[HOSPITAL / HEALTH AUTHORITY NAME]

IMMUNOCOMPROMISED, NEUTROPENIC, AND ONCOLOGY EMERGENCIES PATHWAY

Protocol 46: Neutropenic Sepsis, Tumour Lysis Syndrome, Metastatic Spinal Cord Compression, Hypercalcaemia, Thrombosis, Acute Cancer Complications, and Treatment Toxicity

DRAFT FOR EMERGENCY MEDICINE, INTERNAL MEDICINE, PAEDIATRICS, ONCOLOGY, HAEMATOLOGY, INFECTIOUS DISEASES, CRITICAL CARE, PHARMACY, NURSING, RADIOLOGY, SURGERY, NEUROLOGY / NEUROSURGERY, RADIATION ONCOLOGY, TRANSFUSION MEDICINE, NEPHROLOGY, ENDOCRINOLOGY, PALLIATIVE CARE, LABORATORY SERVICES, AND CLINICAL GOVERNANCE

STATUS: This is a draft clinical-governance document. It must be adapted to local oncology and haematology services, antimicrobial resistance, formularies, chemotherapy and immunotherapy agents, transplant and cellular-therapy pathways, laboratory turnaround, blood-bank capability, MRI / CT access, critical-care capacity, specialist availability, antidote stock, transfer arrangements, palliative-care services, and applicable legislation before implementation.

ONCOLOGY SAFETY RULE: Any immunocompromised or recently treated cancer patient who is feverish, hypothermic, unwell, breathless, hypotensive, confused, in new severe pain, or neurologically changed has a time-critical emergency until proved otherwise. Do not wait for neutrophil results, a named diagnosis, oncology review, or transfer before beginning ABCDE stabilization, sepsis treatment, and complication-specific care.

Document control	Details
Document owner	Emergency Department / Medical Services Directorate / Oncology / Haematology / Paediatrics / Nursing Services / Clinical Governance
Clinical leads	Emergency Medicine; Internal Medicine; Paediatrics; Oncology; Haematology; Infectious Diseases / Microbiology; Critical Care; Pharmacy; Nursing; Radiology; Surgery; Neurology / Neurosurgery; Radiation Oncology; Transfusion Medicine; Nephrology; Endocrinology; Palliative Care; Laboratory Services
Applies to	Children, adolescents, pregnant people and adults with cancer, haematological malignancy, recent systemic anticancer therapy, radiotherapy, stem-cell or solid-organ transplant, cellular therapy, prolonged high-dose immunosuppression, severe primary or acquired immune compromise, or another condition that substantially increases risk from infection or treatment toxicity.
Interfaces	Protocol 1 Patient Journey; Protocol 2 Triage; Protocol 3 Resuscitation / Sepsis / Shock; Protocol 4 Assessment and Documentation; Protocol 6 Pain Management; Protocol 14 Fever / Sepsis; Protocol 15 Acute Respiratory Distress; Protocol 17 Altered Mental Status; Protocol 18 Stroke / TIA; Protocol 19 Seizures; Protocol 20 Acute Headache; Protocol 22 Arrhythmias; Protocol 24 Abdominal Pain; Protocol 25 GI Bleeding; Protocol 26 Dehydration / Electrolytes; Protocol 28 AKI / Dangerous Electrolytes; Protocol 29 Poisoning; Protocol 30 Anaphylaxis; Protocol 37 Eye / ENT / Dental; Protocol 38 Obstetric Emergencies; Protocol 40 Paediatric Assessment; Protocol 41 Neonatal Emergencies; Protocol 42 Mental-Health Crisis; Protocol 43 Safeguarding; Protocol 44 Frailty; Protocol 45 Sickle Cell; Protocol 47 Renal Failure / Dialysis; Protocol 48 Airway / Ventilation; Protocol 49 Major Haemorrhage / Transfusion; Protocol 52 Palliative Emergencies; Protocol 53 Observation Care; Protocol 54 Infection Prevention.
Version / status	Draft 1.0 for local multidisciplinary validation
Review cycle	After any death or serious harm involving delayed antibiotics, missed sepsis, tumour lysis, spinal cord compression, immune-related toxicity, cellular-therapy toxicity, treatment extravasation, thrombosis, bleeding, deterioration during observation / transfer, or at least every 2 years.
Required approval	Emergency Department; Internal Medicine; Paediatrics; Oncology; Haematology; Infectious Diseases / Microbiology; Critical Care; Pharmacy; Nursing; Radiology; Surgery; Neurology / Neurosurgery; Radiation Oncology; Transfusion Medicine; Nephrology; Endocrinology; Palliative Care; Laboratory Services; Clinical Governance.

1. Purpose

To provide a standardized emergency-department pathway for rapid recognition, stabilization, investigation, treatment, reassessment and safe disposition of immunocompromised patients and people presenting with acute complications of cancer or its treatment.

2. Scope

- Includes suspected neutropenic sepsis and occult infection; central-line infection; tumour lysis syndrome (TLS); hypercalcaemia of malignancy; metastatic spinal cord compression (MSCC); venous and arterial thrombosis; bleeding and cytopenias; malignant airway, mediastinal, superior vena cava, pericardial and neurological emergencies; treatment extravasation; immune checkpoint inhibitor toxicity; CAR-T / bispecific-antibody toxicity; transplant-related emergencies; and disposition / transfer.
- Applies whether cancer is active, in remission, newly suspected, treated locally or overseas, and whether the patient presents during therapy or weeks to months after treatment. Immune-related adverse events may occur after treatment has stopped.
- Does not replace product-specific protocols, oncology / haematology advice, paediatric oncology pathways, transplant-centre instructions, antimicrobial policy, radiation-emergency planning, or individualized ceilings of treatment.

3. Core policy statements

- Triage by physiological risk and treatment history, not by appearance, absence of fever, normal initial blood pressure, cancer stage, or assumption that symptoms are expected side effects.
- Suspected neutropenic sepsis is an acute medical emergency. Give locally approved broad-spectrum IV antipseudomonal antibiotics immediately; target within 60 minutes of recognition and sooner in shock. Cultures and tests must not delay therapy.
- Use concurrent pathways: sepsis can coexist with tumour lysis, pulmonary embolism, immune toxicity, adrenal crisis, malignant obstruction or treatment reaction.

- Contact the treating oncology / haematology / transplant / cellular-therapy service early, but do not delay stabilization, antibiotics, electrolyte treatment, corticosteroids for defined emergencies, or transfer preparation while awaiting advice.
- No patient is excluded from active emergency care because of a cancer diagnosis. Establish prognosis, goals of care and treatment ceilings through respectful, documented discussion; treat reversible distress and uncertainty while these are clarified.
- Use standard precautions plus syndrome-specific isolation. Minimize exposure in crowded waiting areas and protect severely immunocompromised patients from communicable infection.
- All medication doses, renal / hepatic adjustment, paediatric dosing, pregnancy safety, antidotes, antimicrobial choices and transfusion specifications must follow approved local protocols.

