

[HOSPITAL / HEALTH AUTHORITY NAME]

POISONING, OVERDOSE, INTOXICATION, AND WITHDRAWAL PATHWAY

Protocol 29: Rapid Stabilization, Toxidrome Recognition, Decontamination, Antidote and Elimination Therapy, Withdrawal Management, Monitoring, and Safe Disposition

DRAFT FOR EMERGENCY MEDICINE, INTERNAL MEDICINE, CRITICAL CARE, PAEDIATRICS, PSYCHIATRY, ADDICTION MEDICINE, CLINICAL TOXICOLOGY, ANAESTHESIA, NEPHROLOGY, CARDIOLOGY, PHARMACY, LABORATORY, NURSING, EMS, SECURITY, TRANSFER, PUBLIC HEALTH, AND CLINICAL-GOVERNANCE REVIEW

STATUS: This is a draft clinical-governance document. Exact antidote doses and preparations, naloxone products, activated-charcoal practice, toxicology laboratory access, poison-centre consultation, extracorporeal-treatment criteria, decontamination facilities, pesticide and chemical-exposure procedures, paediatric and pregnancy dosing, alcohol and sedative-withdrawal regimens, opioid-use-disorder treatment, mental-health assessment, observation periods, antidote stocking, and transfer logistics must be reconciled with current national guidance, local formulary, pharmacy monographs, specialist availability, legal requirements, and approved linked protocols before implementation.

IMMEDIATE SAFETY RULE: Protect staff and bystanders first. Stabilize airway, breathing, circulation, glucose, temperature, seizures, and dangerous dysrhythmias before pursuing a precise toxin label. Give time-critical antidotes when the clinical pattern is compelling, and contact a poison centre or medical toxicologist early. Unknown, intentional, delayed, sustained-release, and mixed exposures must be treated as potentially serious until risk has been actively resolved.

| Document control | Details |
|------------------------|--|
| Document owner | Emergency Department / Medical Services Directorate / Nursing Services / Clinical Governance |
| Clinical leads | Emergency Medicine; Internal Medicine; Critical Care; Clinical Toxicology / Poison Information Service |
| Supporting departments | Paediatrics; Psychiatry; Addiction Medicine; Anaesthesia; Nephrology; Cardiology; Pharmacy; Laboratory; EMS; Security; Public Health; Transfer Coordination |
| Applies to | Adults, adolescents, children, and pregnant or postpartum patients with suspected poisoning, overdose, intoxication, chemical exposure, medication error, adverse drug toxicity, or acute substance withdrawal |
| Linked protocols | Resuscitation; Altered Mental Status; Seizures; Arrhythmias; Acute Kidney Injury / Electrolytes; Diabetic Emergencies; Severe Hypertension; Respiratory Failure; Mental-Health Crisis; Safeguarding; Major Trauma; Burns / Chemical Exposure; Transfer |
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1. Purpose

To provide a standardized emergency-department pathway for the rapid recognition, stabilization, investigation, and treatment of poisoning, overdose, intoxication, medication error, hazardous chemical exposure, and acute withdrawal. The protocol prioritizes supportive care, early toxicology advice, selective decontamination, timely antidotes, prevention of secondary harm, appropriate enhanced elimination, compassionate addiction care, mental-health and safeguarding assessment, and safe disposition.

2. Scope

This protocol applies when a toxic exposure is known, suspected, or cannot be excluded, including deliberate self-poisoning, accidental ingestion, occupational or environmental exposure, substance intoxication, medication accumulation, dosing error, withdrawal from alcohol, opioids, benzodiazepines or other sedative-hypnotics, and toxicity from conventional, herbal, agricultural, illicit, or household products. It supports initial ED management but does not replace product-specific toxicology advice, disaster or hazardous-material procedures, envenomation protocols, chronic substance-use treatment pathways, or specialist critical-care and extracorporeal-treatment guidance.

3. Core policy statements

- Use an ABCDE approach and treat immediately reversible threats. Point-of-care glucose, oxygenation and ventilation assessment, ECG, temperature, and neurological status are minimum early observations in significant poisoning.
- Protect staff from secondary contamination. Remove the patient from the source, use appropriate PPE, isolate contaminated clothing and belongings, and perform external decontamination before entry into clean clinical areas when indicated.

- Contact a poison centre or medical toxicologist early for severe, unusual, uncertain, paediatric, pregnancy-related, sustained-release, delayed, mixed, occupational, pesticide, or antidote-requiring exposures.
- Do not rely on a normal initial examination after a potentially serious exposure. Delayed absorption, active metabolites, sustained-release preparations, bezoars, organ failure, and co-ingestants can produce late deterioration.
- Do not induce vomiting. Gastric lavage is not routine. Activated charcoal is used selectively when a potentially toxic adsorbable substance was ingested and the airway is protected.
- A urine drug screen does not prove intoxication, exclude an important toxin, identify severity, or establish timing. Treat the patient and toxicological syndrome rather than the screen.
- Obtain an acetaminophen level in intentional, unknown, or potentially mixed ingestions unless a reliable history clearly excludes exposure. Obtain salicylate testing when clinically plausible, including unexplained acid-base disturbance, tinnitus, fever, tachypnoea, or altered mental status.
- Use serial ECGs and laboratory tests when toxicity evolves over time. A single normal result may be insufficient after cardiotoxic, sustained-release, toxic alcohol, salicylate, acetaminophen, lithium, valproate, iron, or sulfonyleurea exposure.
- Use naloxone to restore adequate ventilation, not necessarily full wakefulness. Continue airway support and observe for recurrent respiratory depression, particularly with long-acting or high-potency opioids.
- Treat toxin-induced seizures promptly with benzodiazepines. Phenytoin is ineffective or potentially harmful in several poisonings; obtain toxicology advice before second-line therapy.
- Treat hyperthermia as a time-critical organ-threatening emergency. Use rapid external cooling, sedation, paralysis and intubation when necessary; antipyretics do not correct toxin-induced hyperthermia.
- Treat cardiotoxic poisoning with poison-specific resuscitation rather than standard ACLS alone. Sodium bicarbonate, high-dose insulin, calcium, digoxin immune Fab, lipid emulsion, hydroxocobalamin, atropine, or extracorporeal support may be required.
- Avoid flumazenil in undifferentiated overdose, chronic benzodiazepine use, seizure disorder, or pro-convulsant co-ingestion. It has a limited role after selected iatrogenic sedation with a secure history.
- Withdrawal can be fatal. Alcohol and sedative-hypnotic withdrawal require early severity assessment, benzodiazepine-based or approved alternative treatment, thiamine, electrolyte correction, and monitoring.
- Every intentional poisoning requires psychosocial assessment, capacity and suicide-risk review, safeguarding screening, and a safe follow-up plan after medical stabilization. Care must remain non-stigmatizing and trauma-informed.
- Discharge only after the anticipated toxicity window has passed, symptoms and physiology are stable, required serial tests are complete, mental-health and safeguarding needs are addressed, and reliable follow-up and return precautions are documented.

