

Pre-hospital guideline

Illicit substance-induced hyperthermia



This guideline aims to facilitate clinical decision-making at music festivals where there is critical care capability onsite. The senior doctor onsite should apply clinical judgement on a case-by-case basis.

Hyperthermia is the elevation of core body temperature above 38°C secondary to excessive heat production and impaired heat dissipation which is most commonly due to environmental exposure [heat stress/stroke] and/or drugs.

Hyperthermia following illicit substance use is commonly multi-factorial and includes sympathomimetic and/or serotonin toxicity with contributing environmental factors, such as prolonged high ambient temperature and/or physical exertion.

Some of the more common illicit substances which can precipitate hyperthermia include:

- amphetamines including methamphetamine and methylenedioxymethamphetamine (MDMA)
- cocaine
- synthetic cathinones
- other new psychoactive substances.

Patients with elevated temperature following illicit substance use are at high risk of serious illness and death. Early recognition and urgent targeted management of hyperthermia in these patients can **prevent rapid progression to multi-organ failure and cardiac arrest**.

Factors that increase risk of severe hyperthermia and/or adverse outcomes

- Substance use e.g. high dose (large quantities or high strength), poly-drug use, excessive alcohol consumption.
- Environment e.g. high ambient temperature, high humidity, strong radiant heat (direct sunlight).
- Patient condition e.g. dehydration, electrolyte imbalance, medical conditions and prescribed medicines (drug interaction).
- Activity e.g. strenuous physical exertion, physical restraint.

Patients with these risk factors who use stimulants are more prone to **agitated delirium** (also known as excited delirium syndrome). This syndrome includes delirium, psychomotor agitation and physiologic excitation. Clinical features include:

- inappropriate removal of clothing
- constant physical activity or lack of tiring
- severe agitation, violence
- hyperthermia, tachycardia, tachypnoea, seizures.

There is a high risk for precipitation of cardiac arrest with the application of physical restraint in patients with agitated delirium.

Pre-hospital approach to hyperthermia

1. Assessment for presence and severity of temperature disturbance, measuring core temperature where possible.
2. Patients with severe hyperthermia (refer to flowchart) require immediate initiation of resuscitation and cooling onsite.
3. Management of hyperthermia:
 - Decrease heat production:
 - avoid use of physical restraint
 - early use of intramuscular sedation for agitated patients
 - consideration of early intubation +/- paralysis for severe hyperthermia with agitation or decreased level of consciousness.
 - Appropriate cooling measures (refer to flowchart).
4. Obtain a brief history if possible. Check medical alert bracelets, pills/substances/medicines on person¹, and signs of injury or focal neurological deficits.
5. Clearly document all relevant history, observations, examination and interventions to facilitate rapid handover at receiving hospital.
6. Transfer to hospital for any patient with severe hyperthermia (**temperature $\geq 39^{\circ}\text{C}$**). Consider contacting the **NSW Poisons Information Centre priority line on 1300 383 156** for advice especially if in cardiac arrest.

The capacity to deliver these interventions will depend on the clinical resources available.

¹Document the appearance of substances (including photos) and secure any substances available and transport with the patient to hospital for potential analysis. Toxicology testing may also be performed in-hospital to guide clinical management and public health responses.

