel obstruction
- surgical abdomen
- GI bleeding
- diabetic ketoacidosis or metabolic crisis
- pregnancy-related complications where relevant
- medication toxicity
- adrenal crisis where relevant
- severe electrolyte disturbance
- infectious outbreak or severe colitis

Syndrome Questions

Ask:

- Onset and duration?
- Vomiting, diarrhea, or both?
- Blood in vomit or stool?
- Black stool?
- Fever?
- Abdominal pain?
- Severe localized pain?
- Unable to keep fluids?
- Reduced urine?
- Dizziness or fainting?
- Recent antibiotics?
- Sick contacts?
- Travel or food exposure?
- Diabetes?
- Kidney disease?
- Immunosuppression?
- Medicines: diuretics, ACE inhibitors, ARBs, NSAIDs, diabetes medicines?
- Pregnancy possibility where relevant?

Capacity Failure

Consider:

- hydration
- clearance
- electrolytes
- energy regulation
- circulation
- defense
- nutrition

Examination Focus

Assess:

- vital signs
- hydration
- perfusion
- abdomen
- mental state
- urine output
- weight or fluid loss where available

- signs of sepsis
- signs of obstruction
- rectal exam where indicated

Initial Tests

According to local pathway, consider:

- renal function and electrolytes
- glucose and ketones where relevant
- blood count
- infection testing where indicated
- stool tests where severe, bloody, persistent, outbreak, travel, or immunosuppression
- imaging if obstruction or surgical concern

Wise Next Step

Assess dehydration and danger.

Hold or review medicines that can worsen AKI or hypoglycemia during poor intake according to local guidance.

Escalate if shock, confusion, severe abdominal pain, blood, persistent vomiting, severe dehydration, AKI, or high-risk patient.

Safety-Net

Seek urgent help if:

- unable to keep fluids down
- reduced urine
- confusion or drowsiness
- severe abdominal pain
- blood or black stool
- persistent fever
- fainting
- repeated low sugars
- symptoms persist or worsen

13. Cough

Cough may reflect infection, asthma, COPD, heart failure, reflux, medication effect, malignancy, or chronic lung disease.

Immediate Danger

Do not miss:

- pneumonia
- pulmonary embolism
- heart failure
- asthma or COPD exacerbation
- tuberculosis where relevant
- lung cancer

- aspiration
- pneumothorax
- hemoptysis with serious cause

Syndrome Questions

Ask:

- Duration?
- Dry or productive?
- Sputum color or amount?
- Blood?
- Fever?
- Breathlessness?
- Chest pain?
- Wheeze?
- Weight loss or night sweats?
- Smoking?
- Occupational exposure?
- TB contact?
- Recent choking or aspiration?
- Heart failure symptoms?
- Reflux symptoms?
- New ACE inhibitor or other medication?
- Immunosuppression?
- Recurrent infections?

Capacity Failure

Consider:

- oxygenation
- defense
- airway clearance
- circulation
- nutrition
- comfort

Examination Focus

Assess:

- vital signs
- oxygen saturation
- work of breathing
- chest auscultation
- wheeze

- crackles
- focal signs
- heart failure signs
- lymph nodes
- weight loss
- oral and swallowing issues where aspiration possible

Initial Tests

According to local pathway, consider:

- chest imaging
- blood tests
- sputum testing where relevant
- oxygenation assessment
- spirometry later if chronic airway disease suspected and stable
- TB or malignancy pathway where indicated

Wise Next Step

Treat acute danger and identify red flags.

Persistent cough, hemoptysis, weight loss, smoking history, recurrent pneumonia, or abnormal imaging needs follow-up.

Safety-Net

Seek urgent help if:

- breathlessness worsens
- coughing blood occurs
- chest pain occurs
- fever persists
- confusion develops
- weight loss continues
- oxygen levels fall where monitored

14. Palpitations

Palpitations may be benign, but arrhythmia must be considered.

Immediate Danger

Do not miss:

- atrial fibrillation with instability
- supraventricular tachycardia
- ventricular arrhythmia
- myocardial ischemia
- electrolyte disturbance
- thyrotoxicosis

- PE
- drug or stimulant effect
- syncope-related arrhythmia

Syndrome Questions

Ask:

- What does it feel like?
- Fast, irregular, pounding, skipped beats?
- Sudden start or gradual?
- Sudden stop?
- Duration?
- Frequency?
- Associated chest pain?
- Breathlessness?
- fainting or near-fainting?
- Dizziness?
- Triggers: caffeine, alcohol, stress, exercise, stimulants?
- Thyroid symptoms?
- Previous heart disease?
- Family history of sudden death?
- Medicines or recreational drugs?
- Pregnancy where relevant?

Capacity Failure

Consider:

- rhythm coordination
- circulation
- oxygenation
- agency and anxiety

Examination Focus

Assess:

- pulse rate and rhythm
- blood pressure
- signs of shock
- heart sounds
- heart failure signs
- thyroid signs
- anemia signs
- stimulant or withdrawal signs

Initial Tests

According to local pathway, consider:

- ECG
- electrolytes
- thyroid testing where indicated
- blood count
- ambulatory rhythm monitoring where indicated
- cardiac review if concerning

Wise Next Step

Unstable palpitations, syncope, chest pain, severe breathlessness, abnormal ECG, structural heart disease, or family history of sudden death require urgent evaluation.

Safety-Net

Seek urgent help if:

- palpitations occur with chest pain
- fainting or near-fainting occurs
- severe breathlessness occurs
- sustained rapid heartbeat occurs
- new weakness or confusion occurs

15. Leg Pain or Limb Swelling

Leg symptoms may be musculoskeletal, vascular, neurological, infectious, or systemic.

Immediate Danger

Do not miss:

- deep vein thrombosis
- pulmonary embolism
- acute limb ischemia
- cellulitis with sepsis
- septic arthritis
- fracture
- compartment syndrome
- spinal cord or cauda equina concern
- severe gout or inflammatory arthritis with infection mimic

Syndrome Questions

Ask:

- Pain, swelling, redness, weakness, or numbness?
- One leg or both?
- Sudden or gradual?
- Trauma?
- Fever?

- Calf swelling?
- Recent travel, immobility, surgery, cancer, pregnancy, hormones?
- Chest pain or breathlessness?
- Cold limb?
- Color change?
- Numbness or weakness?
- Back pain?
- Bladder or bowel symptoms?
- Joint swelling?
- Can the patient weight-bear?
- Anticoagulants?
- Diabetes or vascular disease?

Capacity Failure

Consider:

- mobility
- circulation
- defense
- nerve function
- comfort
- skin integrity

Examination Focus

Assess:

- pulses
- capillary refill
- temperature
- color
- swelling
- tenderness
- range of motion
- joint warmth
- calf size asymmetry
- skin infection signs
- neurological function
- gait and weight-bearing
- back or spine signs where relevant

Initial Tests

According to local pathway, consider:

- DVT pathway testing

- imaging for fracture or joint concern
- infection blood tests
- vascular imaging if ischemia concern
- joint aspiration where septic arthritis possible and according to local pathway

Wise Next Step

Cold pulseless limb, severe pain with neurological signs, suspected septic arthritis, DVT with PE symptoms, or cellulitis with systemic illness requires urgent escalation.

Safety-Net

Seek urgent help if:

- leg becomes cold, pale, blue, numb, or weak
- severe pain develops
- fever or spreading redness occurs
- breathlessness or chest pain occurs
- unable to walk
- swelling rapidly worsens

16. Anemia or Low Hemoglobin

Anemia is not a diagnosis. It is a signal.

Immediate Danger

Do not miss:

- active bleeding
- GI malignancy
- severe iron deficiency
- hemolysis
- bone marrow disease
- chronic kidney disease
- inflammatory disease
- nutritional deficiency
- anticoagulant-related bleeding
- anemia causing cardiac ischemia or heart failure

Syndrome Questions

Ask:

- Fatigue?
- Breathlessness?
- Chest pain?
- Dizziness or fainting?
- Palpitations?
- Black stool?

- Blood in stool?
- Vomiting blood?
- Heavy menstruation where relevant?
- Weight loss?
- Appetite change?
- Abdominal pain?
- Diet?
- Alcohol use?
- Kidney disease?
- Chronic inflammation?
- Medicines: anticoagulants, antiplatelets, NSAIDs?
- Previous anemia?
- Family history?

Capacity Failure

Consider:

- oxygen delivery
- circulation
- energy regulation
- clearance
- nutrition

Examination Focus

Assess:

- pallor
- heart rate
- blood pressure
- signs of heart failure
- abdominal masses or tenderness
- rectal exam where indicated
- lymph nodes
- jaundice
- bruising
- neurological signs of B12 deficiency where relevant

Initial Tests

According to local pathway, consider:

- blood count pattern
- iron studies
- B12 and folate where indicated
- renal function

- liver tests
- inflammatory markers
- hemolysis screen where indicated
- stool or GI evaluation where indicated

Wise Next Step

Assess stability and cause.

Severe symptoms, chest pain, syncope, active bleeding, or hemodynamic instability require urgent care.

Iron deficiency in adults often needs explanation, not just iron replacement.

Safety-Net

Seek urgent help if:

- black stool or bleeding occurs
- chest pain occurs
- fainting occurs
- severe breathlessness occurs
- weakness rapidly worsens
- vomiting blood occurs

17. Low Mood or Anxiety

Psychological symptoms are real clinical presentations and may coexist with physical illness.

Immediate Danger

Do not miss:

- suicidal intent
- self-harm
- psychosis
- severe depression
- substance withdrawal
- domestic violence or abuse
- delirium or medical cause of behavior change
- thyroid disease
- medication effects
- chronic pain or serious illness distress

Syndrome Questions

Ask:

- How long has mood been low or anxiety present?
- Sleep?
- Appetite?
- Energy?
- Concentration?

- Interest?
- Guilt or hopelessness?
- Panic symptoms?
- Trauma?
- Stressors?
- Pain or chronic illness?
- Alcohol or substance use?
- Medicines, steroids, stimulants, withdrawal?
- Thoughts of self-harm?
- Any plan or intent?
- Protective factors?
- Support network?
- Previous mental health history?

Capacity Failure

Consider:

- agency
- emotion regulation
- sleep
- energy
- social connection
- safety
- function

Examination Focus

Assess mental state:

- appearance
- behavior
- speech
- mood
- affect
- thought content
- perception
- cognition
- insight
- judgment
- risk

Also assess physical causes where relevant.

Initial Tests

When clinically indicated, consider:

- thyroid testing
- blood count
- metabolic tests
- substance-related assessment
- medication review
- physical illness assessment

Wise Next Step

If suicidal intent, psychosis, severe self-neglect, unsafe home, or withdrawal risk is present, escalate urgently.

If stable, create support, treatment plan, follow-up, and safety-net.

Safety-Net

Seek urgent help if:

- suicidal thoughts intensify
- a plan or intent develops
- unable to stay safe
- hallucinations or paranoia worsen
- severe withdrawal symptoms occur
- unable to eat, sleep, or function
- no support is available

18. “Not Right” or General Decline in a Frail Patient

This is one of the most important Internal Medicine presentations.

The patient may not present with classic symptoms.

Immediate Danger

Do not miss:

- sepsis
- hypoxia
- hypoglycemia
- AKI
- electrolyte disturbance
- stroke
- myocardial infarction
- medication toxicity
- pain
- constipation
- urinary retention
- dehydration
- fall injury
- delirium

- caregiver collapse
- end-of-life transition

Syndrome Questions

Ask patient, family, caregiver, or nurse:

- What is different from baseline?
- When did it change?
- Eating less?
- Drinking less?
- Walking less?
- More confused?
- More sleepy?
- More agitated?
- Falling?
- New pain?
- Fever?
- Breathlessness?
- Reduced urine?
- Constipation?
- New medicines?
- Missed medicines?
- Recent infection?
- Recent hospital discharge?
- Can caregiver cope?

Capacity Failure

Consider:

- brain coordination
- mobility
- nutrition
- hydration
- clearance
- defense
- comfort
- agency
- support

Examination Focus

Assess:

- vital signs
- glucose

- oxygenation
- mental state and attention
- hydration and fluid overload
- chest
- abdomen
- bladder and bowels
- pain
- skin and wounds
- mobility
- medication chart
- caregiver concern
- baseline function

Initial Tests

According to local pathway and context, consider:

- blood count
- renal function and electrolytes
- glucose
- infection screen
- urine testing where appropriate
- chest imaging where indicated
- ECG where indicated
- medication review

Wise Next Step

Do not dismiss vague decline.

Identify capacity failures, look for reversible triggers, review medicines, involve family, and assess discharge or home safety.

Escalate if unstable, delirious, dehydrated, hypoxic, unable to walk, unable to drink, or caregiver cannot cope.

Safety-Net

Seek urgent help if:

- confusion worsens
- eating or drinking stops
- urine output falls
- breathlessness occurs
- fever develops
- fall occurs
- severe pain appears
- caregiver cannot manage
- patient becomes drowsy or unsafe

Presenting Complaint Quick Template

For any symptom, use this structure:

1. Immediate Danger

What could kill, disable, or rapidly deteriorate?

2. Syndrome

What pattern is present?

3. Timeline

When did it start, how did it change, and why now?

4. Associated Symptoms

What comes with it?

5. Relevant Negatives

What dangerous features are absent?

6. Capacity Failure

Which life-capacities are affected?

7. Context

Frailty, multimorbidity, medicines, baseline, support, goals.

8. Examination Focus

What must be examined?

9. Initial Tests

What tests will change management?

10. Wise Next Step

Treat, escalate, observe, refer, discharge, safety-net?

11. Safety-Net

What should trigger urgent review?

Worked Example

Presentation

A 78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia presents with “not right,” weakness, poor appetite, and near fall.

Immediate Danger

Delirium, sepsis, hypoxia, hypoglycemia, AKI, electrolyte disturbance, medication toxicity, fall injury, dehydration, heart failure, stroke.

Syndrome

Frail older adult with acute functional and cognitive decline after recent infection.

Timeline

Previously walking with stick and mildly forgetful. Over three days, eating less, more confused, weaker, and nearly fell. NSAID use for knee pain. Diuretic and diabetes medicines may increase risk during poor intake.

Capacity Failure

Brain coordination, mobility, nutrition, hydration, clearance, glucose regulation, comfort, support.

Context

CKD, heart failure, diabetes, mild dementia, chronic pain, frailty, daughter support, home stairs, polypharmacy.

Examination Focus

Vital signs, oxygenation, glucose, mental state, hydration, chest, heart failure signs, abdomen, bladder, bowels, pain, skin, mobility, medication chart.

Initial Tests

Glucose, renal function, electrolytes, infection screen, urine testing where appropriate, chest assessment, ECG if indicated, medication review.

Wise Next Step

Assess urgently, treat reversible triggers, stop harmful medicines, prevent falls, involve daughter, monitor renal function and glucose, consider admission or supported discharge depending on safety.

Safety-Net

Urgent help if confusion worsens, breathlessness, fever, low glucose, reduced urine, fall, severe dizziness, inability to drink, severe pain, or caregiver unable to cope.

Final Reminder

Common presenting complaints become safer when the clinician asks:

What dangerous diagnosis must not be missed?
What syndrome is present?
Which life-capacity is failing?
What context makes this patient vulnerable?
What examination and tests will change management?
What is the safest next step?
What must be safety-netted?

The symptom is the door.

The clinician must walk through it into the patient’s whole living situation.

Appendix E. Clinical Prioritization Checklist

Clinical prioritization is the structured process of deciding what must be done first, what can safely wait, what needs escalation, and what must not be lost.

In Internal Medicine, clinicians are often responsible for many patients, many tasks, and many competing demands at once.

The safe clinician does not simply ask:

“What is next on the list?”

The safe clinician asks:

“What is most dangerous, most time-sensitive, most reversible, and most likely to harm the patient if delayed?”

Clinical prioritization follows the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The First Prioritization Question

Always begin with:

Who is unsafe now?

A patient is unsafe now if there is:

- airway compromise
- severe breathlessness
- rising oxygen requirement
- hypotension or shock
- chest pain with concerning features
- new neurological deficit
- seizure
- reduced consciousness
- new confusion
- severe hypoglycemia
- suspected sepsis
- major bleeding
- severe abdominal pain
- severe electrolyte abnormality
- AKI with reduced urine or dangerous potassium
- overdose or withdrawal risk
- severe uncontrolled pain
- suicidal intent
- unsafe agitation
- fall with injury or anticoagulation risk
- nurse or family concern that patient is “not right”

If any of these are present, routine tasks should wait.

2. The Core Prioritization Order

When overwhelmed, use this order:

1. Immediate Danger

Airway, breathing, circulation, consciousness, glucose, sepsis, bleeding, stroke, chest pain, severe pain, self-harm.

2. Deteriorating Patients

Patients getting worse, needing more oxygen, becoming confused, hypotensive, oliguric, febrile, or more distressed.

3. Critical Results

Dangerous potassium, severe sodium abnormality, very low glucose, major renal deterioration, falling hemoglobin, abnormal ECG, urgent imaging result.

4. Time-Critical Treatments

Antibiotics in suspected sepsis, glucose correction, anticoagulation decisions, emergency medicines, urgent imaging, urgent procedure, reversal or antidote where relevant.

5. High-Risk Medicines

Insulin, anticoagulants, opioids, sedatives, diuretics, potassium, steroids, antibiotics, nephrotoxic medicines, medicines affected by renal or liver function.

6. High-Risk Transitions

Admissions, discharges, transfers, handovers, referrals, end-of-life transitions, patients leaving against advice.

7. Symptom Burden

Pain, breathlessness, nausea, agitation, constipation, anxiety, distress, insomnia when clinically significant.

8. Functional and Safety Issues

Falls risk, delirium, unsafe mobility, unsafe stairs, caregiver inability, unsafe discharge.

9. Routine but Important Tasks

Non-urgent forms, stable results, routine updates, non-urgent referrals, chronic disease optimization, administrative work.

3. The “Sick or Not Sick?” Screen

For each patient, ask quickly:

Do they look unwell?

Are they breathless?

Are they confused?

Are they drowsy?

Are they in severe pain?

Are vital signs abnormal?

Are vital signs worsening?

Is oxygen requirement rising?

Is urine output falling?

Is glucose unsafe?

Is there bleeding?

Is the nurse worried?

Is the family worried?

Is this different from baseline?

If the answer is yes, prioritize review.

4. The “Can This Safely Wait?” Question

For every task, ask:

Can this safely wait?

A task can wait only if:

there is no immediate danger

patient is clinically stable

delay will not worsen outcome

no critical result is pending

no high-risk medicine decision is needed

no urgent communication is required

follow-up responsibility is clear

the task will not be forgotten

If unsure, seek help or reassess.

5. The “What Happens If I Do Not Do This Now?” Test

Ask:

What is the likely consequence if this task is delayed?

High Consequence

Must be done now or escalated.

Examples:

review severe breathlessness

treat severe hypoglycemia

respond to dangerous potassium

assess chest pain

review falling blood pressure

assess new neurological deficit

manage major bleeding

assess suicidal intent

Moderate Consequence

Should be done soon and handed over clearly if delayed.

Examples:

- review rising creatinine
- reassess pain after opioid change
- review recurrent fever
- update family after deterioration
- review delirium triggers
- arrange urgent therapy assessment before discharge

Low Immediate Consequence

Can wait if safely tracked.

Examples:

- routine paperwork
- stable chronic disease review
- non-urgent outpatient referral
- minor administrative clarification
- routine discharge summary for a patient not leaving today

6. Prioritizing Patients on a Ward Round

Before the ward round, identify:

See First

- unstable patients
- patients who deteriorated overnight
- new admissions
- patients with abnormal vital signs
- patients with new confusion
- patients with chest pain or breathlessness
- patients with critical results
- patients awaiting urgent decisions
- patients needing escalation
- patients in severe distress

See Early

- patients with pending discharge today
- patients awaiting procedures
- patients needing medicine decisions
- patients with delirium, falls, AKI, or glucose instability
- patients whose family needs urgent discussion
- patients awaiting transfer

See Later

- stable patients with no overnight events
- routine follow-up patients
- patients awaiting non-urgent investigations
- administrative reviews

7. Prioritizing On-Call Tasks

When on call, divide tasks into four groups.

Immediate

Requires action now.

Examples:

- severe breathlessness
- chest pain
- collapse
- seizure
- reduced consciousness
- severe hypoglycemia
- suspected sepsis
- major bleeding
- dangerous potassium
- severe agitation or self-harm risk

Urgent

Requires action soon.

Examples:

- worsening confusion
- fever with frailty
- reduced urine output
- fall on anticoagulation
- uncontrolled pain
- persistent vomiting
- abnormal lab needing review
- high-risk medicine query

Important but Can Wait Briefly

Examples:

- routine prescribing if patient stable
- non-urgent family update
- stable blood result review
- medication clarification without immediate harm

- discharge paperwork not immediately needed

Can Handover

Examples:

- non-urgent chronic medication optimization
- outpatient referral letter
- routine scan chasing
- stable long-term issue
- administrative tasks

A task handed over must have an owner.

8. Prioritizing Abnormal Results

Review abnormal results by danger.

Immediate Action Results

- dangerously high potassium
- severe hypoglycemia or severe hyperglycemia with illness
- severe sodium abnormality with symptoms
- severe AKI or rapidly rising creatinine
- falling hemoglobin with symptoms or bleeding
- critical imaging result
- ECG with acute dangerous findings
- positive culture in an unwell patient
- severe acidosis where relevant
- very abnormal coagulation with bleeding risk

Soon Action Results

- worsening renal function
- rising inflammatory markers with symptoms
- abnormal liver tests with jaundice or pain
- anemia requiring cause review
- culture result requiring antibiotic adjustment
- abnormal imaging requiring referral
- persistent glucose instability

Routine Review Results

- stable mild abnormalities
- chronic known abnormalities
- results already explained by existing diagnosis
- results that do not change immediate management

Never file a result without asking:

Does this change risk, treatment, follow-up, or discharge?

9. Prioritizing Medicines

High-risk medicine decisions should move up the list.

Prioritize review of:

- insulin with poor intake or hypoglycemia
- anticoagulants with bleeding, falls, procedures, or renal change
- opioids with drowsiness, constipation, delirium, or falls
- sedatives in frailty, delirium, or respiratory disease
- diuretics with AKI, dizziness, hypotension, or heart failure
- ACE inhibitors or ARBs in AKI, hyperkalemia, or hypotension
- NSAIDs in CKD, AKI, heart failure, bleeding risk, or older adults
- antibiotics when sepsis, allergy, renal dosing, or culture results matter
- steroids when infection, glucose, delirium, or adrenal issues matter
- potassium supplements with renal dysfunction
- medicines held during admission that need safe restart decision

Ask:

Could this medicine harm the patient if I delay review?

10. Prioritizing Discharges

Discharge tasks should be prioritized when:

- patient is leaving today
- medicines are complex
- high-risk medicines changed
- caregiver needs instruction
- transport is arranged
- bed pressure is high but safety uncertain
- pending results affect discharge
- function or cognition is borderline
- follow-up is essential
- patient or family is anxious
- discharge delay may cause harm

But discharge should not override acute danger.

Before prioritizing discharge paperwork, ask:

Is any current patient unsafe now?

Then ask:

Is this discharge safe, or are we rushing risk into the home?

11. Prioritizing Communication

Some communication is urgent.

Prioritize communication when:

- patient is deteriorating
- family must be informed of serious change
- goals-of-care decision is needed
- patient lacks capacity
- consent is needed for urgent treatment
- receiving team needs handover
- referral is urgent
- discharge depends on caregiver support
- safeguarding concern exists
- patient wants to leave despite risk
- nurse needs clear monitoring instructions

Routine updates can wait when immediate clinical danger exists, but serious communication should not be neglected.

12. Prioritizing Referrals

Urgent referral is needed when:

- specialist action may prevent harm
- urgent procedure may be required
- diagnosis is dangerous and time-sensitive
- treatment is failing
- patient requires higher level of care
- medicine risk is complex
- mental health or safeguarding danger exists
- palliative symptom crisis is present
- discharge is unsafe without specialist input

Routine referral is appropriate when:

- patient is stable
- issue is important but not time-sensitive
- follow-up is safe
- safety-net is clear

Ask:

Will delay in this referral create harm?

13. Prioritizing Investigations

Order or chase investigations first when results will change urgent management.

Prioritize investigations that answer:

- Is this patient having myocardial infarction?
- Is there stroke?
- Is there sepsis source?
- Is there major bleeding?
- Is there PE or pneumothorax?
- Is there obstruction or perforation?
- Is potassium dangerous?
- Is kidney function worsening?
- Is glucose unsafe?
- Is there fracture or head injury?
- Is discharge unsafe until this result is known?

Do not prioritize tests simply because they are easy.

Prioritize tests that change safety.

14. Prioritizing in Frailty

In frailty, danger may present as:

- confusion
- weakness
- falls
- poor intake
- reduced mobility
- drowsiness
- caregiver concern
- “not right”
- inability to manage at home

Prioritize frail patients when there is:

- acute functional decline
- new delirium
- fall or near fall
- poor oral intake
- reduced urine output
- medicine changes
- uncontrolled pain
- unsafe discharge
- caregiver inability

- recent hospital discharge

Frailty lowers the threshold for review.

Small changes may signal major danger.

15. Prioritizing in Serious Illness

In serious illness, prioritize:

- uncontrolled pain
- severe breathlessness
- agitation
- nausea or vomiting
- family distress
- unclear goals of care
- burdensome treatment without benefit
- possible dying phase
- urgent discharge to preferred place of care
- crisis planning
- comfort medicine availability
- communication with family

The sickest patient is not always the patient needing cure.

A dying patient in distress is a priority.

Comfort is urgent care.

16. Prioritizing When You Are Overloaded

When overloaded:

- stop briefly
- write the task list
- mark immediate danger
- mark time-critical results
- mark high-risk medicines
- mark patients needing reassessment
- ask for help early
- delegate where appropriate
- communicate delays
- hand over unfinished risk

Do not rely on memory when overloaded.

Memory fails under pressure.

17. Asking for Help

Ask for help when:

- more than one patient is unstable
- you cannot review a dangerous problem quickly
- you are unsure what is most urgent
- a task exceeds your competence
- treatment is failing
- patient needs escalation
- ethical or capacity decision is complex
- workload is unsafe
- you are too tired to think clearly

Useful phrase:

“I need help prioritizing. I have one patient with chest pain, one with rising oxygen requirement, and one with dangerous potassium. Can you help me decide and cover one of these?”

Asking for help is patient safety.

18. Delegating Safely

When delegating, be clear.

Say:

- what needs doing
- why it matters
- how urgent it is
- what to report back
- what should trigger escalation
- when it must be completed

Example:

“Please check Mrs. James’ blood glucose now because she is newly confused and diabetic. Tell me immediately if it is low or very high.”

Closed-loop communication prevents missed tasks.

19. Handover of Unfinished Tasks

If you cannot complete a task, hand it over.

A safe handover includes:

- patient identity
- task
- urgency
- reason
- current risk

what has been done

what remains to do

what result is pending

what action is needed if abnormal

who has been informed

Weak:

“Please chase labs.”

Strong:

“Please review Mr. Ali’s repeat potassium at 22:00 after treatment for hyperkalemia. If still elevated or ECG changes occur, call senior and continue local protocol.”

Unfinished work must not become invisible work.

20. The Prioritization Matrix

Use this matrix when many tasks compete.

High Danger + Time Critical

Do now.

Examples:

severe breathlessness

chest pain

dangerous potassium

hypoglycemia

sepsis

major bleeding

new stroke symptoms

High Danger + Less Immediate

Do soon, plan, escalate, monitor.

Examples:

suspicious cancer referral

worsening renal function without immediate instability

unsafe discharge concern

recurrent falls

serious medicine side effect

Low Danger + Time Critical

Schedule and complete, but do not displace danger.

Examples:

discharge transport timing

time-sensitive routine medicine

family call at agreed time

planned blood test before procedure

Low Danger + Not Time Critical

Defer, delegate, or hand over.

Examples:

routine forms

non-urgent letters

stable chronic issue

low-risk administrative tasks

21. Clinical Prioritization Checklist

Use this at the start of a shift, ward round, or busy period.

Immediate Danger

Who needs urgent review now?

Deteriorating Patients

Who is worse than before?

Critical Results

What abnormal results need action?

Time-Critical Treatments

What treatment must happen soon?

High-Risk Medicines

What medicines could cause harm if not reviewed?

Patients Needing Reassessment

Who needs review after treatment or observation?

Admissions

Who needs initial safety assessment?

Discharges

Who is leaving today, and are they safe?

Referrals

Which referrals are urgent?

Communication
Which patient, family, nurse, or team needs urgent communication?

Handover Risks
What must not be lost?

22. Worked Example: Busy Ward Morning
You arrive to the ward and have these tasks:

Patient A has chest pain.

Patient B needs a routine discharge summary.

Patient C has potassium result dangerously high.

Patient D's daughter wants an update.

Patient E is newly confused.

Patient F needs non-urgent outpatient referral.

Patient G is breathless with rising oxygen need.

Priority Order
First
Patient G: breathless with rising oxygen need.
Patient A: chest pain.
Patient C: dangerous potassium.

These may all require immediate action and help. Call for assistance if needed.

Next
Patient E: new confusion. Check glucose, oxygenation, vital signs, infection, medicines, and neurological status.

Then
Patient D: family update, especially if there is clinical concern or discharge planning issue.

Later
Patient B: routine discharge summary, unless discharge is imminent and safe.

Patient F: non-urgent outpatient referral.

Key Learning
Danger, deterioration, and critical results come before routine administration.