4. Definitions and operational terms

| Term | Operational definition |
|---------------------------|---|
| Poisoning | Clinical harm caused by exposure to a substance through ingestion, inhalation, injection, dermal, ocular, mucosal, or other route. |
| Overdose | Exposure to a dose greater than therapeutic or intended, whether deliberate, accidental, cumulative, or due to interaction or organ failure. |
| Intoxication | Reversible alteration in cognition, behaviour, coordination, physiology, or consciousness due to a psychoactive or toxic substance. |
| Toxidrome | A recognizable cluster of findings suggesting a toxin class. Mixed exposures and atypical presentations are common. |
| Antidote | A treatment that prevents absorption, binds or neutralizes a toxin, reverses receptor effects, restores a blocked pathway, or enhances detoxification. |
| Decontamination | Removal of a substance from skin, eyes, clothing, gastrointestinal tract, or environment to reduce ongoing exposure. |
| Enhanced elimination | A method that increases toxin removal, including urinary alkalinization, multiple-dose activated charcoal, haemodialysis, haemoperfusion, or other extracorporeal treatment. |
| Delayed toxicity | Clinically important effects appearing after an initially normal period because of formulation, metabolism, redistribution, organ injury, or co-ingestion. |
| Withdrawal | Symptoms and physiological instability following reduction or cessation of a substance after neuroadaptation. |
| Severe poisoning | Any exposure causing coma, respiratory failure, seizure, shock, dangerous dysrhythmia, severe acid-base disturbance, hyperthermia, organ injury, need for antidote infusion, or anticipated deterioration. |
| Medical clearance | A documented conclusion that emergency medical causes and immediate toxicological risks have been assessed and treated sufficiently for the planned next level of care. It is not a single laboratory test. |
| Poison-centre case number | The reference number and recommendations supplied by the consulted poison information service; record updates and closure advice. |

5. Roles and accountability

| Role | Minimum responsibility |
|---------------------------------------|---|
| Triage / first-contact clinician | Recognize possible toxicity, respiratory depression, contamination, self-harm, severe withdrawal, hyperthermia, seizure, shock, and high-risk agents; initiate immediate escalation. |
| Lead ED clinician | Direct stabilization, toxidrome assessment, investigations, antidotes, decontamination, serial reassessment, specialist consultation, disposition, and documentation. |
| Resuscitation / critical-care team | Manage airway, ventilation, shock, refractory seizure, severe dysrhythmia, hyperthermia, mechanical support, and ICU-level monitoring. |
| Nursing team | PPE and decontamination support; continuous monitoring; antidote and infusion administration; neurological, respiratory, glucose, temperature, and withdrawal observations; belongings and evidence handling. |
| Pharmacy | Verify products and doses; prepare antidotes and infusions; advise compatibility, maximum concentrations, stock, replacement, and medication interactions. |
| Laboratory | Prioritize critical tests, communicate turnaround and analytical limitations, retain appropriate samples, and directly notify critical results. |
| Poison centre / medical toxicologist | Provide agent-specific risk assessment, treatment targets, observation duration, enhanced-elimination advice, and case follow-up. |
| Psychiatry / addiction / safeguarding | Assess self-harm risk, capacity, substance-use disorder, withdrawal treatment, child or vulnerable-adult safety, and continuity of care. |
| Transfer coordinator / EMS | Arrange receiving acceptance and transport with the monitoring, antidotes, airway capability, and trained escort required during transfer. |

6. Pathway activation and triage

| Category | Operational criteria |
|---|---|
| RED / immediate resuscitation | Apnoea or severe hypoventilation; coma; seizure; severe agitation with hyperthermia; shock; dangerous dysrhythmia; QRS widening; severe bradycardia; cyanosis or suspected cyanide / CO; cholinergic crisis; severe acidosis; significant corrosive exposure; active contamination; severe withdrawal delirium. |
| ORANGE / very urgent | Potentially lethal dose; sustained-release or delayed agent; intentional unknown ingestion; acetaminophen or salicylate risk; recurrent vomiting; moderate withdrawal; abnormal ECG; evolving metabolic disturbance; paediatric exposure; pregnancy; significant pesticide, toxic alcohol, lithium, iron, digoxin, sulfonyleurea, beta-blocker, calcium-channel blocker, or TCA exposure. |
| YELLOW / urgent | Clinically stable but symptomatic intoxication, medication error, low-risk exposure requiring verification, mild withdrawal, or need for serial observation and mental-health assessment. |
| GREEN / lower acuity only after screening | Clearly non-toxic exposure with reliable product identification, asymptomatic patient, no safeguarding or self-harm concern, and poison-centre or approved low-risk pathway support. |

7. First 10 minutes: parallel action

1. Use appropriate PPE and determine whether external contamination, hazardous vapour, powder, liquid, needle, or pesticide exposure threatens staff or other patients. Move to the designated decontamination area when required.
2. Begin ABCDE assessment. Support ventilation with bag-mask ventilation and oxygen as needed; prepare for airway control if protective reflexes or ventilation are inadequate.
3. Check point-of-care glucose immediately. Attach cardiac monitor, pulse oximetry, temperature monitoring, and capnography when consciousness or ventilation is impaired. Obtain a 12-lead ECG early.
4. Establish IV access; use IO access if necessary. Send targeted blood tests and retain samples when the agent is uncertain or delayed analysis may be required.
5. Give naloxone when opioid-associated hypoventilation is possible, while continuing ventilation. Treat seizures with benzodiazepines and begin active cooling for severe hyperthermia.
6. Identify time-critical antidote or resuscitation needs: sodium bicarbonate, calcium and high-dose insulin, digoxin immune Fab, atropine and oxime, N-acetylcysteine, hydroxocobalamin, methylene blue, fomepizole, pyridoxine, octreotide, lipid emulsion, or another agent-specific treatment.
7. Obtain the substance, formulation, amount, route, time, intent, co-ingestants, patient weight, comorbidities, regular medicines, and prehospital treatment. Bring packaging, photographs, workplace safety data, or medication records when safe.

8. Contact poison-centre / toxicology support and senior ED / critical care early for severe, uncertain, or high-risk exposure. Document the advice, case number, required repeat tests, and observation endpoint.
9. Protect against aspiration, falls, violence, self-harm, and absconding. Use the least restrictive safe environment and continuous observation when indicated.
10. Begin a contemporaneous timeline of vital signs, ECG changes, symptoms, antidotes, infusions, laboratory results, poison-centre advice, and response to treatment.

DO NOT MISS: The patient with an unknown ingestion may have opioid respiratory depression, hypoglycaemia, acetaminophen exposure, salicylate toxicity, sodium-channel blockade, toxic alcohol poisoning, occult trauma, sepsis, stroke, or pregnancy. A presumed recreational intoxication diagnosis must not stop a structured medical assessment.

8. Immediate stabilization: ABCDE

8.1 Airway and breathing

- Open and protect the airway; suction secretions and vomit. Use capnography when ventilation is impaired or an opioid / sedative exposure is suspected.
- Pre-oxygenate and intubate for persistent hypoventilation despite antidote and support, refractory hypoxaemia, loss of protective reflexes, severe agitation requiring paralysis, or anticipated rapid deterioration.
- Plan the airway around the toxin. Severe salicylate poisoning, metabolic acidosis, and cyanide or toxic alcohol poisoning require preservation of high minute ventilation; peri-intubation hypoventilation can be fatal.
- Avoid succinylcholine when prolonged paralysis is possible from organophosphate poisoning or pseudocholinesterase inhibition. Use senior anaesthetic / critical-care support.
- Bronchorrhoea and wheeze suggest cholinergic poisoning; pulmonary oedema may occur with opioids, salicylates, hydrocarbons, inhaled toxins, or cardiotoxic drugs.

8.2 Circulation

- Assess perfusion, rhythm, QRS, QTc, blood pressure, capillary refill, temperature, and bedside ultrasound. Correct hypoxia, acidosis, electrolyte disturbance, and hypothermia / hyperthermia.
- Use isotonic crystalloid judiciously. Persistent toxin-induced shock may require norepinephrine or epinephrine plus poison-specific therapy such as high-dose insulin, calcium, glucagon, bicarbonate, lipid emulsion, digoxin Fab, hydroxocobalamin, or extracorporeal support.
- Treat wide-complex dysrhythmia from sodium-channel blockade with sodium bicarbonate. Avoid class IA and IC antiarrhythmics; obtain toxicology advice for refractory cases.
- Treat torsades with magnesium, correction of potassium and other causes, and defibrillation / overdrive pacing as indicated. Avoid QT-prolonging medicines.
- In cardiac arrest, continue high-quality resuscitation and use toxin-specific treatments. Prolonged resuscitation and extracorporeal life support may be appropriate for selected reversible poisonings.

8.3 Disability, temperature, and exposure

- Record GCS / AVPU, pupils, tone, clonus, reflexes, agitation, delirium, seizure activity, and serial mental status. Check for trauma and intracranial causes.
- Treat toxin-induced seizures first with benzodiazepines. For refractory seizures, use phenobarbital or propofol according to local critical-care practice; seek toxicology advice before phenytoin.
- Measure core temperature in severe agitation, rigidity, clonus, anticholinergic or sympathomimetic toxicity, serotonin syndrome, neuroleptic malignant syndrome, or environmental exposure.
- For severe hyperthermia, remove clothing, spray and fan, apply ice packs or immersion where feasible, sedate aggressively, and use paralysis / ventilation if muscle activity continues. Do not use antipyretics as primary treatment.
- Expose fully for patches, injection sites, body packing, transdermal products, chemical burns, pressure injury, rhabdomyolysis, and concealed trauma while maintaining dignity and temperature.