4. Definitions and clinical framework

Term	Operational meaning
Immunocompromised	A clinically significant reduction in host defence from cancer, cytotoxic therapy, haematological disease, transplant, cellular therapy, prolonged / high-dose corticosteroids, biologic or other immunosuppressive treatment, primary immunodeficiency, advanced HIV or another condition.
Neutropenia	Low absolute neutrophil count (ANC). Severe neutropenia is commonly ANC <0.5 × 10^9/L or expected to fall below this; profound / prolonged neutropenia carries greater risk. Do not wait for the ANC before treating a clinically suspected emergency.
Suspected neutropenic sepsis	An at-risk patient who is unwell with fever, hypothermia or other evidence of infection / sepsis and known or possible neutropenia. A single temperature threshold must be defined locally; many services use ≥38.0°C, but absence of fever does not exclude sepsis.
Systemic anticancer therapy (SACT)	Cytotoxic chemotherapy, targeted therapy, endocrine therapy, immune checkpoint inhibitor, antibody-drug conjugate, bispecific antibody, CAR-T or other anticancer treatment.
Tumour lysis syndrome	Rapid release of intracellular potassium, phosphate and nucleic-acid metabolites causing hyperkalaemia, hyperphosphataemia, hypocalcaemia, hyperuricaemia, AKI, arrhythmia, seizure or death; spontaneous TLS can occur before therapy.
MSCC	Compression of the spinal cord or cauda equina by malignant disease. New severe spinal pain, weakness, sensory change, gait difficulty or bladder / bowel dysfunction is an oncological emergency.
Immune-related adverse event (irAE)	Inflammatory organ toxicity from immune checkpoint inhibition; may affect any organ and may present during or after treatment.
CRS / ICANS	Cytokine release syndrome and immune effector cell-associated neurotoxicity syndrome after CAR-T, bispecific antibodies or related therapy. Fever, hypotension, hypoxia or acute neurological change requires immediate specialist contact and simultaneous sepsis exclusion.

5. Roles and accountability

Role	Minimum responsibility
Triage nurse	Identify cancer / immune compromise and last treatment; obtain complete observations, temperature, oxygen saturation, pain and mental status; apply isolation; activate resuscitation / sepsis pathway for danger signs.
ED nurse	Obtain access, cultures and time-critical specimens without delaying treatment; administer antibiotics / fluids / antidotes / analgesia; monitor response, urine output and treatment complications; protect lines and avoid contraindicated rectal / IM procedures.
ED clinician	Lead ABCDE, identify overlapping emergencies, prescribe time-critical treatment, interpret treatment card / regimen, contact specialists, define monitoring and disposition, and document times and rationale.
Senior ED / medical / paediatric clinician	Review all unstable, diagnostically uncertain, high-risk or potentially dischargeable cases; coordinate critical care, imaging, transfer, procedural and palliative decisions.
Oncology / haematology / transplant service	Provide regimen-specific toxicity advice, baseline information, treatment intent / ceiling, definitive cancer-complication management, and receiving-team coordination.
Pharmacy / microbiology	Support antimicrobial choice, allergy and interaction management, antidote / tocilizumab / rasburicase availability, cytotoxic extravasation guidance and renal / hepatic adjustment.
Radiology / surgery / radiation oncology / neurosurgery	Provide emergency imaging and definitive pathways for MSCC, obstruction, perforation, bleeding, airway / mediastinal disease and other structural emergencies.
Clinical governance	Maintain local algorithms, medicine stock, staff training, transfer agreements, audit and serious-incident learning.

6. Required readiness

Resource	Required local standard
Identification	Prominent cancer / immunocompromise alert, treatment card review, last-treatment date, oncology contact and individualized emergency plan.
Sepsis response	24/7 access to approved antipseudomonal IV antibiotic, severe-allergy alternative, blood cultures including line cultures, lactate, fluids, vasopressors and critical-care escalation.
Laboratory	Urgent FBC with differential / ANC, renal / liver profile, calcium, magnesium, phosphate, urate, LDH, coagulation, lactate, cultures, group and screen, and repeat testing capability.

Resource	Required local standard
TLS capability	Cardiac monitoring, hyperkalaemia treatment, allopurinol / rasburicase pathway, G6PD risk process, fluid balance, nephrology and emergency dialysis transfer.
Imaging	Urgent CT and MRI pathway; whole-spine MRI or immediate transfer for suspected MSCC; bedside ultrasound / echocardiography capability where available.
Treatment toxicity	Product-specific cards / protocols, corticosteroids, adrenal-crisis treatment, tocilizumab access or immediate transfer plan, extravasation kit and drug-specific antidote guidance.
Special products	Blood-bank access to irradiated / antigen-selected / CMV-appropriate components when indicated; transplant / cellular-therapy requirements visible to ED and laboratory staff.
Referral	24/7 oncology / haematology / paediatric oncology, critical care, surgery, neurosurgery, radiation oncology, nephrology and palliative-care contacts, including regional transfer.

7. Triage and immediate danger recognition

Finding	Immediate response
Airway compromise, severe hypoxia, shock, collapse, rapidly worsening respiratory distress, severe bleeding or reduced consciousness	Move to resuscitation; ABCDE; senior clinician; critical care; initiate concurrent sepsis and cause-specific treatment.
Fever, rigors, hypothermia, malaise, hypotension, tachypnoea, confusion or new deterioration after recent anticancer therapy	Assume possible neutropenic sepsis. Cultures if rapidly obtainable; immediate IV antipseudomonal antibiotic; lactate and sepsis pathway.
New severe back pain, radicular pain, limb weakness, sensory change, gait difficulty, saddle symptoms or bladder / bowel dysfunction	Suspect MSCC; spinal precautions if instability; urgent dexamethasone when neurological signs are present under local pathway; whole-spine MRI / transfer within 24 hours.
Weakness, vomiting, cramps, oliguria, arrhythmia, seizure or acute kidney injury with bulky / rapidly treated malignancy	Suspect TLS; cardiac monitoring; urgent potassium, phosphate, calcium, urate, creatinine and LDH; start specialist-led TLS treatment.
Confusion, dehydration, constipation, polyuria, weakness, arrhythmia or AKI with malignancy	Check ionized or albumin-adjusted calcium urgently; ECG, cautious isotonic fluid and hypercalcaemia pathway.
Chest pain, dyspnoea, unilateral swelling, catheter dysfunction, neurological deficit or limb ischaemia	Investigate cancer-associated thrombosis / embolism or arterial event using standard emergency pathways with bleeding / platelet review.
Recent immunotherapy with diarrhoea, dyspnoea, chest pain, weakness, headache, hypotension, jaundice, rash, severe fatigue or endocrine symptoms	Suspect irAE; hold therapy; investigate infection concurrently; early oncology and organ-specialist review; urgent steroids for defined severe toxicity.
Recent CAR-T / bispecific therapy with fever, hypotension, hypoxia, confusion, aphasia, tremor, dysgraphia or seizure	Suspect CRS / ICANS and sepsis; contact treating centre immediately; continuous monitoring and product-specific emergency pathway.
Child with anterior mediastinal mass symptoms, stridor, orthopnoea or worse when supine	Keep upright, avoid sedation / paralysis and unnecessary supine positioning; urgent anaesthesia, paediatric oncology and critical-care review.