23. Worked Example: Frail Patient Discharge Pressure
A frail older adult is afebrile after pneumonia and off oxygen. The bed is needed. However, the patient is still intermittently confused, weak, constipated, and unsafe on stairs. Daughter is worried.

Prioritization Error
Prioritizing bed availability over discharge safety.

Correct Priority
Discharge safety review.

Why?

The active danger is not pneumonia now. The active danger is falls, medication error, delirium persistence, caregiver overload, and readmission.

Priority Actions

- reassess cognition
- assess mobility and stairs
- review medicines
- treat constipation
- clarify pain plan
- involve daughter
- arrange follow-up
- safety-net
- delay discharge if home repair conditions are not safe

Key Learning

A patient can be medically improving but discharge unsafe.

24. Worked Example: On-Call Overload

You are on call and receive five calls:

- Sleeping tablet request.
- Patient with severe abdominal pain.
- Family wants routine update.
- Nurse worried about patient becoming drowsy.
- Blood result shows worsening AKI and high potassium.

Priority Order

First

High potassium with AKI.
Severe abdominal pain.
Drowsy patient.

All may be urgent. Ask for help if simultaneous.

Later

Family routine update.

Last

Sleeping tablet request, and consider whether it is appropriate at all.

Key Learning

Requests that sound simple may hide danger, but obvious routine comfort requests should not displace urgent clinical risk.

25. Common Student Pitfalls

Pitfall 1: Doing the Easiest Task First

Easy tasks can create false progress while danger waits.

Pitfall 2: Responding to the Loudest Voice

The loudest problem is not always the most dangerous.

Pitfall 3: Ignoring Trends

A patient may be “stable” but steadily worsening.

Pitfall 4: Forgetting Critical Results

Results need ownership and action.

Pitfall 5: Treating Discharge as Administrative

Discharge is a clinical safety decision.

Pitfall 6: Not Asking for Help

Unsafe workload requires escalation.

Pitfall 7: Failing to Handover Unfinished Tasks

Unfinished risk must be transferred clearly.

Pitfall 8: Confusing Importance With Urgency

Some tasks are important but not urgent. Others are urgent because delay causes harm.

26. Rapid Prioritization Script

When overwhelmed, say to yourself:

Who is unsafe now?
Who is getting worse?
What result could kill?
What medicine could harm?
What treatment is time-critical?
What discharge could be unsafe?
Who needs help that I cannot provide alone?
What can wait safely?
What must be handed over?

This script can be used in ten seconds.

27. Final Student Takeaway

Clinical prioritization becomes easier when the clinician asks:

What is dangerous now?
Who is deteriorating?
What cannot wait?
What result changes management?
What medicine could harm?
What transition is unsafe?
What symptom burden is severe?
What function or support failure creates risk?
What can safely wait?
Who can help?
What must be handed over?

The safe clinician does not simply work hard.

The safe clinician works in the right order.

Clinical prioritization protects patients by placing danger, deterioration, time-critical treatment, high-risk medicines, unsafe transitions, and severe suffering before routine tasks. It is one of the central skills of safe Internal Medicine.

Appendix F. Ward Round Checklist

A ward round is not simply a daily visit.

It is the structured process of reassessing each patient's clinical trajectory, updating the diagnosis, reviewing treatment response, preventing harm, coordinating the team, and deciding the next step.

A safe ward round asks:

Is this patient better, worse, unchanged, or different — and what must happen today to protect or restore life-capacity?

The life-coherent ward round follows the loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The Purpose of the Ward Round

The ward round should answer:

- What is the patient's main problem?
- Is the patient safe now?
- Is the patient improving or deteriorating?
- Does the diagnosis still fit?
- Is treatment helping?
- Is treatment harming?
- What results have changed the plan?
- What medicines need review?
- What capacity remains impaired?
- What does the patient understand?
- What does the team need to do today?
- What is the discharge trajectory?
- What must be handed over?

A ward round is a daily repair meeting around the patient.

2. Before Seeing the Patient

Before entering the room, quickly review:

Patient Identity and Background

Name, age, admission date, key diagnoses, baseline function.

Notes:

Overnight Events

New symptoms, deterioration, falls, confusion, pain, fever, agitation, calls to doctor, family concerns.

Notes:

Vital Sign Trends

Temperature, pulse, blood pressure, respiratory rate, oxygen saturation, oxygen requirement, urine output, glucose where relevant.

Notes:

New Results

Blood tests, imaging, ECG, cultures, urine results, specialist opinions.

Notes:

Current Medicines

New medicines, stopped medicines, high-risk medicines, antibiotics, anticoagulants, insulin, opioids, sedatives, diuretics, renal dosing.

Notes:

Active Risks

What must not be missed today?

Notes:

3. First Look at the Patient

Before speaking, observe:

- alert or drowsy
- comfortable or distressed
- breathless or speaking easily
- confused or oriented
- in pain or settled
- eating or not eating
- mobilizing or bedbound
- oxygen, lines, catheters, drains
- family or caregiver present
- signs of frailty or decline

First impression:

Immediate concern:

4. Opening the Ward Round Conversation

Introduce the team briefly.

Useful opening:

“Good morning. We are reviewing how you are doing today, what has changed, and what needs to happen next.”

Ask the patient:

How are you compared with yesterday?

What is worrying you today?

Are you in pain?

How is your breathing?

Are you eating and drinking?

Have you opened your bowels?

Are you passing urine?

Have you been able to get out of bed?

Do you feel confused, dizzy, or weak?

Do you understand the plan?

Patient's main concern today:

5. Daily Danger Check

Ask:

Is anything newly unsafe today?

Check for:

worsening breathlessness

rising oxygen requirement

chest pain

hypotension

persistent fever or sepsis signs

new confusion

reduced consciousness

seizure

new neurological signs

reduced urine output

dangerous electrolytes

severe pain

fall

bleeding

hypoglycemia

unsafe agitation

inability to eat or drink

caregiver or nurse concern

Danger today:

Action needed:

6. Updated Syndrome

State the current syndrome in one sentence.

Examples:

“Recovering pneumonia with persistent weakness and delirium risk.”

“Heart failure improving after diuresis but renal function worsening.”

“AKI after poor intake and NSAID use, now improving but still medication-fragile.”

“Frailty with acute functional decline after infection, complicated by constipation and pain.”

Updated syndrome:

7. Capacity Failure Review

For each patient, ask which capacities are improving and which remain fragile.

Oxygenation

Breathing, oxygen requirement, work of breathing.

Status:

Circulation

Blood pressure, pulse, perfusion, edema, dizziness, heart failure signs.

Status:

Clearance

Kidney function, urine output, electrolytes, medicine accumulation.

Status:

Defense

Infection, fever, cultures, source control, antibiotics.

Status:

Brain Coordination

Confusion, delirium, attention, sleep, agitation, drowsiness.

Status:

Energy Regulation

Glucose, nutrition, fatigue, metabolic stability.

Status:

Mobility

Transfers, walking, stairs, falls risk, therapy progress.

Status:

Comfort

Pain, breathlessness, nausea, constipation, anxiety, distress.

Status:

Agency

Understanding, capacity, consent, confidence, ability to follow plan.

Status:

Support

Family, caregiver, home environment, follow-up, transport, finances.

Status:

8. Treatment Response

Ask:

- What treatment was started?
- Did it help?
- Did it fail?
- Did it cause harm?
- Does response support the diagnosis?
- Does response suggest another diagnosis?
- Should treatment continue, stop, narrow, escalate, or change?

Treatment response:

Treatment harm:

Decision:

9. Medicine Review

Every ward round should include medicine thinking.

Review:

- antibiotics
- anticoagulants
- insulin and diabetes medicines
- opioids
- sedatives
- diuretics
- antihypertensives

- ACE inhibitors or ARBs
- NSAIDs
- steroids
- inhalers
- renal-dose medicines
- medicines held on admission
- medicines needing restart decision
- medicines causing delirium, falls, AKI, bleeding, constipation, or hypoglycemia

Ask:

- What should continue?
- What should stop?
- What should restart?
- What should remain held?
- What should be reduced?
- What needs monitoring?
- What needs explanation to the patient?

Medicine decisions today:

10. Investigation Review

Ask:

- What results returned?
- What results are pending?
- Who owns pending results?
- Does any result change diagnosis?
- Does any result change treatment?
- Does any result change discharge?
- Is any test still needed?
- Can any planned test be cancelled?
- Has the patient been informed?

New results:

Pending results:

Action:

11. Focused Examination

Examine according to today's risk.

Always consider:

- vital signs
- general appearance
- chest if respiratory or infection issue
- heart and fluid status if cardiac, renal, or breathlessness issue
- abdomen if pain, constipation, urinary retention, vomiting, or sepsis
- neurological status if confusion, falls, weakness, or drowsiness
- mobility if discharge or falls risk
- skin and wounds if infection or pressure risk
- devices: lines, catheters, drains, oxygen

Focused findings:

Interpretation:

12. Function Review

Ask:

- Is the patient out of bed?
- Can they stand?
- Can they walk?
- Can they transfer safely?
- Can they manage stairs?
- Are they eating and drinking?
- Are they toileting?
- Are they sleeping?
- Are they weaker than baseline?
- What does therapy say?
- What does nursing say?
- What does family say?

Function today:

Baseline comparison:

Discharge implication:

13. Cognition and Delirium Review

Ask:

- Is the patient alert?

Is attention normal?

Is confusion new or improving?

Does confusion fluctuate?

Is sleep disturbed?

Is the patient agitated or drowsy?

Are medicines contributing?

Are pain, constipation, urinary retention, hypoxia, infection, dehydration, glucose, or electrolytes contributing?

What is baseline?

Cognition today:

Possible delirium triggers:

Action:

14. Nutrition, Hydration, Bowels, and Bladder

Daily ward review should include basic life needs.

Ask:

Nutrition

Eating adequately?

Hydration

Drinking adequately? IV fluids needed or harmful?

Bowels

Constipation or diarrhea?

Bladder

Passing urine? Retention? Catheter needed or removable?

Action:

15. Lines, Tubes, Catheters, and Devices

Ask:

Does the patient still need oxygen?

Does the patient still need IV fluids?

Does the patient still need IV access?

Does the patient still need a urinary catheter?

Does the patient still need monitoring?

Does any device increase infection risk, discomfort, delirium, or immobility?

Can any device be removed today?

Devices to review:

Devices to remove or continue:

16. Escalation and De-Escalation

Escalation

Ask:

Does the patient need senior review?

Does the patient need specialist input?

Does the patient need higher care?

Does the patient need urgent imaging or treatment?

Does the patient need goals-of-care discussion?

Escalation needed:

De-Escalation

Ask:

Can antibiotics be narrowed or stopped?

Can oxygen be stopped?

Can IV fluids stop?

Can monitoring reduce?

Can medicines be simplified?

Can invasive devices be removed?

Can care move toward discharge?

Should goals shift toward comfort?

De-escalation possible:

17. Patient Understanding and Shared Plan

Ask the patient:

Do you understand what we think is happening?

Do you understand today's plan?

What matters most to you today?

Is there anything you disagree with?

Who should we update?

Do you feel ready for the next step?

Patient understanding:

Patient concern or goal:

Family update needed:

18. Discharge Planning

Discharge planning starts early.

Ask daily:

- What is preventing discharge?
- Is the patient medically stable?
- Is function safe?
- Is cognition safe or supported?
- Are medicines clear?
- Are stopped medicines explained?
- Are pending results owned?
- Is follow-up arranged?
- Is caregiver support ready?
- Is transport arranged?
- Is equipment needed?
- Is safety-netting understood?
- Is discharge aligned with patient goals?

Current discharge barrier:

Estimated next step:

Discharge actions today:

19. Daily Plan

The daily plan should be specific and owned.

Include:

Diagnosis / Syndrome

Monitoring

Treatment

Medicines

Investigations

Referrals

Function / Therapy

Nutrition / Bowels / Bladder

Communication

Discharge Planning

Safety-Net / Escalation Triggers

20. Ward Round Documentation

A good ward round note should include:

- date and time
- who was present
- patient status compared with previous day
- current syndrome
- vital signs and important trends
- examination findings
- important results
- treatment response
- medicine changes
- updated assessment
- plan with clear actions
- escalation triggers
- discharge plan
- communication with patient or family

Suggested structure:

Seen With

Patient Report

Overnight Events

Observations / Trends

Examination

Results

Assessment

Plan

Escalation / Safety-Net

Discharge Plan

21. Ward Round Task Allocation

After each patient, clarify:

- What needs doing?
- Who will do it?
- When must it be done?
- What result or response must be checked?
- What should be escalated?
- What should be handed over?

Task:

Owner:

Deadline:

Escalation trigger:

22. End-of-Ward-Round Safety Check

After the ward round, ask:

- Who is unstable?
- Who needs urgent review again?
- What critical results are pending?
- Which medicines must be prescribed or stopped today?
- Which discharges are unsafe unless tasks are completed?
- Which family conversations are essential?
- Which referrals are urgent?

Which patients need handover?

Which tasks can safely wait?

Who needs help?

End-of-round priorities:

23. Ward Round Checklist for Frailty

For frail patients, always check:

baseline function

baseline cognition

delirium

falls

mobility

nutrition

hydration

pain

bowels

bladder

sleep

medicines

pressure areas

family or caregiver concern

discharge support

goals of care

Frailty-specific concerns:

Action:

24. Ward Round Checklist for AKI

For AKI, check:

cause

creatinine trend

potassium and electrolytes

urine output

hydration

fluid overload

obstruction risk

sepsis

- nephrotoxic medicines
- held medicines
- medicine dosing
- renal follow-up
- restart plan
- patient education

AKI status:

Medicine actions:

Monitoring:

25. Ward Round Checklist for Delirium

For delirium, check:

- attention
- fluctuation
- sleep
- agitation or drowsiness
- pain
- infection
- oxygenation
- glucose
- hydration
- constipation
- urinary retention
- medicines
- sensory impairment
- mobility
- family orientation support
- safety
- baseline cognition

Delirium status:

Triggers:

Action:

26. Ward Round Checklist for Heart Failure

For heart failure, check:

- breathlessness
- oxygen requirement
- edema
- JVP where relevant
- lung crackles
- weight or fluid trend where available
- blood pressure
- renal function
- potassium
- diuretic response
- dizziness
- medicines held or restarted
- salt and fluid advice where appropriate
- discharge plan

Heart failure status:

Diuretic / medicine plan:

Monitoring:

27. Ward Round Checklist for Infection

For infection, check:

- source
- fever trend
- vital signs
- mental state
- oxygenation
- blood pressure
- urine output
- cultures
- imaging
- antibiotics
- source control
- renal dosing
- treatment response

- complications
- de-escalation opportunity

Infection status:

Antibiotic plan:

Review date or trigger:

28. Ward Round Checklist for Diabetes

For diabetes, check:

- glucose trends
- hypoglycemia
- food intake
- acute illness effect
- steroids
- renal function
- insulin or medicine plan
- held medicines
- patient ability to self-manage
- discharge plan
- education
- follow-up

Diabetes status:

Medicine plan:

Safety concern:

29. Ward Round Checklist for Pain

For pain, check:

- site
- severity
- cause
- function affected
- sleep affected
- current analgesia
- side effects

- constipation
- drowsiness
- delirium
- falls risk
- renal function
- non-medicine options
- patient goal

Pain status:

Treatment harms:

Plan:

30. Ward Round Checklist for Serious Illness

For serious illness, check:

- reversibility
- symptom burden
- pain
- breathlessness
- nausea
- agitation
- nutrition and hydration goals
- treatment burden
- patient understanding
- family understanding
- goals of care
- escalation plan
- palliative care needs
- preferred place of care
- dignity and spiritual needs

Serious illness status:

Goals discussion needed:

Comfort plan:

31. Common Ward Round Pitfalls

Pitfall 1: Reviewing the Chart but Not the Patient

The patient must be seen and heard.

Pitfall 2: Listing Problems Without Prioritizing

Every problem list needs an order of danger and action.

Pitfall 3: Ignoring Trends

Today's number matters less than the trajectory.

Pitfall 4: Forgetting Medicines

Ward rounds are medicine safety rounds.

Pitfall 5: Ignoring Function

Function often determines discharge safety.

Pitfall 6: Missing Delirium

Ask about attention, fluctuation, sleep, and baseline.

Pitfall 7: Failing to Assign Tasks

A plan without an owner may not happen.

Pitfall 8: Treating Discharge as Administrative

Discharge is a clinical decision.

32. One-Page Ward Round Template

Patient

Name / age / diagnosis / admission day:

Overnight Events

Compared With Yesterday

Better / worse / unchanged / different:

Danger Today

Updated Syndrome

Vital Trends

Examination

Results

Treatment Response

Medicine Review

Start / stop / hold / restart / monitor:

Capacity Failures

Oxygenation:

Circulation:

Clearance:

Defense:

Brain:

Energy:

Mobility:

Comfort:

Agency:

Support:

Function and Cognition

Nutrition / Hydration / Bowels / Bladder

Devices

Escalation / De-Escalation

Patient Understanding / Family Communication

Discharge Barrier

Plan for Today

Task Owners

Handover Risks

33. Worked Example

Patient

78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia.

Overnight Events

No fever. Off oxygen. Slept poorly. Still intermittently confused. No bowel movement. Weak on transfer.

Compared With Yesterday

Respiratory status better. Cognition fluctuating. Mobility still poor. Constipation persists.

Danger Today

Falls, delirium persistence, constipation, medication error, hypoglycemia, AKI recurrence, unsafe discharge.

Updated Syndrome

Recovering pneumonia with incomplete repair in frailty: persistent delirium vulnerability, renal recovery, constipation, pain, weakness, and discharge safety concern.

Capacity Failures

Brain coordination, mobility, clearance, glucose regulation, bowel clearance, comfort, caregiver-supported safety.

Treatment Response

Antibiotic treatment appears effective for pneumonia. Oxygenation improved. However, whole-person recovery incomplete.

Medicine Review

Avoid NSAIDs and sedatives. Review insulin against intake. Diuretic and ACE inhibitor remain held pending renal and volume reassessment. Ensure safe pain and bowel plan.

Examination

Chest improving. No respiratory distress. Mild edema. Abdomen soft but constipated. Attention fluctuates. Weak sit-to-stand.

Plan Today

- continue delirium care
- treat constipation
- review pain plan
- monitor glucose and renal function
- physiotherapy mobility and stairs assessment
- pharmacy medicine reconciliation
- update daughter
- clarify discharge safety
- safety-net for deterioration

Discharge Barrier

Not yet safe because cognition, mobility, bowels, pain, renal medicine plan, and daughter-supported discharge remain unresolved.

Handover Risk

Do not discharge solely because pneumonia has improved. Active risks are falls, delirium, medicine confusion, constipation, AKI recurrence, and unsafe stairs.

Final Reminder

A good ward round asks:

Is the patient better, worse, unchanged, or different?
What danger remains today?
What is the updated syndrome?
Which capacities are repairing, and which are still failing?
Is treatment helping or harming?
What medicines need review?
What results change the plan?
What does the patient understand?
What must happen today?
What must be handed over?
What makes discharge safe or unsafe?

The ward round is the daily discipline of keeping care aligned with the patient's actual repair trajectory.

Appendix G. Admission Checklist

Admission is the structured process of receiving a patient into hospital care, identifying danger, clarifying the working diagnosis, starting safe treatment, preventing early harm, and creating an initial repair trajectory.

A safe admission does not simply ask:

“What is the diagnosis?”

It asks:

“What is dangerous, what syndrome is present, which capacities are failing, what must be done tonight or today, and what needs reassessment?”

The life-coherent admission follows the loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The Purpose of Admission

Admission should establish:

- who the patient is
- why they are being admitted
- what is dangerous
- what syndrome is present
- what the working diagnosis is
- what dangerous alternatives remain
- what treatment is needed now
- what monitoring is required
- what medicines need starting, stopping, holding, or reviewing
- what investigations are needed
- what escalation plan exists
- what patient values matter
- what discharge or recovery trajectory may look like

Admission is not only entry into hospital.

It is the first act of organized repair.

2. Immediate Admission Safety Screen

On arrival or first review, ask:

Is the patient safe now?

Check:

- airway
- breathing
- circulation
- consciousness
- glucose

- pain
- sepsis signs
- bleeding
- neurological deficit
- severe agitation
- suicidal intent
- oxygen requirement
- urine output
- severe electrolyte abnormality
- critical imaging or ECG finding

Immediate danger:

Immediate action taken:

Senior help needed?

Yes / No

3. Confirm Identity and Basic Details

Record:

Patient Name

Age

Date and Time of Admission

Location

Source of Admission

Emergency department / clinic / direct admission / transfer / other:

Main Reason for Admission

Key Background

4. Presenting Syndrome

State the admission syndrome clearly.

Examples:

“Acute breathlessness with hypoxia and fever.”

“Frail older adult with acute confusion, poor intake, fall, and AKI.”

“Chest pain with exertional features and cardiovascular risk.”

“Vomiting and diarrhea with dehydration, AKI risk, and diabetes.”

“Heart failure decompensation with edema, breathlessness, and renal vulnerability.”

Admission syndrome:

5. Initial Danger List

List what must not be missed.

Examples:

Breathlessness

- pneumonia
- heart failure
- pulmonary embolism
- pneumothorax
- asthma or COPD exacerbation
- myocardial ischemia
- anemia
- metabolic acidosis

Confusion

- hypoglycemia
- hypoxia
- sepsis
- stroke
- medicine toxicity
- AKI
- electrolyte disturbance
- head injury
- urinary retention
- constipation

Chest Pain

- myocardial infarction
- pulmonary embolism
- aortic disease
- pneumothorax
- pericarditis
- serious abdominal mimic

Frailty With Decline

- sepsis

- delirium
- dehydration
- AKI
- hypoglycemia
- medicine harm
- fall injury
- heart failure
- caregiver collapse

Dangerous alternatives:

6. Initial Capacity Failure Map

Identify which life-capacities are threatened.

Oxygenation

Breathlessness, hypoxia, respiratory distress, oxygen requirement.

Status:

Circulation

Blood pressure, perfusion, chest pain, arrhythmia, edema, shock.

Status:

Clearance

Renal function, urine output, electrolytes, medicine accumulation.

Status:

Defense

Infection, fever, sepsis, immune compromise, source control.

Status:

Brain Coordination

Confusion, delirium, consciousness, seizure, agitation, cognition.

Status:

Energy Regulation

Glucose, nutrition, metabolic stress, fatigue, poor intake.

Status:

Mobility

Falls, weakness, inability to transfer, unsafe walking.

Status:

Comfort
Pain, breathlessness, nausea, constipation, anxiety, distress.

Status:

Agency
Understanding, consent, capacity, communication, adherence.

Status:

Support
Family, caregiver, home safety, transport, access to follow-up.

Status:

7. Initial History Checklist
Take a focused but complete admission history.

Presenting Complaint

Timeline
When last well? What started first? What changed? Why now?

Key Symptoms

Red Flags

Functional Change

Baseline Function

Baseline Cognition

Patient Concerns

Patient Goals

Collateral History Needed?
Yes / No

Source:

Key collateral information:

8. Past Medical History

Record important conditions:

- cardiovascular disease
- stroke or TIA
- hypertension
- diabetes
- CKD
- COPD or asthma
- liver disease
- cancer
- dementia
- frailty
- falls
- chronic pain
- mental health history
- autoimmune disease
- immunosuppression
- previous similar admissions
- previous surgery

Past medical history:

Previous similar events:

9. Medicine Reconciliation

Admission is a high-risk moment for medication error.

Ask:

- What does the patient actually take?
- What was prescribed?
- What has been missed?
- What has been stopped?
- What has been recently started?
- What has been taken over the counter?
- What old medicines were restarted?
- Who manages medicines?
- Does the patient understand them?
- Are medicines available at home?

Medication list:

Source of medication history:

Patient / family / pharmacy / GP / old notes / medication bottles / other:

Uncertain medicines:

10. High-Risk Medicine Review

Specifically review:

- anticoagulants
- antiplatelets
- insulin
- glucose-lowering medicines
- opioids
- sedatives
- antipsychotics
- diuretics
- ACE inhibitors or ARBs
- NSAIDs
- steroids
- antibiotics
- potassium supplements
- immunosuppressants
- chemotherapy
- medicines requiring renal adjustment

High-risk medicines present:

Medicines to hold:

Medicines to continue:

Medicines to start:

Medicines needing senior review:

Monitoring needed:

11. Allergies and Adverse Reactions

Record:

Allergy

Reaction

Severity

Uncertainty

Clarify whether it is true allergy, intolerance, or unknown reaction.

12. Admission Examination Checklist

First Look

Sick or not sick? Distress? Breathing? Consciousness? Pain? Frailty?

Vital Signs

Temperature:

Pulse:

Blood pressure:

Respiratory rate:

Oxygen saturation and oxygen device:

Pain:

Glucose where relevant:

General Examination

Hydration, pallor, cyanosis, jaundice, edema, rash, wounds, frailty.

Cardiovascular

Pulse, rhythm, perfusion, JVP, heart sounds, murmurs, edema.

Respiratory

Work of breathing, air entry, crackles, wheeze, focal signs.

Abdomen
Tenderness, distension, bowel sounds if relevant, bladder, constipation, organomegaly.

Neurological
Consciousness, attention, orientation, focal signs, gait if safe.

Skin and Wounds

Function and Mobility
Transfers, walking, falls risk, baseline comparison.

Devices
Lines, catheters, oxygen, drains, monitors.

13. Initial Investigation Plan
Order investigations that answer a clinical question.

Ask:

- What danger am I assessing?
- What diagnosis am I testing?
- What result will change management?
- What needs repeating?
- What is time-critical?
- What can wait?

Possible admission investigations according to presentation and local pathway:

- blood count
- renal function and electrolytes
- liver tests
- glucose
- inflammatory markers
- cultures where infection suspected
- urine testing
- ECG
- chest imaging
- oxygenation assessment
- cardiac markers where indicated
- coagulation testing where indicated
- imaging for injury, stroke, abdomen, PE, or other syndrome
- medication levels where relevant

pregnancy test where relevant

Investigations ordered:

Reason:

Urgent results to chase:

Who will review results:

14. Working Diagnosis

State the best current explanation.

A strong working diagnosis includes:

- disease process
- affected capacities
- complications
- context

Example:

“Community-acquired pneumonia causing hypoxia and delirium in a frail older adult, complicated by poor intake, AKI risk, and falls.”

Working diagnosis:

Confidence level:

High / moderate / low

What does not fit:

15. Initial Problem List

Create a prioritized problem list.

Problem 1: Most Dangerous or Active

Plan:

Problem 2

Plan:

Problem 3

Plan:

Problem 4

Plan:

Problem 5

Plan:

Include both disease problems and capacity problems.

Examples:

- pneumonia
- hypoxia
- delirium
- AKI
- hypoglycemia risk
- pain
- constipation
- immobility
- unsafe discharge
- medicine uncertainty
- caregiver strain

16. Initial Treatment Plan

For each treatment, define purpose and monitoring.

Treatment

Purpose:

Monitoring:

Possible harm:

Review time:

Common admission treatments may include:

- oxygen
- fluids

- antibiotics
- diuretics
- glucose correction
- analgesia
- antiemetics
- bowel regimen
- anticoagulation decisions
- inhaled therapy
- medicine cessation
- delirium prevention
- nutrition support
- rehabilitation
- palliative symptom control

Do not prescribe without asking:

What capacity is this treatment trying to restore, and what harm could it cause?

17. Fluids and Volume Plan

Assess:

- dehydration
- fluid overload
- heart failure
- CKD
- sepsis
- vomiting or diarrhea
- poor intake
- urine output
- blood pressure
- electrolytes

Volume status:

Dry / overloaded / euvolemic / mixed / uncertain

Notes:

Fluid plan:

Monitoring:

Review trigger:

Avoid automatic fluids in every AKI.

Avoid automatic diuresis in every edema.

Reassess.

18. Oxygen and Respiratory Plan

Assess:

- oxygen requirement
- work of breathing
- respiratory rate
- baseline oxygen use
- target range according to local guidance
- need for inhalers, nebulizers, antibiotics, diuretics, imaging, or escalation
- risk of respiratory failure

Respiratory status:

Oxygen plan:

Escalation trigger:

Review time:

19. Pain and Comfort Plan

Ask:

- What is the cause of pain?
- How severe is it?
- What function is affected?
- What has helped before?
- What medicines are risky?
- Is the patient frail, confused, constipated, hypoxic, or renally impaired?
- What non-medicine options may help?

Pain problem:

Pain plan:

Side effect monitoring:

Bowel plan if opioids used:

20. Delirium Prevention and Management

For older, frail, or acutely ill patients, ask:

- Is delirium present?
- Is baseline cognition known?
- Is attention impaired?
- Are there triggers?
- Are sedatives or anticholinergic medicines present?
- Is pain controlled?
- Are bowels and bladder addressed?
- Is the patient sleeping?
- Are glasses, hearing aids, family orientation, hydration, mobility supported?

Delirium risk:

Low / moderate / high

Delirium present?

Yes / No / uncertain

Actions:

21. Falls and Mobility Plan

Assess:

- recent falls
- head injury
- anticoagulation
- pain
- dizziness
- weakness
- delirium
- vision
- footwear
- walking aid
- baseline mobility
- therapy needs
- supervision needs

Falls risk:

Low / moderate / high

Mobility plan:

Therapy referral needed?

Yes / No

Immediate safety actions:

22. Nutrition, Hydration, Bowels, and Bladder

Nutrition

Eating? Weight loss? Swallow risk? Assistance needed?

Plan:

Hydration

Drinking? IV fluids? Fluid restriction? Monitoring?