9. Contamination control and external decontamination

| Exposure | Required action |
|-----------------------------------|--|
| Dry chemical / powder | Do not bring contaminated clothing or powder into clean areas. Remove clothing, double-bag and label it, brush dry powder off before irrigation, and use PPE appropriate to the product. |
| Liquid chemical / pesticide | Remove clothing and jewellery; irrigate skin with copious tepid water and mild soap when appropriate. Protect drains and staff according to hazardous-material policy. |
| Ocular exposure | Begin immediate irrigation with water or saline; remove contact lenses; continue until symptoms improve and ocular pH is neutral when relevant. Arrange ophthalmic assessment for corrosives or persistent injury. |
| Inhalation | Move to fresh air without exposing rescuers. Give oxygen and assess for bronchospasm, pulmonary oedema, CO, cyanide, methemoglobinaemia, and delayed inhalational injury. |
| Needle / injection / envenomation | Treat sharps as evidence and biohazard; assess local tissue, compartment, vascular, systemic, and infectious risks; follow the dedicated injury or envenomation pathway. |

| Exposure | Required action |
|---------------------------------|---|
| Contaminated vomit / secretions | Use gloves, gown and eye protection as indicated. Cholinergic pesticides and some chemicals may contaminate staff through secretions. |

10. Focused exposure history and risk assessment

| Domain | Key questions / findings |
|-------------------------|---|
| Substance | Exact name, active ingredients, strength, formulation, immediate- or modified-release, product label, colour / imprint, pesticide or workplace name, safety-data sheet. |
| Dose | Maximum possible amount; number of missing tablets; concentration and volume; mg/kg where possible; chronic accumulation or repeated supratherapeutic dosing. |
| Time and route | Earliest and latest possible exposure; ingestion, inhalation, dermal, ocular, injection, transdermal, rectal / vaginal, body packing or stuffing. |
| Intent and reliability | Accidental, therapeutic error, recreational, occupational, malicious, self-harm, or unknown; witness reliability; access to additional substances. |
| Co-exposures | Alcohol, acetaminophen, salicylate, opioids, sedatives, antidepressants, stimulants, herbal products, and household or agricultural agents. |
| Patient factors | Age, weight, pregnancy, CKD, liver disease, cardiac disease, seizure disorder, G6PD deficiency, substance tolerance, chronic medicines, and allergies. |
| Symptoms and trajectory | Vomiting, tinnitus, visual symptoms, sweating or dryness, secretions, bowel sounds, agitation, somnolence, weakness, dyspnoea, chest pain, palpitations, seizures, urine output, and temperature. |
| Prehospital course | Time found, environment, empty containers, naloxone or other antidotes, airway support, decontamination, charcoal, fluids, restraints, and response. |

11. Toxidrome recognition

| Toxidrome | Typical findings | Important examples / cautions |
|-------------------------|---|--|
| Opioid | Reduced consciousness, slow or absent breathing, small pupils, bradycardia, hypotension, hypothermia | Pupils may be normal; fentanyl analogues may require repeated naloxone; consider co-ingestants and pulmonary oedema. |
| Sedative-hypnotic | Somnolence, ataxia, dysarthria, hypoventilation, generally normal vital signs unless mixed | Alcohol, benzodiazepines, barbiturates, gabapentinoids; severe instability suggests co-ingestion or another diagnosis. |
| Sympathomimetic | Agitation, mydriasis, diaphoresis, tachycardia, hypertension, hyperthermia, chest pain, seizures | Cocaine, amphetamines, synthetic stimulants; treat agitation and hyperthermia early with benzodiazepines. |
| Anticholinergic | Agitated delirium, mydriasis, dry flushed skin, urinary retention, reduced bowel sounds, tachycardia, hyperthermia | Antihistamines, antipsychotics, tricyclics, plants; ECG sodium-channel or QT effects may coexist. |
| Cholinergic | Salivation, lacrimation, urination, diarrhoea, vomiting, bronchorrhoea, wheeze, bradycardia, miosis, fasciculations, weakness | Organophosphates and carbamates; protect staff; atropine treats muscarinic effects, oxime may be needed. |
| Serotonergic | Agitation, diaphoresis, diarrhoea, hyperreflexia, inducible or spontaneous clonus, hyperthermia | Serotonergic medicines and interactions; stop agents, sedate, cool; severe cases need paralysis / ICU. |
| Neuroleptic malignant | Altered mental status, generalized rigidity, hyperthermia, autonomic instability, elevated CK | Dopamine antagonists or withdrawal of dopamine agonists; provide intensive supportive care and specialist advice. |
| Sodium-channel blockade | Tachycardia, hypotension, seizures, widened QRS, terminal R in aVR | TCA, diphenhydramine, cocaine, carbamazepine, class I antiarrhythmics; sodium bicarbonate is first-line. |

12. Investigations and interpretation

| Investigation | Indication / interpretation |
|-----------------------|---|
| Point-of-care glucose | Immediate in all altered, seizing, weak, or intoxicated patients; repeat after treatment and with sulfonyleurea / insulin exposure. |

| Investigation | Indication / interpretation |
|---|--|
| 12-lead ECG and rhythm strip | Early in significant or unknown poisoning; repeat for QRS, QTc, conduction, rhythm, ischaemia, potassium, calcium, and treatment response. |
| VBG / ABG, lactate | Assess ventilation, pH, bicarbonate, lactate, and severe metabolic toxicity. ABG may be needed for oxygenation or co-oximetry. |
| Electrolytes, urea, creatinine, glucose, calcium, magnesium | Identify metabolic effects, organ failure, and treatment complications; calculate anion gap and corrected values where appropriate. |
| Acetaminophen level | Intentional or unknown ingestion, mixed overdose, unreliable history, repeated supratherapeutic use, or unexplained liver injury. Time level correctly and repeat when delayed absorption is possible. |
| Salicylate level | Known / possible salicylate exposure, tinnitus, tachypnoea, fever, altered state, unexplained respiratory alkalosis or anion-gap acidosis. Use serial levels and clinical status. |
| Liver tests, INR, CBC | Acetaminophen, mushroom, valproate, iron, severe systemic toxicity, bleeding, haemolysis, or organ injury. |
| Serum osmolality / osmolar gap | Suspected toxic alcohol; a normal gap does not exclude late exposure. Interpret with ethanol and clinical acid-base status. |
| CK, urinalysis | Agitation, hyperthermia, seizure, prolonged immobilization, muscle pain, stimulant toxicity, or rhabdomyolysis risk. |
| Specific levels | Lithium, digoxin, valproate, carbamazepine, theophylline, iron, ethanol, methanol, ethylene glycol, or other agents when results change management. |
| Pregnancy test | Patients of reproductive potential when it affects investigation, antidote, psychiatric care, or disposition. Do not withhold life-saving treatment. |
| Toxicology screen | Use only for a defined question. Immunoassays have false positives / negatives and limited detection; confirmatory testing rarely guides immediate stabilization. |
| Imaging | CT head for trauma, focal deficit, persistent unexplained coma, or seizure; chest imaging for aspiration / inhalation; abdominal imaging for packets, iron, lead, or radiopaque material when indicated. |

