

Heat Illness

Author: Dr Claire McGrath (Emergency Department, ASH)

Topic Reviewers: Kenna Bistani (RAN, Pine Creek); Helen Collinson (RAN, Adelaide River); Monica Ostigh (RAN, Jabiru)

Heat stroke exists when the core body temperature exceeds 40-41°C. It usually results from a prolonged exposure to extreme heat or physical activity during extreme heat. In the Central Australian context it is more likely to occur in tourists who are not acclimatised, where the actual ambient temperature need not be excessive.

Mortality increases significantly when cooling is delayed. Immersion in iced water results in rapid reduction of core temperature to less than 39°C. This treatment is advocated but is not practical in most rural clinics in Central Australia. The combination of atomised tepid water from a spray bottle and standing fans cools at a comparable rate to immersion and is much more amenable to our conditions. When the temperature falls to 39°C cooling measures should cease to avoid a hypothermic overshoot. If excessive shivering occurs this can further aggravate the hyperthermia. Treatment options include reducing the cooling mechanisms or IV Chlorpromazine 25-50 mg.

The absence of sweating is usual but not always present. The diagnosis should not be based on the absence of sweating.

Antipyretics such as paracetamol and aspirin are contraindicated because the pathophysiology of fever is different and liver damage from the hyperthermia may be exacerbated.

Fluid requirements are modest unless there has been prolonged exposure. 250-500 ml/hour of N Saline or Hartmanns should be sufficient. Pulmonary oedema occurs in heat stroke and may be exacerbated by too much fluid.

All patients with heat stroke have signs of CNS dysfunction – delirium, coma, and seizures.

Cerebral oedema is a feared complication and can also result in convulsions, which should be treated with IV Diazepam or midazolam.

A urinary catheter should be inserted in any one whose initial core temperature exceeds 40°C or whose temperature fails to fall below 39°C after one hour of appropriate cooling methods. If there is heavy proteinuria (2 plus or more) or haematuria (which may represent myoglobinuria) the administration of mannitol 12.5 gm loading, followed by 12.5 mg/L of IV fluid should be considered after consultation with a doctor or emergency department. Urine flow then needs to be maintained at 50 ml/hour or more (adult).

A full examination should be performed to exclude other injuries that may have occurred before or during the exposure to heat. e.g. a fall because of wandering during a delirium; or a snake bite. Remember that such an event may have precipitated the prolonged exposure.

[Editor: There have been cases of hyponatremia in the Top End, brought about by the combination of drinking large amounts of water while sweating 'saline'; this possibility should be kept in mind in the Top End.]

Medline keywords: Heat stress, mannitol; hyperthermia and resuscitation, dehydration and heat stress

References

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