Plan:

Bowels

Constipation, diarrhea, obstruction risk, opioid use?

Plan:

Bladder

Urine output, retention, catheter, infection concern?

Plan:

These basic functions strongly affect recovery.

23. Diabetes and Glucose Plan

For diabetes or acute glucose abnormality, assess:

- current glucose trend
- hypoglycemia risk
- food intake
- infection or steroids
- kidney function
- usual regimen
- patient ability to self-manage
- medicines to hold or adjust according to local guidance
- monitoring frequency
- discharge implications

Diabetes status:

Glucose plan:

Hypoglycemia risk:

Monitoring:

24. VTE, Bleeding, and Anticoagulation Review

According to local policy, assess:

- VTE risk
- bleeding risk
- current anticoagulants
- renal function
- falls risk
- recent bleeding
- planned procedures
- platelet count or coagulation issues where relevant

VTE plan:

Bleeding concerns:

Anticoagulation decision:

Review trigger:

25. Infection and Antibiotic Plan

If infection suspected, record:

- likely source
- severity
- cultures or samples
- antibiotics started
- allergy status
- renal adjustment
- source control needs
- review date or trigger
- de-escalation plan

Source:

Severity:

Antibiotic plan:

Cultures or samples:

Review / de-escalation plan:

Escalation trigger:

26. Renal and AKI Plan

For AKI or CKD risk, assess:

- baseline renal function
- current creatinine
- potassium
- urine output
- hydration and fluid overload
- sepsis
- obstruction
- nephrotoxic medicines
- medicines needing dose adjustment
- imaging or catheter needs where appropriate
- repeat blood testing
- follow-up plan

AKI / CKD status:

Likely cause:

Medicines to hold or adjust:

Monitoring:

Escalation trigger:

27. Capacity, Consent, and Goals of Care

Ask:

- Does the patient understand the admission?

- Can the patient consent to treatment?
- Is delirium impairing decision-making?
- Who should be involved?
- Are there advance care wishes?
- Is illness serious enough to discuss escalation limits?
- Does the patient want full disease-directed treatment, comfort-focused care, or a time-limited trial?
- Is palliative care needed?

Capacity concern:

Decision needing consent:

Goals of care:

Escalation status / treatment ceiling according to local practice:

Family or decision-maker:

28. Communication Plan

Who needs to know?

- patient
- family or caregiver
- nurse
- senior clinician
- specialist
- pharmacy
- therapy team
- primary care
- receiving ward
- community team

Patient explanation given:

Family update needed:

Yes / No

Family update completed:

Yes / No

Key message:

29. Initial Monitoring Plan

Define what needs watching.

Monitor:

- vital signs
- oxygen requirement
- consciousness
- pain
- urine output
- fluid balance
- glucose
- renal function
- electrolytes
- temperature
- mobility
- bowels
- treatment response
- medicine side effects

Monitoring plan:

Frequency:

Review time:

Escalation triggers:

30. Escalation Plan

Record:

- what would trigger urgent review
- who should be called
- what treatment should be started or repeated
- whether higher-level care is appropriate
- whether goals of care limit escalation
- whether family should be contacted

Escalation triggers:

Who to call:

Immediate actions if worse:

Treatment ceiling / goals:

31. Discharge Thinking From Admission

Even on admission, ask:

- What was baseline?
- What must improve before discharge?
- What support exists?
- What medicine changes may complicate discharge?
- What function must return?
- What follow-up will be needed?
- What pending results may remain?
- What safety-net will be required?

Predicted discharge barriers:

Likely needs:

Early referrals:

32. Admission Documentation Template

Date and Time

Source of Admission

Presenting Complaint and Duration

History and Timeline

Relevant Background

Medicines and Allergies

Functional and Social Baseline

Examination

Initial Results

Impression / Working Diagnosis

Dangerous Alternatives

Problem List

Plan

Monitoring

Escalation Plan

Communication

Discharge Considerations

33. Admission Checklist for Frailty

For frail patients, always include:

- baseline function
- baseline cognition
- collateral history
- delirium screen
- falls history
- mobility assessment
- nutrition and hydration
- pain
- bowels and bladder
- skin and pressure risk
- medicine review
- high-risk medicines
- caregiver capacity
- home environment
- goals of care
- discharge barriers

Frailty admission concerns:

Collateral source:

Immediate plan:

34. Admission Checklist for Delirium

For delirium, check:

- onset and fluctuation
- attention
- baseline cognition
- infection
- oxygenation
- glucose
- pain
- constipation
- urinary retention
- dehydration
- AKI or electrolytes
- medication toxicity
- withdrawal
- head injury
- stroke signs
- sleep disruption
- sensory impairment

Likely triggers:

Immediate actions:

Safety plan:

35. Admission Checklist for AKI

For AKI, check:

- baseline creatinine
- current creatinine and trend
- potassium
- urine output
- fluid status
- sepsis
- obstruction
- NSAIDs
- ACE inhibitors or ARBs

diuretics

nephrotoxic medicines

contrast exposure

vomiting or diarrhea

heart failure

repeat bloods

follow-up plan

AKI plan:

36. Admission Checklist for Heart Failure

For heart failure, check:

breathlessness

oxygen requirement

edema

fluid status

blood pressure

renal function

potassium

ECG

trigger: infection, ischemia, arrhythmia, non-adherence, renal change, medicines

diuretic plan

medicine review

monitoring response

discharge education

Heart failure plan:

37. Admission Checklist for Infection

For infection, check:

likely source

sepsis signs

cultures or samples

antibiotics

allergies

renal dosing

source control

oxygenation

blood pressure

urine output

mental state

review and de-escalation plan

Infection plan:

38. Admission Checklist for Diabetes

For diabetes, check:

usual regimen

current glucose

hypoglycemia risk

eating and drinking

infection or steroids

renal function

medicine holds

insulin safety

patient ability to self-manage

monitoring

discharge plan

Diabetes plan:

39. Common Admission Pitfalls

Pitfall 1: Writing a Diagnosis Without Naming Danger

Every admission should identify what could harm the patient.

Pitfall 2: Copying Medicines Without Reconciling Them

The admission medication list must reflect what the patient actually takes.

Pitfall 3: Ignoring Baseline Function

Baseline determines whether the patient has recovered.

Pitfall 4: Missing Delirium

Confusion is not automatically dementia.

Pitfall 5: Giving Fluids Without Volume Thinking

Fluids can help or harm.

Pitfall 6: Prescribing Pain Relief Without Side Effect Planning

Opioids, NSAIDs, and sedatives can cause serious harm.

Pitfall 7: Forgetting Escalation Plan

The night team must know what to do if the patient worsens.

Pitfall 8: Treating Admission as Paperwork

Admission is the first repair plan.

40. One-Page Admission Template

Patient

Name / age / date / location:

Reason for Admission

Immediate Danger

Presenting Syndrome

Timeline

Relevant Background

Baseline Function and Cognition

Medicines and Allergies

Examination Summary

Key Results

Capacity Failures

Oxygenation:

Circulation:

Clearance:

Defense:

Brain:

Energy:

Mobility:

Comfort:

Agency:

Support:

Working Diagnosis

Dangerous Alternatives

Problem List and Plan

Monitoring

High-Risk Medicines

Escalation Plan

Communication

Early Discharge Barriers

41. Worked Example

Patient

78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic knee pain, and recent poor intake.

Reason for Admission

Three days of cough, fever, weakness, reduced appetite, confusion, and near fall.

Immediate Danger

Hypoxia, sepsis, delirium, AKI, hypoglycemia, fall injury, medicine harm, dehydration, heart failure.

Syndrome

Frail older adult with fever, cough, acute confusion, poor intake, weakness, and near fall.

Capacity Failures

Defense, oxygenation, brain coordination, clearance, glucose regulation, mobility, comfort, caregiver-supported safety.

Coupling Conditions

Frailty, CKD, heart failure, diabetes, mild dementia, chronic pain, NSAID exposure, daughter support, home stairs, polypharmacy.

Working Diagnosis

Likely pneumonia causing fever and acute delirium, complicated by poor intake, AKI risk, hypoglycemia risk, weakness, and falls vulnerability.

Dangerous Alternatives

Sepsis, hypoglycemia, stroke, heart failure, PE, medication toxicity, urinary infection, AKI with electrolyte disturbance, occult fall injury.

Initial Plan

assess oxygenation and treat if needed

infection work-up and antibiotics according to local pathway

check glucose and monitor

assess renal function, potassium, urine output

stop NSAIDs

review diuretics, ACE inhibitor, insulin, sedatives, opioids

assess hydration versus fluid overload

delirium prevention and management

pain plan that avoids kidney harm and excess sedation

constipation prevention

falls precautions

physiotherapy when stable

collateral from daughter

escalation triggers documented

Monitoring

Vital signs, oxygen need, mental state, glucose, urine output, renal function, electrolytes, pain, bowels, mobility.

Escalation

Escalate if oxygen requirement rises, hypotension develops, confusion worsens, glucose unsafe, urine output falls, potassium dangerous, chest pain occurs, severe pain persists, or fall occurs.

Discharge Thinking

Discharge will require cognition near baseline or supervised, mobility safe or supported, renal and glucose plan, medicine reconciliation, pain and bowel plan, daughter education, and follow-up.

Final Reminder

A safe admission asks:

Is the patient safe now?
What syndrome is present?
Which capacities are failing?
What context makes this patient vulnerable?
What is the working diagnosis?
What dangerous alternatives remain?
What treatment is needed now?
What medicines must be started, stopped, held, or reviewed?
What monitoring and escalation plan is required?
What does the patient understand and value?
What must improve before discharge?

Admission is not administrative entry into hospital.

It is the first disciplined act of life-coherent repair.

Appendix H. Discharge Checklist

Discharge is not simply the act of leaving hospital.

Discharge is the structured transfer of the patient's repair trajectory from one setting to another.

A safe discharge does not ask only:

"Is the patient medically fit?"

It asks:

"Can this patient continue recovering safely outside hospital, with clear medicines, adequate function, understood risks, owned follow-up, and sufficient support?"

The life-coherent discharge follows the loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. The Purpose of Discharge Planning

Discharge planning should ensure that:

- immediate danger is controlled
- the diagnosis is clear enough
- the patient is clinically stable
- medicines are reconciled and understood
- treatment can continue safely
- function is safe or supported
- cognition is safe or supported
- follow-up is arranged
- pending results are owned
- caregivers understand their role
- warning signs are explained
- the patient knows what to do if worse
- the receiving clinician understands the risks
- the repair trajectory can continue outside hospital

Discharge is not the end of care.

It is a handover of recovery.

2. The First Discharge Question

Ask:

What could go wrong after this patient leaves?

Consider:

- recurrence of illness
- deterioration at home
- medication error

- missed follow-up
- pending result not reviewed
- fall
- delirium worsening
- poor oral intake
- hypoglycemia
- AKI recurrence
- heart failure relapse
- uncontrolled pain
- constipation
- caregiver unable to cope
- transport barrier
- financial barrier
- misunderstanding of safety-net
- readmission

If you can name the likely dangers, you can plan against them.

3. Discharge Danger Screen

Before discharge, check for unresolved danger.

Do not discharge without senior review if there is:

- unstable vital signs
- rising oxygen requirement
- ongoing chest pain
- new neurological deficit
- worsening confusion
- reduced consciousness
- recurrent hypoglycemia
- worsening AKI or dangerous electrolytes
- reduced urine output
- uncontrolled pain
- active bleeding
- persistent vomiting
- inability to drink
- unsafe mobility
- fall risk without support
- unsafe home situation
- caregiver unable to cope

unclear medicine plan

pending critical result without owner

patient or family major concern not addressed

Discharge danger present?

Yes / No

Details:

Action before discharge:

4. Confirm the Updated Syndrome

State the discharge syndrome clearly.

Examples:

“Recovering pneumonia after hypoxia, with improving oxygenation but ongoing frailty-related weakness.”

“AKI from poor intake and NSAID use, improving but requiring medicine caution and repeat renal function.”

“Heart failure exacerbation improved after diuresis, with renal function and potassium requiring follow-up.”

“Delirium improving but not fully resolved, requiring supervision and medication simplification.”

Discharge syndrome:

5. Confirm the Working Diagnosis

Ask:

What was the final or working diagnosis?

How certain is it?

What dangerous alternatives were considered?

What uncertainty remains?

Does follow-up address uncertainty?

Does the patient understand the diagnosis?

Diagnosis:

Diagnostic uncertainty:

Follow-up for uncertainty:

6. Clinical Stability Check

Before discharge, review:

Symptoms

Improved / unchanged / worse:

Vital Signs
Stable?

Yes / No

Concerns:

Oxygenation
On room air or baseline oxygen? Oxygen need stable?

Circulation
Blood pressure, pulse, dizziness, edema, chest pain:

Renal Function and Electrolytes
Stable or improving? Repeat needed?

Glucose
Stable? Hypoglycemia risk addressed?

Pain
Controlled enough for home?

Bowels
Constipation or diarrhea addressed?

Nutrition and Hydration
Eating and drinking enough?

Clinical stability summary:

7. Capacity Failure Review Before Discharge
Ask which life-capacities are now safe or still fragile.

Oxygenation
Safe / supported / unsafe:

Circulation
Safe / supported / unsafe:

Clearance
Safe / supported / unsafe:

Defense
Safe / supported / unsafe:

Brain Coordination
Safe / supported / unsafe:

Energy Regulation
Safe / supported / unsafe:

Mobility
Safe / supported / unsafe:

Comfort
Safe / supported / unsafe:

Agency
Safe / supported / unsafe:

Support
Safe / supported / unsafe:

Any unsafe capacity should delay discharge or require a clear support plan.

8. Function and Mobility Checklist

Ask:

- Can the patient get out of bed?
- Can the patient stand safely?
- Can the patient walk safely?
- Can the patient use their walking aid?
- Can the patient manage stairs if needed?
- Can the patient toilet safely?
- Can the patient wash and dress?
- Is there fear of falling?
- Has therapy assessed if needed?
- Is equipment needed?
- Is transport safe?
- Is the home environment suitable?

Baseline mobility:

Current mobility:

Therapy assessment:

Equipment needed:

Stairs safe?

Yes / No / Not applicable

Mobility discharge plan:

9. Cognition and Delirium Checklist

Ask:

- Is the patient alert?
- Is attention normal?
- Is confusion new, improving, or persistent?
- Is cognition back to baseline?
- Has family confirmed baseline?
- Is supervision needed?
- Can the patient understand medicine changes?
- Can the patient follow safety-net instructions?
- Is there risk of wandering, falls, or unsafe decisions?
- Are sedatives or deliriogenic medicines minimized?

Baseline cognition:

Current cognition:

Collateral source:

Supervision needed:

Cognitive safety plan:

10. Medicine Reconciliation

Medicine reconciliation is one of the most important parts of discharge.

For every medicine, decide:

- continue
- start

- stop
- reduce
- increase
- restart
- hold until review
- monitor
- avoid restarting

Medicines Started

Reason:

Duration or review plan:

Medicines Stopped

Reason:

Explain “do not restart”?

Yes / No

Medicines Held Temporarily

Reason:

Who decides restart:

When to review:

Medicines Changed

Old plan:

New plan:

Reason:

Medicines Continued

Important monitoring:

11. High-Risk Medicine Checklist

Review high-risk medicines carefully.

Anticoagulants

Indication clear? Bleeding and falls risk considered?

Plan:

Insulin and Diabetes Medicines

Food intake stable? Hypoglycemia risk addressed?

Plan:

Opioids

Pain benefit outweighs constipation, drowsiness, delirium, and falls risk?

Plan:

Sedatives

Still needed? Fall and delirium risk addressed?

Plan:

Diuretics

Volume status, renal function, potassium, dizziness reviewed?

Plan:

ACE Inhibitors / ARBs

Restart, hold, or adjust? Renal and potassium follow-up arranged?

Plan:

NSAIDs

Avoided where CKD, AKI, heart failure, bleeding risk, or frailty?

Plan:

Antibiotics

Duration, indication, side effects, and review clear?

Plan:

Steroids

Duration, taper, glucose, infection risk, and adrenal considerations clear?

Plan:

12. “Do Not Restart” Medicines

Patients often restart old medicines at home unless told clearly.

Explicitly explain medicines that should not be restarted.

Examples:

- NSAIDs after AKI, CKD, heart failure, or bleeding risk
- sedatives after delirium or falls
- old antibiotics
- duplicate blood pressure medicines
- old insulin doses after hypoglycemia or poor intake
- diuretics if held pending renal review
- anticoagulants if stopped for bleeding pending specialist review

Do-not-restart list:

Patient / caregiver understands?

Yes / No

Teach-back completed?

Yes / No

13. Prescription and Supply Check

Before discharge, confirm:

- prescription is complete
- medicines are available
- patient can afford or access medicines
- doses are clear
- timing is clear
- duration is clear
- monitoring is clear
- old medicines will not conflict
- caregiver can administer if needed
- pharmacy review completed where needed

Prescription complete?

Yes / No

Supply confirmed?

Yes / No

Access barriers:

14. Pending Results Checklist

Ask:

- Are any results pending?
- Could they change diagnosis?
- Could they change treatment?
- Could they indicate cancer, infection, clot, bleeding, renal risk, or other serious disease?
- Who will review them?
- When?
- How will the patient be contacted?
- Does the patient know there are pending results?

Pending results:

Owner:

Expected date:

Action if abnormal:

Patient informed?

Yes / No

15. Follow-Up Checklist

Ask:

- Who will review the patient?
- When?
- Where?
- What is the purpose?
- What results or symptoms should be reviewed?
- What medicines need monitoring?
- What blood tests are needed?
- What referrals are pending?
- What should trigger earlier review?

Follow-up appointment:

Blood tests:

Medicine review:

Specialist follow-up:

Primary care follow-up:

Therapy or community follow-up:

16. Safety-Netting Checklist

Safety-netting must be specific.

Explain:

- what recovery should look like
- what symptoms may be expected
- what symptoms are dangerous
- what medicines may cause side effects
- what to do if symptoms worsen
- who to contact
- when to seek urgent care
- when follow-up occurs

General safety-net:

Condition-specific warning signs:

Medicine warning signs:

Who to contact:

Emergency instructions:

Teach-back completed?

Yes / No

17. Patient Understanding

Ask:

- Do you understand what happened?
- Do you understand the diagnosis?
- Do you understand the medicine changes?
- Do you know what to watch for?
- Do you know when follow-up is?

Do you know who to contact?

Is anything unclear?

What worries you about going home?

Patient understanding:

Patient concern:

Questions answered:

18. Caregiver Readiness

If a caregiver is involved, ask:

Do they understand the diagnosis?

Do they understand the medicine changes?

Can they provide required help?

Can they monitor warning signs?

Can they help with mobility?

Can they manage stairs or equipment?

Can they bring the patient to follow-up?

Are they overwhelmed?

Do they know who to contact?

Caregiver:

Role:

Concerns:

Training or explanation completed:

Caregiver ready?

Yes / No

19. Home Safety Checklist

Before discharge, consider:

stairs

bathroom access

toilet access

lighting

- walking aids
- fall hazards
- bed location
- food access
- medicine storage
- caregiver availability
- emergency contact
- transport
- oxygen or equipment
- wound care supplies
- ability to call for help

Home safety concerns:

Equipment needed:

Community support:

Transport plan:

20. Nutrition, Hydration, Bowels, and Bladder

Confirm:

Nutrition

Eating enough? Diet advice needed?

Hydration

Drinking enough? Fluid restriction or encouragement clear?

Bowels

Constipation treated? Bowel plan provided?

Bladder

Passing urine? Catheter plan? Follow-up?

These simple functions often determine readmission risk.

21. Wounds, Devices, and Equipment

Check:

- wounds

- dressings
- drains
- catheters
- stomas
- oxygen
- feeding tubes
- walking aids
- braces
- monitoring equipment
- pressure injury prevention
- diabetic foot care

Device or wound:

Care instructions:

Who will review:

Warning signs:

22. Discharge Communication to Receiving Clinician

The discharge summary should clearly state:

- reason for admission
- key diagnosis or syndrome
- important results
- treatment given
- treatment response
- medicine changes and reasons
- medicines stopped and why
- pending results and owner
- follow-up plan
- ongoing risks
- safety-net provided
- functional status
- cognitive status
- caregiver support
- escalation concerns

Receiving clinician message:

23. Discharge Summary Template

Patient Details

Admission Dates

Reason for Admission

Main Diagnosis / Syndrome

Important Background

Clinical Course

Key Results

Treatment Given

Treatment Response

Medicine Changes

Started:

Stopped:

Held:

Changed:

Reason for changes:

Pending Results

Owner:

Functional Status at Discharge

Cognitive Status at Discharge

Follow-Up

Safety-Net

Patient / Caregiver Communication

24. Discharge in Frailty

For frail patients, discharge requires special care.

Check:

- baseline function known
- current function compared with baseline
- cognition compared with baseline
- delirium improving or supported
- falls risk addressed
- walking aid available
- caregiver ready
- medicines simplified
- sedatives minimized
- constipation addressed
- pain controlled safely
- nutrition and hydration adequate
- pressure injury risk addressed
- follow-up realistic
- transport safe
- goals understood

Frailty discharge concerns:

Discharge safe?

Yes / No / Only with supports

Supports required:

25. Discharge After AKI

For AKI, check:

- creatinine improving or stable
- potassium safe
- urine output adequate
- hydration plan clear
- nephrotoxic medicines stopped
- held medicines documented

- restart decisions assigned
- repeat blood tests arranged
- patient knows what to avoid
- warning signs explained

AKI status:

Medicines held or stopped:

Repeat blood test:

Owner:

Safety-net:

26. Discharge After Delirium

For delirium, check:

- delirium resolved or improving
- baseline cognition confirmed
- supervision available if needed
- sedatives minimized
- triggers addressed
- sleep plan considered
- family understands fluctuation
- safety plan for falls and confusion
- follow-up arranged
- driving, cooking, medicines, and finances considered where relevant

Delirium status:

Baseline confirmed by:

Supervision plan:

Warning signs:

27. Discharge After Heart Failure

For heart failure, check:

- breathlessness improved

- edema improved or manageable
- oxygen requirement stable
- renal function and potassium reviewed
- diuretic plan clear
- medicines reviewed
- weight or symptom monitoring explained where appropriate
- salt/fluid advice according to local guidance
- follow-up arranged
- worsening signs explained

Heart failure status:

Diuretic plan:

Renal / potassium follow-up:

Safety-net:

28. Discharge After Infection

For infection, check:

- fever settled or explained
- vital signs stable
- source identified or follow-up arranged
- antibiotic plan clear
- cultures reviewed or pending owner assigned
- treatment duration clear
- side effects explained
- recurrence warning signs explained
- immune risk considered

Infection status:

Antibiotic plan:

Pending cultures:

Safety-net:

29. Discharge With Diabetes

For diabetes, check:

- glucose stable enough
- food intake adequate
- hypoglycemia risk addressed
- insulin or medicine changes explained
- steroid-related glucose plan if relevant
- renal-related medicine holds explained
- monitoring plan clear
- patient or caregiver able to manage
- follow-up arranged

Diabetes plan:

Hypoglycemia safety-net:

Monitoring:

30. Discharge With Pain

For pain, check:

- cause of pain addressed
- pain manageable at home
- medicine side effects addressed
- bowel plan if opioids
- NSAID risk reviewed
- sedation and falls risk reviewed
- non-medicine strategies discussed
- follow-up arranged
- patient knows when pain is dangerous

Pain plan:

Side effect plan:

Danger pain signs:

31. Discharge Against Medical Advice or Earlier Than Recommended

If the patient wishes to leave despite risk:

- assess capacity
- explain risks clearly

- explore reasons
- address barriers
- involve senior clinician if needed
- involve family if patient agrees
- offer safer alternatives
- provide prescriptions where appropriate
- provide follow-up
- provide safety-net
- document discussion

Reason for leaving:

Capacity assessment:

Risks explained:

Safer plan offered:

Follow-up and safety-net:

32. Discharge Readiness Decision

A patient is discharge-ready when:

- danger is controlled
- diagnosis is clear enough
- treatment can continue safely
- medicines are reconciled
- function is safe or supported
- cognition is safe or supported
- symptoms are controlled
- follow-up is arranged
- pending results are owned
- patient and caregiver understand the plan
- safety-netting is clear
- transport and home conditions are adequate

Discharge readiness:

Ready / not ready / ready with supports

Reason:

Supports needed:

33. Common Discharge Pitfalls

Pitfall 1: Discharging Because One Disease Marker Improved

Pneumonia may improve while mobility, cognition, kidneys, glucose, or caregiver capacity remain unsafe.

Pitfall 2: Unclear Medicine Changes

Patients need to know what changed and why.

Pitfall 3: Forgetting "Do Not Restart" Medicines

Old medicines at home can cause readmission.

Pitfall 4: Pending Results Without Owner

Every pending result needs responsibility.

Pitfall 5: Ignoring Function

Walking, toileting, stairs, and self-care determine safety.

Pitfall 6: Ignoring Cognition

Confusion makes medicines, falls, and safety-netting harder.

Pitfall 7: Weak Safety-Netting

"Come back if worse" is often not enough.

Pitfall 8: Assuming Caregiver Capacity

Caregivers need explanation, preparation, and support.

34. One-Page Discharge Checklist

Diagnosis / Syndrome

Danger Controlled?

Yes / No

Concerns:

Clinical Stability

Symptoms:

Vital signs:

Oxygenation:

Renal / electrolytes:

Glucose:

Pain:

Capacity Review

Oxygenation:

Circulation:

Clearance:

Defense:

Brain:

Energy:

Mobility:

Comfort:

Agency:

Support:

Function

Walking / transfers / stairs / toileting:

Cognition

Baseline / current / supervision:

Medicines

Started:

Stopped:

Held:

Changed:

Do not restart:

High-risk medicines:

Pending Results

Owner:

Follow-Up

Patient Understanding

Caregiver Readiness

Home Safety

Safety-Net

Discharge Summary Completed

Yes / No

Receiving Clinician Informed Where Needed

Yes / No

Discharge Decision

Ready / not ready / ready with supports:

35. Worked Example

Patient

78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia.

Diagnosis / Syndrome

Recovering pneumonia with improving oxygenation, complicated by delirium, AKI risk, weakness, constipation, pain, medication changes, and discharge safety concerns.

Danger Controlled?

Pneumonia danger improved. However, discharge danger remains: falls, medicine error, persistent confusion, constipation, pain, renal relapse, hypoglycemia, and caregiver uncertainty.

Clinical Stability

Afebrile, off oxygen, eating better. Creatinine improving but not baseline. Glucose safer but insulin changed. Bowels not yet open. Weak and afraid to walk.

Function

Still below baseline. Needs physiotherapy assessment for transfers, walking, and stairs.

Cognition

Still intermittently confused. Daughter says not baseline. Needs supervision and delirium safety plan.

Medicines

NSAIDs stopped and must not be restarted. Diuretic and ACE inhibitor held pending renal and volume review. Insulin reduced because of poor intake and hypoglycemia risk. Pain plan must avoid kidney harm and excess sedation.

Pending Results

Repeat renal function and electrolytes needed. Owner and timing must be clear.

Follow-Up

Primary care or clinic review, renal function check, medicine review, glucose review, mobility and falls follow-up.

Caregiver Readiness

Daughter must understand medicine changes, warning signs, mobility limitations, and when to seek urgent help.

Safety-Net

Return urgently for fever, breathlessness, confusion, fall, low glucose, reduced urine, dizziness, vomiting, inability to drink, uncontrolled pain, or medication uncertainty.

Discharge Decision

Not discharge-ready until cognition, mobility, bowels, pain plan, renal monitoring, medicine reconciliation, daughter teaching, and home safety are addressed.

Life-Coherent Judgment

The patient is medically improving but not yet safely transferable to home unless the conditions of repair are secured.

Final Reminder

A safe discharge asks:

Is danger controlled?
What syndrome is being transferred home or to another setting?
Which capacities remain fragile?
Are medicines clear and safe?
Are stopped medicines explained?
Are pending results owned?
Is function safe?
Is cognition safe or supported?
Is caregiver support real?
Does the patient understand the plan?
Is follow-up arranged?
Are warning signs specific?
Can repair continue safely outside hospital?

Discharge is not release from responsibility.

It is the careful transfer of responsibility so that recovery can continue without preventable harm.

Appendix I. Handover, Referral, and Escalation Scripts

Handover, referral, and escalation are clinical safety skills.

They are not merely communication tasks.

A good handover transfers risk.
A good referral asks the right person for the right help at the right time.
A good escalation recognizes when the patient's need exceeds the current plan or current clinician's capacity.

The life-coherent communication structure is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

In practical language, this means:

Who is the patient?
What is the problem?
What is dangerous?
What has changed?
What has been done?
What do I need from you?
What must happen next?

1. The Purpose of Clinical Handover

Handover is the transfer of responsibility for clinical risk.

It should not merely list tasks.

It should explain:

- who the patient is
- why they are in hospital
- what is dangerous
- what is changing
- what has been done
- what remains uncertain
- what results are pending
- what medicines are high-risk
- what would trigger escalation
- what the receiving clinician must do

A weak handover says:

"Please chase bloods."

A strong handover says:

"Please review Mrs. Khan's repeat potassium at 22:00 after treatment for hyperkalemia. She has AKI on CKD. If potassium remains high or ECG changes are present, follow the local hyperkalemia pathway and call the senior doctor."

The difference is safety.

2. The Purpose of Referral

Referral is asking another clinician or team to help with a specific clinical question.

A good referral explains:

- the clinical problem
- why help is needed
- how urgent it is
- what has already been done
- what decision is required
- what the patient's context is
- what the patient's goals are where relevant

A weak referral says:

"Please see this patient with renal problems."

