## Amphetamines and Amphetamine-type substances (includes ‘ice’, MDMA/ecstasy)

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

Titrated doses of oral / IV benzodiazepines are used to reduce sympathomimetic excess.

Diazepam 5-10 mg orally q30 minutes / IV every 5-10 minutes to achieve sedation (sedated but rousable)

**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