13. Gastrointestinal decontamination

| Method | When to consider | Do not use / cautions |
|----------------------------------|--|---|
| Single-dose activated charcoal | Potentially toxic, adsorbable ingestion, usually within 1 hour but later for delayed gastric emptying, modified-release, or massive ingestion after toxicology discussion. Typical dose 1 g/kg, adult maximum commonly 50 g. | Unprotected airway, bowel obstruction / ileus, significant aspiration risk, caustics, hydrocarbons, alcohols, metals, lithium, or substances poorly adsorbed by charcoal. |
| Multiple-dose activated charcoal | Selected life-threatening carbamazepine, dapsone, phenobarbital, quinine, or theophylline poisoning after toxicology consultation. | Ileus, unprotected airway, gastrointestinal bleeding, or inability to monitor fluid / electrolyte effects. |
| Whole-bowel irrigation | Potentially serious modified-release or enteric-coated ingestion, iron / lithium, body packers, or packets visible on imaging, with toxicology / surgical input. | Bowel obstruction, perforation, ileus, haemodynamic instability, uncontrolled vomiting, or unprotected airway. |
| Gastric lavage | Exceptionally, after a very recent potentially lethal ingestion when benefits outweigh risks and expert support is available. | Not routine. Avoid with unprotected airway, corrosives, hydrocarbons, bleeding risk, or delayed presentation. |
| Induced emesis | Never recommended. | Risk of aspiration, delay, and no reliable benefit. |

14. Antidotes and enhanced elimination

ANTIDOTE SAFETY: Use an approved local monograph and obtain toxicology / pharmacy support whenever possible. Do not delay a life-saving antidote because a confirmatory level is pending when the exposure and clinical syndrome are compelling. Record weight, dose, concentration, route, time, response, adverse effects, and next dose due.

| Clinical problem / toxin | Reference emergency treatment | Key cautions / escalation |
|-------------------------------|---|---|
| Opioid respiratory depression | Ventilation plus titrated naloxone; repeat doses or infusion for recurrent hypoventilation. | Target adequate breathing. Observe for recurrence and acute withdrawal. |
| Acetaminophen | N-acetylcysteine using approved IV or oral regimen. | Start promptly when indicated or results will be delayed. Continue until stopping criteria are met. |
| Sodium-channel blocker / TCA | Sodium bicarbonate 1-2 mmol/kg IV bolus, repeated to clinical / ECG response; infusion as required. | Monitor sodium, potassium, pH and volume; avoid over-alkalinization. |

| | | |
|--|--|--|
| Beta-blocker / calcium-channel blocker | High-dose insulin euglycaemia therapy, dextrose, calcium, vasopressors; glucagon mainly for selected beta-blocker cases. | Frequent glucose and potassium monitoring; early ICU / toxicology; consider lipid or ECMO in refractory shock. |
| Digoxin / cardiac glycoside | Digoxin immune Fab for life-threatening dysrhythmia, hyperkalaemia, shock, or severe poisoning. | Dose by amount / level when possible; post-Fab digoxin levels are not clinically interpretable. |
| Organophosphate / carbamate | Atropine rapidly titrated to clear bronchial secretions and improve ventilation; pralidoxime for significant organophosphate toxicity. | Large atropine doses may be required. Staff decontamination and airway protection are priorities. |
| Toxic alcohol | Fomepizole or approved ethanol protocol; correct acidosis and give cofactors; early haemodialysis discussion. | Do not wait for a specific level if severe acidosis, visual symptoms, renal injury, or strong exposure history. |
| Cyanide | Hydroxocobalamin 5 g IV adult; repeat once if needed; paediatric 70 mg/kg up to 5 g. | May interfere with laboratory assays and dialysis equipment; treat smoke-inhalation co-toxicity. |
| Methemoglobinaemia | Methylene blue 1-2 mg/kg IV over 5 minutes; may repeat after specialist advice. | Use caution in G6PD deficiency and serotonergic drug exposure; consider exchange / hyperbaric options if refractory. |
| Isoniazid seizures | Pyridoxine gram-for-gram of known ingestion; if unknown, adult 5 g IV or paediatric 70 mg/kg up to 5 g. | Give benzodiazepines and correct acidosis; repeat may be needed. |
| Sulfonylurea hypoglycaemia | Dextrose plus octreotide; adult commonly 50-100 micrograms SC / IV every 6 hours; paediatric dosing by local monograph. | Prolonged observation and serial glucose; dextrose alone can provoke recurrent insulin release. |
| Local-anaesthetic systemic toxicity | 20% lipid emulsion: 1.5 mL/kg bolus then 0.25 mL/kg/min, with repeat / increase per approved LAST protocol. | Use modified resuscitation; avoid excessive epinephrine and vasopressin; monitor total lipid dose. |

| Enhanced elimination | Typical indications / principle |
|-------------------------------|--|
| Urinary alkalization | Salicylate poisoning and selected agents. Use IV sodium bicarbonate, correct potassium, monitor pH and fluid balance, and target urine alkalization according to toxicology guidance. |
| Multiple-dose charcoal | Selected enterohepatic / enteroenteric toxins when bowel function and airway are safe. |
| Intermittent haemodialysis | Preferred for severe salicylate, methanol, ethylene glycol, lithium, valproate, theophylline, metformin-associated lactic acidosis, and other dialysable toxins according to EXTRIP / toxicology criteria. |
| Continuous kidney replacement | May be used when intermittent dialysis is unavailable or haemodynamic instability prevents it, but toxin clearance may be slower. |
| ECMO / mechanical support | Consider early for selected refractory cardiotoxic poisoning when the toxin is reversible and expertise is available. |

15. Opioid poisoning

- Provide immediate ventilation. Do not wait for naloxone to take effect before bag-mask support in apnoea or severe hypoventilation.
- Use small IV naloxone doses such as 0.04-0.1 mg when the patient is opioid-dependent and breathing is impaired but present; use 0.4-2 mg IV / IM / intranasal or the available emergency formulation when apnoea or near-apnoea requires rapid reversal. Repeat every 2-3 minutes to adequate ventilation.
- Failure to respond after an appropriate cumulative dose should trigger reassessment of airway technique, potency and route, co-ingestants, hypoxic brain injury, hypoglycaemia, stroke, seizure, or another diagnosis.
- For recurrent respiratory depression, repeat boluses and begin an infusion based on the effective wake-up dose; a common starting principle is approximately two-thirds of the effective cumulative dose per hour, titrated to ventilation.
- Observe longer after long-acting opioids, methadone, sustained-release products, fentanyl analogues, body packing, renal failure, recurrent naloxone requirement, pulmonary complications, or mixed sedative exposure.
- After recovery, provide overdose education, take-home naloxone where available, and direct linkage to opioid-use-disorder treatment.

16. Acetaminophen poisoning

- Determine whether exposure was a single acute ingestion, repeated supratherapeutic dosing, staggered ingestion, delayed presentation, or uncertain pattern. The Rumack-Matthew nomogram applies only to a single acute ingestion with a known time.
- Obtain an acetaminophen level at 4 hours or later after a single acute ingestion. If presentation is earlier, draw baseline tests but repeat at the correct time. Repeat a 4-12 hour level when delayed absorption is possible and the first concentration is detectable but below the treatment line.
- Start N-acetylcysteine immediately when the level is above the treatment line, the ingestion is more than 8 hours earlier and potentially toxic, the time is unknown with detectable acetaminophen, repeated supratherapeutic exposure is concerning, or liver injury is present and acetaminophen contribution is possible.
- Use the approved local IV or oral regimen. A traditional IV regimen is 150 mg/kg over 1 hour, 50 mg/kg over 4 hours, then 100 mg/kg over 16 hours; approved two-bag regimens may reduce adverse reactions. Avoid dosing interruption during transfer.

- Continue treatment beyond the initial course when acetaminophen remains detectable, aminotransferases are rising or markedly elevated, INR is abnormal because of liver injury, acidosis / lactate / renal injury is present, or the patient is clinically unwell. Seek transplant-centre advice early in acute liver failure.
- Treat anaphylactoid reactions according to severity; temporary slowing or brief interruption may be appropriate, but restart N-acetylcysteine as soon as safe.

17. Salicylate poisoning

SALICYLATE AIRWAY WARNING: The spontaneously hyperventilating patient may be maintaining life through respiratory alkalosis. Intubation that lowers minute ventilation or allows pH to fall can cause abrupt deterioration. Obtain senior airway and toxicology support, pre-alkalinize when feasible, and match the pre-intubation minute ventilation immediately after intubation.