A strong referral says:

"I am referring a 76-year-old man with CKD and heart failure who has worsening AKI and hyperkalemia despite stopping nephrotoxic medicines. I need advice on further AKI management, potassium control, and whether renal imaging or specialist review is needed today."

Referral is not transferring uncertainty vaguely.

It is sharing a defined question.

3. The Purpose of Escalation

Escalation is seeking higher-level help because risk, complexity, deterioration, or uncertainty exceeds current capacity.

Escalation is needed when:

- the patient is deteriorating
- treatment is not working
- vital signs are worsening
- oxygen requirement is rising
- consciousness is reduced
- confusion is worsening
- pain is uncontrolled
- results are dangerous
- diagnosis is uncertain and risk is high
- discharge is unsafe
- patient or family concern is serious
- the clinician is unsure and delay may harm

A weak escalation says:

"Can you review when free?"

A strong escalation says:

“I need urgent senior review. This patient’s oxygen requirement has doubled over the last hour, respiratory rate is rising, and they are becoming confused despite treatment for pneumonia.”

Escalation protects patients.

It is not failure.

4. The SBAR Structure

A practical communication structure is SBAR:

Situation

What is happening now?

Background

What is the key context?

Assessment

What do you think is going on?

Recommendation / Request

What do you need?

SBAR works well because it prevents vague communication.

5. Life-Coherent SBAR

A life-coherent SBAR adds capacity and repair.

Situation

Who is the patient, and what is the immediate concern?

Background

What is the syndrome, baseline, and relevant context?

Assessment

What danger or capacity failure is present?

Recommendation

What action, decision, review, or escalation is needed?

Repair / Review

What should happen next, and what should be monitored?

6. Handover Script Template

Use this structure:

“This is [patient name], a [age]-year-old with [key background], admitted with [main syndrome / diagnosis].”

“The current concern is [danger / active issue].”

“Today, [what changed / treatment response / key result].”

“The main risks are [risk 1, risk 2, risk 3].”

“Pending tasks/results are [specific tasks].”

“Please do [specific action] by [timeframe].”

“Escalate if [clear triggers].”

Fill-In Template

Patient:

Key background:

Admission syndrome:

Current concern:

What changed today:

Main risks:

Pending tasks / results:

Action requested:

Timeframe:

Escalation triggers:

7. Referral Script Template

Use this structure:

“I am referring [patient], a [age]-year-old with [key background], because of [specific problem].”

“They were admitted with [syndrome / diagnosis].”

“The current issue is [clinical question].”

“So far, we have found [key findings] and done [actions].”

“The patient is currently [stable / unstable / deteriorating].”

“I would like your advice or review regarding [specific request].”

“The urgency is [now / today / routine] because [reason].”

Fill-In Template

Patient:

Key background:

Reason for referral:

Current clinical question:

Key findings:

Actions already taken:

Current stability:

Specific request:

Urgency:

Patient goals or context:

8. Escalation Script Template

Use this structure:

“I need urgent help with [patient], a [age]-year-old admitted with [syndrome / diagnosis].”

“They are deteriorating because [specific change].”

“The danger is [hypoxia / shock / confusion / bleeding / critical result / other].”

“I have already done [actions].”

“I need you to [come now / advise now / arrange transfer / review treatment].”

“My concern is [what you fear will happen].”

Fill-In Template

Patient:

Diagnosis / syndrome:

Deterioration:

Danger:

Actions already taken:

Help needed:

Urgency:

What you are worried about:

9. Closed-Loop Communication

Closed-loop communication means confirming that the message was received, understood, and assigned.

Use phrases like:

“Can you repeat back the plan so I know I was clear?”

“Who will review the result?”

“When will this be done?”

“What should happen if the result is abnormal?”

“Can you call me back after you have assessed the patient?”

Closed-loop communication prevents invisible risk.

10. Handover of an Unstable Patient

Weak Handover

“Bed 4 is a bit breathless. Please keep an eye.”

Strong Handover

“Bed 4 is Mr. Lewis, 68, admitted with pneumonia. His oxygen requirement increased from nasal oxygen to face mask this afternoon, respiratory rate is rising, and he looks more tired. Antibiotics have been given and repeat chest imaging has been requested. Please review him within 30 minutes, check blood gas if clinically indicated according to local pathway, and call the senior doctor if oxygen requirement rises further, he becomes confused, or work of breathing increases.”

Why This Is Safer

It includes:

- patient identity
- diagnosis
- trend
- danger
- treatment already given
- specific task
- timeframe
- escalation triggers

11. Handover of a Critical Result

Weak Handover

“Please chase potassium.”

Strong Handover

“Mrs. Ali has AKI on CKD with hyperkalemia treated this afternoon according to local protocol. Repeat potassium is due at 22:00. Please review the result immediately. If potassium remains high, ECG changes occur, or she becomes weak, drowsy, or unstable, escalate to the senior doctor and continue the local pathway.”

Why This Is Safer

It explains why the result matters and what action follows.

12. Handover of a Pending Imaging Result

Weak Handover

“CT pending.”

Strong Handover

“Mr. James has severe abdominal pain and vomiting. CT abdomen was requested to assess obstruction or perforation. Please chase the result tonight. If obstruction, perforation, ischemia, or another surgical emergency is reported, contact surgery urgently and inform the senior doctor.”

Why This Is Safer

It tells the receiver:

- why the scan was done
- what dangerous results matter
- who to call
- what to do next

13. Handover of a Discharge Risk

Weak Handover

“Possible discharge tomorrow.”

Strong Handover

“Mrs. Brown may be considered for discharge tomorrow after pneumonia, but she is still intermittently confused and weak. Physiotherapy has not yet confirmed stairs safety. Her daughter is worried she is not back to baseline. Please do not discharge until cognition, mobility, medicines, and daughter-supported care are reviewed.”

Why This Is Safer

It prevents discharge based only on disease improvement.

14. Referral to Cardiology

Example Script

“I am referring Mr. Daniel, a 62-year-old man with hypertension and diabetes, admitted with exertional chest pain. Initial ECG and blood tests are being managed according to local chest pain pathway. He is currently stable, but his history remains concerning because the pain is exertional and relieved by rest. I would like cardiology advice on further risk assessment and management. The referral is today because discharge planning depends on whether further inpatient or urgent outpatient assessment is needed.”

Key Elements

- risk factors
- symptom pattern
- current stability
- current pathway
- specific question
- urgency reason

15. Referral to Respiratory Team

Example Script

“I am referring Ms. Adams, a 70-year-old with COPD, admitted with acute breathlessness, wheeze, and increased sputum. She initially improved with treatment, but her oxygen requirement has increased again and she is more breathless on minimal exertion. Chest imaging shows persistent changes, and we are considering infection, COPD exacerbation, heart failure, or PE depending on reassessment. I would like respiratory review today to help clarify the cause of ongoing breathlessness and advise further management.”

Key Elements

- known background
- current syndrome
- treatment response
- deterioration
- differential
- specific request

16. Referral to Renal Team

Example Script

“I am referring Mr. Thomas, a 76-year-old man with CKD, diabetes, and heart failure, admitted with AKI after poor intake and NSAID use. NSAIDs have been stopped and volume status has been reassessed, but creatinine continues to rise and potassium is becoming difficult to control. Urine output is reduced. I would like renal advice today on further AKI management, potassium control, medicine adjustment, and whether further imaging or specialist intervention is needed.”

Key Elements

- baseline risk
- likely trigger
- actions already taken
- current deterioration
- specific renal questions
- urgency

17. Referral to Neurology or Stroke Team

Example Script

“I am referring Mrs. Evans, a 74-year-old with hypertension and atrial fibrillation, who has new right-sided weakness and slurred speech starting approximately one hour ago. She is alert, glucose has been checked, and vital signs are being monitored. I need urgent stroke team review according to local pathway.”

Key Elements

- time of onset
- focal signs

key risk factors

glucose checked

urgent pathway request

18. Referral to Palliative Care

Example Script

“I am referring Mr. Henry, a 79-year-old with advanced heart failure and COPD, with repeated admissions and worsening frailty. He is now very breathless despite disease-directed treatment, and the team is concerned that treatment burden is increasing while recovery is limited. The patient values comfort and home time. I would like palliative care input for symptom control, goals-of-care discussion, family support, and planning for future crises.”

Key Elements

serious illness trajectory

symptom burden

treatment limitation

patient values

specific requests

future planning

19. Referral to Physiotherapy

Example Script

“I am referring Mrs. Grant, a 78-year-old admitted with pneumonia and delirium, now medically improving but significantly weaker than baseline. She normally walks with a stick and manages stairs at home, but she currently needs assistance to transfer and is afraid to walk. Please assess mobility, falls risk, and stairs safety to guide discharge planning.”

Key Elements

baseline function

current function

discharge relevance

specific assessment needed

20. Referral to Occupational Therapy

Example Script

“I am referring Mr. Clarke, an 82-year-old with frailty and recent fall, now below baseline function. He lives alone with stairs and is struggling with washing, dressing, toileting, and kitchen tasks. Please assess functional safety, equipment needs, home setup, and discharge supports.”

Key Elements

home environment

functional tasks

safety concerns

discharge supports

21. Referral to Pharmacy

Example Script

“I am referring Mrs. Joseph for pharmacy review because she has CKD, recent AKI, diabetes, heart failure, and multiple medicine changes. NSAIDs were stopped, diuretic and ACE inhibitor are held, insulin was reduced, and she is confused about her old medicines at home. Please help reconcile discharge medicines, identify high-risk interactions, and create clear patient instructions including medicines not to restart.”

Key Elements

- complexity
- high-risk medicines
- discharge risk
- patient understanding
- specific task

22. Referral to Social Work or Discharge Coordination

Example Script

“I am referring Mrs. Richards, a frail older adult recovering from infection, because she is medically improving but not safe to return home without support. She lives alone, has stairs, is below baseline mobility, and her daughter can only provide limited help. Please assess home support, equipment, community services, and safe discharge options.”

Key Elements

- medical improvement but social risk
- home environment
- caregiver limits
- discharge planning request

23. Escalating Rising Oxygen Requirement

Example Script

“I need urgent senior review for Mr. Lewis, admitted with pneumonia. His oxygen requirement has increased over the last hour, respiratory rate is rising, and he is now more confused. Antibiotics have been given, but I am concerned he is deteriorating with worsening oxygenation. I need you to review him now and advise on further respiratory support and level of care.”

Key Danger

Rising oxygen requirement is deterioration even if saturation is temporarily maintained.

24. Escalating Hypotension

Example Script

“I need urgent help with Mrs. Singh. She is admitted with suspected infection and is now hypotensive with a rising heart rate and reduced urine output. I have repeated observations, assessed fluid status, and started management according to local sepsis pathway. I am concerned about shock and need senior review now.”

Key Danger

Hypotension with reduced urine output suggests circulation failure.

25. Escalating New Confusion

Example Script

"I need senior advice for Mr. Roberts, a 70-year-old with diabetes and CKD, who has become acutely confused over the last two hours. Glucose has been checked, oxygenation and vital signs are being assessed, and I am reviewing medicines and infection signs. I am concerned about delirium with possible metabolic, infectious, or neurological cause. Please review or advise urgently."

Key Danger

New confusion is acute brain dysfunction until proven otherwise.

26. Escalating Uncontrolled Pain

Example Script

"I need help with Mrs. Martin, who has severe abdominal pain that is worsening despite analgesia. She is now guarding and looks unwell. I am concerned about a possible surgical abdomen or other serious cause. Please review urgently and advise on further imaging, surgical referral, and pain control."

Key Danger

Pain trajectory and examination change may reveal evolving serious disease.

27. Escalating Unsafe Discharge

Example Script

"I need senior review before discharge for Mrs. Brown. Her pneumonia has improved, but she remains intermittently confused, weak, and unsafe on stairs. Her daughter says she is not baseline and cannot provide full supervision. I am concerned that discharge today would create a high risk of falls, medicine error, and readmission."

Key Danger

Discharge danger is clinical danger.

28. Escalating Goals-of-Care Uncertainty

Example Script

"I need senior review for Mr. Henry, who has advanced heart failure, COPD, and repeated admissions. He is deteriorating despite treatment, and it is unclear whether further escalation would benefit him. The family is asking about ICU, and the patient previously said he values comfort and home time. I think we need an urgent goals-of-care discussion."

Key Danger

Unclear goals in serious illness can lead to both under-treatment and over-treatment.

29. Speaking to a Senior When You Are Worried but Unsure

Sometimes you cannot yet name the diagnosis, but you know the patient is unsafe.

Use this script:

“I am worried about this patient, but I cannot yet explain everything. They look worse than before, their observations are changing, and the nurse also feels they are not right. I have checked [vitals/glucose/oxygen/initial assessment], but I need senior review because I am concerned they may be deteriorating.”

This is appropriate.

You do not need a complete diagnosis before escalating danger.

30. Receiving a Handover Safely

When receiving handover, ask:

- What is the patient’s main syndrome?
- What is the danger?
- What has changed?
- What has already been done?
- What is pending?
- What do you want me to do?
- How urgent is it?
- What should trigger escalation?
- Who else knows?
- What is the patient’s ceiling of care or goals where relevant?

If the handover is vague, clarify.

Do not accept invisible risk.

31. Receiving a Referral Safely

When receiving a referral, clarify:

- Why are you referring?
- What is the specific question?
- How urgent is this?
- Is the patient stable?
- What danger are you worried about?
- What investigations have been done?
- What treatment has already started?
- What decision do you need from us?
- What are the patient’s goals or limitations where relevant?

Good receiving also improves patient safety.

32. When a Referral Is Declined

If a referral is declined but you remain concerned:

- clarify the reason

ask what alternative plan is recommended

document advice

safety-net the patient

escalate within your team if danger remains

re-refer if the patient deteriorates

involve senior-to-senior discussion if needed

Useful phrase:

“Thank you. I remain concerned because the patient is deteriorating. Could you please advise what specific monitoring or trigger should prompt re-referral, and I will discuss with my senior now.”

33. Handover for End-of-Life Care

Example Script

“Mrs. James is a 90-year-old with advanced dementia and pneumonia. After discussion with family and senior review, the focus is comfort. She is not for escalation to ICU. The priority overnight is relief of breathlessness, pain, agitation, and family support. Please review if distress increases, if medicines are not controlling symptoms, or if family has concerns.”

Key Elements

diagnosis and phase

goals of care

escalation limits

symptom priorities

family support

review triggers

34. Handover for a Patient Awaiting Discharge

Example Script

“Mr. Pierre is planned for discharge tomorrow after heart failure treatment. He is clinically improved, but discharge depends on renal function, potassium, diuretic plan, medicine reconciliation, and confirmation that he understands worsening symptoms. Please do not finalize discharge unless repeat bloods are reviewed and the medicine plan is clear.”

Key Elements

discharge conditions

pending results

medicine risks

safety-net requirements

35. Handover for a Patient With Delirium

Example Script

“Mrs. Francis has delirium on the background of mild dementia after infection and AKI. She is calmer today but still fluctuates. Please avoid sedatives unless there is immediate safety risk, check for pain,

constipation, urinary retention, hypoxia, glucose changes, and infection if she worsens. Call senior if she becomes drowsy, unsafe, or develops new neurological signs."

Key Elements

- baseline
- delirium status
- avoid harm
- triggers
- escalation signs

36. Handover for AKI

Example Script

"Mr. Grant has AKI likely from poor intake and NSAID use. NSAIDs have been stopped, ACE inhibitor and diuretic are held, and fluids are being reassessed because he also has heart failure. Please monitor urine output and repeat renal function and potassium in the morning. Escalate if potassium rises, urine output falls, breathlessness worsens, or blood pressure drops."

Key Elements

- likely cause
- medicine changes
- fluid complexity
- monitoring
- escalation triggers

37. Handover for Diabetes Risk

Example Script

"Mrs. Joseph has diabetes and poor intake after infection. Insulin has been reduced because she had hypoglycemia yesterday. Please monitor glucose closely, especially if she does not eat. Escalate if recurrent low sugars, drowsiness, vomiting, or high sugars with dehydration occur."

Key Elements

- food intake
- medicine change
- recent event
- monitoring
- escalation triggers

38. Handover for Anticoagulation Risk

Example Script

"Mr. Allen is on anticoagulation and had a fall with head strike. Initial assessment is stable, but he needs neurological observations according to local policy and reassessment if headache, vomiting, confusion, drowsiness, weakness, or seizure develops. Please escalate immediately if any neurological change occurs."

Key Elements

anticoagulation

head injury

current status

monitoring

specific danger signs

39. Common Communication Pitfalls

Pitfall 1: Saying “Stable” Without Explaining Risk

Stable compared with what? What could change?

Pitfall 2: Handing Over Tasks Without Reasons

The receiver must know why the task matters.

Pitfall 3: Not Giving a Timeframe

“Review later” is unsafe.

Pitfall 4: Not Stating Escalation Triggers

The receiving clinician needs to know when to act.

Pitfall 5: Referring Without a Question

Specialists need a defined clinical question.

Pitfall 6: Delaying Escalation Until Diagnosis Is Certain

Escalate danger, not certainty.

Pitfall 7: Not Closing the Loop

Confirm that the message was received and understood.

Pitfall 8: Hiding Uncertainty

Uncertainty should be named and managed.

40. One-Page Handover Template

Patient

Name / age / location:

Key Background

Admission Syndrome / Diagnosis

Current Status

What Changed Today

Main Danger

Capacity Failures

Treatment Given

Treatment Response

Medicines to Watch

Pending Results / Tasks

Action Requested

Timeframe

Escalation Triggers

Goals of Care / Treatment Limits Where Relevant

Family / Patient Concerns

41. One-Page Referral Template

Patient

Key Background

Reason for Referral

Specific Clinical Question

Current Syndrome

Stability / Urgency

Key Findings

Results

Treatment Already Given

Relevant Medicines

Patient Goals / Context

What I Need From You

Timeframe Requested

42. One-Page Escalation Template

Patient

Problem

Why I Am Worried

What Has Changed

Current Vital / Clinical Concerns

Actions Already Taken

What I Need Now

What I Fear May Happen

Who Else Has Been Informed

43. Worked Example: Full Life-Coherent Handover

Patient

78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia.

Handover Script

“Mrs. Roberts is a 78-year-old woman admitted with pneumonia causing hypoxia and delirium, complicated by AKI risk, poor intake, frailty-related weakness, chronic knee pain, and medication complexity. Her pneumonia is improving: she is now afebrile and off oxygen. However, she remains intermittently confused, constipated, weak, and afraid to walk. Her daughter says she is not back to baseline and is worried about stairs.”

“The main current risks are falls, persistent delirium, unsafe discharge, recurrent AKI, hypoglycemia, constipation, and medicine error. NSAIDs have been stopped. Diuretic and ACE inhibitor remain held pending renal and volume reassessment. Insulin was reduced because of poor intake and hypoglycemia risk.”

“Please do not discharge until cognition, mobility and stairs, bowel function, pain plan, renal function, glucose trend, medicine reconciliation, and daughter-supported safety are reviewed. Escalate if

confusion worsens, she falls, oxygen need returns, urine output drops, glucose becomes low, severe pain persists, or daughter remains unable to support discharge."

Why This Works

It transfers:

- diagnosis
- improvement
- remaining danger
- capacity failures
- medicine risks
- discharge conditions
- escalation triggers
- family concern

Final Reminder

Safe handover, referral, and escalation ask:

Who is the patient?
What is the syndrome?
What is dangerous?
What has changed?
Which capacities are failing?
What has been done?
What remains uncertain?
What do I need from the other person?
How urgent is it?
What should trigger escalation?
Who owns the next step?

Good communication is not decoration around clinical care.

It is clinical care.

Appendix J. Safety-Netting Phrases

Safety-netting is the structured process of telling the patient, caregiver, or receiving clinician what to expect, what to watch for, what would be worrying, what to do if things worsen, and who is responsible for follow-up.

A safe clinician does not simply say:

“Come back if you feel worse.”

That may be too vague.

A safe clinician explains:

“This is what we expect. These are the warning signs. This is what you should do. This is who you should contact. This is when we will review you. This is what must not be missed.”

Safety-netting follows the life-coherent loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

In practical language:

What could go wrong?
What should improvement look like?
What warning signs show danger?
What should the patient or caregiver do?
Who owns follow-up?

1. The Purpose of Safety-Netting

Safety-netting protects patients when:

- diagnosis is uncertain
- illness may evolve
- treatment has started but response is not yet known
- symptoms may worsen
- side effects may occur
- results are pending
- follow-up is needed
- discharge is recent
- patient is frail or vulnerable
- caregiver support is important
- the patient may not recognize danger
- care is being transferred

Safety-netting is clinical reasoning extended into the future.

2. The Basic Safety-Netting Structure

Use this structure:

1. What We Think Is Happening

“At the moment, this looks most consistent with…”

2. What We Expect

“If things are improving, you should notice…”

3. What Would Be Worrying

“The warning signs I want you to watch for are…”

4. What To Do

“If any of these happen, you should…”

5. Follow-Up

“You should be reviewed…”

6. Check Understanding

“Can you tell me what you would watch for and what you would do?”

3. General Safety-Netting Phrase

Use this when a clear but broad safety-net is needed:

“Based on what we have found today, we think the most likely problem is _____. The plan is _____. You should start to improve by _____. However, if you develop _____, _____, or _____, or if you feel significantly worse, you should seek medical help urgently. We will arrange follow-up with _____ on _____. Before you go, can you tell me what warning signs you will watch for?”

Fill in:

Most likely problem:

Plan:

Expected improvement:

Warning signs:

Follow-up:

Teach-back:

4. Safety-Netting for Uncertain Diagnosis

When the diagnosis is not fully certain, be honest.

“At the moment, we have not found signs of _____, which is reassuring. The most likely explanation is _____. However, some illnesses can change over time, and early tests do not always show everything. If you develop _____, _____, or _____, please seek urgent review. If symptoms do not improve as expected, you should be reviewed again.”

This phrase avoids false reassurance.

Use when:

early symptoms may evolve

initial tests are reassuring but not definitive

dangerous diagnoses were considered

symptoms persist

patient is anxious or vulnerable

5. Safety-Netting After Discharge

“You are well enough to continue recovering outside hospital, but recovery is not complete yet. The main things to watch for are _____. If you develop these, or if you feel you are going backward rather than forward, seek medical help. Your follow-up is with _____, and your medicines have changed in these ways: _____. Please do not restart _____ unless a clinician tells you to.”

Use for:

pneumonia

AKI

heart failure

delirium

medication changes

frailty

surgery or procedures

chronic disease exacerbations

6. Safety-Netting With Teach-Back

Teach-back checks understanding without blaming the patient.

Say:

“I have given you a lot of information. To make sure I explained it clearly, can you tell me what you will watch for at home and what you will do if it happens?”

If the patient cannot repeat the plan, explain again more simply.

Teach-back is especially important when:

medicines changed

high-risk diagnosis

frailty

cognitive impairment

caregiver involved

language barrier

low health literacy

pending results

recent discharge

chronic disease self-management

7. Safety-Netting for Chest Pain

"Your assessment today is reassuring enough for _____, but chest pain can be serious if it changes or returns. If you develop chest pain that is severe, lasts longer, comes on with exertion, spreads to your arm, jaw, back, or neck, or comes with breathlessness, sweating, nausea, fainting, or palpitations, seek urgent medical help immediately."

Also say:

"If the pain returns and feels different from your usual pain, do not wait for a routine appointment."

Follow-up:

8. Safety-Netting for Breathlessness

"Your breathing is stable enough for the current plan, but you must seek urgent help if your breathlessness worsens, if you cannot speak full sentences, if your lips or fingers look blue, if you develop chest pain, fainting, confusion, severe weakness, or if you need more oxygen than usual."

For chronic lung disease:

"Use your usual action plan if you have one, but seek help early if the action plan is not working or if symptoms are worse than your usual flare-up."

Follow-up:

9. Safety-Netting for Fever or Infection

"We are treating this as an infection. You should gradually feel better with the plan we have given. Seek urgent help if fever persists or worsens, if you become confused, very weak, breathless, dizzy, unable to drink, pass much less urine, develop severe pain, rash with feeling very unwell, or if symptoms worsen despite treatment."

For antibiotics:

"If you develop swelling of the lips or face, difficulty breathing, a widespread rash, severe diarrhea, or feel much worse after starting the antibiotic, seek help urgently."

Follow-up:

10. Safety-Netting for Pneumonia

"Your pneumonia is improving enough for this plan, but recovery can take time. Seek urgent help if breathlessness worsens, fever returns, chest pain develops, confusion appears, you become very weak, you cannot drink, your lips look blue, or you feel you are getting worse rather than slowly better."

For older or frail patients:

"In older adults, worsening infection may show as confusion, falls, poor appetite, or unusual sleepiness rather than cough alone."

Follow-up:

11. Safety-Netting for AKI or Kidney Risk

"Your kidney function has been affected, and it is important to protect it while it recovers. Drink according to the plan you were given, avoid medicines we told you to stop, and attend repeat blood testing. Seek

urgent help if you pass much less urine, cannot keep fluids down, become very dizzy, confused, breathless, swollen, or very weak."

Medicine warning:

"Do not restart _____ until your kidney function has been reviewed."

Follow-up blood test:

Owner:

12. Safety-Netting for Heart Failure

"Your heart failure has improved, but it can worsen again. Seek help if breathlessness worsens, you wake at night short of breath, swelling increases quickly, you gain fluid weight if you are monitoring it, you feel faint, develop chest pain, pass much less urine, or become confused or very weak."

Medicine warning:

"Your diuretic plan is _____. If you become very dizzy, dehydrated, or pass much less urine, seek advice."

Follow-up:

13. Safety-Netting for Diabetes and Hypoglycemia

"Because your eating, illness, or medicines have changed, your sugar levels may change too. Watch for low sugar symptoms such as sweating, shaking, hunger, confusion, drowsiness, weakness, or unusual behavior. Treat low sugar according to your plan and seek help if it does not improve, keeps happening, or if you cannot eat or drink."

For high sugars:

"Seek urgent help if your sugars remain very high with vomiting, dehydration, drowsiness, confusion, abdominal pain, or rapid breathing."

Medicine change:

Monitoring plan:

14. Safety-Netting for Falls

"After a fall, seek urgent help if you develop headache, vomiting, confusion, drowsiness, weakness, speech difficulty, seizure, worsening pain, inability to walk, chest pain, palpitations, fainting, or another fall."

If on anticoagulants:

"Because you are on a blood thinner, any head injury needs extra caution. If any confusion, drowsiness, headache, vomiting, weakness, or unusual behavior develops, seek urgent help immediately."

Mobility plan:

15. Safety-Netting for Head Injury

“After a head injury, you should be watched for worsening headache, repeated vomiting, confusion, drowsiness, seizure, weakness, speech difficulty, vision change, unusual behavior, or fluid or blood from the nose or ears. If any of these occur, seek urgent medical help.”

Caregiver instruction:

“Someone should check on you according to the plan given, especially overnight if advised.”

Follow-up:

16. Safety-Netting for Delirium or Confusion

“Confusion can fluctuate. Seek urgent help if confusion worsens, the patient becomes very sleepy, agitated and unsafe, develops fever, breathlessness, poor intake, reduced urine, falls, new weakness, speech difficulty, seizure, or if the caregiver cannot manage safely.”

For family:

“Please compare with their usual baseline. If this is not their normal behavior or it is getting worse, do not assume it is just dementia.”

Supervision plan:

17. Safety-Netting for Abdominal Pain

“At the moment, we do not see signs requiring immediate emergency treatment, but abdominal pain can evolve. Seek urgent help if the pain becomes severe, moves or localizes, the abdomen becomes swollen or hard, vomiting persists, fever develops, you cannot pass stool or wind, you pass blood or black stool, you faint, or you cannot drink.”

Follow-up:

18. Safety-Netting for Vomiting or Diarrhea

“The main danger is dehydration and salt imbalance. Seek help if you cannot keep fluids down, pass much less urine, feel faint, become confused or drowsy, develop severe abdominal pain, pass blood or black stool, have persistent fever, or symptoms do not improve.”

For diabetes or kidney disease:

“Because you have diabetes or kidney disease, vomiting and diarrhea can become serious more quickly. Follow your sick-day or medicine advice and seek help early if intake is poor or urine output falls.”

Medicine advice:

19. Safety-Netting for Headache

“Seek urgent help if the headache is sudden and severe, the worst headache you have had, associated with fever or neck stiffness, confusion, seizure, weakness, speech difficulty, vision changes, persistent vomiting, drowsiness, or if it follows a head injury.”

Follow-up:

20. Safety-Netting for Dizziness or Fainting

“Seek urgent help if you faint again, develop chest pain, palpitations, breathlessness, new weakness, speech difficulty, black stool, severe headache, injury from a fall, or if dizziness is worsening and you cannot stand safely.”

Medicine review:

21. Safety-Netting for Palpitations

“Seek urgent help if palpitations are sustained, associated with chest pain, fainting, severe breathlessness, dizziness, weakness, confusion, or if your heartbeat feels very fast and does not settle.”

Follow-up:

22. Safety-Netting for Leg Swelling or Suspected DVT Risk

“Seek urgent help if the leg becomes much more swollen, painful, red, hot, or if you develop chest pain, breathlessness, coughing blood, fainting, or sudden weakness.”

If anticoagulation started:

“Seek help if you have unusual bleeding, black stool, vomiting blood, severe headache, head injury, or large unexplained bruising.”