DO NOT SEND A HIGH-RISK IMMUNOCOMPROMISED PATIENT BACK TO THE WAITING ROOM after initial observations. Place in a monitored clinical area with defined reassessment and infection-control precautions.

8. The first 30 minutes

1. Complete ABCDE, full vital signs, oxygen saturation, temperature, mental status, pain score, weight and bedside glucose. Repeat abnormal observations promptly.
2. Identify diagnosis, treatment centre, treatment intent, last SACT / radiotherapy / transplant / cellular therapy, current immunosuppression, central line, recent admissions, prophylactic antimicrobials, allergies and emergency treatment card.
3. Ask specifically about fever / rigors, cough / dyspnoea, dysuria, diarrhoea / abdominal pain, mucositis, rash, line pain, severe back pain, weakness, bladder / bowel change, chest pain, swelling, bleeding, reduced urine and new neurological symptoms.
4. If sepsis or neutropenic sepsis is possible, obtain cultures and urgent bloods while giving immediate empiric IV antibiotics. Do not await FBC, imaging, urine or specialist review.
5. Obtain IV access; use intraosseous access if critically ill and access is delayed. Draw peripheral cultures and cultures from each central-line lumen when feasible without delaying antibiotics.
6. Begin oxygen, cautious isotonic fluid, vasopressor preparation, analgesia, electrolyte stabilization, glucose treatment and other ABCDE measures according to physiology.
7. Activate time-critical pathways for MSCC, TLS, hypercalcaemia, PE, tamponade, airway / mediastinal compromise, major haemorrhage, adrenal crisis, irAE, CRS / ICANS or extravasation when suspected.
8. Contact senior ED plus oncology / haematology / transplant / cellular-therapy service early. Initiate regional transfer immediately when required diagnostics or definitive therapy are unavailable.
9. Document arrival, recognition, cultures, antibiotics, fluids, specialist contact, imaging request, reassessment and transfer times. Any delay requires contemporaneous explanation and mitigation.

9. Focused history and examination

Domain	Minimum assessment
Cancer / immune history	Cancer type and stage if known; haematological disorder; transplant; immune deficiency; prior splenectomy; current disease status; treatment intent and treatment ceiling.
Treatment exposure	Exact agents if possible, last dose / cycle, radiation field, steroids / immunosuppressants, growth factor, CAR-T / bispecific / checkpoint inhibitor, recent surgery and transfusion.
Infection risk	Expected neutropenic nadir, previous resistant organisms, recent antibiotics / hospital stay, prophylaxis, travel, contacts, line / port, skin breakdown and device sites.

Domain	Minimum assessment
Complication symptoms	Back / radicular pain, weakness, urinary retention, chest pain, dyspnoea, oedema, headache, seizures, diarrhoea, vomiting, abdominal distension, bleeding, bruising, reduced urine and severe fatigue.
Baseline and function	Usual blood counts, renal function, calcium, oxygenation, cognition, mobility, frailty, nutrition, pain regimen and home support.
Examination	ABCDE; skin / mouth / perineum without rectal examination; line sites; lungs; heart; abdomen; hydration; full neurology including gait when safe; spinal tenderness; limb swelling; bleeding and rash.
Medicines / interactions	Anticoagulant, antiplatelet, steroids, insulin, opioids, nephrotoxins, QT-prolonging drugs, CYP / P-gp interactions, herbal treatments and recent medication changes.
Goals and support	Advance plan, preferred contacts, understanding, caregiver capacity, distance / transport, ability to return rapidly and direct oncology access.

10. Neutropenic sepsis and severe infection

- Treat any unwell patient receiving or recently receiving anticancer treatment as possible neutropenic sepsis until assessed. Fever may be absent in profound neutropenia, corticosteroid use, frailty or shock.
- Administer the locally approved first-line broad-spectrum IV antipseudomonal antibiotic immediately. Use a pre-defined severe beta-lactam allergy pathway. Dose for weight, renal / hepatic function and prior microbiology.
- Do not routinely add gram-positive coverage solely because a central line is present. Add it under local policy for shock, suspected catheter / skin infection, pneumonia, severe mucositis, known resistant gram-positive colonization or another specific indication.
- Obtain at least two blood-culture sets where feasible, including peripheral and each central-line lumen, plus urine and source-directed specimens. Do not remove a functional line automatically; discuss indications for removal with oncology / infectious diseases.
- Use balanced crystalloid / isotonic fluid in small reassessed boluses when hypoperfused, especially with cardiac / renal disease. Escalate early to vasopressors and critical care rather than repeated unmonitored fluid loading.
- Apply source control. Examine mouth, skin, perineum and line sites gently. Avoid rectal temperature, digital rectal examination, suppositories, enemas and intramuscular injections in significant neutropenia or thrombocytopenia unless specifically justified.
- Consider viral, fungal and opportunistic infection in prolonged neutropenia, transplant, high-dose steroids or refractory deterioration. Early microbiology / infectious-disease advice is required; empiric antifungal or antiviral treatment follows local risk pathways.
- Repeat clinical assessment, lactate and organ-function tests according to severity. A normal initial lactate or blood pressure does not make the patient low risk.

ANTIBIOTICS BEFORE ANC: A normal total white-cell count does not exclude severe neutropenia, and the ANC result must not delay the first antibiotic dose.

