

Heat Related Illness

A variety of medications may predispose to the development of heat illness. In addition, individuals who take drugs of abuse (e.g. cocaine, ecstasy, amphetamines) and then engage in vigorous dancing in crowded 'rave' settings may also develop heat illness.

3. Severity and Outcome

- Heat stroke is a life-threatening emergency that requires prompt appropriate treatment, with estimates of mortality of 10–50%. Recovery from heat stroke even after appropriate treatment and rehabilitation may be incomplete and leave patients with persistent functional impairment.
- **Systemic effects** – heat stroke can lead to a variety of life-threatening systemic conditions including: disseminated intravascular coagulation, rhabdomyolysis, renal failure, hepatic necrosis, metabolic acidosis, decreased tissue perfusion, in addition to cerebral and cerebellar damage.

4. Pathophysiology

- In heat illnesses there is an imbalance in the metabolic production and subsequent loss of heat by the body. This increase in core body temperature

has multiple undesirable effects on many body systems. Systemically this increased temperature leads to swelling and degeneration at both cellular and tissue levels.

- **Cellular changes** – at increased temperatures cellular organelles swell and stop functioning properly. Cell membranes become distorted, leading to unwanted increased permeability and inappropriate movement of ions into and out of cells. Red blood cells also change shape at elevated temperatures and their capacity to carry oxygen is decreased. At higher temperatures cells will also undergo inappropriate apoptosis and die.

5. Assessment and Management

- For the assessment and management of heat related illness refer to Table 3.36.

Methodology

For details of the methodology used in the development of this guideline, refer to the guideline webpage.

KEY POINTS

Heat Related Illness

- Heat exhaustion/heat stroke occurs in high external temperatures, as a result of excess heat production and with certain drugs. The higher the level of activity the lower the environmental temperature required to produce heat stroke.
- Do not assume that collapse in an athlete is due to heat – check for other causes.
- In heat exhaustion the patient may present with flu-like symptoms, such as headache, nausea, dizziness, vomiting, and cramps: the temperature may not be elevated.
- In heat stroke the patient will have neurological symptoms such as decreased level of consciousness, ataxia, and convulsions and the temperature will usually be elevated, typically $>40^{\circ}\text{C}$.
- Remove the patient from the hot environment or remove cause, if possible, remove clothing and cool.