Follow-up:

23. Safety-Netting for Cellulitis or Skin Infection

“The redness should gradually stop spreading and symptoms should begin to improve. Seek urgent help if redness spreads quickly, fever develops, pain becomes severe, you feel very unwell, confusion develops, blisters or black skin appear, swelling worsens, or you cannot move the limb because of pain.”

Marking skin edge:

“If advised, mark the edge of redness so spreading can be recognized.”

Follow-up:

24. Safety-Netting for Pain Medicines

Opioids

“This medicine can help pain, but it can also cause drowsiness, slow breathing, constipation, confusion, nausea, and falls. Seek help if you become very sleepy, confused, short of breath, severely constipated, or unsteady.”

NSAIDs

“This medicine can affect kidneys, blood pressure, stomach bleeding, and heart failure in some people. Stop and seek advice if you develop black stool, vomiting blood, severe stomach pain, reduced urine, swelling, breathlessness, or severe dizziness.”

Sedatives

“This medicine can increase confusion, falls, and breathing problems. Seek advice if you become unusually sleepy, confused, unsteady, or breathless.”

25. Safety-Netting for Antibiotics

“Take the antibiotic as prescribed unless you are told to stop. Seek urgent help if you develop difficulty breathing, swelling of lips or face, widespread rash, severe diarrhea, severe abdominal pain, yellowing of the eyes, or if the infection symptoms worsen despite treatment.”

Review date:

26. Safety-Netting for Anticoagulants

“This medicine reduces clot risk but increases bleeding risk. Seek urgent help if you have black stool, vomiting blood, blood in urine, severe headache, head injury, unusual weakness, confusion, severe bruising, coughing blood, or bleeding that does not stop.”

Also say:

“Tell any clinician, dentist, or pharmacist that you take this medicine.”

Follow-up:

27. Safety-Netting for Steroids

“Steroids can help inflammation but may affect sugar levels, infection risk, mood, sleep, and stomach irritation. Seek help if you develop fever, worsening infection symptoms, severe mood change, black stool, vomiting blood, very high sugars, severe weakness, or if you are unsure how to continue them.”

If long-term or tapering:

“Do not stop suddenly unless a clinician tells you to.”

Plan:

28. Safety-Netting for Frail Older Adults

“In frailty, worsening illness may show as confusion, sleepiness, falls, poor appetite, reduced drinking, weakness, reduced urine, or not being able to do usual activities. If any of these appear or worsen, seek help early.”

For caregiver:

“You know their baseline. If they are not themselves, that matters.”

Caregiver contact plan:

29. Safety-Netting After Medication Changes

“Your medicines have changed. The important changes are: _____. The medicines you should not restart are: _____. Seek advice if you feel dizzy, confused, very sleepy, breathless, swollen, pass less urine, have low sugars, bleeding, severe pain, or if you are unsure which medicines to take.”

Medicine list reviewed with:

Patient / caregiver / both

Teach-back completed?

Yes / No

30. Safety-Netting for Pending Results

“Some results are still pending. These are: _____. The person responsible for checking them is _____. If you have not heard by _____, contact _____. If the result is abnormal, the plan is _____.”

Pending result:

Owner:

Expected date:

Patient contact plan:

31. Safety-Netting for Serious Illness

“Given the seriousness of the illness, it is important to know what to do if things worsen. If pain, breathlessness, agitation, vomiting, confusion, or distress increases, contact _____. If the goal remains comfort, the plan is _____. If you are unsure or frightened, please call for help rather than waiting.”

Family understanding:

Crisis plan:

32. Safety-Netting for Palliative or Comfort-Focused Care

“The main goal now is comfort. Please contact us if pain, breathlessness, agitation, noisy breathing, vomiting, distress, or family concern becomes difficult to manage. You are not expected to manage this alone.”

Also say:

“If death appears near, the most important things are comfort, dignity, and support. Call _____ if you need help.”

Contact:

33. Safety-Netting for Mental Health Risk

“If thoughts of harming yourself become stronger, if you feel you may act on them, if you feel unable to stay safe, or if you are alone and at risk, seek urgent help immediately or contact _____. Please also tell _____ so you are not managing this alone.”

Safety plan:

Support person:

Urgent contact:

34. Safety-Netting When the Patient Declines Admission

“I understand you do not want to stay in hospital. I am concerned because _____. The risks of leaving are _____. If you still decide to leave, please return urgently if _____. We will also arrange _____. Can you tell me what would make you come back?”

Capacity assessed?

Yes / No

Risks explained:

Safer alternative offered:

Follow-up:

35. Safety-Netting for Caregivers

Caregivers need specific instructions.

“You are not being asked to diagnose the illness. Please watch for changes from baseline: worsening confusion, sleepiness, breathlessness, fever, falls, poor drinking, reduced urine, severe pain, low sugars, bleeding, or anything that makes you feel they are not safe. If that happens, seek help.”

Ask:

“Do you feel able to manage this plan at home?”

Caregiver concern:

Support needed:

36. Safety-Netting for Receiving Clinicians

When handing over or discharging, safety-net the receiving clinician too.

“The main risk after discharge is _____. Please review _____ by _____. If _____ occurs, the patient should be reassessed urgently. Pending results are _____ and are owned by _____.”

This prevents risk from disappearing between settings.

37. Safety-Netting in Plain Language

Avoid jargon.

Instead of:

“Return if dyspnea worsens.”

Say:

“Come back urgently if breathing becomes harder, you cannot speak full sentences, or you feel unusually weak or confused.”

Instead of:

“Monitor urine output.”

Say:

“Seek help if you are passing much less urine than usual.”

Instead of:

“Watch for melena.”

Say:

“Seek help if your stool becomes black and tarry or you see blood.”

Plain language saves lives.

38. Safety-Netting With Uncertainty Without Causing Panic

Balanced phrase:

“I do not think this is dangerous right now based on today’s assessment, but I want you to know what would change that. If any of these warning signs happen, please seek help urgently.”

This communicates reassurance and vigilance together.

39. Safety-Netting Documentation

Document:

- diagnosis or working diagnosis
- uncertainty
- expected course
- red flags discussed
- medicine warnings
- pending results
- follow-up plan
- who received instructions
- teach-back if completed
- caregiver involvement
- written information given

Safety-net documented?

Yes / No

Details:

40. Common Safety-Netting Pitfalls

Pitfall 1: Saying “Come Back If Worse”

Too vague.

Pitfall 2: Not Explaining Expected Recovery

Patients need to know what improvement should look like.

Pitfall 3: Not Naming Red Flags

Specific warning signs are safer.

Pitfall 4: Forgetting Medicine Side Effects

Many readmissions are medication-related.

Pitfall 5: Not Using Teach-Back

Understanding should be checked.

Pitfall 6: Ignoring Caregivers

Caregivers often detect deterioration first.

Pitfall 7: Not Assigning Pending Result Ownership

Pending results need a named reviewer.

Pitfall 8: False Reassurance

A reassuring assessment is not the same as certainty.

41. One-Page Safety-Netting Template

Working Diagnosis

What We Expect

What Would Be Worrying

What To Do If Warning Signs Occur

Medicines to Watch

Medicines Not to Restart

Pending Results

Owner:

Follow-Up

Caregiver Instructions

Teach-Back Completed

Yes / No

Patient or caregiver repeated plan:

42. Worked Example

Patient

78-year-old woman with diabetes, CKD, heart failure, frailty, mild dementia, chronic pain, and recent pneumonia.

Safety-Net Script

“Your pneumonia has improved, and your breathing is now stable enough to continue recovery outside hospital if the home plan is safe. However, recovery is not complete. The main things we are watching are confusion, weakness, falls, kidney function, sugars, constipation, pain, and medicine changes.”

“Please seek urgent help if fever returns, breathing worsens, confusion gets worse, she becomes very sleepy, she falls, she passes much less urine, has low sugars, cannot eat or drink, becomes very dizzy, develops chest pain, swelling with breathlessness, severe pain, vomiting, or if you are unsure about the medicines.”

“Do not restart the NSAID pain medicine because it can harm the kidneys and worsen heart failure risk. The diuretic and ACE inhibitor are still on hold until kidney function and fluid status are reviewed. Insulin has been reduced because eating has been poor and low sugars are dangerous.”

“Repeat blood tests are needed on _____, and follow-up is with _____. Before you leave, can you tell me which medicines should not be restarted and which warning signs would make you seek help?”

Why This Works

It includes:

- current improvement
- remaining vulnerability
- specific warning signs
- medicine warnings
- follow-up
- teach-back
- caregiver involvement

Final Reminder

Good safety-netting answers five questions:

What do we think is happening?
What should improvement look like?
What warning signs mean danger?
What should the patient or caregiver do?
Who is responsible for follow-up?

Safety-netting is not a closing phrase.

It is the continuation of clinical care beyond the consultation, ward, discharge, or handover.

Appendix K. Mini Case Practice Bank

This appendix provides short clinical cases for practice.

Each case is designed to help students apply the life-coherent clinical reasoning loop:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

For each case, ask:

- What is dangerous?
- What is the main syndrome?
- Which capacities are failing?
- What context shapes risk?
- What is the working diagnosis?
- What dangerous alternatives must not be missed?
- What is the wise next step?
- What should improvement look like?
- What must be safety-netted or handed over?

These cases are not meant to replace local clinical pathways. They are reasoning exercises.

How to Use These Cases

For each case, complete the following structure.

Danger

What could seriously harm the patient now or soon?

Syndrome

What pattern organizes the presentation?

Capacity Failure

Which life-capacities are threatened?

Coupling Conditions

What patient-specific context matters?

Working Diagnosis

What is the best current explanation?

Dangerous Alternatives

What must not be missed?

Wise Next Step

What should be done now?

Repair Trajectory
What should improvement look like?

Safety-Net / Handover
What must be communicated?

Case 1: Chest Pain With Exertion
A 58-year-old man with hypertension and diabetes presents with central chest tightness that comes on when walking uphill and settles with rest. Today it lasted longer than usual. He is currently pain-free.

Practice Questions
What is dangerous?
What syndrome is present?
What must not be missed?
What initial assessment is needed?

Suggested Reasoning

Danger
Acute coronary syndrome or unstable angina pattern must be considered.

Syndrome
Exertional chest pain with cardiovascular risk factors and change in pattern.

Capacity Failure
Circulation and myocardial oxygen supply-demand balance.

Coupling Conditions
Hypertension, diabetes, male sex, exertional pattern, increasing duration.

Working Diagnosis
Possible cardiac ischemia.

Dangerous Alternatives
Myocardial infarction, pulmonary embolism, aortic disease, pneumothorax, serious GI mimic.

Wise Next Step
Assess according to local chest pain pathway, including vital signs, ECG, cardiac markers where indicated, and senior review if concerning.

Repair Trajectory
Pain does not recur, dangerous cardiac disease is excluded or treated, follow-up or admission plan is clear.

Safety-Net / Handover
Escalate if pain returns, becomes prolonged, occurs at rest, or is associated with breathlessness, sweating, fainting, or instability.

Case 2: Breathlessness and Leg Swelling
A 76-year-old woman with known heart failure and CKD presents with worsening breathlessness, ankle swelling, and waking at night short of breath. She has been taking NSAIDs for knee pain.

Practice Questions
Which capacities are failing?
How may treatment help and harm?
What medicine issue matters?

Suggested Reasoning

Danger
Decompensated heart failure, hypoxia, renal deterioration, electrolyte disturbance.

Syndrome
Breathlessness with edema and orthopnea in a patient with heart failure and CKD.

Capacity Failure
Oxygenation, circulation, clearance, mobility, comfort.

Coupling Conditions
CKD, heart failure, NSAID exposure, older age, possible diuretic requirement.

Working Diagnosis
Heart failure exacerbation possibly worsened by NSAID use and renal vulnerability.

Dangerous Alternatives
Pneumonia, pulmonary embolism, myocardial ischemia, arrhythmia, anemia, renal failure.

Wise Next Step
Assess oxygenation, fluid status, renal function, electrolytes, ECG, chest findings, and review medicines. Treat congestion while monitoring kidney function and blood pressure.

Repair Trajectory
Breathlessness improves, edema reduces, oxygenation stabilizes, renal function and potassium remain safe, NSAIDs are stopped and not restarted.

Safety-Net / Handover
Escalate if oxygen requirement rises, blood pressure falls, urine output drops, chest pain occurs, or renal function worsens.

Case 3: Fever With Confusion

An 82-year-old man with dementia is brought in by his daughter because he is more confused than usual, eating poorly, and has a fever. He has no clear localizing symptoms.

Practice Questions
Why is “more confused than usual” important?
What should be checked immediately?
What collateral information matters?

Suggested Reasoning

Danger
Delirium due to infection, hypoxia, hypoglycemia, AKI, electrolyte disturbance, stroke, medication toxicity.

Syndrome
Fever with acute confusion and poor intake in an older adult with dementia.

Capacity Failure
Brain coordination, defense, energy regulation, clearance, hydration, agency.

Coupling Conditions
Dementia, older age, poor intake, possible frailty, need for collateral baseline.

Working Diagnosis
Acute delirium, likely triggered by infection or metabolic disturbance.

Dangerous Alternatives
Hypoglycemia, sepsis, stroke, head injury, urinary retention, constipation, medicine toxicity, hypoxia.

Wise Next Step

Check vital signs, oxygenation, glucose, hydration, infection source, medicines, renal function, electrolytes, pain, bladder, bowels, and obtain collateral baseline.

Repair Trajectory

Attention improves, fever settles, intake improves, triggers corrected, family recognizes return toward baseline.

Safety-Net / Handover

Do not assume confusion is dementia. Escalate if drowsiness, unsafe agitation, worsening confusion, hypotension, hypoxia, or new neurological signs occur.

Case 4: Fall on a Blood Thinner

A 79-year-old man on anticoagulation falls in the bathroom and hits his head. He says he feels fine and wants to go home.

Practice Questions

What danger must be considered even if he feels well?
What should the clinician assess?
What safety-net is needed?

Suggested Reasoning

Danger

Intracranial bleeding, occult injury, syncope, medication-related fall.

Syndrome

Fall with head strike in an anticoagulated older adult.

Capacity Failure

Mobility, brain safety, circulation regulation, medicine safety.

Coupling Conditions

Anticoagulation, older age, bathroom fall, possible frailty or dizziness.

Working Diagnosis

Fall with head injury risk requiring careful assessment.

Dangerous Alternatives

Intracranial hemorrhage, fracture, syncope, arrhythmia, stroke, hypoglycemia, infection, postural hypotension.

Wise Next Step

Assess injury, neurological status, vital signs, glucose where relevant, reason for fall, anticoagulation details, and follow local head injury pathway.

Repair Trajectory

No evolving neurological signs, fall cause addressed, mobility and medicine risk reviewed, safe supervision and follow-up arranged.

Safety-Net / Handover

Seek urgent help if headache, vomiting, confusion, drowsiness, weakness, speech difficulty, seizure, another fall, or unusual behavior occurs.

Case 5: AKI After Vomiting

A 64-year-old woman with diabetes and hypertension has three days of vomiting and poor intake. She is taking an ACE inhibitor, diuretic, metformin, and NSAIDs. Blood tests show AKI.

Practice Questions

What medicine risks are present?
What capacities are failing?
What should be monitored?

Suggested Reasoning

Danger

Worsening AKI, hyperkalemia, dehydration, hypoglycemia or hyperglycemia, lactic acidosis risk where relevant, medication accumulation.

Syndrome

Vomiting and poor intake with AKI in a patient on kidney-sensitive medicines.

Capacity Failure

Clearance, hydration, circulation, energy regulation, medication safety.

Coupling Conditions

Diabetes, hypertension, ACE inhibitor, diuretic, NSAID, poor intake.

Working Diagnosis

Pre-renal or mixed AKI triggered by vomiting, poor intake, and medicine effects.

Dangerous Alternatives

Sepsis, obstruction, severe electrolyte disturbance, diabetic metabolic crisis, GI obstruction, pancreatitis.

Wise Next Step

Assess fluid status, urine output, electrolytes, glucose, vomiting cause, and review medicines according to local guidance. Stop or hold kidney-harming or unsafe medicines where appropriate.

Repair Trajectory

Vomiting settles, hydration improves, urine output adequate, creatinine and potassium stabilize, safe medicine restart plan created.

Safety-Net / Handover

Escalate if reduced urine, confusion, breathlessness, dangerous potassium, hypotension, persistent vomiting, or inability to drink.

Case 6: Hypoglycemia in Poor Intake

A 72-year-old woman with diabetes is admitted with infection. She is eating very little but remains on her usual insulin regimen. Overnight she becomes sweaty, confused, and drowsy.

Practice Questions

What should be checked immediately?
What caused the capacity failure?
What plan should change?

Suggested Reasoning

Danger

Hypoglycemia causing acute brain dysfunction, seizure, fall, coma.

Syndrome

Acute confusion and drowsiness in a diabetic patient with poor intake and insulin exposure.

Capacity Failure

Energy regulation and brain coordination.

Coupling Conditions

Acute infection, poor intake, insulin, older age, inpatient setting.

Working Diagnosis
Hypoglycemia due to mismatch between insulin and intake.

Dangerous Alternatives
Sepsis, stroke, hypoxia, medication toxicity, electrolyte disturbance.

Wise Next Step
Check glucose immediately and treat according to local protocol. Review insulin plan, intake, renal function, infection severity, and monitoring.

Repair Trajectory
Glucose stabilizes, mental state returns to baseline, insulin plan matches food intake and illness, recurrence prevented.

Safety-Net / Handover
Monitor closely if not eating. Escalate recurrent hypoglycemia, drowsiness, inability to eat, or high sugars with dehydration.

Case 7: Delirium After Opioids

A 68-year-old man with chronic back pain is admitted with worsening pain. Opioids are increased. The next day he is drowsy, constipated, and confused.

Practice Questions
Is the pain plan restoring capacity?
What harms have appeared?
What should be reviewed?

Suggested Reasoning

Danger
Opioid toxicity, delirium, constipation, falls, respiratory depression.

Syndrome
Pain partially treated but complicated by drowsiness, constipation, and acute confusion.

Capacity Failure
Comfort, brain coordination, bowel clearance, mobility, safety.

Coupling Conditions
Chronic pain, opioid exposure, possible older age or renal vulnerability, constipation risk.

Working Diagnosis
Medication-associated delirium and constipation after opioid escalation.

Dangerous Alternatives
Infection, hypoxia, AKI, electrolyte disturbance, spinal cord compression if neurological signs, urinary retention.

Wise Next Step
Reassess pain cause, opioid burden, sedation, respiratory status, bowels, bladder, renal function, and alternative analgesia strategies. Treat constipation and reduce harm.

Repair Trajectory
Pain manageable, alertness improves, bowels open, mobility safer, falls risk reduced.

Safety-Net / Handover
Escalate if reduced consciousness, slow breathing, severe constipation, new neurological deficit, or uncontrolled pain.

Case 8: Pneumonia Improving but Discharge Unsafe

An 84-year-old woman admitted with pneumonia is now afebrile and off oxygen. However, she remains weak, intermittently confused, and unable to manage stairs. Her son says she is not herself.

Practice Questions

Is she discharge-ready?
What remains unsafe?
What must be repaired before discharge?

Suggested Reasoning

Danger

Falls, persistent delirium, unsafe stairs, medication error, readmission, caregiver strain.

Syndrome

Recovering pneumonia with incomplete whole-person repair in frailty.

Capacity Failure

Brain coordination, mobility, agency, support, comfort, nutrition.

Coupling Conditions

Older age, frailty, possible dementia, home stairs, family concern.

Working Diagnosis

Pneumonia improving, but delirium vulnerability and functional decline remain unresolved.

Dangerous Alternatives

Persistent infection, hypoxia, AKI, medication toxicity, constipation, urinary retention, stroke, uncontrolled pain.

Wise Next Step

Do not discharge solely because infection markers improved. Reassess cognition, mobility, medicines, bowels, pain, hydration, family support, and therapy needs.

Repair Trajectory

Cognition returns toward baseline or supervision arranged, mobility safe or supported, medicines clear, caregiver ready, follow-up arranged.

Safety-Net / Handover

Handover that discharge is unsafe until cognition, mobility, stairs, medicines, and family concerns are addressed.

Case 9: Heart Failure Treatment and Rising Creatinine

A 74-year-old man admitted with pulmonary edema improves after diuresis. His breathing is better, but creatinine rises and he feels dizzy when standing.

Practice Questions

What trade-off is present?
What should be reassessed?
Should treatment simply stop?

Suggested Reasoning

Danger

Worsening renal function, hypotension, falls, persistent congestion if under-treated.

Syndrome

Heart failure improving with diuresis but complicated by renal and circulation vulnerability.

Capacity Failure

Oxygenation improving; clearance and circulation regulation now fragile.

Coupling Conditions
Heart failure, renal vulnerability, diuretic therapy, older age, dizziness.

Working Diagnosis
Cardiorenal trade-off after decongestion.

Dangerous Alternatives
Over-diuresis, persistent congestion, arrhythmia, sepsis, medication-induced hypotension, AKI from another cause.

Wise Next Step
Reassess volume status, blood pressure, urine output, renal function, potassium, dizziness, medicines, and congestion. Adjust treatment proportionately and seek senior input if uncertain.

Repair Trajectory
Breathing remains improved, dizziness resolves, renal function stabilizes, electrolyte safety maintained.

Safety-Net / Handover
Escalate if hypotension, reduced urine, dangerous potassium, recurrent breathlessness, chest pain, or syncope.

Case 10: Abdominal Pain That Changes

A 46-year-old man presents with vague abdominal discomfort and nausea. Initial examination is soft and non-specific. Six hours later, pain localizes to the right lower abdomen and he develops fever.

Practice Questions
What changed?
Why is reassessment important?
What danger is now higher?

Suggested Reasoning

Danger
Evolving surgical abdomen, appendicitis, perforation, sepsis.

Syndrome
Abdominal pain changing from vague to localized with fever.

Capacity Failure
Comfort, defense, digestion, circulation if worsening.

Coupling Conditions
Changing trajectory over time.

Working Diagnosis
Evolving intra-abdominal inflammatory or surgical process.

Dangerous Alternatives
Appendicitis, diverticulitis, obstruction, perforation, ischemia, urinary or testicular pathology where relevant.

Wise Next Step
Reassess vital signs and abdomen, repeat clinical reasoning, escalate for surgical or imaging pathway according to local practice.

Repair Trajectory
Diagnosis clarified, source treated, pain and fever improve, deterioration prevented.

Safety-Net / Handover

Pain evolution must be handed over. Escalate severe pain, guarding, vomiting, fever, hypotension, or worsening condition.

Case 11: Weight Loss and Anemia

A 69-year-old man reports unintentional weight loss, fatigue, reduced appetite, and dark stools. Blood tests show anemia.

Practice Questions

What must not be missed?
Is anemia the diagnosis?
What follow-up is needed?

Suggested Reasoning

Danger

GI bleeding, malignancy, symptomatic anemia, cardiovascular strain.

Syndrome

Weight loss with anemia and possible GI blood loss.

Capacity Failure

Oxygen delivery, nutrition, circulation reserve, digestion.

Coupling Conditions

Older age, dark stools, reduced appetite, possible chronic disease.

Working Diagnosis

Anemia likely requiring investigation for GI blood loss or malignancy.

Dangerous Alternatives

Cancer, peptic ulcer bleeding, anticoagulant-related bleeding, inflammatory disease, renal disease, hematologic disease.

Wise Next Step

Assess stability, symptoms, bleeding risk, medicines, examination findings, and arrange appropriate investigation according to local pathway.

Repair Trajectory

Bleeding source identified or excluded, anemia treated, nutrition and strength improve, follow-up completed.

Safety-Net / Handover

Urgent help if black stool persists, vomiting blood, chest pain, fainting, severe breathlessness, or worsening weakness.

Case 12: “Anxiety” With Palpitations

A 34-year-old woman presents with episodes of palpitations, trembling, and fear. She has been told before it is anxiety. Today she nearly fainted during an episode.

Practice Questions

What should not be assumed?
What dangerous alternatives must be considered?
What initial assessment matters?

Suggested Reasoning

Danger

Arrhythmia, syncope, thyroid disease, hypoglycemia, PE, stimulant effect.

Syndrome
Episodic palpitations with near-syncope and fear.

Capacity Failure
Rhythm coordination, circulation, energy regulation, agency.

Coupling Conditions
Previous anxiety label may create diagnostic anchoring.

Working Diagnosis
Palpitations requiring assessment before attributing to anxiety.

Dangerous Alternatives
Arrhythmia, cardiac disease, thyroid disease, hypoglycemia, anemia, PE, substance or medication effect.

Wise Next Step
Assess vital signs, ECG, glucose where relevant, medication/substance history, syncope features, and red flags. Arrange monitoring or follow-up according to risk.

Repair Trajectory
Dangerous rhythm causes excluded or treated, symptoms understood, anxiety addressed if appropriate.

Safety-Net / Handover
Urgent help if chest pain, fainting, severe breathlessness, sustained rapid heartbeat, weakness, or confusion.

Case 13: Cellulitis With Systemic Symptoms
A 59-year-old man with diabetes has a red painful lower leg. He is febrile, tachycardic, and feels weak.

Practice Questions
What makes this more than simple cellulitis?
What complications matter?
What must be checked?

Suggested Reasoning

Danger
Sepsis, rapidly spreading infection, diabetic foot complication, deep infection, DVT mimic.

Syndrome
Painful red leg with fever and systemic illness in diabetes.

Capacity Failure
Defense, circulation, comfort, mobility, skin integrity.

Coupling Conditions
Diabetes, possible vascular disease, immune vulnerability, skin barrier.

Working Diagnosis
Cellulitis with systemic features.

Dangerous Alternatives
Necrotizing infection, DVT, septic arthritis, osteomyelitis, abscess, sepsis.

Wise Next Step
Assess vital signs, extent of infection, foot wounds, pulses, glucose, renal function, infection severity, and treat according to local pathway.

Repair Trajectory
Fever settles, redness stops spreading, pain improves, mobility improves, glucose and renal function stable.

Safety-Net / Handover

Escalate spreading redness, severe pain, blisters, black skin, confusion, hypotension, worsening fever, or inability to weight-bear.

Case 14: Low Mood With Chronic Illness

A 52-year-old woman with chronic pain and diabetes says she is exhausted, sleeping poorly, and “cannot keep going.” She denies chest pain or fever.

Practice Questions

What must be asked directly?
How does mood affect capacity?
What physical contributors should still be considered?

Suggested Reasoning

Danger

Self-harm, severe depression, medication harm, uncontrolled pain, metabolic or endocrine contributors.

Syndrome

Low mood, exhaustion, poor sleep, chronic pain burden.

Capacity Failure

Agency, emotional regulation, sleep, comfort, energy regulation.

Coupling Conditions

Chronic pain, diabetes, possible social stress, medicine burden.

Working Diagnosis

Possible depression or distress related to chronic illness and pain, requiring risk assessment.

Dangerous Alternatives

Suicidal intent, severe depression, hypothyroidism, anemia, medication side effect, substance use, uncontrolled diabetes.

Wise Next Step

Ask directly about self-harm and safety, assess mood, pain, sleep, medicines, glucose control, social support, and arrange appropriate mental health or medical follow-up.

Repair Trajectory

Safety established, support engaged, pain and sleep plan improved, mood follow-up arranged.

Safety-Net / Handover

Urgent help if suicidal thoughts intensify, plan or intent develops, unable to stay safe, or no support available.

Case 15: Severe Headache

A 61-year-old woman presents with sudden severe headache described as “like being hit.” She vomited once and feels light sensitive.

Practice Questions

What red flag is present?
What must not be missed?
What action is needed?

Suggested Reasoning

Danger

Subarachnoid hemorrhage or other intracranial emergency.

Syndrome
Thunderclap headache with vomiting and photophobia.

Capacity Failure
Brain coordination, comfort, circulation safety.

Coupling Conditions
Sudden onset, severe intensity, vomiting.

Working Diagnosis
High-risk acute headache requiring urgent assessment.

Dangerous Alternatives
Subarachnoid hemorrhage, meningitis, stroke, intracranial bleed, venous sinus thrombosis.

Wise Next Step
Urgent assessment and investigation according to local emergency pathway. Do not reassure as migraine without addressing red flags.

Repair Trajectory
Dangerous intracranial cause identified or excluded, pain controlled, neurological status stable.

Safety-Net / Handover
Escalate confusion, drowsiness, seizure, weakness, neck stiffness, worsening headache, or abnormal neurological findings.

Case 16: Severe Breathlessness in Advanced Disease
An 80-year-old man with advanced COPD and heart failure has repeated admissions. He is now severely breathless despite treatment. He previously said he wants comfort and home time.

Practice Questions
What is the goal of care?
What should be escalated?
What should be de-escalated?

Suggested Reasoning

Danger
Severe distress, respiratory failure, burdensome treatment not aligned with goals.

Syndrome
Advanced cardiorespiratory disease with severe breathlessness and limited reserve.

Capacity Failure
Oxygenation, comfort, agency, family support.

Coupling Conditions
Advanced COPD, heart failure, repeated admissions, patient values, limited reserve.

Working Diagnosis
Serious illness deterioration with breathlessness crisis.

Dangerous Alternatives
Treatable infection, pulmonary edema, PE, pneumothorax, arrhythmia, but goals must guide action.

Wise Next Step
Assess reversibility, relieve breathlessness, clarify goals, involve senior and palliative care where available, support family, consider time-limited treatment if appropriate.

Repair Trajectory
Distress relieved, plan aligns with values, family understands, crisis plan created.

Safety-Net / Handover
Handover comfort priorities, escalation limits, symptom triggers, and family communication needs.