11. Infection sources, central lines and neutropenic enterocolitis

Syndrome	Key actions
Central-line infection	Inspect tunnel / pocket and exit site; culture each lumen and periphery; give antibiotics. Urgent removal discussion for severe sepsis, tunnel / pocket infection, persistent bacteraemia / fungaemia, endocarditis or line malfunction.
Respiratory infection	Low threshold for chest imaging and viral testing. Hypoxia, pleuritic pain or haemoptysis also requires PE and fungal-disease consideration. Avoid assuming all infiltrates are infection; pneumonitis, oedema and malignant disease may coexist.
Mucositis / odontogenic infection	Assess airway, hydration and pain; provide mouth care and analgesia. Severe mucositis may permit bloodstream infection and impair oral absorption. Avoid traumatic procedures without platelet / neutrophil review.
Abdominal pain / diarrhoea	Consider neutropenic enterocolitis, C. difficile, immune colitis, obstruction, perforation, pancreatitis and graft-versus-host disease. Use CT when indicated, bowel rest / IV fluids / broad antibiotics and early surgery / oncology; avoid antidiarrhoeals when ileus, severe colitis or toxic megacolon is possible.
Perineal / skin infection	Inspect without instrumentation. Rapid pain, crepitus, bullae or toxicity suggests necrotizing infection and requires immediate surgery plus broad antibiotics.
Urinary infection	Send urine when feasible, but absence of pyuria does not exclude infection in neutropenia. Evaluate obstruction and devices.
CNS infection	Treat meningitis / encephalitis promptly with local immunocompromised-host regimen. Correct thrombocytopenia / coagulopathy and assess mass lesion before lumbar puncture when indicated; do not delay antimicrobials.

12. Tumour lysis syndrome

1. Recognize high-risk disease: rapidly proliferating or bulky haematological malignancy, high LDH / urate, renal impairment, high tumour burden, highly treatment-sensitive disease, recent cytotoxic / steroid / targeted / cellular therapy, or spontaneous lysis before treatment.
2. Place on cardiac monitoring; obtain urgent potassium, phosphate, calcium, magnesium, urate, creatinine, bicarbonate, glucose, LDH, FBC and ECG. Repeat every 4-6 hours or more frequently when unstable under local specialist protocol.
3. Stop potassium- and phosphate-containing fluids / supplements and nephrotoxins. Begin carefully monitored isotonic hydration when appropriate, with strict input / output and weight; avoid fluid overload.
4. Give urate-lowering therapy according to risk and local oncology / haematology protocol. Rasburicase is time-critical in established or high-risk TLS but is contraindicated in known G6PD deficiency; apply an urgent G6PD-risk process and specialist decision. Follow special laboratory handling for urate samples after rasburicase.

5. Treat hyperkalaemia immediately under Protocol 28. Manage hyperphosphataemia and AKI with nephrology. Do not routinely replace asymptomatic hypocalcaemia because calcium-phosphate precipitation may worsen; treat symptomatic hypocalcaemia, seizures or arrhythmia cautiously.
6. Do not routinely alkalinize urine. Escalate early for dialysis when hyperkalaemia, severe acidosis, fluid overload, symptomatic electrolyte disturbance or worsening AKI is refractory.
7. TLS can evolve rapidly despite an initially normal result. Continue serial monitoring and transfer to a centre with oncology, critical-care and renal support when local capability is insufficient.

13. Hypercalcaemia of malignancy

Step	Standard
Confirm severity	Check ionized calcium or albumin-adjusted calcium, renal function, phosphate, magnesium and ECG. Assess cognition, hydration, vomiting, constipation, weakness, arrhythmia, renal stones / AKI and volume status.
Stabilize	Stop calcium / vitamin D and contributing medicines when appropriate. Give isotonic IV fluid with frequent reassessment; use lower rates and early senior review in heart or renal failure. Routine loop diuretics are not a substitute for rehydration.
Rapid control	For severe or symptomatic hypercalcaemia, use calcitonin under local protocol for short-term effect while definitive antiresorptive therapy acts. Limit duration because tachyphylaxis develops.
Definitive therapy	Give an IV bisphosphonate or denosumab according to renal function, previous treatment, cause and local oncology / endocrine protocol. Do not delay specialist discussion in severe disease.
Cause-specific treatment	Glucocorticoids may be indicated for calcitriol-mediated hypercalcaemia such as some lymphomas, but are not universal treatment. Treat the underlying malignancy.
Escalation	Critical care / nephrology for severe neurological or cardiac effects, refractory calcium, oliguria, fluid intolerance or dialysis consideration. Repeat calcium and renal tests; prevent rebound and arrange oncology follow-up.

14. Metastatic spinal cord compression

- Ask every cancer patient with new back pain about weakness, sensory change, gait, saddle symptoms, urinary retention / incontinence and bowel dysfunction. Examine power, sensation, reflexes, gait when safe, anal tone only when clinically essential and locally appropriate, and bladder volume.
- Immobilize / handle with spinal precautions when instability is suspected or movement causes neurological symptoms. Provide analgesia, pressure care, thrombosis prevention and bladder management.
- For neurological symptoms or signs of MSCC, give dexamethasone promptly according to the approved pathway; NICE recommends 16 mg oral or equivalent daily while definitive treatment is arranged. Give gastric protection and monitor glucose.
- If lymphoma or myeloma is suspected without neurological signs, seek specialist advice before corticosteroids because tissue diagnosis may be affected. Do not delay steroids in neurological compromise.
- Arrange urgent MRI of the whole spine as soon as possible and within 24 hours of suspected MSCC. Plain radiographs do not exclude compression. Transfer immediately if MRI and definitive care are unavailable.
- Contact oncology / haematology, radiation oncology and spinal surgery / neurosurgery urgently. Definitive surgery and / or radiotherapy decisions depend on neurological status, stability, cancer biology, prior treatment, prognosis and patient goals.
- Document exact onset and progression of symptoms, neurological findings before and after treatment, bladder function, steroid time, MRI request / completion and receiving-team acceptance.

15. Thrombosis, embolism, bleeding and cytopenias

Problem	Emergency approach
DVT / pulmonary embolism	Use standard diagnostic and haemodynamic pathways. Cancer increases risk and symptoms may be atypical. Start anticoagulation when indicated after reviewing platelet count, active bleeding, recent surgery, renal / hepatic function, brain / GI / GU lesions, interactions and treatment plan.
Massive / high-risk PE	Resuscitate, obtain critical-care and senior multidisciplinary review. Reperfusion decisions require individualized assessment of bleeding, intracranial disease, thrombocytopenia and prognosis; do not withhold solely because cancer is present.
Catheter-associated thrombosis	Assess infection, limb / neck swelling, SVC symptoms and line need. Anticoagulation and line retention / removal require oncology / haematology advice; do not manipulate a malfunctioning line forcefully.
Arterial event / stroke	Activate standard stroke / limb-ischaemia pathways. Consider non-bacterial thrombotic endocarditis, treatment-related vasculopathy, hyperviscosity and disseminated intravascular coagulation.
Thrombocytopenia / bleeding	Identify source and severity; stop contributing medicines where appropriate; FBC, film, coagulation, fibrinogen and group / crossmatch. Avoid IM / rectal procedures and NSAIDs. Use platelet / plasma / cryoprecipitate according to active bleeding, procedure and local haematology guidance.
Hyperviscosity / leukostasis	Headache, confusion, visual change, dyspnoea, hypoxia or priapism with very high cell counts requires immediate haematology, critical care and leukapheresis / cytoreduction pathway. Avoid unnecessary red-cell transfusion before specialist advice when hyperviscosity is possible.

