NHS Children's Acute Transport Service

Clinical Guidelines

Poisoning

Document Control Information

Author	E Randle, P Knight	**Author Position**	CATS Consultants
Document Owner	M Clement	**Document Owner Position**	CATS Operational and Nursing Lead
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Introduction

There may be a clear history of poisoning at presentation, but it should be considered in any cases of unexplained neurological toxicity (seizures or reduced level of consciousness), metabolic acidosis, respiratory, cardiovascular, liver or multi-organ failure.

Poisoning can be accidental or intentional. High risk age groups include 1-5year olds of chemical exposure, accidental ingestion or being deliberately fed prescribed or illicit drugs. Teenagers and older children more commonly presenting with intentional overdose of prescribed or illicit drugs. The history of any household medication is very important. Concurrent alcohol ingestion and multiple toxins are common.

1. Assessment

Ascertain the nature and time of poisoning if known. Remember hazmat procedures may apply.

Always check the National Poisons Information Service (NPIS) online database http://www.toxbase.org

For further information, contact the National Poisons Information Service **(Tel 0344 892 0111)** for advice.

Assessment of toxidromes or predominant organ toxicities may provide clues to toxins involved.

2. Initial resuscitation - ABCDE assessment and supportive care

- Hypoxia is common in poisoning- treat with high flow oxygen, airway management and respiratory support as required (early anaesthetic involvement)
- Heart rate, respiratory rate and respiratory pattern may give clues as to the nature of the poisoning and should be accurately recorded
- Treat shock with a 10ml/kg fluid bolus of balanced isotonic crystalloid (or 0.9% sodium chloride if not available), assess for cardiac failure, further fluid should be discussed with CATS
- Vasoactive drugs should be used with caution, as they may be pro-arrhythmic in combination with poisons, consider vasopressors
- Assess conscious level and pupils. Commence frequent neurological observations and treat seizures as per APLS guidelines
- Consider need for CT head if head injury suspected

- Measure blood glucose and treat hypoglycaemia
- Correct electrolyte abnormalities
- An ECG should be performed for all cases of tricyclic antidepressants (TCA) overdose and where the full history of poisoning is uncertain. QRS prolongation is an early sign of cardiovascular involvement
- Measure temperature and treat hypo- or hyperthermia, both are common
- Send urine for toxicology

Decontamination

- **Emesis is no longer recommended and is contraindicated with volatile substances**
- Consider gut decontamination. Follow the poisons centre advice with regard to charcoal administration

Anion Gap:

Blood gas analysis and anion gap {$(Na^+ + K^+) – (Cl^- + HCO_3^-)$} should be performed. Elevated anion gap (>16) is seen with methanol, ethanol, ethylene glycol, salicylates, ketones and iron poisoning (secondary to increased lactate).

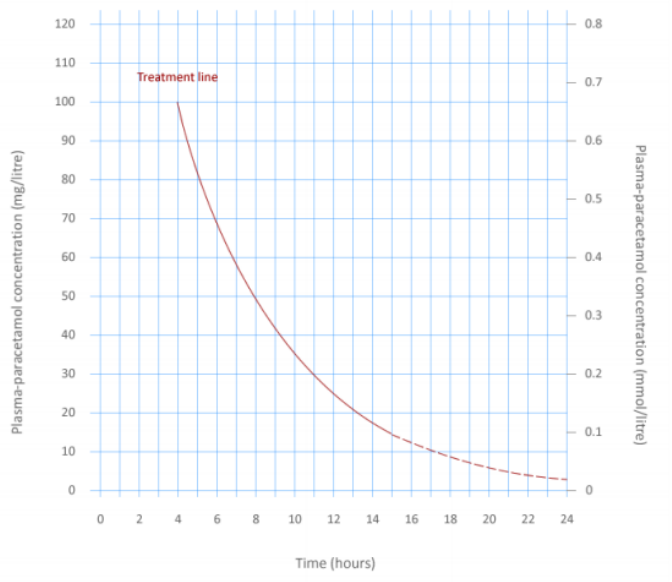
Osmolar gap:

Osmolar gap= (2 Na + Urea + Glucose) – measured osmolar gap. Gap > 20 is significant. This is seen with methanol and ethylene glycol.

2.2 Specific treatments

Specific treatments (see table below) should be given after discussion with the NPIS.

- Paracetamol:
  - Attain history of timing and dose taken. Serum level, at least 4 hours post ingestion, with AST/ALT, U+E, creatinine, blood gas, lactate, clotting
  - If hepatotoxic dose ingested (>75mg/kg) consider activated charcoal
  - Discuss management algorithms for acute, staggered, and repeated supratherapeutic ingestions and modified release formulations with medical toxicologist (Toxbase)
  - If presenting at 4-8 hours the level should be plotted on graph below and treatment started with N-acetylcysteine (NAC) if the level is above the line
  - Start NAC empirically if: patients present >8 hours after ingestion, serum paracetamol levels are not available within an 8-hour time window, uncertainty over timing of overdose, patients are unconscious or have a suspected overdose



- Refer to CATS Liver failure guideline and involve liver centre early

Poison	Specific treatment
Paracetamol	N-acetylcysteine (NAC)
Opiates	Naloxone
Salicylate or Tricyclics	Alkalinisation with sodium bicarbonate (1mmol/kg boluses should be considered)
Organophosphates	Atropine Pralidoxime
Beta Blockers	Atropine Isoprenaline or dobutamine Glucagon
Iron	Desferrioxamine

3. Indications for intubation in cases of poisoning

- Impaired airway reflexes
- Respiratory depression
- Severe cardiovascular compromise
- Altered level of consciousness- GCS ≤ 8
- Refractory seizures

4. Management following intubation

- Ventilate to normal parameters, unless otherwise indicated
- Use end tidal CO2
- Monitor cardiac rhythm and blood pressure
- Monitor glucose levels and temperature
- Neurological observations must be performed regularly, and seizures treated
- Give sedation if necessary. Consider possible interactions with suspected poison

5. Transport considerations

- Anticipate need for CRRT or ECMO. Ensure that the receiving hospital is informed immediately if haemodialysis will be required (theophylline, methanol) or ECMO support likely
- Draw up emergency drugs as appropriate, especially with cardiotoxic poisoning and apply defibrillator pads for transport in high-risk patients (especially TCA/dysrhythmic agent overdose)
- It is important to handover relevant safeguarding information and local teams to initiate the appropriate safeguarding referrals

References

Toxbase www.toxbase.org you will need your institutions log in details, usually held by your Accident and Emergency Department.