Case 17: Medication Confusion After Discharge
A 70-year-old woman returns three days after discharge with dizziness and weakness. She restarted all her old medicines in addition to the new ones because she was unsure what had changed.

Practice Questions
What failed at discharge?
What capacities are affected?
What must be repaired now?

Suggested Reasoning

Danger
Medication toxicity, hypotension, AKI, hypoglycemia, bleeding, falls.

Syndrome
Post-discharge medication confusion with dizziness and weakness.

Capacity Failure
Agency, circulation regulation, clearance, medicine safety, mobility.

Coupling Conditions
Recent discharge, polypharmacy, poor understanding, possible frailty.

Working Diagnosis
Medication-related harm due to unclear discharge instructions.

Dangerous Alternatives
Sepsis, arrhythmia, stroke, bleeding, dehydration, hypoglycemia.

Wise Next Step
Assess vital signs, glucose, renal function, medicine list, old and new medicines, symptoms, and safety.
Reconcile medicines with patient and caregiver.

Repair Trajectory
Harm corrected, medicines simplified, patient understands plan, follow-up arranged, “do not restart” list clear.

Safety-Net / Handover
Teach-back required. Escalate falls, confusion, low glucose, bleeding, reduced urine, severe dizziness.

Case 18: “Normal Tests” but Persistent Concern
A 45-year-old woman has persistent fatigue, weight loss, and night sweats. Initial basic blood tests are normal. She feels dismissed.

Practice Questions
Do normal initial tests end the assessment?
What matters in the history?
What follow-up is needed?

Suggested Reasoning

Danger

Malignancy, chronic infection, inflammatory disease, endocrine disease, depression or other serious systemic cause.

Syndrome
Constitutional symptoms with weight loss and night sweats despite initial normal tests.

Capacity Failure
Energy regulation, nutrition, defense, agency.

Coupling Conditions
Persistent symptoms, patient concern, possible diagnostic delay risk.

Working Diagnosis
Unexplained systemic symptoms requiring follow-up and further assessment.

Dangerous Alternatives
Cancer, TB or chronic infection where relevant, autoimmune disease, endocrine disease, hematologic disease.

Wise Next Step
Review timeline, weight trend, exposures, examination, age-appropriate screening, and arrange appropriate follow-up or investigation pathway.

Repair Trajectory
Cause identified or symptoms improve with safe follow-up; patient feels heard; red flags safety-netted.

Safety-Net / Handover
Urgent review if weight loss continues, fever persists, bleeding, breathlessness, severe weakness, new pain, or night sweats worsen.

Case 19: Acute Weakness
A 67-year-old man develops sudden right arm and leg weakness with slurred speech while eating breakfast. His wife brings him immediately.

Practice Questions
What is the time-critical danger?
What should be checked immediately?
What pathway is needed?

Suggested Reasoning

Danger
Acute stroke or intracranial event.

Syndrome
Sudden focal neurological deficit.

Capacity Failure
Brain coordination, mobility, communication, swallowing safety.

Coupling Conditions
Time of onset, vascular risk factors if present, medication history including anticoagulants.

Working Diagnosis
Acute stroke until proven otherwise.

Dangerous Alternatives
Hypoglycemia, seizure with postictal weakness, intracranial bleed, migraine mimic.

Wise Next Step

Check glucose, vital signs, time of onset, anticoagulation status, and activate local stroke pathway urgently.

Repair Trajectory

Rapid diagnosis, appropriate acute treatment decision, swallowing and complications assessed, rehabilitation planning begins.

Safety-Net / Handover

Time of onset and neurological findings must be handed over clearly.

Case 20: Constipation and Confusion

An 87-year-old woman in hospital becomes more confused and agitated at night. She has not opened her bowels for five days and is receiving opioid pain relief.

Practice Questions

What simple trigger may be driving deterioration?
What medicine issue matters?
What capacities are failing?

Suggested Reasoning

Danger

Delirium, bowel obstruction or impaction, pain, urinary retention, opioid toxicity, falls.

Syndrome

Hospital-acquired delirium with constipation and opioid exposure.

Capacity Failure

Brain coordination, bowel clearance, comfort, mobility, safety.

Coupling Conditions

Older age, hospitalization, opioid use, immobility, sleep disruption.

Working Diagnosis

Delirium likely contributed to by constipation, pain, opioid burden, and hospital environment.

Dangerous Alternatives

Infection, hypoxia, hypoglycemia, stroke, AKI, urinary retention, medication toxicity.

Wise Next Step

Assess delirium triggers, treat constipation, review opioid dose and alternatives, check pain, bladder, glucose, oxygen, infection, renal function, and falls risk.

Repair Trajectory

Bowels open, confusion improves, pain controlled safely, sleep improves, falls risk reduced.

Safety-Net / Handover

Escalate drowsiness, severe abdominal pain, vomiting, worsening agitation, new neurological signs, or unsafe behavior.

Case 21: Dizziness on Standing

A 73-year-old man feels dizzy when standing and nearly falls. He recently started a new blood pressure medicine. He has reduced oral intake because of a viral illness.

Practice Questions

What is the likely capacity failure?
What medicine issue matters?
What should be reviewed?

Suggested Reasoning

Danger
Fall, syncope, hypotension, dehydration, AKI.

Syndrome
Postural dizziness after medicine change and poor intake.

Capacity Failure
Circulation regulation, hydration, mobility, clearance.

Coupling Conditions
Older age, new antihypertensive, poor intake, acute illness.

Working Diagnosis
Postural hypotension or volume depletion worsened by medication.

Dangerous Alternatives
Arrhythmia, bleeding, sepsis, stroke, hypoglycemia, severe electrolyte disturbance.

Wise Next Step
Assess vital signs, postural symptoms, hydration, renal function, electrolytes, glucose where relevant, medicine list, and falls risk.

Repair Trajectory
Dizziness resolves, hydration improves, medicines adjusted, fall risk reduced.

Safety-Net / Handover
Urgent help if fainting, chest pain, palpitations, weakness, black stool, confusion, or recurrent falls.

Case 22: Diarrhea After Antibiotics

A 66-year-old woman develops severe diarrhea after antibiotics for pneumonia. She feels weak and dizzy.

Practice Questions
What treatment harm may be present?
What capacities are threatened?
What should be checked?

Suggested Reasoning

Danger
Dehydration, AKI, electrolyte disturbance, severe antibiotic-associated colitis, sepsis.

Syndrome
Severe diarrhea after antibiotic exposure with weakness and dizziness.

Capacity Failure
Hydration, clearance, circulation, defense, energy regulation.

Coupling Conditions
Recent antibiotics, older age, recent infection, possible frailty.

Working Diagnosis
Antibiotic-associated diarrhea; severe colitis must be considered depending on clinical features.

Dangerous Alternatives
Severe colitis, sepsis, GI bleeding, medication toxicity, dehydration-related AKI.

Wise Next Step

Assess volume status, vital signs, stool features, renal function, electrolytes, infection severity, and follow local testing and treatment pathway.

Repair Trajectory

Diarrhea improves, hydration restored, renal function stable, antibiotic plan reviewed.

Safety-Net / Handover

Escalate fever, severe abdominal pain, blood, confusion, reduced urine, hypotension, persistent diarrhea, or inability to drink.

Case 23: Breathlessness After Fluids

A 71-year-old woman with CKD and possible sepsis receives IV fluids. Blood pressure improves, but she becomes more breathless and develops crackles.

Practice Questions

What trade-off has appeared?
What should be reassessed?
What capacity worsened?

Suggested Reasoning

Danger

Pulmonary edema, worsening oxygenation, persistent sepsis or shock.

Syndrome

Circulation improved after fluids but oxygenation worsened with possible fluid overload.

Capacity Failure

Oxygenation worsened; circulation and clearance remain vulnerable.

Coupling Conditions

CKD, possible sepsis, fluid exposure, older age.

Working Diagnosis

Fluid overload or heart failure after resuscitation in a vulnerable patient.

Dangerous Alternatives

Pneumonia progression, PE, ARDS, myocardial ischemia.

Wise Next Step

Reassess fluid status, oxygenation, chest, heart, renal function, urine output, blood pressure, and need for escalation or treatment adjustment.

Repair Trajectory

Breathing stabilizes, perfusion remains adequate, fluid balance plan revised, renal function monitored.

Safety-Net / Handover

Escalate rising oxygen need, respiratory distress, hypotension, reduced urine, chest pain, or confusion.

Case 24: Patient Wants to Leave

A 60-year-old man with chest pain wants to leave before repeat cardiac testing because he feels better and has work obligations.

Practice Questions

What must be assessed?
How should risk be communicated?
What safer alternative can be offered?

Suggested Reasoning

Danger
Missed myocardial infarction or unstable cardiac disease.

Syndrome
Chest pain under evaluation with incomplete risk assessment.

Capacity Failure
Circulation risk, agency, social pressure.

Coupling Conditions
Work obligation, improved symptoms, incomplete testing.

Working Diagnosis
Possible cardiac chest pain not yet fully assessed.

Dangerous Alternatives
Acute coronary syndrome, arrhythmia, PE, aortic disease depending on history.

Wise Next Step
Assess capacity, explain risk clearly, explore reason for leaving, offer alternatives, involve senior if needed, arrange follow-up and safety-net if he leaves.

Repair Trajectory
Patient makes informed decision, risk minimized, follow-up and return precautions clear.

Safety-Net / Handover
Return urgently for recurrent chest pain, exertional pain, breathlessness, sweating, fainting, palpitations, or worsening symptoms.

Case 25: Family Says “This Is Not Her”

A 79-year-old woman is admitted with mild dehydration. The team plans discharge, but her family says, “She is still not herself.”

Practice Questions
Why does family concern matter?
What should be reassessed?
What discharge danger exists?

Suggested Reasoning

Danger
Persistent delirium, missed infection, medication toxicity, unsafe discharge.

Syndrome
Older adult with incomplete cognitive recovery despite apparent medical improvement.

Capacity Failure
Brain coordination, agency, mobility, support.

Coupling Conditions
Older age, family knows baseline, discharge pressure.

Working Diagnosis
Possible unresolved delirium or acute cognitive change.

Dangerous Alternatives
Hypoglycemia, hypoxia, infection, stroke, AKI, electrolyte disturbance, constipation, urinary retention, sedative effect.

Wise Next Step

Pause discharge. Reassess cognition, attention, baseline, vitals, glucose, oxygenation, medicines, bowels, bladder, pain, mobility, and collateral.

Repair Trajectory

Cognition returns to baseline or support arranged, cause addressed, family understands plan.

Safety-Net / Handover

Do not discharge until family concern is addressed and cognitive safety plan exists.

Case 26: Painful Swollen Joint

A 57-year-old man with diabetes presents with a hot swollen knee and fever. He says he has had gout before.

Practice Questions

What must not be assumed?
What dangerous diagnosis must be excluded?
What is the wise next step?

Suggested Reasoning

Danger

Septic arthritis.

Syndrome

Hot swollen joint with fever in a patient with diabetes.

Capacity Failure

Defense, mobility, comfort.

Coupling Conditions

Diabetes, history of gout may anchor reasoning.

Working Diagnosis

Acute monoarthritis; septic arthritis must be considered.

Dangerous Alternatives

Septic arthritis, crystal arthritis, cellulitis, osteomyelitis, trauma.

Wise Next Step

Urgent clinical assessment, inflammatory/infection evaluation, and joint-specific pathway according to local practice. Do not assume gout without considering infection.

Repair Trajectory

Joint infection excluded or treated urgently, pain improves, mobility restored, systemic illness resolves.

Safety-Net / Handover

Escalate fever, severe pain, inability to bear weight, worsening swelling, confusion, or systemic illness.

Case 27: Black Stool and Weakness

A 70-year-old man on aspirin and NSAIDs presents with weakness, dizziness, and black stool.

Practice Questions

What capacity is threatened?
What medicine risks matter?
What danger must be addressed?

Suggested Reasoning

Danger
Upper GI bleeding, shock, symptomatic anemia, myocardial strain.

Syndrome
Possible GI bleed with weakness and dizziness.

Capacity Failure
Circulation, oxygen delivery, comfort, medicine safety.

Coupling Conditions
Aspirin, NSAID use, older age.

Working Diagnosis
Possible upper GI bleeding related to ulcer or medication harm.

Dangerous Alternatives
Major hemorrhage, malignancy, anticoagulant-related bleeding if present, severe anemia.

Wise Next Step
Assess hemodynamic stability, hemoglobin, medication risks, bleeding severity, and escalate according to local GI bleed pathway.

Repair Trajectory
Bleeding controlled, circulation stable, hemoglobin stable, harmful medicines stopped or reviewed, follow-up arranged.

Safety-Net / Handover
Escalate vomiting blood, fainting, chest pain, worsening dizziness, ongoing black stool, hypotension, or confusion.

Case 28: Recurrent Admissions

A 78-year-old man with advanced heart failure, CKD, COPD, and frailty has been admitted four times in three months. He says, “I am tired of coming back.”

Practice Questions
What does recurrent admission signal?
What conversation is needed?
What capacities matter?

Suggested Reasoning

Danger
Unrecognized serious illness trajectory, treatment burden, symptom crisis, poor goals alignment.

Syndrome
Advanced multimorbidity with recurrent decompensation and frailty.

Capacity Failure
Oxygenation, circulation, clearance, mobility, comfort, agency, support.

Coupling Conditions
Advanced organ disease, frailty, repeated admissions, patient fatigue, limited reserve.

Working Diagnosis
Serious illness trajectory with recurrent instability.

Dangerous Alternatives
Potentially reversible triggers should still be assessed, but broader goals-of-care review is needed.

Wise Next Step

Treat reversible problems, but also initiate senior goals-of-care discussion, palliative support, crisis planning, and discharge support review.

Repair Trajectory

Symptoms controlled, patient values understood, escalation plan clear, future crises anticipated, family supported.

Safety-Net / Handover

Handover goals, treatment limits, symptom plan, and who to call if breathlessness or distress worsens.

Case 29: Patient Cannot Afford Medicines

A 55-year-old man with hypertension and diabetes is repeatedly labeled “non-compliant.” He quietly admits he cannot afford all his medicines every month.

Practice Questions

What assumption must be avoided?
What capacity is failing?
What plan is more life-coherent?

Suggested Reasoning

Danger

Uncontrolled chronic disease, preventable complications, shame, disengagement from care.

Syndrome

Chronic disease instability due to access barrier.

Capacity Failure

Agency, support, long-term vascular protection, medicine access.

Coupling Conditions

Financial barrier, medication cost, stigma, possible health literacy issue.

Working Diagnosis

Treatment plan not feasible in the patient’s actual life.

Dangerous Alternatives

Medication side effects, depression, cognitive impairment, substance use, but access barrier is central.

Wise Next Step

Explore barriers respectfully, simplify regimen if possible, use affordable options, involve pharmacy/social support, and create realistic follow-up.

Repair Trajectory

Patient can obtain and take medicines reliably, disease control improves, trust restored.

Safety-Net / Handover

Document access barrier without blame. Handover affordability as a clinical risk.

Case 30: The Quietly Deteriorating Patient

A nurse calls because a patient “just looks different.” The patient’s blood pressure is still acceptable, but respiratory rate has risen, urine output is lower, and the patient is more withdrawn.

Practice Questions

Why is this dangerous?
What trend matters?
What should happen next?

Suggested Reasoning

Danger
Early deterioration, sepsis, hypoxia, shock, AKI, delirium.

Syndrome
Subtle clinical deterioration with rising respiratory rate, reduced urine output, and behavior change.

Capacity Failure
Oxygenation, circulation, clearance, brain coordination.

Coupling Conditions
Nursing concern, trend change, possibly early illness before collapse.

Working Diagnosis
Deteriorating patient requiring urgent reassessment.

Dangerous Alternatives
Sepsis, PE, heart failure, bleeding, medication toxicity, metabolic acidosis, AKI.

Wise Next Step
Review urgently, repeat vital signs, assess ABCDE according to local practice, check glucose, oxygenation, urine output, labs, medicines, and escalate if concerned.

Repair Trajectory
Cause identified early, deterioration prevented, monitoring and escalation plan clear.

Safety-Net / Handover
Nurse concern plus trend change should be handed over as active risk.

Mixed Practice: Quick Cases Without Answers

Use these for self-testing or group discussion.

Quick Case 1
A 66-year-old man with COPD has increased sputum and wheeze. He is now too breathless to walk to the bathroom.

Danger:

Syndrome:

Wise next step:

Quick Case 2
A 73-year-old woman with CKD is prescribed NSAIDs for back pain and returns with reduced urine output.

Danger:

Syndrome:

Wise next step:

Quick Case 3

A 49-year-old woman has palpitations and fainting during exercise.

Danger:

Syndrome:

Wise next step:

Quick Case 4

A 90-year-old man with advanced dementia stops eating, becomes bedbound, and develops noisy breathing.

Danger:

Syndrome:

Wise next step:

Quick Case 5

A 38-year-old man has fever, severe headache, neck stiffness, and confusion.

Danger:

Syndrome:

Wise next step:

Quick Case 6

A 62-year-old woman with diabetes has a foot ulcer with redness spreading up the foot.

Danger:

Syndrome:

Wise next step:

Quick Case 7

A patient discharged after AKI has not attended repeat blood tests and has restarted old medicines.

Danger:

Syndrome:

Wise next step:

Quick Case 8

A frail patient is medically stable but cannot transfer from bed to chair without help.

Danger:

Syndrome:

Wise next step:

Quick Case 9

A patient with cancer has worsening pain, constipation, nausea, and family distress.

Danger:

Syndrome:

Wise next step:

Quick Case 10

A patient with infection improves clinically, but cultures return showing resistance to the current antibiotic.

Danger:

Syndrome:

Wise next step:

Student Reflection After Cases

After each case, ask:

What did I notice first?

Did I identify danger early?

Did I name the syndrome clearly?

Did I consider capacity failure?

Did I include context?

Did I avoid premature closure?

Did I choose proportionate action?

Did I define repair trajectory?

Did I safety-net or hand over risk?

Common Reasoning Errors in Mini Cases

Error 1: Jumping to the Familiar Diagnosis

Example: assuming hot swollen knee is gout without considering septic arthritis.

Error 2: Ignoring the Trend

Example: oxygen saturation is acceptable, but oxygen requirement is rising.

Error 3: Treating the Disease Marker Only

Example: pneumonia fever improves, but mobility and cognition remain unsafe.

Error 4: Forgetting Medicines

Example: AKI worsens because NSAIDs, diuretics, or ACE inhibitors were not reviewed.

Error 5: Ignoring Family Baseline

Example: dementia is assumed, but acute delirium is present.

Error 6: Missing Treatment Harm

Example: pain improves but opioid toxicity causes delirium and falls.

Error 7: Weak Safety-Netting

Example: “come back if worse” without naming warning signs.

Error 8: No Repair Trajectory

Example: treatment is started, but no one defines what improvement should look like.

Final Student Takeaway

Mini cases should train the clinician to ask:

What is dangerous?
What is the syndrome?
Which capacity is failing?
What context changes the risk?
What is the working diagnosis?
What must not be missed?
What is the wise next step?

What would improvement look like?
What must be safety-netted or handed over?

Clinical reasoning improves through repeated practice.

The goal is not to memorize answers.

The goal is to develop a disciplined way of seeing the patient clearly, protecting against danger, acting proportionately, and guiding care toward repair.

Appendix L. Glossary of Core Concepts

This glossary explains the central concepts used throughout *Internal Medicine Made Easy: A Life-Coherent Guide to Clinical Reasoning, Physiology, and Healing*.

The goal is not to create abstract terminology.

The goal is to give students and clinicians a simple language for seeing patients clearly, reasoning safely, and acting wisely.

The core framework is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

1. Life-Coherent Medicine

Life-coherent medicine is clinical practice oriented toward protecting, restoring, relieving, supporting, or accompanying the living capacities of the patient.

It asks:

Does this action serve the patient's life, function, dignity, agency, comfort, and realistic recovery?

Life-coherent medicine does not reject evidence, guidelines, protocols, or technology.

It places them in service of the living patient.

Example

A patient's pneumonia improves, but she remains confused, weak, constipated, and unsafe on stairs.

A disease-only view says:

"Pneumonia treated. Discharge."

A life-coherent view says:

"Infection improved, but whole-person repair is incomplete. Cognition, mobility, bowels, medicines, and support must be addressed before discharge is safe."

2. Danger

Danger means anything that could seriously harm the patient now or soon.

Danger may be immediate, such as shock, hypoxia, bleeding, hypoglycemia, stroke, sepsis, or airway compromise.

Danger may also be less dramatic but still serious, such as unsafe discharge, medication error, falls risk, untreated pain, suicidal intent, or missed follow-up.

The first clinical question is:

What could harm this patient if I miss it or delay action?

Examples

- chest pain with possible myocardial infarction
- breathlessness with rising oxygen requirement
- confusion from hypoglycemia
- fall with head injury on anticoagulation
- AKI with hyperkalemia
- frail patient discharged before mobility is safe

3. Syndrome

A syndrome is a pattern of symptoms, signs, trajectory, and context that organizes the case before the final diagnosis is known.

A syndrome is broader than a disease label.

It helps the clinician reason safely while uncertainty remains.

Weak Syndrome Statement

“UTI.”

Stronger Syndrome Statement

“Fever, acute confusion, poor intake, and falls in a frail older adult, with urinary infection possible but delirium triggers and medication harm also requiring review.”

Common Syndromes

- chest pain with exertional features
- acute breathlessness with hypoxia
- fever with confusion
- AKI with poor intake
- falls with dizziness
- frailty with acute functional decline
- weight loss with anemia
- chronic pain with opioid harm
- heart failure with renal vulnerability

4. Capacity Failure

Capacity failure means that one or more essential life-capacities are threatened, impaired, or overwhelmed.

Internal Medicine becomes clearer when diseases are understood through the capacities they disrupt.

Core Capacities

- oxygenation
- circulation
- clearance
- defense
- brain coordination
- energy regulation
- mobility
- nutrition
- comfort
- agency
- support

Example

Pneumonia is not only “infection.”

It may cause:

- oxygenation failure
- defense activation
- delirium
- poor intake
- AKI
- weakness
- falls risk
- caregiver strain

Capacity failure shows what must repair before the patient is safe.

5. Oxygenation

Oxygenation is the body's capacity to get oxygen into the blood and deliver it adequately to tissues.

It is threatened by:

- pneumonia
- asthma or COPD exacerbation
- pulmonary edema
- pulmonary embolism
- pneumothorax
- severe anemia
- respiratory failure
- airway obstruction

Clinical Clues

- breathlessness
- low oxygen saturation
- rising oxygen requirement
- high respiratory rate
- inability to speak full sentences
- cyanosis
- confusion or drowsiness in severe cases

Clinical Question

Is the patient getting enough oxygen, and is the work of breathing sustainable?

6. Circulation

Circulation is the body's capacity to move blood effectively to organs.

It is threatened by:

- shock
- bleeding

- dehydration
- sepsis
- heart failure
- arrhythmia
- myocardial infarction
- pulmonary embolism
- severe vasodilation
- medication-induced hypotension

Clinical Clues

- low blood pressure
- fast or irregular pulse
- cold peripheries
- dizziness
- fainting
- chest pain
- reduced urine output
- confusion
- edema or pulmonary congestion

Clinical Question

Is blood reaching the organs safely, and is the heart able to sustain the circulation?

7. Clearance

Clearance is the body's capacity to remove waste, regulate electrolytes, handle fluids, and process medicines.

It mainly involves the kidneys and liver, but also broader metabolic function.

It is threatened by:

- AKI
- CKD
- dehydration
- sepsis
- heart failure
- obstruction
- nephrotoxic medicines
- liver failure
- medication accumulation

Clinical Clues

- rising creatinine
- reduced urine output
- hyperkalemia

- metabolic disturbance
- fluid overload
- confusion from toxin or medicine accumulation
- medicine side effects

Clinical Question

Can this patient safely clear waste, fluid, electrolytes, and medicines?

8. Defense

Defense is the body's capacity to recognize, contain, and resolve infection, inflammation, injury, and immune threat.

It is threatened by:

- infection
- sepsis
- immunosuppression
- wounds
- devices or catheters
- diabetes
- malnutrition
- inflammatory disease
- severe physiological stress

Clinical Clues

- fever
- rigors
- low temperature in frailty or sepsis
- raised inflammatory markers
- hypotension
- confusion
- tachycardia
- local infection signs
- poor wound healing

Clinical Question

Is the body defending itself effectively, or is infection or inflammation overwhelming reserve?

9. Brain Coordination

Brain coordination is the capacity for consciousness, attention, orientation, cognition, emotion, movement control, communication, and safe behavior.

It is threatened by:

- delirium

- stroke
- seizure
- hypoglycemia
- hypoxia
- sepsis
- medication toxicity
- AKI or electrolyte disturbance
- head injury
- dementia
- withdrawal
- severe pain
- sleep disruption

Clinical Clues

- acute confusion
- poor attention
- drowsiness
- agitation
- hallucinations
- new weakness
- speech change
- seizure
- falls
- behavior change

Clinical Question

Is this patient's brain functioning safely compared with baseline?

10. Energy Regulation

Energy regulation is the body's capacity to maintain glucose, nutrition, metabolism, and usable energy for daily function.

It is threatened by:

- diabetes
- hypoglycemia
- hyperglycemia
- infection
- poor intake
- vomiting or diarrhea
- endocrine disease
- malnutrition

- chronic illness
- severe fatigue syndromes
- medication effects

Clinical Clues

- sweating, shaking, confusion, or drowsiness from hypoglycemia
- dehydration and drowsiness with severe hyperglycemia
- weight loss
- poor appetite
- fatigue
- weakness
- reduced activity
- poor wound healing

Clinical Question

Does the patient have enough usable energy and metabolic stability to function and recover?

11. Mobility

Mobility is the capacity to move safely through the world.

It includes:

- sitting
- standing
- transferring
- walking
- balance
- stairs
- strength
- confidence
- falls prevention

Mobility is threatened by:

- frailty
- infection
- pain
- arthritis
- stroke
- neuropathy
- delirium
- dizziness
- hypotension
- sedatives

- deconditioning
- falls
- unsafe environment

Clinical Clues

- falls
- fear of walking
- inability to transfer
- new walking aid requirement
- weakness
- slow gait
- unsafe stairs
- functional decline

Clinical Question

Can this patient move safely enough for the setting they are in or returning to?

12. Nutrition

Nutrition is the capacity to take in, digest, absorb, and use adequate nourishment.

It is threatened by:

- poor appetite
- dysphagia
- vomiting
- diarrhea
- malignancy
- chronic infection
- depression
- dementia
- frailty
- poverty
- social isolation
- medication side effects
- advanced illness

Clinical Clues

- weight loss
- poor intake
- low muscle mass
- weakness
- delayed healing
- low energy

- recurrent infection
- caregiver concern

Clinical Question

Can this patient nourish themselves enough to repair and function?

13. Comfort

Comfort is the capacity to be free enough from pain, breathlessness, nausea, anxiety, constipation, insomnia, and distress to rest, heal, communicate, and function.

Comfort is threatened by:

- pain
- breathlessness
- nausea
- constipation
- urinary retention
- anxiety
- delirium
- wounds
- cancer
- chronic disease
- treatment burden

Clinical Clues

- grimacing
- guarding
- agitation
- poor sleep
- reduced mobility
- poor appetite
- distress
- withdrawal
- repeated requests for help

Clinical Question

Is suffering being recognized and relieved without causing avoidable harm?

14. Agency

Agency is the patient's capacity to understand, decide, consent, refuse, cooperate, manage medicines, and participate in care.

Agency is threatened by:

- delirium

- dementia
- severe pain
- fear
- poor communication
- language barriers
- low health literacy
- medication complexity
- depression
- coercion
- poverty
- lack of support

Clinical Clues

- misunderstanding plan
- inability to repeat medicine changes
- refusal without understanding
- confusion
- fear
- missed appointments
- “non-compliance” due to barriers
- unsafe self-management

Clinical Question

Can this patient understand and carry out the plan, and what support do they need?

15. Support

Support is the network of people, resources, environment, access, and systems that allow the patient to recover and remain safe.

Support includes:

- family
- caregivers
- housing
- transport
- food access
- medicine access
- follow-up
- community nursing
- therapy
- primary care
- social services

- financial resources
- cultural or spiritual community

Support is threatened by:

- isolation
- caregiver exhaustion
- poverty
- unsafe housing
- transport barriers
- lack of follow-up
- complex medicines
- inaccessible care
- family conflict
- stigma

Clinical Question

Can the patient's real-world conditions sustain the plan?

16. Coupling Conditions

Coupling conditions are the patient-specific factors that shape vulnerability, treatment response, risk, and recovery.

They determine how disease and treatment interact with the person.

Examples

- age
- frailty
- CKD
- heart failure
- diabetes
- dementia
- chronic pain
- polypharmacy
- pregnancy
- immunosuppression
- anticoagulation
- baseline mobility
- baseline cognition
- home stairs
- caregiver availability
- finances
- transport

patient values

local resources

Clinical Question

What about this person changes the meaning, risk, or feasibility of the standard plan?

17. Wise Perturbation

A wise perturbation is any clinical action that changes the patient's body, environment, treatment, or care plan in a way that is likely to help more than harm.

It may include:

oxygen

fluids

diuretics

antibiotics

insulin adjustment

stopping harmful medicines

pain relief

bowel treatment

mobility support

referral

escalation

de-escalation

palliative symptom care

discharge support

safety-netting

conversation

"Perturbation" reminds us that every action changes a living system.

The question is not only:

Can I do this?

The question is:

Will this help restore capacity in this patient, with acceptable harm and burden?