16. Structural and malignant emergencies

Emergency	Key actions
Airway / mediastinal mass	Keep the patient in the position of comfort; avoid unnecessary supine positioning, deep sedation and paralysis, especially in children. Preserve spontaneous ventilation where possible and obtain urgent anaesthesia, critical-care, oncology and surgical input.

Emergency	Key actions
Superior vena cava obstruction	Elevate head, oxygen if hypoxaemic, secure monitoring and obtain urgent imaging / oncology review. Avoid unnecessary upper-extremity lines when severe obstruction is present. Airway or cerebral compromise requires critical-care and interventional / radiation planning.
Pericardial effusion / tamponade	Suspect with hypotension, tachycardia, raised JVP, pulsus, dyspnoea or enlarged silhouette. Bedside echo, cautious resuscitation and urgent cardiology / critical-care drainage pathway.
Brain metastasis / raised ICP	Treat seizure, hypoxia and glucose abnormality; urgent neuroimaging. Give corticosteroid for symptomatic vasogenic oedema under local pathway, but seek specialist advice where lymphoma or infection is possible. Neurosurgery / oncology / radiation review.
Malignant bowel / urinary obstruction	Analgesia, antiemetic, fluids, decompression and early surgery / urology / oncology. Consider perforation, neutropenic enterocolitis, opioid constipation and goals of care.
Pathological fracture	Analgesia, immobilization, neurovascular assessment and orthopaedic / oncology review. Consider impending fracture in new focal weight-bearing pain.

17. Cytotoxic, targeted-therapy and radiotherapy complications

Presentation	Response
Extravasation	STOP infusion; leave cannula / port needle in place; disconnect tubing and aspirate residual drug; DO NOT flush; mark and measure area, photograph with consent, elevate, and use drug-specific warm / cold compress and antidote. Contact oncology / pharmacy / plastics according to agent.
Infusion reaction / anaphylaxis	Stop infusion and use Protocol 30. Give IM adrenaline for anaphylaxis. Preserve the product / tubing as required and notify oncology / pharmacy; distinguish cytokine reaction from sepsis and other causes.
Severe mucositis / odynophagia	Assess airway, hydration, pain, fungal / viral infection and neutropenia. IV fluids, analgesia and nutrition support; investigate chest pain / oesophageal perforation when indicated.
Severe diarrhoea / vomiting	Assess sepsis, dehydration, electrolyte disturbance, C. difficile, neutropenic enterocolitis, immune colitis and bowel obstruction. Avoid automatic antidiarrhoeals until dangerous causes are excluded.
Hand-foot / skin toxicity or severe rash	Look for mucosal involvement, blistering, skin pain, infection and systemic features. Suspect SJS / TEN or immune toxicity; stop culprit treatment and obtain urgent dermatology / burn / critical-care advice.
Radiotherapy complication	Consider pneumonitis, enteritis, cystitis, marrow suppression, skin injury, spinal oedema and late tissue damage. Manage physiology and contact radiation oncology; symptoms may occur weeks to months later.
Drug-specific toxicity	Use the treatment card and toxicology / oncology pathway for cardiomyopathy, QT prolongation, hypertension, thrombosis, pancreatitis, hepatic injury, renal injury, PRES and other agent-specific effects.

18. Immune checkpoint inhibitor toxicity

- Ask explicitly about checkpoint inhibitors and date of last dose. Toxicity can affect any organ and can occur after therapy has ended. Hold further immunotherapy pending oncology review.
- Always evaluate infection, progression, thromboembolism and medication effects concurrently. Severe irAE and sepsis may coexist; obtain cultures and give empiric antimicrobials when infection is plausible while starting time-critical immunosuppression for life-threatening toxicity.
- Mild toxicity may require observation and oncology advice; grade 3-4 or organ-threatening toxicity generally requires admission, specialist consultation and systemic corticosteroids under an approved organ-specific protocol. Do not delay steroids for suspected myocarditis, severe pneumonitis, adrenal crisis, encephalitis, myasthenic / myositis overlap or other immediately life-threatening irAE.
- Check ECG, troponin and CK for chest pain, dyspnoea, weakness, ptosis, dysphagia or arrhythmia; myocarditis can coexist with myositis and myasthenia and may deteriorate rapidly.
- For diarrhoea / colitis, document stool frequency above baseline, blood, pain and fever; send infection tests and image severe cases. Avoid loperamide in severe colitis, ileus or toxic megacolon. Early gastroenterology / oncology review is required.
- For endocrine presentations, check glucose, sodium, potassium, cortisol / ACTH and thyroid tests as indicated. Treat suspected adrenal crisis immediately with stress-dose hydrocortisone and isotonic fluid; give corticosteroid before thyroid hormone when adrenal insufficiency is possible.
- Neurological or respiratory-muscle symptoms require early critical-care review, serial vital capacity where appropriate, and avoidance of sedatives / medications that worsen neuromuscular transmission.

19. CAR-T, bispecific-antibody and immune-effector toxicities

Syndrome	Recognition and initial management
CRS	Fever after immune-effector therapy with hypotension and / or hypoxia. Treat as sepsis concurrently: cultures, antibiotics, fluids with reassessment and vasopressors as needed. Grade using the local ASTCT-based pathway. Contact treating centre immediately.
CRS-specific therapy	Tocilizumab and corticosteroids follow product-specific and specialist protocols. Ensure tocilizumab stock / transfer route is known. Do not delay critical-care escalation for worsening oxygen or vasopressor requirement.
ICANS	New inattention, confusion, expressive difficulty, dysgraphia, tremor, seizure, reduced consciousness or focal deficit. Perform ICE or age-appropriate neurological assessment, glucose, imaging / EEG as indicated and frequent reassessment.
ICANS-specific therapy	Urgent cellular-therapy / neurology / critical-care advice; corticosteroids and antiseizure treatment per protocol. Tocilizumab treats CRS but is not treatment for isolated ICANS. Protect airway and manage raised intracranial pressure if suspected.
Other toxicities	Consider cytopenia, infection, HLH / macrophage activation, coagulopathy, cardiomyopathy, TLS and prolonged hypogammaglobulinaemia. Send FBC, coagulation, ferritin, fibrinogen, CRP, organ tests and cultures as directed.

Syndrome	Recognition and initial management
Transfer	Patients outside the treating centre with suspected CRS / ICANS require direct clinician-to-clinician handover, product / infusion date, current grade, treatment given, tocilizumab availability and critical-care transport capability.