- Suspect salicylate toxicity with tinnitus, hearing change, nausea, vomiting, sweating, tachypnoea, fever, confusion, pulmonary oedema, hypoglycaemia, mixed respiratory alkalosis and anion-gap acidosis, or unexplained deterioration in an older adult.
- Use serial levels, pH, electrolytes, glucose, renal function, and clinical status. A falling concentration does not guarantee improvement if tissue distribution, acidaemia, or organ failure is worsening.
- Give activated charcoal for appropriate recent or ongoing absorption when the airway and bowel are safe. Correct volume depletion, glucose deficiency, and potassium deficit.
- Use IV sodium bicarbonate to alkalinize serum and urine in significant toxicity. A commonly used infusion contains 150 mmol sodium bicarbonate in 1 L dextrose solution with potassium added as needed; target serum pH around 7.5-7.55 and urine pH 7.5-8 while monitoring sodium, potassium, glucose, fluid status, and pH.
- Discuss haemodialysis early for altered mental status, pulmonary oedema, renal failure, severe acidaemia, refractory electrolyte disturbance, inability to alkalinize, rising level despite therapy, or severe concentration thresholds according to toxicology / EXTRIP guidance.

18. Cardiotoxic and metabolic poisonings

| Exposure / pattern | Immediate priorities |
|---|--|
| Tricyclic antidepressant / sodium-channel blocker | Benzodiazepines for seizure; sodium bicarbonate for QRS widening, hypotension, ventricular dysrhythmia, or terminal R in aVR; repeat to response and monitor pH / sodium. Consider hypertonic saline or lipid emulsion with toxicology advice. |
| Beta-blocker | Airway and ECG; fluids, vasopressors, glucagon where appropriate, high-dose insulin euglycaemia therapy, dextrose, and correction of potassium / magnesium. Consider lipid emulsion, pacing, ECMO, or dialysis for selected agents. |
| Calcium-channel blocker | Calcium, high-dose insulin euglycaemia therapy, dextrose, vasopressors, and early critical-care / toxicology support. Monitor glucose frequently and anticipate pulmonary oedema. |
| Digoxin / cardiac glycoside | Treat unstable dysrhythmia and hyperkalaemia with digoxin immune Fab. Avoid routine calcium controversy by prioritizing Fab; seek toxicology / cardiology advice. Correct magnesium / potassium carefully. |
| Sulfonylurea / insulin | Frequent glucose; dextrose for immediate hypoglycaemia. Add octreotide for sulfonylurea. Continue prolonged observation because recurrence is common. |
| Lithium | Stop exposure; isotonic fluid when appropriate; serial lithium, renal function, sodium, ECG and neurological examination. Early nephrology / toxicology and dialysis discussion for severe symptoms, renal failure, high or rising levels. |
| Valproate | Airway, glucose, ammonia, acid-base status, liver tests and serial level. Consider L-carnitine for hyperammonaemia, hepatotoxicity, significant CNS depression, or severe exposure; dialysis for severe poisoning per EXTRIP. |
| Theophylline | Repeated charcoal when safe, potassium and glucose monitoring, benzodiazepines for seizure, beta-blockade for severe tachycardia only with expert input, and early haemodialysis for severe toxicity. |
| Iron | Serum iron timed appropriately, acid-base status and abdominal radiography when relevant. Severe gastrointestinal, shock, acidosis, altered state, or high level requires IV deferoxamine and toxicology / critical-care support. |
| Metformin-associated lactic acidosis | Support circulation and ventilation, correct severe metabolic derangement, and arrange urgent haemodialysis for severe acidosis / lactate, shock, organ failure, or clinical deterioration. |

19. Stimulant, anticholinergic, serotonergic, and hyperthermic syndromes

- For cocaine, amphetamine, synthetic stimulant, or severe anticholinergic agitation, use benzodiazepines as first-line treatment, reduce stimulation, monitor ECG and temperature, and actively cool. Treat chest pain and hypertension according to the linked cardiovascular pathway and toxicology advice.
- Avoid physical struggle and prolonged prone restraint. Severe agitation may require rapid sedation, airway control, and continuous physiological monitoring.

- Serotonin syndrome is suggested by exposure plus clonus, hyperreflexia, agitation, diaphoresis, diarrhoea, and hyperthermia. Stop serotonergic agents, give benzodiazepines, cool, and use cyproheptadine in selected moderate / severe cases when enteral administration is possible.
- Neuroleptic malignant syndrome is suggested by dopamine-antagonist exposure or dopamine-agonist withdrawal with generalized rigidity, fever, altered state, dysautonomia, and raised CK. Stop the trigger, provide aggressive supportive care, and seek critical-care / neurology advice regarding dantrolene or dopamine agonist therapy.
- Physostigmine may reverse severe pure anticholinergic delirium but should be used only with toxicology expertise, continuous ECG, and exclusion of QRS widening, TCA exposure, conduction disease, and pro-convulsant co-ingestion.

20. Cholinergic pesticide poisoning

- Protect staff and decontaminate the patient before routine entry when feasible. Remove clothing, wash skin and hair, and contain contaminated material.
- Prioritize suction, oxygenation and ventilation. Give atropine immediately for bronchorrhoea, wheeze, bradycardia, hypotension, or respiratory compromise. An adult may start at 1-2 mg IV, doubling every 3-5 minutes until secretions dry and ventilation / perfusion improve; severe cases may need much larger doses and infusion.
- Give pralidoxime early for significant organophosphate poisoning according to local monograph, particularly with weakness, fasciculations, respiratory failure, or substantial exposure. Carbamate poisoning may improve rapidly with atropine, but expert advice is required.
- Benzodiazepines treat seizures and marked agitation. Monitor for intermediate syndrome, delayed neuropathy, recurrent weakness, aspiration, and atropine complications.
- Do not use pupil size or heart rate alone as the atropine endpoint. The key endpoints are clearing bronchial secretions, improved air entry, oxygenation, perfusion, and reduced bronchospasm.

21. Toxic gases, toxic alcohols, and dyshemoglobinaemia

| Condition | ED priorities |
|----------------------------|---|
| Carbon monoxide | Remove from source and give 100% oxygen. Measure carboxyhaemoglobin with co-oximetry, but do not use a low delayed level to dismiss exposure. Assess neurological status, ECG, troponin, lactate and pregnancy. Discuss hyperbaric oxygen for loss of consciousness, neurological deficit, severe acidosis, cardiac ischaemia, very high level, or pregnancy according to local access. |
| Cyanide / smoke inhalation | Suspect with enclosed-space fire, soot, altered state, shock, severe lactic acidosis, or cardiovascular collapse. Give hydroxocobalamin promptly when severe cyanide toxicity is plausible; treat concomitant CO and inhalational injury. |
| Methanol | Visual symptoms, abdominal symptoms, altered state and anion-gap acidosis may be delayed. Give fomepizole when exposure is credible or metabolic findings suggest toxicity; give folate / folic acid and arrange urgent dialysis when severe. |
| Ethylene glycol | Consider in intoxication with anion-gap acidosis, osmolar gap, hypocalcaemia, calcium oxalate crystals, or AKI. Give fomepizole, thiamine and pyridoxine; arrange dialysis according to severity and EXTRIP criteria. |
| Methemoglobinaemia | Suspect cyanosis with normal PaO ₂ , chocolate-coloured blood, and saturation gap after oxidant exposure. Give high-flow oxygen and methylene blue for symptomatic or significant levels, with specialist caution in G6PD deficiency. |
| Hydrocarbon | Avoid induced vomiting and routine charcoal. Observe for coughing, hypoxaemia, or aspiration pneumonitis; chest radiography is guided by symptoms and timing. Severe CNS or dysrhythmia requires supportive care. |

22. Alcohol intoxication and withdrawal

22.1 Alcohol intoxication

- Do not attribute coma, trauma, hypoglycaemia, sepsis, stroke, head injury, co-ingestion, or sexual assault to alcohol without assessment. Check glucose and temperature, and perform serial neurological examinations.
- Use supportive care, aspiration prevention, fluids only for a defined indication, and thiamine for patients at risk of deficiency. Give glucose immediately when hypoglycaemic; thiamine should be given before or with glucose when feasible but must not delay correction.
- Assess capacity, safe supervision, mobility, oral intake, withdrawal risk, violence / vulnerability, driving risk, and safeguarding before discharge.

22.2 Alcohol withdrawal

- Ask time of last drink, usual amount, previous withdrawal seizure or delirium, concurrent sedatives, medical illness, pregnancy, and previous treatment. Use an approved severity tool only in a patient able to communicate; do not allow a score to override clinical instability.