18. Repair Trajectory

Repair trajectory is the expected path of recovery, stabilization, palliation, or decline after clinical action.

It defines what improvement should look like and what would signal failure.

Examples

For pneumonia:

fever settles

breathing improves

- oxygen requirement falls
- appetite returns
- confusion improves
- mobility recovers

For AKI:

- urine output improves
- creatinine stabilizes
- potassium remains safe
- harmful medicines are stopped or adjusted
- follow-up blood tests occur

For delirium:

- attention improves
- sleep normalizes
- agitation reduces
- family recognizes movement toward baseline
- triggers are corrected

Clinical Question

What should happen next if the plan is working?

19. Proportionality

Proportionality means matching the intensity of care to the patient's danger, reserve, goals, likely benefit, potential harm, and realistic context.

Under-treatment can harm.
Over-treatment can harm.
Delayed treatment can harm.
Burdensome treatment can harm.
Failure to stop can harm.

Clinical Question

Is this too little, too much, too soon, too late, or just right for this patient now?

20. Escalation

Escalation means increasing the level of clinical attention, treatment, expertise, monitoring, or care setting because the patient's need exceeds the current plan.

Escalation may include:

- calling a senior clinician
- urgent specialist review
- emergency pathway
- higher level of monitoring
- transfer to higher care

- urgent imaging
- urgent treatment
- goals-of-care discussion

Escalation Triggers

- worsening vital signs
- rising oxygen requirement
- reduced consciousness
- new confusion
- new neurological signs
- severe pain
- dangerous results
- treatment failure
- unsafe discharge
- clinician uncertainty with risk

Clinical Question

Does this patient need more help than the current plan provides?

21. De-Escalation

De-escalation means safely reducing, stopping, narrowing, simplifying, or redirecting treatment when danger is controlled or treatment burden exceeds benefit.

It may include:

- stopping oxygen
- narrowing antibiotics
- stopping IV fluids
- removing catheters
- reducing monitoring
- deprescribing medicines
- switching from IV to oral treatment
- simplifying diabetes regimen
- shifting to comfort-focused care
- avoiding unnecessary tests

Clinical Question

What can be safely reduced or stopped because it no longer serves the patient?

22. Safety-Netting

Safety-netting is the process of explaining expected recovery, warning signs, what to do if deterioration occurs, and who is responsible for follow-up.

Good safety-netting is specific.

Weak:

“Come back if worse.”

Strong:

“Seek urgent help if breathlessness worsens, fever returns, confusion develops, urine output falls, pain becomes severe, or you cannot drink.”

Clinical Question

What future danger must the patient, caregiver, or next clinician recognize?

23. Handover

Handover is the transfer of responsibility for clinical risk.

It should include:

- patient identity
- diagnosis or syndrome
- current status
- danger
- what changed
- treatment response
- pending results
- medicine risks
- tasks
- timeframe
- escalation triggers
- goals of care where relevant

Clinical Question

What must the next clinician not miss?

24. Referral

Referral is asking another clinician or team for help with a defined clinical question.

A good referral states:

- why help is needed
- how urgent it is
- what the specific question is
- what has already been done
- what decision is needed

Clinical Question

What help do I need, from whom, and by when?

25. Clinical Review

Clinical review is the act of returning to the patient after time, treatment, new information, or concern.

It asks:

- Is the patient better, worse, unchanged, or different?
- Does the diagnosis still fit?
- Did treatment help or harm?
- Are new results important?
- Are new dangers present?
- Should the plan change?

Clinical Question

Does the current plan still fit the patient's evolving condition?

26. Reassessment

Reassessment is active re-reasoning.

It is not simply repeating observations.

It compares the expected repair trajectory with the actual patient.

Reassessment Asks

- What changed?
- What does not fit?
- What new information has arrived?
- What capacity is still failing?
- What treatment harm appeared?
- Should we escalate, de-escalate, continue, or change direction?

Clinical Question

What has changed enough that my understanding or plan should change?

27. Clinical Reflection

Clinical reflection is structured learning after action.

It asks:

- What happened?
- What went well?
- What went wrong or nearly went wrong?
- What did the patient experience?
- What cognitive, communication, or system factors contributed?
- What repair is needed?
- What should change next time?

Clinical Question

How should this experience change future care?

28. Frailty

Frailty is reduced physiological reserve and increased vulnerability to stressors.

A minor illness may cause major decline.

Frailty often appears as:

- weakness
- weight loss
- exhaustion
- slow walking
- low activity
- falls
- delirium
- poor recovery
- functional decline

Frailty does not mean “do nothing.”

It means care must be proportionate, careful, function-aware, and harm-sensitive.

Clinical Question

How much reserve does this patient have, and what stress could tip them into decline?

29. Delirium

Delirium is an acute disturbance of attention and brain function that often fluctuates.

It is commonly triggered by:

- infection
- hypoxia
- hypoglycemia
- AKI
- electrolyte disturbance
- medication toxicity
- pain
- constipation
- urinary retention
- dehydration
- sleep disruption
- surgery
- withdrawal

Delirium is not the same as dementia.

Dementia is usually chronic.
Delirium is acute or fluctuating.

Clinical Question

Is this patient acutely more confused, inattentive, sleepy, agitated, or unlike baseline?

30. Multimorbidity

Multimorbidity means the patient has multiple chronic conditions that interact.

It creates trade-offs.

Examples:

- diuresis helps heart failure but may worsen kidney function
- glucose control prevents complications but may cause hypoglycemia
- pain relief helps mobility but may worsen delirium
- blood pressure lowering protects organs but may increase falls
- anticoagulation prevents stroke but increases bleeding risk

Clinical Question

How do this patient's conditions and treatments interact, and which trade-off matters most now?

31. Polypharmacy

Polypharmacy means the patient is taking many medicines, especially when the combined burden increases risk.

The issue is not only the number of medicines.

The issue is whether the medicine list remains coherent, safe, necessary, and understandable.

Risks

- falls
- delirium
- AKI
- bleeding
- hypoglycemia
- constipation
- dizziness
- interactions
- poor adherence
- treatment burden

Clinical Question

Which medicines still help, which now harm, and which no longer fit?

32. Deprescribing

Deprescribing is the planned and supervised reduction or stopping of medicines that no longer help, may harm, or no longer match patient goals.

It is not neglect.

It is medicine safety.

Candidates for Review

- sedatives in frailty or delirium
- NSAIDs in CKD, AKI, heart failure, or bleeding risk
- opioids causing drowsiness or constipation
- preventive medicines with limited time-to-benefit in serious illness
- duplicate medicines
- medicines without clear indication
- medicines causing falls or hypotension

Clinical Question

What can be stopped or simplified to reduce harm while preserving benefit?

33. Treatment Burden

Treatment burden is the work, discomfort, risk, cost, complexity, and disruption caused by medical care itself.

It includes:

- many medicines
- frequent appointments
- blood tests
- procedures
- hospital admissions
- monitoring
- side effects
- financial cost
- caregiver workload
- dietary restrictions
- emotional stress

Clinical Question

Is the treatment burden proportionate to the benefit for this patient?

34. Time-to-Benefit

Time-to-benefit is how long a treatment usually takes to produce meaningful benefit.

It matters especially in frailty, advanced illness, and prevention.

Some treatments help immediately.
Some help over months or years.
Some may never benefit a patient whose life expectancy or goals do not match the intervention.

Clinical Question

Will this patient live long enough, and remain well enough, to benefit from this treatment?

35. Baseline

Baseline means the patient's usual function, cognition, symptoms, mobility, independence, and support before the acute illness.

Baseline is essential for judging change and recovery.

Ask:

- How did the patient usually think?
- How far could they walk?
- Could they manage stairs?
- Could they manage medicines?
- Could they cook, wash, dress, toilet?
- Who helped?
- What was normal for them?

Clinical Question

Compared with their usual self, what has changed?

36. Collateral History

Collateral history is information from someone other than the patient, such as family, caregiver, nurse, care home, pharmacy, primary care clinician, or previous records.

It is essential when:

- the patient is confused
- baseline is unclear
- medicines are uncertain
- function is uncertain
- history is incomplete
- caregiver support matters
- safety at home is uncertain

Clinical Question

Who knows this patient's usual life and can tell us what changed?

37. Functional Safety

Functional safety means the patient can safely perform the activities required in their current or next environment.

It includes:

- transferring
- walking
- stairs
- toileting
- eating
- drinking

- dressing
- managing medicines
- calling for help
- avoiding falls

Clinical Question

Can this patient actually function safely where we are sending them?

38. Discharge Readiness

Discharge readiness means the patient can continue recovery safely outside the current care setting.

It requires:

- danger controlled
- diagnosis clear enough
- medicines reconciled
- function safe or supported
- cognition safe or supported
- symptoms controlled
- follow-up arranged
- pending results owned
- safety-net understood
- caregiver support ready

Clinical Question

Can repair continue safely outside hospital?

39. Pending Result Ownership

Pending result ownership means every unreturned test has a named person or service responsible for reviewing and acting on it.

No pending result should be left floating.

Clinical Question

Who will review this result, when, and what will happen if it is abnormal?

40. Treatment Response

Treatment response is what happens after an intervention.

It is clinical data.

Ask:

- Did the patient improve?
- What improved?
- What did not improve?
- What worsened?

Did side effects occur?

Does the response support the diagnosis?

Does it suggest another diagnosis?

Should the plan change?

Clinical Question

What did the patient's response teach us?

41. Treatment Harm

Treatment harm means injury, burden, or capacity loss caused by medical care.

Examples:

AKI after NSAIDs

delirium after sedatives

constipation after opioids

hypoglycemia after insulin

fluid overload after IV fluids

bleeding after anticoagulation

falls after antihypertensives

diarrhea after antibiotics

Clinical Question

Could the treatment be causing the new problem?

42. Diagnostic Momentum

Diagnostic momentum occurs when an initial label keeps moving forward without enough reassessment.

Example:

A patient labeled "dementia" is not reassessed for delirium.
A patient labeled "anxiety" is not assessed for arrhythmia.
A patient labeled "pneumonia" is not reassessed when oxygen requirement rises.

Clinical Question

Am I following a label that no longer fits the patient's trajectory?

43. Premature Closure

Premature closure is accepting a diagnosis too early and stopping further thinking before danger has been adequately considered.

Example

A fall is called "mechanical" before syncope, hypoglycemia, infection, medication harm, and injury are assessed.

Clinical Question

What dangerous alternative remains possible?

44. Anchoring Bias

Anchoring bias is over-reliance on the first impression or first piece of information.

Example

Because the patient has anxiety, all palpitations are assumed to be anxiety.
Because the patient has gout, a hot swollen joint is assumed to be gout.
Because the patient has dementia, acute confusion is assumed to be baseline.

Clinical Question

What evidence would make me change my mind?

45. Attribution Bias

Attribution bias occurs when symptoms are explained away because of age, personality, mental health, disability, social situation, or previous labels.

Examples

"She is just old."

"He is non-compliant."

"It is just anxiety."

"That family is difficult."

"She is always confused."

Clinical Question

Am I dismissing danger because of who the patient is rather than what is happening?

46. Provisional Diagnosis

A provisional diagnosis is the best current explanation while uncertainty remains.

It should be clearly communicated as provisional.

Example

"The most likely diagnosis is pneumonia, but we are monitoring oxygenation and considering heart failure or PE if breathlessness worsens."

Clinical Question

How certain am I, and what would change the diagnosis?

47. Working Differential

A working differential is the prioritized list of possible diagnoses, ordered by likelihood, danger, reversibility, and relevance to management.

It should not be a random list.

Clinical Question

What diagnoses are likely, dangerous, reversible, or management-changing?

48. Time-Limited Trial

A time-limited trial is a treatment plan used when benefit is uncertain, with clear goals, duration, monitoring, and stopping criteria.

Example

A frail patient with severe infection receives a trial of treatment with reassessment of oxygenation, consciousness, renal function, comfort, and patient goals over a defined period.

Clinical Question

What outcome would show that this treatment is helping enough to continue?

49. Goals of Care

Goals of care are the patient's priorities, values, hopes, fears, and acceptable burdens in relation to treatment.

Goals of care are especially important in serious illness, frailty, advanced disease, and high-burden treatments.

Questions

What matters most to you?

What are you hoping for?

What are you afraid of?

What outcome would be unacceptable?

What treatment burden would you accept?

Who should be involved in decisions?

Clinical Question

What are we trying to achieve for this patient, and does the plan match that goal?

50. Treatment Ceiling

Treatment ceiling refers to the agreed level of treatment intensity that is appropriate for a patient, based on clinical benefit, patient values, and realistic outcomes.

It may involve decisions about ICU, resuscitation, invasive procedures, hospital transfer, or comfort-focused care.

Clinical Question

How far should treatment escalate if the patient worsens, and why?

51. Palliative Care

Palliative care is active care focused on relief of suffering, quality of life, dignity, communication, family support, and goal-concordant care in serious illness.

It can occur alongside disease-directed treatment.

It is not simply "nothing more to do."

Clinical Question

What suffering can we relieve, and how can care align with what matters most?

52. Comfort-Focused Care

Comfort-focused care prioritizes symptom relief, dignity, and support when cure or disease reversal is no longer realistic or no longer desired.

It may involve stopping burdensome investigations or treatments and focusing on pain, breathlessness, agitation, nausea, anxiety, family presence, and spiritual needs.

Clinical Question

What actions now best preserve comfort and dignity?

53. System Capture

System capture occurs when healthcare activity becomes driven more by institutional pressures than by patient life-needs.

Examples:

- discharge pressure overriding safety
- documentation replacing communication
- protocol replacing judgment
- target achievement replacing patient understanding
- risk avoidance producing burdensome treatment
- throughput displacing dignity

Clinical Question

Is this action serving the patient, or mainly serving the system?

54. Life-Capacity

Life-capacity means the practical ability of a person to live, function, relate, decide, heal, adapt, and participate in the world.

It includes biological, psychological, social, and relational capacities.

Medicine serves life-capacity when it helps the patient breathe, think, move, eat, sleep, decide, connect, recover, or be comfortable.

Clinical Question

What capacity for living is this care protecting or restoring?

55. Repair

Repair means movement toward restored function, stability, comfort, dignity, or goal-concordant care.

Repair may mean cure.
Repair may mean stabilization.
Repair may mean rehabilitation.
Repair may mean symptom relief.
Repair may mean a safe discharge.
Repair may mean a peaceful death.

Clinical Question

What form of repair is realistic and meaningful here?

56. Life-Coherent Clinical Judgment

Life-coherent clinical judgment is the ability to integrate danger, diagnosis, physiology, evidence, values, function, medicines, context, uncertainty, and timing into a proportionate decision.

It asks:

Which decision best protects life, reduces harm, respects the patient, and supports the most realistic repair trajectory?

57. The Life-Coherent Clinician

A life-coherent clinician is a clinician who practices medicine in a way that remains faithful to the living patient.

Such a clinician:

- recognizes danger
- listens carefully
- reasons physiologically
- uses evidence wisely
- respects dignity
- protects agency
- reviews medicines
- attends to function
- includes caregivers
- escalates when needed
- de-escalates when appropriate
- safety-nets uncertainty
- hands over risk
- reflects after action
- resists system capture

The life-coherent clinician asks:

What does this patient's life need from medicine here and now?

Final Summary of Core Concepts

The whole framework can be remembered as:

Danger

What could harm the patient?

Syndrome

What pattern is present?

Capacity Failure

Which life-capacity is threatened?

Coupling Conditions

What context shapes risk and recovery?

Wise Perturbation

What action helps more than harms?

Repair Trajectory

What should improvement, stabilization, palliation, or safe transition look like?

Safety-Net

What future danger must be recognized?

Reassessment

Does the plan still fit?

Reflection

What must be learned?

Together, these concepts help the clinician practice Internal Medicine as a disciplined, compassionate, and life-serving art.

Appendix M. Suggested Answers to Quick Cases

This appendix provides suggested answers to the quick cases from Appendix K.

These answers are not meant to be memorized.

They are meant to model the reasoning process:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

In real practice, decisions must always follow local clinical pathways, senior advice where needed, and patient-specific assessment.

Quick Case 1

Case

A 66-year-old man with COPD has increased sputum and wheeze. He is now too breathless to walk to the bathroom.

Danger

- worsening respiratory failure
- hypoxia
- hypercapnia where relevant
- pneumonia
- sepsis
- exhaustion from increased work of breathing
- inability to function safely at home

Syndrome

Acute breathlessness with wheeze and increased sputum in a patient with COPD, now causing major functional limitation.

Capacity Failure

- oxygenation
- ventilation
- defense
- mobility
- comfort
- agency if breathlessness prevents self-care

Coupling Conditions

- known COPD
- increased sputum suggests infective trigger
- reduced exercise tolerance
- possible frailty or comorbidity
- baseline oxygenation and usual function matter

Wise Next Step

Assess vital signs, oxygen saturation, work of breathing, chest findings, sputum features, temperature, cognition, hydration, and ability to cope. Manage according to local COPD or acute breathlessness pathway. Escalate if oxygenation, ventilation, consciousness, or work of breathing is concerning.

Repair Trajectory

Breathlessness improves, wheeze reduces, sputum burden improves, oxygenation stabilizes, walking and self-care return toward baseline, and the patient understands when to seek help.

Safety-Net / Handover

Escalate if breathlessness worsens, oxygen requirement rises, confusion or drowsiness develops, chest pain occurs, fever persists, sputum worsens, or the patient cannot manage basic activities.

Quick Case 2

Case

A 73-year-old woman with CKD is prescribed NSAIDs for back pain and returns with reduced urine output.

Danger

- AKI on CKD
- hyperkalemia
- fluid overload
- medication accumulation
- dehydration or obstruction
- worsening pain masking serious pathology

Syndrome

Reduced urine output after NSAID exposure in a patient with chronic kidney disease.

Capacity Failure

- clearance
- fluid regulation
- electrolyte balance
- medicine safety
- comfort

Coupling Conditions

- CKD
- older age
- NSAID exposure
- pain requiring safer treatment
- possible dehydration, infection, or obstruction

Wise Next Step

Assess vital signs, hydration, fluid overload, urine output, renal function, potassium, medication list, pain features, and possible obstruction. Stop NSAIDs unless a senior clinician gives a specific reason to continue. Follow local AKI pathway and seek senior help if potassium, urine output, fluid status, or renal function is concerning.

Repair Trajectory

Urine output improves, kidney function stabilizes or recovers, potassium remains safe, pain is treated with safer alternatives, and the patient understands not to restart NSAIDs unless advised.

Safety-Net / Handover

Warn about reduced urine, swelling, breathlessness, confusion, severe weakness, vomiting, dizziness, or uncertainty about medicines.

Quick Case 3

Case

A 49-year-old woman has palpitations and fainting during exercise.

Danger

- dangerous arrhythmia
- structural heart disease
- exertional syncope
- sudden cardiac risk
- pulmonary embolism or other serious cardiorespiratory cause depending on context

Syndrome

Exertional palpitations with syncope.

Capacity Failure

- rhythm coordination
- circulation
- oxygen delivery
- brain perfusion

Coupling Conditions

- exertional trigger
- fainting is higher risk than palpitations alone
- medication, stimulant, family history, and cardiac history matter

Wise Next Step

Assess urgently. Check vital signs, ECG, cardiac and syncope history, exertional features, family history of sudden death, medicines, substances, anemia or endocrine clues where relevant, and follow local syncope or cardiac pathway. Do not label as anxiety without excluding dangerous causes.

Repair Trajectory

Dangerous rhythm or structural causes are identified or safely excluded, recurrence risk is managed, and follow-up is clear.

Safety-Net / Handover

Urgent review if recurrent fainting, chest pain, sustained palpitations, breathlessness, neurological symptoms, injury, or exertional recurrence occurs.

Quick Case 4

Case

A 90-year-old man with advanced dementia stops eating, becomes bedbound, and develops noisy breathing.

Danger

- aspiration
- pneumonia
- dehydration

- severe frailty decline
- end-of-life phase
- distress from breathlessness or secretions
- family uncertainty or panic

Syndrome

Advanced dementia with acute functional collapse, poor intake, bedbound state, and noisy breathing.

Capacity Failure

- nutrition
- hydration
- oxygenation
- defense
- mobility
- comfort
- agency
- family support

Coupling Conditions

- advanced dementia
- extreme frailty
- likely limited reserve
- patient’s prior wishes and family understanding matter
- goals of care are central

Wise Next Step

Assess for reversible distress and treatable causes while clarifying goals of care with senior support. Prioritize comfort, dignity, symptom relief, family communication, and an appropriate escalation or comfort-focused plan. Palliative care involvement may be appropriate.

Repair Trajectory

If reversible, breathing, comfort, and intake improve. If dying, distress is relieved, family is supported, and care remains dignified and goal-concordant.

Safety-Net / Handover

Handover goals of care, comfort priorities, escalation limits, symptoms to treat, family concerns, and who to call if distress worsens.

Quick Case 5

Case

A 38-year-old man has fever, severe headache, neck stiffness, and confusion.

Danger

- meningitis
- encephalitis
- sepsis
- intracranial infection

reduced consciousness

seizure

Syndrome
Fever with severe headache, meningism, and acute confusion.

Capacity Failure
brain coordination

defense

circulation if septic

comfort

agency

Coupling Conditions
acute neurological symptoms

confusion increases urgency

immune status, travel, exposure, and rash may matter

Wise Next Step
This is an emergency. Assess airway, breathing, circulation, consciousness, glucose, vital signs, rash, neurological signs, and activate local emergency infection or meningitis pathway immediately with senior involvement.

Repair Trajectory
Rapid treatment begins, sepsis and neurological complications are prevented or managed, consciousness stabilizes, infection source is clarified, and monitoring is intensive enough for risk.

Safety-Net / Handover
Handover time course, mental state, vital signs, rash, neurological findings, treatments given, pending results, and escalation needs.

Quick Case 6

Case
A 62-year-old woman with diabetes has a foot ulcer with redness spreading up the foot.

Danger
diabetic foot infection

spreading cellulitis

deep infection

osteomyelitis

sepsis

limb-threatening infection

poor wound healing

Syndrome
Diabetic foot ulcer with spreading infection.

Capacity Failure
defense

- skin integrity
- circulation where vascular disease exists
- mobility
- comfort
- glucose regulation

Coupling Conditions

- diabetes
- possible neuropathy
- possible vascular disease
- foot ulcer
- spreading redness
- possible delayed presentation

Wise Next Step

Assess urgently: vital signs, extent of redness, ulcer depth, pain, pulses, sensation, glucose, renal function, systemic symptoms, and signs of deep infection. Follow local diabetic foot or infection pathway and involve appropriate senior or specialist teams where needed.

Repair Trajectory

Redness stops spreading, systemic features settle, wound care is established, glucose is managed, deep infection is excluded or treated, and follow-up is secured.

Safety-Net / Handover

Escalate if fever, confusion, severe pain, rapidly spreading redness, black tissue, blisters, swelling, reduced perfusion, inability to bear weight, or worsening glucose control occurs.

Quick Case 7

Case

A patient discharged after AKI has not attended repeat blood tests and has restarted old medicines.

Danger

- recurrent or worsening AKI
- hyperkalemia
- hypotension
- fluid overload
- medication toxicity
- preventable readmission

Syndrome

Post-discharge AKI follow-up failure with unsafe medicine restart.

Capacity Failure

- clearance
- electrolyte regulation
- medicine safety
- agency

support

care continuity

Coupling Conditions

recent AKI

unclear discharge understanding

missed follow-up

old medicines at home

possible access, transport, literacy, or caregiver barriers

Wise Next Step

Urgently reconcile medicines, identify what was restarted, check renal function and potassium, assess symptoms and urine output, and re-establish follow-up. Explain clearly which medicines must not be restarted until reviewed.

Repair Trajectory

Kidney function and potassium are checked, harmful medicines are stopped or adjusted, patient and caregiver understand the plan, and repeat monitoring has an owner.

Safety-Net / Handover

Warn about reduced urine, weakness, dizziness, confusion, breathlessness, swelling, vomiting, or uncertainty about medicines. Handover pending blood tests and medicine restart decisions clearly.

Quick Case 8

Case

A frail patient is medically stable but cannot transfer from bed to chair without help.

Danger

unsafe discharge

falls

pressure injury

deconditioning

loss of independence

caregiver strain

readmission

Syndrome

Frailty with unresolved functional capacity failure despite medical stability.

Capacity Failure

mobility

strength

functional safety

agency

support

dignity

Coupling Conditions

- frailty
- baseline function must be known
- home layout and caregiver support matter
- therapy input may determine discharge safety

Wise Next Step

Do not equate medical stability with discharge readiness. Assess baseline mobility, current transfer ability, falls risk, cognition, pain, dizziness, medicines, nutrition, and home support. Request physiotherapy and occupational therapy assessment where available.

Repair Trajectory

The patient transfers safely or has appropriate support and equipment. Discharge is delayed or modified until function is safe in the next setting.

Safety-Net / Handover

Handover that discharge is unsafe until transfers, mobility, home setup, and caregiver capacity are addressed.

Quick Case 9

Case

A patient with cancer has worsening pain, constipation, nausea, and family distress.

Danger

- uncontrolled suffering
- bowel obstruction or severe constipation
- opioid toxicity or inadequate analgesia
- dehydration
- delirium
- caregiver crisis
- disease progression
- end-of-life transition

Syndrome

Serious illness with escalating symptom burden and family distress.

Capacity Failure

- comfort
- bowel clearance
- nutrition and hydration
- brain coordination if delirium develops
- agency
- family support

Coupling Conditions

- cancer diagnosis
- treatment stage and prognosis matter
- opioid use may contribute
- family distress affects care

goals of care may need review

Wise Next Step

Assess pain cause, analgesia effectiveness and harm, constipation severity, nausea, hydration, mental state, disease trajectory, and family understanding. Treat symptoms actively and consider palliative care involvement. Clarify goals and crisis plan.

Repair Trajectory

Pain, nausea, constipation, and distress improve; family understands the plan; treatment burden matches goals; urgent contact pathway is clear.

Safety-Net / Handover

Escalate severe uncontrolled pain, vomiting, abdominal distension, no bowel movement with worsening symptoms, confusion, drowsiness, breathlessness, or family unable to cope.

Quick Case 10

Case

A patient with infection improves clinically, but cultures return showing resistance to the current antibiotic.

Danger

undertreated infection

relapse or deterioration

sepsis

inappropriate antibiotic continuation

missed result action

antimicrobial resistance risk

Syndrome

Clinically improving infection with microbiology result showing current antibiotic resistance.

Capacity Failure

defense

treatment alignment

care continuity

Coupling Conditions

current clinical improvement matters but does not erase the result

infection source and severity matter

immune status, renal function, allergies, and oral options matter

local antimicrobial guidance is essential

Wise Next Step

Do not ignore the culture. Reassess the patient clinically, confirm infection source, review the culture and sensitivities, discuss with senior or microbiology according to local practice, and adjust antibiotics if indicated.

Repair Trajectory

Antibiotic therapy matches organism and patient context, infection continues to improve, adverse effects are minimized, and review or de-escalation plan is clear.

Safety-Net / Handover

Handover the resistant culture result, antibiotic decision, allergy and renal considerations, review date, and escalation triggers if fever, instability, confusion, worsening pain, or recurrence occurs.

Summary Table: Quick Case Reasoning

Case	Main Danger	Main Syndrome	Key Capacity Failure	Core Lesson
COPD breathlessness	Respiratory failure	COPD flare / infection	Oxygenation	Function loss signals severity
CKD + NSAID	AKI / hyperkalemia	Medicine-associated renal risk	Clearance	Pain treatment can harm kidneys
Palpitations + syncope	Arrhythmia	Exertional syncope	Circulation	Do not assume anxiety
Advanced dementia decline	Aspiration / dying phase	Severe frailty decline	Comfort / nutrition	Clarify goals of care
Fever + neck stiffness	Meningitis / sepsis	CNS infection syndrome	Brain / defense	Emergency escalation
Diabetic foot ulcer	Limb-threatening infection	Spreading diabetic foot infection	Defense / skin	Early specialist pathway
AKI follow-up failure	Recurrent AKI	Post-discharge medicine risk	Clearance / agency	Pending follow-up needs ownership
Frailty immobility	Unsafe discharge	Functional failure	Mobility	Medical stability is not discharge readiness
Cancer symptoms	Uncontrolled suffering	Serious illness symptom crisis	Comfort	Treat suffering and support family
Resistant culture	Treatment failure	Infection with antibiotic mismatch	Defense	Results must be acted on

Final Student Takeaway

The quick cases are small, but they teach large habits.

Do not ask only:

“What is the diagnosis?”

Ask:

What is dangerous?
What syndrome is present?
Which capacity is failing?
What context changes the risk?
What intervention helps more than harms?
What should repair look like?
What must be safety-netted or handed over?

This is the discipline of life-coherent clinical reasoning.

Appendix N. Life-Coherent Pocket Cards

These pocket cards are designed for quick clinical use.

They summarize the core reasoning patterns of this book in a format that can be reviewed before ward rounds, admissions, handovers, discharges, referrals, safety-netting, and reflection.

They are not protocols.

They are prompts for safe, life-coherent clinical thinking.

The master loop is:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Pocket Card 1

The Master Clinical Reasoning Card

For every patient, ask:

1. Danger

What could seriously harm this patient now or soon?

2. Syndrome

What pattern of symptoms, signs, trajectory, and context is present?

3. Capacity Failure

Which life-capacity is threatened?

- oxygenation
- circulation
- clearance
- defense
- brain coordination
- energy regulation
- mobility
- nutrition
- comfort
- agency
- support

4. Coupling Conditions

What patient-specific context changes risk or treatment?

