

Amphetamines can produce life threatening hyperthermia + neurological, cardiovascular, and metabolic toxicity.

Toxicity / Risk Assessment

Dose-dependent sympathomimetic +/- serotonergic stimulation

Can be ingested, snorted, injected or smoked

Clinical features:

- Clinical effects of amphetamines occur rapidly
- **Hyperthermia and multi-organ failure**
- **CNS:** Anxiety, agitation, aggression, euphoria, seizures
- **Excited Delirium:** (delirium, psychomotor agitation, marked physiological excitation) = **medical emergency**
- **CVS:** ↑HR+BP, arrhythmias, pulmonary oedema, acute coronary syndrome (ACS) – vasospasm +/- thrombosis, aortic dissection,
- **Metabolic:** lactic acidosis
- **SIADH** (Syndrome of Inappropriate Anti-Diuretic Hormone): substituted amphetamines including MDMA /Ecstasy can cause SIADH, increasing the likelihood of hyponatraemia
- **Other:** Diaphoresis, tremor, mesenteric ischaemia, intracranial haemorrhage, rhabdomyolysis

Management: Decontamination: There is no role for administration of activated charcoal

Rapid titration of benzodiazepines (and rapid cooling) is the mainstay of treatment.

Diazepam 5-10 mg IV every 5-10 mins to achieve sedation; less severe cases: use oral diazepam q30 mins

Agitation - Droperidol 10 mg IM / 5-10 mg IV initially. Continued agitation may require titrated doses of droperidol 5 mg IV increments or diazepam 5 mg IV increments to achieve gentle sedation

Excited Delirium – *MEDICAL EMERGENCY. Treat aggressively as extreme catecholamine excess can lead to death. Consider ketamine sedation or RSI / general anesthetic / intubation*

Hyperthermia - *treat aggressively as temperatures > 40°C can rapidly lead to death*

- If T > 39°C rapid cooling measures (fanning, tepid sponging, ice). May require intubation and paralysis.

Seizures - Diazepam 5-10 mg IV every 5-10 mins

Continued seizures or altered mental status

- Check sodium concentration for possible hyponatraemia (treat as below). CT brain to exclude ICH.
- General anesthetic sedation with propofol, midazolam or barbiturates

Hypertension/Tachycardia – *Beta-blockers are contra-indicated due to unopposed alpha effects*

- Diazepam: if refractory – IV GTN infusion +/- calcium channel antagonist (seek expert advice)

Acute Coronary Syndrome

- Manage along conventional lines, but avoid beta blockers; PCI is preferred over thrombolysis

Hyponatraemia - *beware hyponatraemia secondary to SIADH +/- excess H₂O intake*

- Euvolaemic fluid overload: fluid restrict. If Na⁺ conc. < 120 mmol/L, consider 3% NaCl. (1-2 mL/ kg IV)

Observe all ingestions for at least 4 hours, and all exposures until toxicity resolves