

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

Toxicity / Risk Assessment

Exposure = dose-dependent sympathomimetic stimulation

Clinical features:

- Clinical effects of amphetamines occur rapidly
- **CNS:** Anxiety, agitation, aggression, euphoria, seizures
- **CVS:** ↑HR+BP, arrhythmias, aortic dissection, pulmonary oedema, acute coronary syndrome (ACS) - *is most likely secondary to vasospasm, not thrombosis*
- **Excited Delirium:** (delirium, psychomotor agitation, marked physiological excitation) = **medical emergency**
- **SIADH** (Syndrome of Inappropriate Anti-Diuretic Hormone): substituted amphetamines including MDMA / Ecstasy can cause SIADH, increasing the likelihood of hyponatraemia
- **Other:** Diaphoresis, tremor, hyperthermia, ischaemic colitis, intracranial haemorrhage, rhabdomyolysis

Management

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 and Excited Delirium – *treat aggressively as extreme catecholamine excess can lead to death*

- Droperidol 10 mg IM / 2.5-10 mg IV initially. Continued agitation or delirium may require Rx with droperidol 5 mg increments / titrated doses of diazepam / or GA sedation (seek expert advice)

Hypertension/Tachycardia – *Beta-blockers are contra-indicated*

- Diazepam sedation, GTN infusion as per ACS protocol, calcium channel antagonist (seek expert advice)

Acute Coronary Syndrome

- Aspirin, GTN, proceed to coronary angiography to identify thrombosis vs. coronary artery spasm

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

- Active cooling measures (fanning, tepid sponging, ice axilla/groin), sedation/paralysis/intubation

Continued seizures or altered mental status – *exclude hyponatraemia early*

- Check sodium concentration for possible hyponatraemia (treat as below). CT brain
- No role for phenytoin. General anesthetic sedation with thiopentone, propofol or midazolam

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)

Investigations – ECG / electrolytes

- Additional investigations based on clinical findings: troponin / PCI / CT brain / angiography