20. Transplant and other immunocompromised patients

- Contact the transplant / specialist centre early. Time since transplant, donor type, conditioning, graft-versus-host disease (GVHD), immunosuppression, prophylaxis, CMV status and recent rejection treatment materially alter risk.
- Fever, cough, hypoxia, diarrhoea, jaundice, rash, confusion or renal dysfunction may represent bacterial, viral, fungal or parasitic infection, GVHD, rejection, drug toxicity or multiple simultaneous processes.
- Use protective isolation appropriate to local policy, but never delay resuscitation. Avoid live organisms / non-approved probiotics and unnecessary exposure to infectious patients.
- Before transfusion, notify the blood bank of transplant / haematology status and confirm irradiation, CMV and antigen requirements. Do not use family-directed products without transfusion-service authorization.
- Long-term steroids or abrupt steroid interruption creates adrenal-crisis risk. Advanced HIV or primary immune deficiency requires organism- and CD4 / immune-status-specific differential diagnosis, but initial stabilization and sepsis treatment remain standard.
- Palliative or end-stage disease does not remove the obligation to relieve pain, dyspnoea, fever, agitation, bleeding or family distress. Align burdensome interventions with documented goals and Protocol 52.

21. Paediatric and pregnancy considerations

Population	Additional requirements
Children and adolescents	Use weight-based dosing, paediatric observations and Protocol 40. Fever after chemotherapy requires immediate paediatric oncology pathway. Children may compensate until sudden collapse; parental concern is significant. Avoid sedation in mediastinal mass.
Paediatric TLS	Risk can be high in leukaemia / lymphoma. Use paediatric fluid, urate-lowering and dialysis thresholds with paediatric oncology / nephrology; monitor weight and urine output closely.
Adolescents	Respect privacy and assent, screen pregnancy when relevant, include caregivers appropriately and assess adherence, mental health, fertility concerns and safeguarding without delaying emergency care.
Pregnancy / postpartum	Maternal stabilization first with simultaneous obstetric input. Cancer, central lines and pregnancy increase VTE risk. Antibiotic, imaging, anticoagulant, corticosteroid and antidote choices require gestation-aware review, but necessary emergency treatment should not be withheld.
Lactation	Check treatment-specific exposure and specialist advice; do not assume breastfeeding is safe during or shortly after all anticancer therapy.

22. Investigations

Clinical context	Suggested initial tests - tailor and do not delay treatment
Possible neutropenic sepsis	FBC + differential / ANC, renal / liver profile, lactate, cultures from periphery and each line lumen, urinalysis / culture and source-directed imaging / viral tests.
Possible TLS	Potassium, phosphate, calcium, magnesium, urate, creatinine, bicarbonate, glucose, LDH, FBC, ECG; repeat 4-6 hourly or more frequently when unstable.
Hypercalcaemia	Ionized or adjusted calcium, renal function, magnesium, phosphate, ECG, fluid balance; PTH / vitamin D-related tests after stabilization as directed.
MSCC / neurological	Whole-spine MRI within 24 hours; CT if MRI impossible only under specialist pathway. Glucose, FBC, chemistry, coagulation; urgent brain imaging for focal deficits / raised ICP.
Chest pain / dyspnoea	ECG, troponin, CXR, blood gas when severe, CT pulmonary angiography / echo as indicated; add CK / BNP and immune-toxicity work-up when relevant.
Bleeding / cytopenia	FBC / film, PT / INR, aPTT, fibrinogen, D-dimer where useful, group and screen / crossmatch, haemolysis tests and source imaging.
Diarrhoea / abdominal pain	Electrolytes, renal / liver tests, lactate, stool pathogens / C. difficile, CT abdomen / pelvis when severe, neutropenic or peritonitic.
Treatment toxicity	Bring treatment card; agent-specific ECG, troponin, CK, cortisol, thyroid tests, lipase, liver tests, urinalysis, ferritin / fibrinogen or imaging as directed.

23. Observation and senior reassessment

- Observation is active treatment with written physiological, laboratory and diagnostic goals. High-risk patients must remain in a monitored area, not an unobserved waiting space.
- Repeat vital signs, mental status, perfusion, oxygen requirement, pain, urine output and focused examination after each intervention and at a frequency matched to risk.
- Repeat FBC / differential, electrolytes, calcium, phosphate, urate, lactate, renal / liver tests and coagulation according to the suspected syndrome. Trend matters more than a single normal value.
- Reassess for new focal neurology, worsening back pain, line infection, fluid overload, arrhythmia, bleeding, rash, diarrhoea and treatment adverse effects.
- Any deterioration, rising oxygen or vasopressor need, oliguria, refractory electrolyte abnormality, recurrent fever, new confusion or delayed definitive imaging triggers senior review and escalation.
- Use Protocol 53 only for narrowly defined, stable pathways with oncology agreement, reliable monitoring, explicit conversion-to-admission criteria and a maximum observation duration.

24. Admission, critical care and transfer

Disposition	Indications / requirements
Critical care / urgent tertiary transfer	Shock, escalating oxygen / ventilation, severe CRS / ICANS, life-threatening irAE, severe TLS, refractory hyperkalaemia / acidosis, tamponade, airway / mediastinal compromise, massive PE, major bleeding, leukostasis or rapidly progressive neurological deficit.
Hospital admission	High-risk or confirmed neutropenic sepsis, persistent fever / instability, severe mucositis, inability to take oral medication, MSCC, symptomatic hypercalcaemia, significant thrombosis / bleeding, organ toxicity, uncontrolled pain, AKI, social unsafety or diagnostic uncertainty.
Specialist centre transfer	Need for MRI / radiotherapy / spinal surgery, dialysis, leukapheresis, exchange / specialized transfusion, paediatric oncology, transplant / CAR-T management, interventional radiology or treatment unavailable locally. Start treatment before departure.
Low-risk outpatient pathway	Only after initial assessment / treatment, validated adult risk assessment, senior and oncology agreement, clinical stability, oral absorption, reliable 24-hour support, rapid return capacity and next-day review. Children require a specific paediatric oncology pathway.
Transfer preparation	Stabilize ABCDE; give antibiotics / steroids / antidotes / electrolyte treatment; send treatment details, cultures, imaging and trends; confirm receiving clinician, transport monitoring, medicines in transit and escalation plan.

25. Low-risk outpatient care and safe discharge

- Do not use MASCC, CISNE or another score to overrule clinical concern, organ dysfunction, unstable observations, severe mucositis, pneumonia, abdominal pain, new neurological symptoms, significant comorbidity, prolonged profound neutropenia or unreliable follow-up.
- Outpatient febrile-neutropenia care requires a locally approved regimen, first-dose and observation standard, medication availability, review within 24 hours, daily contact until recovery, and immediate readmission pathway.
- Before any discharge, confirm stable observations, improving symptoms, oral intake and absorption, manageable pain / nausea, no evolving high-risk complication, and that oncology / haematology agrees with the plan.
- Provide written diagnosis, treatment given, medicine schedule, infection precautions, direct 24-hour contact, follow-up time and explicit return warnings. Use teach-back with patient and caregiver.
- Return immediately for fever / rigors, breathlessness, chest pain, fainting, confusion, severe headache, weakness, worsening back pain, urinary retention, bleeding, reduced urine, uncontrolled vomiting / diarrhoea, new rash, line redness / pain or any rapid deterioration.
- Assign a named clinician / service to review pending cultures, imaging and laboratory results and document how the patient will be contacted.