- age
- frailty
- CKD

- heart failure
- diabetes
- dementia
- pregnancy
- immunosuppression
- anticoagulation
- polypharmacy
- baseline function
- baseline cognition
- home support
- finances
- patient goals

5. Wise Perturbation

What action will help more than harm?

6. Repair Trajectory

What should improvement, stabilization, palliation, or safe transition look like?

7. Reassessment

When and how will we know whether the plan is working?

8. Safety-Net

What warning signs must be communicated?

Pocket Card 2

Danger-First Card

Before diagnosis, ask:

What must not be missed?

Check for:

- airway compromise
- severe breathlessness
- rising oxygen requirement
- shock
- sepsis
- chest pain with high-risk features
- stroke symptoms

seizure

reduced consciousness

severe hypoglycemia

dangerous electrolytes

AKI with reduced urine or hyperkalemia

major bleeding

severe pain

fall with head injury

anticoagulation risk

suicidal intent

unsafe discharge

critical result without owner

family or nurse serious concern

Urgent Question

Does this patient need immediate help, senior review, emergency pathway, or higher-level monitoring?

Action:

Pocket Card 3

Syndrome Statement Card

Avoid vague labels.

Instead of:

“UTI.”

Say:

“Fever, acute confusion, poor intake, and weakness in a frail older adult, with urinary infection possible but delirium triggers and medication harm also requiring review.”

A good syndrome statement includes:

main symptom pattern

time course

severity

key risk context

capacity failure

dangerous uncertainty

Template

“This is a [age]-year-old with [key background], presenting with [main symptoms and time course], currently showing [danger or capacity failure], most consistent with [working syndrome], with [dangerous alternatives] still needing consideration.”

Syndrome statement:

Pocket Card 4

Capacity Failure Card

Ask:

What is the disease doing to the patient's ability to live?

Oxygenation

Can the patient breathe and oxygenate safely?

Circulation

Is blood reaching organs safely?

Clearance

Can kidneys, liver, and metabolism handle waste, fluid, electrolytes, and medicines?

Defense

Is infection, inflammation, or injury being contained?

Brain Coordination

Is the patient alert, attentive, oriented, and neurologically safe?

Energy Regulation

Are glucose, nutrition, and metabolic stability adequate?

Mobility

Can the patient move safely?

Nutrition

Can the patient eat, drink, swallow, and repair?

Comfort

Is pain, breathlessness, nausea, constipation, anxiety, or distress controlled?

Agency

Can the patient understand, decide, consent, and carry out the plan?

Support

Can the real-world environment sustain the plan?

Main failing capacities:

Pocket Card 5

Coupling Conditions Card

The same disease is not the same illness in every patient.

Ask:

What about this patient changes the meaning of the problem?

Check:

- frailty
- age
- pregnancy
- CKD
- liver disease
- heart failure

- COPD
- diabetes
- dementia
- stroke history
- cancer
- immunosuppression
- anticoagulation
- polypharmacy
- baseline mobility
- baseline cognition
- chronic pain
- poor intake
- poverty
- isolation
- caregiver availability
- home stairs
- transport
- health literacy
- patient values
- local resources

Key coupling conditions:

Clinical implication:

Pocket Card 6

Wise Perturbation Card

Every intervention changes a living system.

Before acting, ask:

Purpose

What capacity am I trying to restore?

Benefit

How should this help?

Harm

What could this treatment worsen?

Burden

How difficult, painful, costly, or disruptive is it?

Monitoring

How will I know if it is helping or harming?

Stop / Change Point

When should we stop, reduce, escalate, or change direction?

A wise perturbation is not merely an action.

It is an action with purpose, proportionality, monitoring, and reassessment.

Pocket Card 7

Repair Trajectory Card

After every plan, define expected repair.

Ask:

- What should improve first?
- What may take longer?
- What result should change?
- What symptom should settle?
- What function should return?
- What would count as treatment failure?
- What harm should we monitor?
- When should reassessment happen?
- What would trigger escalation?
- What would make discharge safe?

Template

“If the plan is working, we expect _____ to improve by _____. We will reassess _____. Escalate or change plan if _____.”

Repair trajectory:

Pocket Card 8

Admission Card

Admission should create the first repair plan.

Ask:

Immediate Safety

Is the patient safe now?

Syndrome

What brought the patient in?

Danger
What must not be missed?

Baseline
What was usual function and cognition?

Medicines
What does the patient actually take?

High-Risk Medicines
Anticoagulants, insulin, opioids, sedatives, diuretics, ACE inhibitors, ARBs, NSAIDs, steroids, antibiotics.

Concerns:

Working Diagnosis
Best current explanation:

Dangerous Alternatives

Initial Plan
Treatment:

Monitoring:

Escalation:

Communication:

Early discharge barriers:

Pocket Card 9

Ward Round Card
For each patient, ask:

Compared With Yesterday
Better / worse / unchanged / different?

Danger Today

Updated Syndrome

Treatment Response
Helping / harming / unclear?

Results
What new result changes the plan?

Medicines
Start / stop / hold / restart / monitor?

Capacity Review
Oxygenation:

Circulation:

Clearance:

Defense:

Brain:

Energy:

Mobility:

Comfort:

Agency:

Support:

Today’s Plan
Three to five priority actions:

Task Ownership
Who does what, by when?

Handover Risk

Pocket Card 10

On-Call Prioritization Card

When overwhelmed, ask:

Who could be harmed by delay?

Prioritize:

- immediate danger
- deteriorating patient
- airway, breathing, circulation, consciousness, glucose
- critical result
- time-critical treatment
- high-risk medicine issue
- severe symptom burden
- unsafe discharge or transfer
- urgent family or goals-of-care issue
- routine tasks

Quick Triage Questions

- Is the patient unstable?
- Are vital signs worsening?
- Is oxygen requirement rising?
- Is consciousness changing?
- Is there chest pain, stroke symptom, severe pain, bleeding, seizure, or hypoglycemia?
- Is a critical result pending or returned?
- Is the nurse worried?
- Am I out of my depth?

If yes, review or escalate.

Top priority now:

Help needed:

Pocket Card 11

Medicine Review Card

For every medicine, ask:

Indication

Why is the patient taking it?

Benefit

Is it still helping?

Harm

Could it be causing AKI, bleeding, delirium, falls, constipation, hypoglycemia, hypotension, or diarrhea?

Context
Does frailty, renal function, liver function, poor intake, pregnancy, or goals of care change safety?

Decision
Continue / start / stop / hold / restart / reduce / monitor?

Patient Understanding
Can the patient or caregiver explain the medicine plan?

Do Not Restart
Which medicines should not be restarted at home?

Pocket Card 12

Delirium Card
Delirium is acute brain dysfunction until proven otherwise.

Ask:

Baseline
What is normal for this patient?

Change
What changed, and when?

Attention
Can the patient focus and follow conversation?

Fluctuation
Does confusion come and go?

Triggers
Check:

- infection
- hypoxia
- hypoglycemia
- AKI
- electrolytes
- pain
- constipation

- urinary retention
- dehydration
- medication toxicity
- sedatives
- opioids
- withdrawal
- head injury
- stroke signs
- sleep disruption
- sensory impairment

Likely triggers:

Safety
Falls, agitation, drowsiness, capacity, supervision:

Plan
Treat triggers, reduce harm, orient, mobilize, support sleep, involve family.

Pocket Card 13

AKI Card
For AKI, ask:

Baseline
What is usual renal function?

Current Risk
Creatinine, potassium, urine output, fluid status:

Likely Cause
Poor intake / sepsis / heart failure / obstruction / medicines / other:

Medicines to Review
- NSAIDs
- ACE inhibitors
- ARBs
- diuretics
- metformin
- anticoagulants
- antibiotics
- opioids

contrast exposure

nephrotoxins

medicines requiring renal adjustment

Actions:

Fluid Status
Dry / overloaded / mixed / uncertain:

Monitoring
Repeat renal function, potassium, urine output:

Escalation
Escalate if potassium dangerous, urine output falls, fluid overload, hypotension, worsening renal function, or uncertainty.

Pocket Card 14

Frailty Card
Frailty means reduced reserve and increased vulnerability.

Ask:

Baseline Function
Walking, transfers, stairs, washing, dressing, toileting:

Baseline Cognition

Acute Change
Weakness, confusion, falls, poor intake, immobility:

Capacity Failures
Mobility, cognition, nutrition, hydration, comfort, agency, support:

Medicines
Sedatives, opioids, NSAIDs, antihypertensives, diuretics, insulin, anticholinergics:

Support
Caregiver, home setup, stairs, equipment, transport:

Goals
What matters most to the patient?

Safe Plan

Function-aware, harm-sensitive, proportionate, supported.

Pocket Card 15

Discharge Card

Before discharge, ask:

Danger Controlled?

Diagnosis Clear Enough?

Capacity Safe or Supported?

Oxygenation:

Circulation:

Clearance:

Brain:

Mobility:

Comfort:

Agency:

Support:

Medicines Reconciled?

Started:

Stopped:

Held:

Changed:

Do not restart:

Pending Results Owned?

Result:

Owner:

Action if abnormal:

Follow-Up Arranged?

Patient / Caregiver Understands?
Teach-back completed?

Yes / No

Safety-Net Given?

Discharge Decision
Ready / not ready / ready with supports:

Pocket Card 16

Handover Card
Handover transfers risk.

Use:

Patient → Syndrome → Current Concern → Risk → Tasks → Escalation

Template
“This is [patient], a [age]-year-old with [background], admitted with [syndrome]. The current concern is [danger/change]. Today [what changed]. The main risks are [risks]. Please [task] by [time]. Escalate if [triggers].”

Fill-In
Patient:

Syndrome:

Current concern:

What changed:

Main risks:

Task:

Timeframe:

Escalation triggers:

Pocket Card 17

Referral Card

A referral asks a defined question.

Use:

Patient → Problem → Question → Stability → What Done → What Needed

Template

“I am referring [patient], a [age]-year-old with [background], because of [problem]. The clinical question is [question]. They are currently [stable/unstable]. We have found [findings] and done [actions]. I need [review/advice/decision] by [timeframe].”

Fill-In

Patient:

Problem:

Clinical question:

Stability:

Findings:

Actions already taken:

Specific request:

Urgency:

Pocket Card 18

Escalation Card

Escalate danger, not certainty.

Use:

“I am worried because…”

Template

“I need urgent help with [patient], admitted with [syndrome]. They are deteriorating because [change]. The danger is [specific risk]. I have already [actions]. I need you to [review/advise/come now]. I am worried that [what may happen].”

Fill-In

Patient:

Syndrome:

Deterioration:

Danger:

Actions done:

Help needed:

What I fear:

Pocket Card 19

Safety-Netting Card

Do not say only:

“Come back if worse.”

Use:

What We Think

“We think this is most likely _____.”

What We Expect

“You should start to notice _____.”

What Is Worrying

“Seek help if _____, _____, or _____ happens.”

What To Do

“If that happens, contact _____ or seek urgent care.”

Follow-Up

“You will be reviewed by _____ on _____.”

Teach-Back

“Can you tell me what you will watch for and what you will do?”

Fill-In

Diagnosis / syndrome:

Expected course:

Warning signs:

Action:

Follow-up:

Teach-back:

Pocket Card 20

Reassessment Card

Reassessment prevents drift.

Ask:

What Changed?

Better, Worse, Unchanged, or Different?

Does the Diagnosis Still Fit?

Did Treatment Help?

Did Treatment Harm?

Any New Result?

Any New Danger?

Any Capacity Still Failing?

Escalate, De-Escalate, Continue, or Change?

What Must Be Communicated?

Pocket Card 21

Goals-of-Care Card

Use when illness is serious, frailty is advanced, treatment burden is high, or escalation may not help.

Ask:

Understanding

“What is your understanding of what is happening?”

Values

“What matters most to you now?”

Hopes
“What are you hoping for?”

Fears
“What are you worried about?”

Acceptable Burden
“What treatments would feel too much for you?”

Family
“Who should be involved in decisions?”

Recommendation
“Given what you have told us, I recommend _____.”

Plan
Disease treatment / time-limited trial / comfort-focused care / other:

Pocket Card 22

Palliative and Comfort Card
When cure is not realistic or not the goal, ask:

Main Distress
Pain / breathlessness / nausea / agitation / anxiety / constipation / secretions / family distress:

Current Goal
Comfort / home time / family presence / dignity / symptom relief:

Burdens to Reduce
Unhelpful tests, monitoring, transfers, medicines, procedures:

Symptoms to Treat

Family Needs

Spiritual / Cultural Needs

Crisis Plan
Who to call if distress worsens:

Comfort-focused care is active care.

Pocket Card 23

Reflection After Action Card

After a case, ask:

What Happened?

What Did I Think Was Happening?

What Was Dangerous?

What Went Well?

What Did I Miss or Nearly Miss?

Did Treatment Help or Harm?

What Did the Patient Experience?

What System Factors Mattered?

What Should I Learn?

What Should Change Next Time?

Reflection turns experience into wisdom.

Pocket Card 24

The “Do Not Miss” Cognitive Bias Card

Before closing a case, ask:

Anchoring

Am I stuck on the first diagnosis?

Premature Closure

Did I stop thinking too early?

Diagnostic Momentum

Am I carrying forward an old label without reassessment?

Attribution Bias

Am I dismissing symptoms because of age, anxiety, dementia, disability, or “non-compliance”?

Treatment Harm

Could the treatment be causing the new problem?

Function Blindness

Am I ignoring mobility, cognition, self-care, or home safety?

System Pressure

Am I rushing because of bed pressure, workload, or convenience?

Corrective Question

What would make me change my mind?

Pocket Card 25

The Final Life-Coherent Question

At any point in care, pause and ask:

Does this plan still serve the living patient?

More specifically:

- Does it protect against danger?
- Does it fit the syndrome?
- Does it restore or support life-capacity?
- Does it account for frailty, multimorbidity, medicines, and context?
- Does it help more than harm?
- Does it respect dignity and agency?
- Does it reduce suffering?
- Does it include family or caregivers where needed?
- Does it assign responsibility?
- Does it define reassessment?
- Does it safety-net uncertainty?
- Does it make repair possible?

If yes, continue and reassess.

If no, pause and repair the plan.

One-Page Master Pocket Card

Life-Coherent Internal Medicine

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Danger

What could harm the patient now or soon?

Syndrome
What pattern organizes the presentation?

Capacity Failure
Which life-capacity is failing?

Coupling Conditions
What patient-specific context changes the plan?

Wise Perturbation
What action helps more than harms?

Repair Trajectory
What should improvement, stabilization, palliation, or safe transition look like?

Reassessment
Does the plan still fit?

Communication
What must be handed over, referred, escalated, or safety-netted?

Reflection
What should be learned?

Final Question
What does this patient's life need from medicine here and now?

Final Student Takeaway
Pocket cards are not a substitute for knowledge.

They are a way to remember what matters under pressure.

Use them to slow down just enough to ask the right questions:

What is dangerous?
What is the syndrome?
Which capacity is failing?
What context matters?
What action is wise?
What should repair look like?
What must be reassessed?
What must be communicated?

The goal is not mechanical medicine.

The goal is disciplined, humane, physiologically grounded, life-coherent care.

Selected Reading / Further Study

This section offers suggested areas for further study for readers who want to deepen their understanding of Internal Medicine, clinical reasoning, physiology, patient safety, communication, frailty, multimorbidity, and life-coherent care.

This is not intended to be an exhaustive bibliography.

It is a guided reading map.

Readers should always use the most current clinical guidelines, local protocols, national standards, drug formularies, and professional guidance relevant to their setting.

1. Core Internal Medicine

Students and clinicians should maintain access to a standard Internal Medicine reference.

Useful areas for further study include:

- general Internal Medicine
- cardiovascular medicine
- respiratory medicine
- nephrology
- endocrinology
- gastroenterology
- neurology
- infectious diseases
- rheumatology
- hematology
- oncology
- geriatrics
- palliative care
- emergency medicine
- clinical pharmacology

Representative sources include major Internal Medicine textbooks, national guideline repositories, specialty society guidance, and institutional protocols.

The purpose of this book is not to replace these resources, but to help learners organize them around clinical reasoning and patient life-capacity.

2. Clinical Reasoning

Clinical reasoning is the disciplined process of moving from symptoms and signs to safe diagnosis, treatment, reassessment, and communication.

Further study should include:

- diagnostic reasoning
- illness scripts
- problem representation

- cognitive bias
- uncertainty
- differential diagnosis
- diagnostic error
- metacognition
- reflective practice

Key themes to explore:

- premature closure
- anchoring bias
- attribution bias
- diagnostic momentum
- availability bias
- confirmation bias
- base-rate neglect
- overconfidence
- uncertainty management
- reassessment after treatment

Suggested search terms:

- clinical reasoning in medicine
- diagnostic error
- cognitive bias in diagnosis
- problem representation
- illness scripts
- metacognition in clinical practice

Clinical reasoning improves when learners repeatedly ask:

What is dangerous?
What pattern is present?
What does not fit?
What would change my mind?

3. Physiology and Pathophysiology

Internal Medicine becomes clearer when physiology is understood as the protection of life-capacity.

Further study should include:

- cardiovascular physiology
- respiratory physiology
- renal physiology
- endocrine regulation
- glucose metabolism

- acid-base physiology
- fluid and electrolyte balance
- immune response
- inflammation
- nervous system function
- nutrition and metabolism
- pharmacokinetics and pharmacodynamics

Useful themes:

- oxygen delivery
- tissue perfusion
- fluid balance
- kidney clearance
- electrolyte regulation
- glucose regulation
- immune defense
- brain coordination
- homeostasis and allostasis
- reserve and decompensation

The central question is:

How does physiological disruption become loss of function, danger, suffering, or vulnerability for this patient?

4. Patient Safety

Patient safety is essential to life-coherent medicine.

Further study should include:

- systems thinking
- human factors
- medication safety
- handover safety
- diagnostic safety
- discharge safety
- escalation systems
- adverse event review
- near-miss analysis
- safety culture
- teamwork
- communication failures

Important safety topics:

- missed deterioration
- medication reconciliation errors
- high-risk medicines
- unsafe discharge
- pending results without ownership
- failure to rescue
- weak handover
- poor documentation
- diagnostic delay
- fragmentation of care

Suggested search terms:

- patient safety in hospitals
- human factors in healthcare
- medication reconciliation
- diagnostic safety
- failure to rescue
- safe clinical handover
- discharge safety

A life-coherent safety question is:

Where could this patient fall through the cracks?

5. Communication in Clinical Practice

Communication is clinical care.

Further study should include:

- case presentation
- shared decision-making
- informed consent
- difficult conversations
- breaking bad news
- goals-of-care discussions
- handover
- referral
- escalation
- safety-netting
- teach-back
- health literacy

- family meetings
- interprofessional communication

Useful frameworks to explore:

- SBAR for structured communication
- teach-back for patient understanding
- shared decision-making models
- serious illness conversation guides
- communication skills for uncertainty
- conflict de-escalation
- trauma-informed communication

Clinical communication should answer:

What does the patient understand?
What does the family understand?
What does the next clinician need to know?
What danger must not be lost in transfer?

6. Frailty and Geriatric Medicine

Frailty is central to modern Internal Medicine.

Further study should include:

- frailty assessment
- physiological reserve
- falls
- delirium
- dementia
- polypharmacy
- functional decline
- sarcopenia
- nutrition
- pressure injury prevention
- rehabilitation
- caregiver support
- comprehensive geriatric assessment
- discharge planning
- goals of care

Important themes:

- minor illness causing major decline
- atypical presentations
- delirium versus dementia

- falls as a syndrome
- medicines as causes of harm
- baseline function
- mobility as a vital sign
- caregiver knowledge
- safe transitions of care

A core frailty question is:

What stress could tip this patient into loss of independence, delirium, falls, or institutional care?

7. Delirium

Delirium is common, dangerous, and often missed.

Further study should include:

- delirium recognition
- attention testing
- fluctuating cognition
- hypoactive delirium
- hyperactive delirium
- mixed delirium
- delirium prevention
- medication triggers
- infection triggers
- pain and constipation
- urinary retention
- dehydration
- sleep disruption
- sensory impairment
- family involvement

Key distinction:

Dementia is usually chronic.
Delirium is acute or fluctuating.

Always ask:

Is this patient acutely different from baseline?

8. Multimorbidity and Complexity

Many patients do not fit single-disease pathways neatly.

Further study should include:

- multimorbidity

- treatment burden
- competing risks
- disease-disease interactions
- drug-disease interactions
- polypharmacy
- deprescribing
- patient priorities
- care coordination
- chronic disease integration
- shared decision-making
- individualized goals

Common trade-offs:

- diuresis and kidney function
- glucose control and hypoglycemia
- anticoagulation and bleeding
- pain relief and delirium
- blood pressure control and falls
- antibiotics and adverse effects
- prevention and time-to-benefit

The key question is:

Which problem matters most now, and what treatment trade-off is acceptable for this patient?

9. Clinical Pharmacology and Prescribing

Safe prescribing is a core Internal Medicine skill.

Further study should include:

- pharmacokinetics
- pharmacodynamics
- renal dosing
- hepatic impairment
- drug interactions
- prescribing in older adults
- prescribing in pregnancy
- antimicrobial stewardship
- opioid safety
- anticoagulation safety
- insulin safety
- steroid safety

- deprescribing
- medication reconciliation
- discharge prescribing

High-risk medicine groups:

- anticoagulants
- antiplatelets
- insulin
- opioids
- sedatives
- antipsychotics
- diuretics
- ACE inhibitors
- ARBs
- NSAIDs
- steroids
- antibiotics
- immunosuppressants

Prescribing should always ask:

What is the indication?
What is the benefit?
What is the harm?
What monitoring is needed?
When should this medicine stop?
Does the patient understand it?

10. Palliative Care and Serious Illness

Palliative care is active care.

It focuses on relief of suffering, dignity, communication, family support, and goal-concordant care.

Further study should include:

- serious illness communication
- symptom control
- pain
- breathlessness
- nausea
- constipation
- agitation
- anxiety
- end-of-life care
- advance care planning

- treatment ceilings
- resuscitation decisions
- family meetings
- spiritual care
- grief and bereavement

Important concepts:

- palliative care can occur alongside disease-directed treatment
- comfort-focused care is not abandonment
- goals of care must guide escalation
- treatment burden matters
- time-to-benefit matters
- dignity remains central

A life-coherent palliative question is:

What form of repair is still possible here: cure, stabilization, comfort, dignity, reconciliation, or peaceful dying?

11. Rehabilitation and Functional Recovery

Recovery is not complete when a disease marker improves.

Further study should include:

- functional assessment
- mobility
- activities of daily living
- rehabilitation after acute illness
- deconditioning
- sarcopenia
- falls prevention
- occupational therapy
- physiotherapy
- nutrition
- discharge planning
- home safety
- caregiver training

Clinical themes:

- walking is a vital sign
- stairs determine discharge safety
- fear of falling limits recovery
- cognition affects rehabilitation

- pain control enables mobility
- nutrition supports repair
- caregiver readiness matters

The key functional question is:

Can the patient safely live in the next setting of care?

12. Public Health and Social Determinants of Health

Clinical medicine does not happen outside society.

Further study should include:

- social determinants of health
- poverty
- housing
- food security
- medicine access
- transport
- education
- environmental exposure
- occupational risk
- health literacy
- discrimination
- social isolation
- caregiver burden
- public health prevention

Clinical implications:

- “non-compliance” may reflect cost
- missed appointments may reflect transport
- poor diet may reflect food insecurity
- delayed care may reflect fear or access barriers
- medication error may reflect low health literacy
- discharge failure may reflect unsafe housing

The life-coherent question is:

Can this patient realistically carry out the plan in their actual life?

13. Ethics and Professionalism

Medicine is moral practice as well as scientific practice.

Further study should include:

- consent

- capacity
- confidentiality
- autonomy
- beneficence
- non-maleficence
- justice
- dignity
- truth-telling
- professional boundaries
- conflicts of interest
- resource allocation
- end-of-life ethics
- shared decision-making
- moral distress
- advocacy

Important questions:

- Does the patient understand?
- Can the patient decide?
- Is the plan proportionate?
- Is the burden justified?
- Are we respecting dignity?
- Are we avoiding harm?
- Are we being honest?
- Are system pressures distorting care?

A life-coherent ethical question is:

Does this decision serve the patient's living good while respecting their rights, values, and dignity?

14. Systems Thinking in Healthcare

Healthcare systems shape clinical care.

Further study should include:

- complex systems
- feedback loops
- institutional incentives
- workflow
- fragmentation
- defensive practice
- resource constraints

- quality improvement
- implementation science
- team dynamics
- organizational culture
- burnout
- moral injury
- patient-centered system design

System problems often appear as individual failures.

Examples:

- missed results
- unsafe discharge
- poor handover
- medication errors
- delayed referrals
- lack of follow-up
- repeated admissions
- poor communication
- clinician overload

The systems question is:

What conditions made this error, delay, harm, or suffering more likely?

15. Reflective Practice

Reflection turns experience into clinical wisdom.

Further study should include:

- reflective writing
- case review
- morbidity and mortality meetings
- debriefing
- supervision
- feedback
- learning from error
- emotional processing
- professional identity formation
- compassion fatigue
- resilience
- moral distress

Reflective questions:

- What happened?
- What did I notice?
- What did I miss?
- What helped?
- What harmed?
- What did the patient experience?
- What did the system make easier or harder?
- What should I do differently next time?
- What kind of clinician am I becoming?

Reflection is not self-punishment.

It is disciplined learning in service of safer care.

16. Evidence-Based Medicine

Evidence-based medicine helps clinicians use research wisely.

Further study should include:

- study design
- randomized trials
- observational studies
- systematic reviews
- meta-analysis
- absolute risk
- relative risk
- number needed to treat
- number needed to harm
- confidence intervals
- diagnostic test performance
- guideline appraisal
- applicability to individual patients
- shared decision-making

Evidence must be interpreted through patient context.

Ask:

- Was this patient represented in the study?
- Does frailty change the risk?
- Does multimorbidity change the benefit?
- Is the outcome meaningful to this patient?
- What is the treatment burden?
- What is the time-to-benefit?

What does the patient value?

Evidence-based medicine becomes life-coherent when evidence is integrated with physiology, context, patient values, and clinical judgment.

17. Suggested Learning Method

To deepen learning, use a four-step method.

Step 1: Read

Choose a topic such as AKI, heart failure, delirium, or chest pain.

Read from a standard medical source.

Step 2: Reframe

Ask:

What capacity is failing?
What danger matters?
What treatment restores capacity?
What treatment harms are possible?

Step 3: Apply

Use one real or simulated case.

Write:

Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory

Step 4: Reflect

Ask:

What did I understand better?
What remains unclear?
What would I ask a senior clinician?
What would I safety-net?

This method turns reading into clinical reasoning.

18. Recommended Ongoing Learning Habits

Follow Current Guidelines

Use current national, institutional, and specialty guidance.

Review High-Risk Medicines Regularly

Learn one medicine group at a time.

Practice Case Presentations

Present cases as clinical arguments, not data lists.

Learn From Handover

Notice what information makes handover safe or unsafe.

Study Complications

Ask how good treatments cause harm.

Practice Safety-Netting

Write specific red flags for common presentations.

Ask About Baseline

Especially in frailty, delirium, falls, and discharge planning.

Reflect After Difficult Cases

Use experience as a teacher.

Learn From Patients and Families

They often know the trajectory before the chart does.

19. A Life-Coherent Reading List by Theme

Clinical Reasoning

Study diagnostic reasoning, cognitive bias, problem representation, and uncertainty.

Physiology

Study organ function as life-capacity: oxygenation, circulation, clearance, defense, brain coordination, energy regulation.

Patient Safety

Study medication safety, handover, escalation, discharge, and diagnostic error.

Frailty

Study reserve, function, falls, delirium, polypharmacy, and comprehensive geriatric assessment.

Communication

Study teach-back, shared decision-making, serious illness conversations, handover, referral, and safety-netting.

Palliative Care

Study symptom relief, goals of care, treatment burden, and dignity.

Systems Thinking

Study how institutions, workflows, incentives, and communication structures shape clinical outcomes.

Ethics

Study consent, capacity, dignity, proportionality, justice, and end-of-life decision-making.

20. Final Guidance for Further Study

Do not study medicine only as information.

Study medicine as care.

When reading any source, ask:

How does this help me recognize danger?
How does this help me understand physiology?
How does this help me restore capacity?
How does this help me avoid harm?
How does this help me communicate?
How does this help me respect the patient?
How does this help repair suffering?

The best medical learning does not merely increase knowledge.

It forms attention, judgment, humility, courage, and service.

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Back Matter

Publication and review support

About the Author

Dr. Bichara Sahely is an Internal Medicine physician whose clinical, educational, and public-health work has focused on whole-person care, clinical reasoning, systems thinking, and the restoration of life-capacity. His work integrates bedside medicine with a broader concern for humane institutions, public health, and life-coherent practice.

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Internal Medicine can feel overwhelming because patients rarely present as neat diagnoses. They arrive with symptoms, uncertainty, frailty, risk, context, and suffering.

Internal Medicine Made Easy gives students and early clinicians a practical way to think through real patients using the life-coherent clinical loop: Danger → Syndrome → Capacity Failure → Coupling Conditions → Wise Perturbation → Repair Trajectory.

Across 90 chapters, Dr. Bichara Sahely guides the reader from common clinical presentations to bedside reasoning, systems of capacity, multimorbidity, frailty, palliative care, communication, handover, referral, escalation, safety-netting, reassessment, and integrated clinical judgment.

This is a reasoning companion for safer, clearer, more humane Internal Medicine.

Clinical reasoning from danger to repair.