- Benzodiazepines are first-line. Use symptom-triggered treatment for suitable monitored patients or a fixed / front-loaded regimen for severe risk, unreliable scoring, seizure, delirium, or critical illness. Phenobarbital may be used by experienced teams under an approved pathway.
- Give parenteral thiamine before carbohydrate when feasible in high-risk patients, plus magnesium, potassium, phosphate, glucose and fluid correction according to findings. Treat Wernicke encephalopathy with therapeutic rather than prophylactic thiamine dosing.
- Withdrawal seizure requires benzodiazepine treatment and admission / close observation. Delirium tremens requires ICU-level care, large titrated sedative doses, temperature and cardiorespiratory monitoring, and treatment of precipitating illness.
- Arrange alcohol-use-disorder treatment, relapse prevention, psychosocial support, and safe follow-up rather than treating withdrawal as an isolated episode.

23. Opioid and sedative-hypnotic withdrawal

23.1 Opioid withdrawal

- Opioid withdrawal is intensely distressing but is usually not directly life-threatening; dehydration, pregnancy, severe comorbidity, infection, suicidality, and return to use create major risk.
- Use an objective withdrawal assessment such as COWS and determine last opioid, potency, route, methadone or buprenorphine use, fentanyl exposure, and previous precipitated withdrawal.
- Offer buprenorphine initiation when opioid-use disorder is present, the patient is in clear objective withdrawal, and local law, formulary, training, and follow-up permit. A common standard induction begins with 4-8 mg sublingual and repeats according to symptoms, but the approved local pathway must address fentanyl and long-acting opioids.
- Provide symptomatic treatment, hydration, antiemetic, antidiarrhoeal, non-opioid analgesia, and clonidine where appropriate. Avoid replacing one unstructured opioid prescription with another.
- Provide take-home naloxone, overdose prevention, infectious-disease screening as appropriate, and a confirmed treatment linkage.

23.2 Benzodiazepine and other sedative-hypnotic withdrawal

- Suspect after abrupt cessation of regular benzodiazepine, barbiturate, gamma-hydroxybutyrate, or related sedative use. Anxiety, tremor, insomnia, perceptual disturbance, autonomic activation, delirium, and seizures may occur.
- Treat significant benzodiazepine withdrawal with a controlled benzodiazepine replacement and taper under specialist guidance. Severe withdrawal, seizure, delirium, pregnancy, polydrug use, or unreliable follow-up requires admission.
- Barbiturate or GHB withdrawal may be severe and difficult to manage; obtain critical-care / addiction / toxicology input. Do not use flumazenil.

24. Special populations

| Population | Required modifications |
|---------------------------------------|--|
| Children | Use weight-based dosing, child-protection assessment, and a lower threshold for poison-centre consultation. A single tablet or small volume may be lethal. Confirm caregiver reliability and safe storage before discharge. |
| Pregnancy / postpartum | Stabilize the mother first. Do not withhold indicated antidotes or imaging solely because of pregnancy. Involve obstetrics; assess fetal monitoring according to gestation and severity. CO has particular fetal risk and may lower the threshold for hyperbaric consultation. |
| Older adult / frailty | Consider therapeutic accumulation, medication duplication, renal or hepatic impairment, digoxin, lithium, anticoagulants, falls, cognitive impairment, neglect, and dosing error. Use cautious fluids and prolonged observation when reserve is limited. |
| Chronic kidney / liver disease | Expect altered clearance, prolonged toxicity, and lower thresholds for serial testing, antidote extension, or dialysis. Review all regular medicines and recent dose changes. |
| Body packer / stuffer | Do not perform digital rectal removal. Use imaging and whole-bowel irrigation when appropriate; surgical consultation is urgent for obstruction, perforation, packet rupture, or severe toxicity. |
| Occupational / environmental exposure | Obtain product and safety data; notify workplace / public health authorities when required; identify co-exposed persons and prevent return to an unsafe environment. |
| Person in custody | Clinical care and consent standards are unchanged. Maintain confidentiality, document restraints and observations, and avoid discharge to a setting unable to provide required monitoring. |

25. Monitoring and reassessment

| Parameter | Minimum expectation |
|----------------------|--|
| Airway / ventilation | Continuous pulse oximetry; capnography for hypoventilation, deep sedation, intubation, or naloxone infusion; repeat respiratory rate and airway-protection assessment. |

| Parameter | Minimum expectation |
|--------------------|--|
| Cardiovascular | Continuous ECG for cardiotoxic exposure, abnormal ECG, significant electrolyte disturbance, severe withdrawal, or antidote infusion; repeat 12-lead ECG to defined endpoints. |
| Neurological | Serial GCS, pupils, agitation / sedation, clonus / rigidity, seizure recurrence, and delirium assessment. |
| Temperature | Continuous or frequent core temperature in hyperthermia, severe agitation, serotonin / NMS, cholinergic or sympathomimetic toxicity. |
| Glucose | Repeat after hypoglycaemia and regularly with insulin, sulfonylurea, high-dose insulin therapy, liver injury, children, or altered consciousness. |
| Laboratory trends | Repeat pH, lactate, electrolytes, toxin levels, renal / liver tests, INR, CK, and osmolality at toxin-specific intervals. |
| Treatment response | Document the clinical target and response after each naloxone dose, bicarbonate bolus, atropine escalation, calcium, high-dose insulin change, antidote, charcoal, cooling intervention, or dialysis step. |
| Behavioural safety | Observation level, suicide precautions, restraint review, capacity, elopement risk, and family / safeguarding communication. |

26. Disposition

| Disposition | Minimum criteria |
|------------------------------|--|
| Resuscitation / ICU | Airway or ventilatory support; shock; recurrent seizure; severe hyperthermia; dangerous ECG change; antidote infusion requiring intensive monitoring; severe acidosis; organ failure; severe withdrawal delirium; need for dialysis / ECMO. |
| Monitored inpatient care | Persistent symptoms, abnormal serial tests, long-acting / modified-release exposure, recurrent naloxone need, moderate withdrawal, aspiration, inability to complete psychiatric or safeguarding assessment, or uncertain trajectory. |
| Observation unit | Selected stable patients requiring serial ECG, glucose, toxin level, mental-status observation, or psychosocial assessment within an approved time-limited pathway. |
| Psychiatric / crisis service | Only after immediate toxicological risk is resolved or a medical monitoring plan is explicitly accepted by the receiving service. Handover must include exposure, treatment, tests outstanding, and recurrence risks. |
| Discharge | Asymptomatic or resolved symptoms; stable vital signs and mental state; normal or acceptable required serial ECG / laboratory results; expected toxicity window completed; safe mobility and oral intake; no recurrent antidote requirement; psychosocial, safeguarding and follow-up plan complete. |

27. Discharge and prevention plan

- Provide written substance-specific return precautions, including breathing difficulty, recurrent drowsiness, vomiting, confusion, seizure, chest pain, palpitations, fever, jaundice, reduced urine, bleeding, or new neurological symptoms.
- Explain delayed toxicity and the reason for any repeat laboratory appointment. Name the responsible clinician / service and confirm the patient can attend.
- Complete medication reconciliation and safe-storage advice. Remove discontinued, duplicated, or unsafe medicines through an approved process; do not instruct unsafe disposal.
- For opioid exposure, provide naloxone and overdose-prevention education where available. For alcohol or drug use disorder, make a direct treatment referral rather than only supplying a telephone number.
- For intentional poisoning, complete a documented psychosocial assessment and collaborative safety plan. Confirm safe supervision, transport, and restriction of access to the substance when possible.
- Notify public health, occupational health, child protection, law enforcement, or environmental authorities only when required and consistent with confidentiality and law.

28. Transfer and handover

- Obtain named receiving-clinician acceptance and document the destination, indication, and agreed treatment plan.
- Continue ventilation, monitoring, antidote infusions, dextrose, bicarbonate, high-dose insulin, atropine, vasopressors, cooling, or seizure treatment during delay and transfer. Send enough drug and equipment for anticipated delays.
- Use an escort competent to manage recurrent respiratory depression, dysrhythmia, seizure, agitation, airway failure, and infusion complications.
- Send packaging / photographs, poison-centre case number, exposure timeline, serial ECGs, laboratory trends, antidote doses, infusion calculations, response, complications, mental-health risk, and next actions due.
- Do not transfer a contaminated patient through clean areas or standard transport until decontamination and hazardous-material arrangements are complete.