26. Documentation and handover

Record	Minimum content
Risk identity	Cancer / immune diagnosis, treatment and date, treatment centre / clinician, line, transplant / CAR-T status, allergies, prior organisms and emergency card.
Assessment	ABCDE, full observations, sepsis / complication screen, focused examination, baseline function and goals / treatment ceiling when known.
Time-critical care	Recognition time, cultures, first antibiotic, fluid, vasopressor, corticosteroid, rasburicase / calcitonin / tocilizumab / antidote, imaging request and specialist contact times.
Clinical reasoning	Differential diagnoses, overlap considered, risk score only if appropriate, reasons for admission / transfer / discharge, and explanation of any deviation or delay.
Reassessment	Observation trends, urine output, laboratory trends, neurological / spinal findings, oxygen / vasopressor changes and response to each intervention.
Handover	Current problem list, treatment regimen, latest results, medicines / allergies, pending tests, blood-product requirements, escalation ceiling, receiving clinician and transport risks.

27. Quality indicators and audit

Indicator	Suggested measure
Recognition	Percentage of at-risk patients with treatment history, complete vital signs and sepsis / oncology danger screen at triage.
Antibiotic timeliness	Median and 90th-percentile time from recognition / arrival to first appropriate IV antibiotic; percentage within 60 minutes.
Safe diagnostics	Cultures obtained without delaying antibiotics; no avoidable rectal / IM procedures in severe neutropenia / thrombocytopenia.
MSCC	Time from recognition to dexamethasone when indicated, specialist contact, MRI request / completion or transfer acceptance within 24 hours.
TLS	Time to complete electrolyte / urate panel, cardiac monitoring, urate-lowering therapy and nephrology escalation; rasburicase / G6PD safety compliance.
Treatment toxicity	Percentage with treatment agent / date documented, oncology contacted and organ-specific bundle followed for severe irAE / CRS / ICANS.
Disposition	Unplanned return, ICU transfer within 24 hours, avoidable transfer delay, outpatient pathway failure and pending-result follow-up.
Equity and experience	Pain and symptom treatment, communication, access to specialist advice and outcomes reviewed by age, sex, cancer type, ethnicity, disability and social vulnerability where lawful.

28. Training and implementation

- Provide annual multidisciplinary simulation for neutropenic sepsis, TLS with hyperkalaemia, MSCC, mediastinal mass, immune checkpoint myocarditis / adrenal crisis, CRS / ICANS and cytotoxic extravasation.

- Train staff to recognize treatment cards, calculate ANC, use the local antibiotic-allergy pathway, avoid contraindicated rectal / IM procedures, perform ICE / neurological assessments and activate transfer.
- Maintain visible first-hour bundles, medicine / antidote locations, specialist contact list, blood-product requirements and imaging pathways at triage, resuscitation and pharmacy.
- Review all deaths, ICU escalations, antibiotic delays, missed MSCC / TLS, severe extravasation injury, high-risk discharge and transfer failures through multidisciplinary governance with patient / family input where appropriate.

29. Local configuration before approval

- Local definition of fever / suspected neutropenic sepsis and the exact first-line, severe-allergy and resistant-organism antimicrobial regimens for adults, children and pregnancy.
- 24/7 oncology / haematology / paediatric oncology / transplant / CAR-T contacts and regional receiving centres.
- TLS risk stratification, adult and paediatric hydration, allopurinol / rasburicase criteria, G6PD pathway, urate sample handling and dialysis triggers.
- MSCC dexamethasone prescription, whole-spine MRI access, spinal precautions, radiotherapy / surgery contacts and transfer time standard.
- Hypercalcaemia calcitonin and antiresorptive formulary, renal adjustment and monitoring.
- Cancer-associated thrombosis and thrombocytopenia anticoagulation policy, reversal, transfusion thresholds and irradiated / CMV / antigen-selected blood requirements.
- Immune checkpoint organ-toxicity protocols, adrenal-crisis kit, CAR-T / bispecific CRS / ICANS pathway, tocilizumab stock and cellular-therapy transfer.
- Extravasation kit, agent-specific compress / antidote chart, photography and surgical referral pathway.
- Low-risk outpatient febrile-neutropenia eligibility, oral regimen, observation, next-day review and 24-hour contact.
- Audit dashboard, serious-incident triggers and document review ownership.

30. Source guidance for local adaptation

Source	Key use in this protocol
National Institute for Health and Care Excellence. CG151: Neutropenic Sepsis - Prevention and Management in People with Cancer. 2012; current guidance reviewed 2020.	Immediate emergency assessment, empiric antibiotics, investigations, risk assessment and inpatient / outpatient principles.
European Society for Medical Oncology. Clinical Practice Guideline: Febrile Neutropaenia; current online guideline accessed June 2026.	Assessment, risk stratification and management of febrile neutropenia.
NICE. NG234: Spinal Metastases and Metastatic Spinal Cord Compression. 2023; reviewed March 2026.	Danger symptoms, dexamethasone, whole-spine MRI within 24 hours, referral and definitive treatment.
British Society for Haematology. Updated Guidelines for the Diagnosis and Management of Tumour Lysis Syndrome in Adults and Children. 2025.	TLS recognition, prevention, monitoring, urate-lowering treatment, G6PD safety and renal escalation.
Endocrine Society. Treatment of Hypercalcemia of Malignancy in Adults: Clinical Practice Guideline. 2022.	Hydration, calcitonin, bisphosphonate / denosumab and severe / refractory hypercalcaemia.
American Society of Hematology. 2021 Guidelines for Management of Venous Thromboembolism in Patients with Cancer.	Cancer-associated thrombosis assessment and anticoagulation principles.
American Society of Clinical Oncology. Management of Immune-Related Adverse Events in Patients Treated With Immune Checkpoint Inhibitor Therapy: Guideline Update. 2021.	Recognition and organ-specific management of checkpoint-inhibitor toxicity.
ASCO. Management of Immune-Related Adverse Events in Patients Treated With CAR T-Cell Therapy. 2021; ASTCT Consensus Grading for CRS and ICANS. 2019.	CRS / ICANS recognition, grading, supportive care, tocilizumab, corticosteroids and critical-care escalation.
UK Oncology Nursing Society. Acute Oncology Initial Management Guidelines. 2023.	Initial emergency management of disease-related and treatment-related oncology complications.
Local protocols and formularies	Sepsis, antimicrobial resistance, paediatrics, pregnancy, renal failure, anticoagulation, transfusion, imaging, critical care, palliative care and inter-island / regional transfer.

