A heat wave is considered as ≥2 consecutive days of average 30°C by day and 15°C overnight, during which there is a significant increase in the risk of people developing heat-related illnesses. These may also be seen in people undertaking strenuous exercise in lower temperatures.

**Definitions**

- **Heat exhaustion**
  - Mild>mod illness caused by exposure to high environmental heat or strenuous exercise
  - Headache, weakness, anorexia, nausea, cramps, excessive sweating, clammy skin, tachycardia/pnoea, intense thirst, discomfort, anxiety, dizziness, syncope
  - In children also consider if floppy and sleepy
  - Core temperature may be normal or slightly elevated - >37.0°C to <40.0°C
    - NB a rectal measurement is considered most accurate in heat-related illness

- **Heat stroke**
  - More severe illness, characterised by a core temp >40°C & CNS abnormalities
  - Confusion, seizure, loss of consciousness, marked tachycardia/pnoea/SOB, dehydration, lack of sweating despite temperature

**Pathophysiology**

- Core temperatures rising to critical levels results in thermoregulatory dysfunction, acute-phase response and heat shock protein response, the ensuing chain reaction culminating in circulatory shock
- The acute phase response is similar to the inflammatory response seen in sepsis
- Protective “heat shock proteins” fail, resulting in denaturation of normal protein and enzymes at a cellular level, resulting in end-organ dysfunction
- Critical hyperthermia can cause direct tissue injury and death

**Specific considerations**

- Various medications and illicit drugs can contribute, particularly:
  - Most antihypertensives, TCAs, antiepileptics, antipsychotics, phenothiazines, anticholinergics, laxatives, thyroid agonists, benzos, amphetamines, cocaine, alcohol

**Treatment**

- The NHS has some simple advice for managing people with heat exhaustion:
  - Move the person to a cool place
  - Lie the person down and slightly elevate their legs
  - Encourage plenty of water - sports/rehydration drinks are ok
  - Cool the person’s skin using a spray or sponge with cold water and fan - cold packs around the axillae and neck are also helpful
  - Monitor the person - they should improve within 30 minutes

- Our role, as ever, is to identify those with severe illness or at increased risk
- Heat stroke is a medical emergency - call 999 if any signs or a person fails to improve from heat exhaustion after 30 minutes despite the above interventions