29. Documentation and handover

- Agent, formulation, maximum dose, route, timing, intent, source of history, co-ingestants, and reliability.
- Initial and serial ABCDE findings, GCS, pupils, temperature, glucose, ECG parameters, laboratory results, and toxidrome assessment.
- Poison-centre / toxicologist name, case number, recommendations, updates, and closure criteria.
- Decontamination decision and airway assessment; antidotes and infusions with weight, concentration, rate, response, and adverse effects.
- Mental-health, capacity, safeguarding, violence, restraint, and observation decisions.
- Disposition rationale, outstanding results, repeat tests, medication changes, follow-up, return precautions, and teach-back.

30. Quality indicators and audit

| Indicator | Suggested standard |
|---|---------------------------------------|
| Point-of-care glucose documented in altered / unconscious poisoning | At least 95% |
| 12-lead ECG within 15 minutes for significant or unknown ingestion | At least 90% |
| Naloxone accompanied by immediate ventilation support when indicated | 100% |
| Poison-centre / toxicology consultation documented for defined high-risk exposure | At least 90% |
| Intentional / unknown ingestion has acetaminophen risk addressed | At least 95% |
| Activated charcoal use includes airway and contraindication documentation | 100% |
| Antidote dose, response and next action documented | At least 95% |
| Severe alcohol withdrawal receives thiamine and monitored sedative pathway | At least 95% |
| Intentional poisoning receives psychosocial / safeguarding assessment before discharge | 100% |
| Transfer handover includes exposure timeline, serial ECG / labs, antidotes and poison-centre advice | At least 95% |
| Antidote stock and expiry audit completed | Monthly or per local governance cycle |

31. Training and implementation

- Annual simulation should include opioid apnoea, TCA cardiotoxicity, beta-blocker / calcium-channel blocker shock, pesticide decontamination and atropinization, salicylate airway risk, toxic alcohol acidosis, and severe alcohol withdrawal.
- Staff should know the poison-centre contact method, antidote storage location, decontamination route, charcoal contraindications, naloxone devices, high-dose insulin order set, and dialysis / transfer escalation process.
- Pharmacy and clinical governance should maintain a locally approved antidote list, minimum stock quantities, expiry surveillance, after-hours access, borrowing agreements, and replacement process after use.
- Every serious poisoning, antidote delay, contamination incident, medication calculation error, unexpected deterioration, restraint-related harm, or failed transfer should undergo multidisciplinary review.

ANNEX A. One-page poisoning workflow

| Step | Action |
|----------------------------------|---|
| 1. Protect | PPE; identify contamination; remove from source; external decontamination before clean-area entry. |
| 2. Stabilize | ABCDE; ventilation; glucose; ECG; temperature; seizure control; active cooling; treat shock. |
| 3. Reverse immediate threats | Naloxone for opioid hypoventilation; toxin-specific antidote when compelling; sodium bicarbonate for sodium-channel toxicity; atropine for cholinergic bronchorrhoea. |
| 4. Identify risk | Agent, dose, time, route, formulation, intent, co-ingestants, patient factors, delayed-toxicity potential. |
| 5. Consult | Poison centre / toxicology; pharmacy; critical care; nephrology / dialysis; psychiatry / addiction / safeguarding as needed. |
| 6. Investigate | Glucose, ECG, acid-base, electrolytes; acetaminophen and salicylate when indicated; agent-specific levels and organ tests. |
| 7. Reduce absorption | Activated charcoal or whole-bowel irrigation only when indicated and safe. Never induce emesis. |
| 8. Monitor | Serial ventilation, ECG, neuro, temperature, glucose, laboratory and antidote-response endpoints. |
| 9. Treat withdrawal / dependence | Evidence-based alcohol, opioid, or sedative pathway; thiamine; naloxone and treatment linkage. |
| 10. Dispose safely | Complete toxicity window, mental-health and safeguarding assessment, follow-up, return precautions, and structured transfer / discharge. |

ANNEX B. Toxidrome quick card

| Pattern | Pupils / skin | Vital signs | Key treatment |
|-----------------|--------------------------|---|--|
| Opioid | Small pupils; cool | Bradypnoea, bradycardia | Ventilation, naloxone |
| Sedative | Variable; usually normal | Hypoventilation, hypotension if severe | Airway / supportive care; avoid routine flumazenil |
| Sympathomimetic | Large; sweaty | Tachycardia, hypertension, hyperthermia | Benzodiazepines, cooling, fluids / cardiovascular care |
| Anticholinergic | Large; dry / flushed | Tachycardia, hyperthermia | Benzodiazepines, cooling, bladder care; toxicology for physostigmine |
| Cholinergic | Small; wet / secretions | Brady- or tachycardia; bronchorrhoea | Decontaminate, atropine, pralidoxime, ventilation |
| Serotonergic | Large; sweaty | Tachycardia, hyperthermia | Stop agents, benzodiazepines, cooling, cyproheptadine selected cases |
| Sodium-channel | Variable | Tachycardia, hypotension, wide QRS | Sodium bicarbonate, seizure control |

ANNEX C. First-hour checklist

- ☐ PPE and contamination risk assessed; decontamination completed or pathway activated.
- ☐ Airway and ventilation assessed; capnography used when indicated.
- ☐ Point-of-care glucose, temperature, monitor and 12-lead ECG completed.
- ☐ Agent, formulation, maximum dose, time, route, intent and co-ingestants documented.
- ☐ Acetaminophen and salicylate risk addressed; targeted laboratories sent.
- ☐ Poison centre / toxicology contacted for high-risk or uncertain exposure.
- ☐ Time-critical antidotes and infusion calculations double-checked.
- ☐ Activated charcoal / whole-bowel irrigation decision documented.
- ☐ Suicide, safeguarding, violence, capacity and observation needs addressed.
- ☐ Next ECG, glucose, laboratory, antidote, reassessment and escalation time documented.

ANNEX D. Naloxone card

| Situation | Action |
|----------------------|--|
| Apnoea / near-apnoea | Ventilate immediately. Give available naloxone emergency dose, commonly 0.4-2 mg IV / IM / intranasal, repeat every 2-3 minutes to adequate ventilation. |

| Situation | Action |
|--|--|
| Opioid-dependent with partial respiratory depression | Titrate small IV doses, commonly 0.04-0.1 mg increments, to restore breathing while limiting abrupt withdrawal. |
| Recurrent respiratory depression | Repeat effective bolus and start infusion; a common starting principle is two-thirds of the effective cumulative dose per hour, then titrate. |
| No response | Check airway / ventilation, glucose, dose and route; consider potent opioid, delayed absorption, co-ingestion, brain injury, seizure, stroke, or non-opioid diagnosis. |
| After reversal | Observe for recurrence; treat pulmonary oedema, aspiration, agitation or withdrawal; provide take-home naloxone and OUD linkage. |

ANNEX E. Acetaminophen card

| Question | Required action |
|--|--|
| Single acute ingestion with known time? | Draw level at 4 hours or later and plot on treatment nomogram. Earlier level cannot exclude toxicity. |
| More than 8 hours since potentially toxic ingestion or result delayed? | Start N-acetylcysteine while awaiting results. |
| Unknown time / staggered / repeated dosing? | Use acetaminophen level plus AST / ALT, INR, renal function and clinical assessment; do not use nomogram. |
| Delayed absorption possible? | Repeat level when first is detectable but below treatment threshold and formulation / co-ingestion may delay absorption. |
| Stopping N-acetylcysteine? | Only when acetaminophen is undetectable and liver injury / INR / clinical criteria meet approved stopping rules. |
| Liver failure? | Continue N-acetylcysteine and contact a liver-transplant centre early. |

ANNEX F. Salicylate rescue card

- [] Serial salicylate, pH, electrolytes, glucose, renal function and clinical status.
- [] Correct volume depletion, hypoglycaemia and potassium deficit.
- [] Activated charcoal if ongoing absorption and airway / bowel safe.
- [] Begin bicarbonate alkalization for significant toxicity; target serum and urine pH according to protocol.
- [] Avoid intubation if possible; if essential, preserve high minute ventilation and alkalization.
- [] Discuss haemodialysis early for CNS change, pulmonary oedema, renal failure, severe acidaemia, rising level, or treatment failure.