Annex A. One-page oncology emergency workflow

Stage	Action
1. Identify	Cancer / immune compromise, exact treatment, last dose, line, transplant / CAR-T status and treating centre.
2. Recognize danger	Complete ABCDE and screen for sepsis, MSCC, TLS, hypercalcaemia, PE / bleeding, airway / mediastinal disease, irAE and CRS / ICANS.
3. Treat immediately	Antibiotics for possible neutropenic sepsis; oxygen / fluids / vasopressors; glucose / electrolyte treatment; analgesia; syndrome-specific steroids / antidotes when indicated.
4. Investigate without delay	FBC / ANC, cultures, renal / liver tests, lactate; add calcium / phosphate / urate / LDH, ECG and targeted imaging.
5. Contact specialists	Senior ED plus oncology / haematology / transplant / cellular-therapy service; critical care and definitive specialty early.
6. Reassess	Vital signs, mental status, oxygen, urine, pain, neurology and serial laboratory trends after each intervention.
7. Escalate / transfer	Do not wait for full diagnosis when MRI, dialysis, radiation, spinal surgery, leukapheresis or cellular-therapy capability is unavailable.
8. Dispose safely	Admit high risk; use outpatient pathway only if validated and reliable; provide direct contact, teach-back and named pending-result follow-up.

Annex B. Neutropenic sepsis first-hour bundle

☐ Cancer / immune status, last treatment, allergies, line and prior resistant organisms identified.

☐ Complete observations, oxygen saturation, mental status, glucose and lactate obtained.
☐ Peripheral cultures and cultures from each central-line lumen collected without delaying treatment.
☐ Locally approved antipseudomonal IV antibiotic administered at _____; recognition _____; arrival _____.
☐ Severe beta-lactam allergy / renal / hepatic / weight adjustment checked.
☐ Fluid bolus / vasopressor / oxygen decisions documented with reassessment.
☐ FBC + differential / ANC, renal / liver profile, coagulation and source-directed specimens sent.
☐ No rectal temperature / examination, suppository, enema or avoidable IM injection.
☐ Oncology / haematology and senior clinician contacted; critical care if shock or deterioration.
☐ Repeat observations and response documented; admission / transfer / approved outpatient decision made.

Annex C. Tumour lysis syndrome checklist

☐ High-risk disease / recent treatment / spontaneous TLS risk identified.
☐ Cardiac monitor and ECG applied.
☐ Potassium, phosphate, calcium, magnesium, urate, creatinine, bicarbonate, glucose, LDH and FBC sent.
☐ Serial laboratory frequency ordered: every _____ hours.
☐ Potassium / phosphate intake and nephrotoxins stopped; strict fluid balance and weight commenced.
☐ Isotonic hydration prescribed with cardiac / renal reassessment.
☐ Allopurinol / rasburicase indication reviewed; G6PD risk / status checked and documented.
☐ Post-rasburicase urate specimen handling communicated to laboratory.
☐ Hyperkalaemia / symptomatic hypocalcaemia / seizure treated; asymptomatic hypocalcaemia not routinely replaced.
☐ Oncology / haematology, nephrology and critical care contacted; dialysis / transfer contingency confirmed.

Annex D. Suspected MSCC checklist

☐ Cancer history and exact onset / progression of back or radicular pain documented.
☐ Power, sensation, reflexes, gait when safe, saddle symptoms and bladder / bowel function assessed.
☐ Spinal precautions / position and pressure care instituted when instability suspected.
☐ Dexamethasone given at _____ when neurological signs present; glucose and gastric protection addressed.
☐ If lymphoma / myeloma suspected without neurological deficit, specialist advice obtained before steroid.
☐ Whole-spine MRI requested at _____; planned completion / transfer within 24 hours.
☐ Bladder scan / catheter and analgesia provided as indicated.
☐ Oncology / haematology, radiation oncology and spinal surgery / neurosurgery contacted.
☐ Neurological reassessment and definitive treatment / transfer plan documented.

Annex E. Immunotherapy and cellular-therapy red flags

Red flag	Immediate actions
Chest pain, dyspnoea, palpitations, weakness, ptosis / dysphagia	ECG, troponin, CK, oxygen / respiratory assessment; suspect myocarditis-myopathy-myasthenia overlap; urgent oncology / critical care; steroids per severe-irAE pathway.
Diarrhoea, blood, severe pain, fever	Stool infection tests, chemistry, CT if severe; consider immune colitis, neutropenic enterocolitis and sepsis; avoid antidiarrhoeal in severe colitis / ileus.
Hypotension, hyponatraemia, hypoglycaemia, severe fatigue	Treat adrenal crisis immediately with hydrocortisone and isotonic fluid; obtain endocrine tests if this does not delay treatment.
Fever + hypotension / hypoxia after CAR-T / bispecific	Treat sepsis and CRS concurrently; ASTCT grade, contact treating centre, tocilizumab / steroid pathway, critical-care monitoring.
Confusion, aphasia, dysgraphia, tremor, seizure	ICE / neurological assessment, glucose, seizure care, imaging / EEG as indicated; suspect ICANS; steroids / ICU per protocol; tocilizumab is not treatment for isolated ICANS.
Severe rash, blistering, mucosal lesions	Stop suspected treatment, supportive care, urgent dermatology / burns / critical care; consider SJS / TEN or severe irAE.

Annex F. Oncology emergency discharge / transfer checklist

☐ Final diagnosis, residual uncertainty and high-risk complications considered are documented.
☐ Vital signs, oxygenation, mental status, pain, oral intake and urine output are stable for the chosen disposition.
☐ Latest ANC / haemoglobin / platelets, renal function, electrolytes, calcium / TLS markers and imaging reviewed as applicable.
☐ Oncology / haematology / transplant / cellular-therapy service agrees with discharge or receiving clinician accepts transfer.
☐ Medicines, timing, interactions, steroid sick-day rules, anticoagulant / antibiotic plan and adverse effects explained.
☐ Written return warnings and direct 24-hour contact provided; patient / caregiver used teach-back.
☐ Follow-up date / location and transport confirmed; social / caregiver barriers addressed.
☐ Pending cultures / imaging / pathology and named result owner documented.
☐ Transfer includes treatment card, regimen / date, resuscitation status, blood-product requirements, trends, medicines and escalation plan.
☐ Any deviation from standard pathway or patient preference / refusal documented with capacity and safety plan.

END OF PROTOCOL 46 - DRAFT 1.0 FOR LOCAL MULTIDISCIPLINARY VALIDATION