ANNEX G. Cardiotoxic poisoning card

| Finding | Immediate response |
|--|---|
| QRS widening / TCA pattern | Sodium bicarbonate bolus; repeat ECG; treat seizure; monitor pH / sodium / potassium. |
| Bradycardic shock after beta-blocker / CCB | Calcium, high-dose insulin with dextrose, vasopressors, toxicology / ICU; consider glucagon, lipid, pacing, ECMO. |
| Digoxin dysrhythmia / hyperkalaemia | Digoxin immune Fab; continuous ECG; toxicology / cardiology. |
| QT prolongation / torsades | Stop causes; magnesium; correct potassium; defibrillate / pace as required. |
| Refractory cardiotoxic arrest | Continue toxin-specific therapy and prolonged resuscitation; consider lipid emulsion and ECMO in selected cases. |

ANNEX H. Chemical / pesticide decontamination card

- [] Notify charge clinician and activate contaminated-patient route.
- [] Use product-specific PPE; avoid secondary contamination.
- [] Remove and bag clothing / jewellery; brush dry powder before water.
- [] Irrigate skin / eyes as indicated; contain runoff according to policy.
- [] Airway, bronchorrhoea, wheeze, secretions and neuromuscular weakness assessed.
- [] Atropine available and administered to ventilation / secretion endpoints when cholinergic toxicity present.
- [] Pralidoxime and toxicology / critical-care advice obtained for significant organophosphate poisoning.
- [] Co-exposed persons, workplace and public-health notification considered.

ANNEX I. Withdrawal card

| Syndrome | High-risk features | Action |
|-------------------|--|--|
| Alcohol | Prior seizure / delirium, marked autonomic activity, hallucinations, severe comorbidity, pregnancy | Benzodiazepine pathway, thiamine, electrolytes, monitoring; ICU for delirium / refractory symptoms. |
| Opioid | Pregnancy, dehydration, infection, suicidality, recent overdose, fentanyl / methadone use | COWS / clinical assessment; buprenorphine when appropriate; symptomatic care; naloxone and direct treatment linkage. |
| Benzodiazepine | High-dose chronic use, abrupt cessation, seizure, delirium, pregnancy, polydrug use | Controlled replacement / taper with specialist input; admit severe cases; no flumazenil. |
| Barbiturate / GHB | Rapid severe delirium, autonomic instability, seizure | Early ICU, addiction / toxicology support, sedative replacement under approved protocol. |

ANNEX J. Antidote readiness checklist

- ☐ Naloxone: IV / IM and intranasal products; infusion preparation.
- ☐ N-acetylcysteine and approved dosing chart.
- ☐ Sodium bicarbonate, calcium, dextrose, insulin, potassium and magnesium.
- ☐ Digoxin immune Fab; atropine; pralidoxime.
- ☐ Fomepizole or approved ethanol protocol; folate / folinic acid; thiamine / pyridoxine.
- ☐ Hydroxocobalamin; methylene blue; lipid emulsion 20%; pyridoxine.
- ☐ Octreotide; glucagon; L-carnitine; deferoxamine; cyproheptadine.
- ☐ Activated charcoal and whole-bowel irrigation solution.
- ☐ After-hours access, minimum stock, expiry, replacement and regional borrowing agreement verified.

ANNEX K. Monitoring chart

| Time | GCS / pupils | RR / ETCO ₂ / SpO ₂ | BP / HR / ECG | Temp | Glucose | pH / labs / level | Antidote / infusion / response |
|---------|--------------|---|---------------|------|---------|-------------------|--------------------------------|
| Arrival | | | | | | | |
| 15 min | | | | | | | |
| 30 min | | | | | | | |
| 1 h | | | | | | | |
| 2 h | | | | | | | |
| 4 h | | | | | | | |
| Other | | | | | | | |

ANNEX L. Discharge checklist

- ☐ Expected toxicity window completed and symptoms resolved.
- ☐ Vital signs, cognition, gait, oral intake and respiratory status stable.
- ☐ Required serial ECG, glucose, toxin levels and organ tests complete and acceptable.
- ☐ No recurrent naloxone, hypoglycaemia, seizure, dysrhythmia, agitation or withdrawal escalation.
- ☐ Medication reconciliation and delayed-toxicity plan documented.
- ☐ Psychosocial, suicide-risk, capacity and safeguarding assessment complete when indicated.
- ☐ Naloxone / substance-use treatment linkage and safe-storage advice provided where relevant.
- ☐ Written return precautions, repeat tests, responsible clinician, transport and supervision confirmed with teach-back.

ANNEX M. Transfer and handover minimum dataset

- ☐ Agent, formulation, amount, route, exposure time range, intent and co-ingestants.
- ☐ Poison-centre case number, toxicologist recommendations and next consultation time.
- ☐ Initial and latest airway, ventilation, GCS, temperature, glucose, ECG and haemodynamics.
- ☐ Serial pH, lactate, electrolytes, acetaminophen / salicylate and agent-specific levels.
- ☐ Decontamination, charcoal / irrigation and contamination status.
- ☐ Antidotes, boluses, infusions, concentration, rates, response and adverse effects.
- ☐ Next tests, antidote dose, glucose / ECG check, airway or dialysis contingency due.
- ☐ Mental-health, safeguarding, custody / restraint, family and capacity information.
- ☐ Receiving clinician, transport team capability, drugs / equipment sent, and responsibility during delay.

ANNEX N. Audit tool

| Audit item | Met / not met / N/A |
|---|---------------------|
| Contamination and PPE risk assessed | |
| Airway / ventilation and glucose assessed promptly | |
| ECG completed for significant / unknown exposure | |
| Agent, dose, time, route and intent documented | |
| Acetaminophen and salicylate risk addressed | |
| Poison-centre / toxicology advice documented when indicated | |
| Charcoal contraindications / airway documented | |
| Antidote dose and response documented | |
| Serial monitoring completed to defined endpoint | |
| Withdrawal pathway and thiamine used appropriately | |
| Psychosocial / safeguarding assessment completed | |
| Discharge / transfer handover complete | |

ANNEX O. Local configuration checklist

- ☐ 24-hour poison-centre / toxicologist contact and backup process.
- ☐ Designated contaminated-patient route, PPE, shower / irrigation and hazardous-waste arrangements.
- ☐ Approved activated-charcoal, whole-bowel irrigation and body-packer pathways.
- ☐ Naloxone dosing / infusion and take-home naloxone programme.
- ☐ Acetaminophen / N-acetylcysteine and salicylate / bicarbonate order sets.
- ☐ High-dose insulin euglycaemia therapy, digoxin Fab, organophosphate, toxic alcohol, cyanide, methemoglobin and LAST protocols.
- ☐ Critical laboratory turnaround, co-oximetry, osmolality and toxin-level access.
- ☐ Haemodialysis, ECMO, hyperbaric oxygen, transplant and regional transfer agreements.
- ☐ Alcohol withdrawal, opioid withdrawal / buprenorphine, sedative withdrawal and Wernicke treatment pathways.
- ☐ Mental-health, safeguarding, security, observation and post-overdose follow-up pathways.
- ☐ Antidote stock quantities, storage, expiry, shortage and borrowing procedures.

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10. Centers for Disease Control and Prevention. Clinical Guidance for Carbon Monoxide Poisoning Following Disasters and Severe Weather. Updated July 2024; accessed June 2026.
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12. Local source tools to attach before approval: poison-centre directory; antidote formulary and stock list; naloxone, N-acetylcysteine, bicarbonate, high-dose insulin, pesticide, toxic alcohol, cyanide, methaemoglobinaemia and lipid-emulsion protocols; laboratory directory; withdrawal order sets; dialysis / ECMO / hyperbaric / transplant transfer directory; psychosocial and safeguarding forms.