

2-8 Peri-operative hyperthermia v.1

If prolonged or $\geq 39^{\circ}\text{C}$ this is a clinical emergency: permanent organ dysfunction and death can result.

Treatment depends on the aetiology. Distinguish early between:

- Excessive heating (most common)
- Inadequate dissipation of metabolic heat
- Excessive heat production
- Actively maintained fever

START

- 1 Call for help. Inform theatre team of problem. Measure and record core temperature.
- 2 Remove cause of hyperthermia including any insulation and heating devices.
- 3 Make an initial diagnosis of the cause as this affects further management (Box A):
 - Actively maintained fever (typically cold peripheries, vasoconstricted) OR
 - Non-febrile hyperthermia (typically warm peripheries, vasodilated)
 - Suspect malignant hyperthermia crisis or neuroleptic malignant syndrome? (\rightarrow 3-8)
- 4 Start active cooling WITH CAUTION if core temp $\geq 39^{\circ}\text{C}$ (stop once below):
 - Reduce the operating room ambient temperature.
 - Cooling jackets or blankets.
 - Ice packing in groin, axillae and anterior neck.
 - Bladder, gastric or peritoneal lavage with boluses 10 ml.kg^{-1} iced water.
- 5 Give benzodiazepines to treat shivering and consider tracheal intubation and muscle paralysis if core temperature $\geq 40^{\circ}\text{C}$
- 6 If fever, give antipyretics such as paracetamol and treat underlying cause if known.
- 7 Give chlorpromazine if serotonin syndrome is suspected (Box B)
- 8 Monitor and manage life-threatening complications especially:
 - Hyperkalaemia, hypoglycaemia, acidosis
 - Hypotension (\rightarrow 2-4), malignant hypertension
 - Altered conscious level, convulsions
 - Coagulopathy and disseminated intravascular coagulation

Box A: CAUSES OF HYPERTHERMIA

COMMON

- Excessive insulation, high ambient temperature, external warming devices, especially infants and children (most common)
- Surgical devices, e.g. HIFU, diathermy, radiotherapy
- Prolonged epidural anaesthesia
- Sepsis (\rightarrow 3-14) e.g. during manipulation of a urological device
- Blood transfusion
- Allergic reaction / anaphylaxis (\rightarrow 3-1)

Drug induced:

- Neuroleptic malignant syndrome (e.g. haloperidol and other antipsychotics)
- Malignant hyperthermia crisis (late sign) (\rightarrow 3-8)
- Serotonin syndrome (cocaine, amphetamine, phencyclidine, MDMA)
- Anticholinergic syndrome (tricyclic antidepressants, antipsychotics, antihistamines)
- Sympathomimetic syndrome (cocaine, MDMA, amphetamines)

Toxic:

- Radiologic contrast neurotoxicity
- Alcohol withdrawal

Endocrine:

- Thyrotoxicosis
- Pheochromocytoma

Neurologic:

- Meningitis
- Intracranial blood
- Hypoxic encephalopathy
- Traumatic brain injury

Box B: CHLORPROMAZINE DOSE

Chlorpromazine (Largactil) 25-50 mg **i.m.** 6-8 hourly. Caution in elderly.

The Association Of Anaesthetists of Great Britain & Ireland 2018. www.aagbi.org/grh Subject to Creative Commons license CC BY-NC-SA 4.0. You may distribute original version or adapt for yourself and distribute with acknowledgement of source. You may not use for commercial purposes. Visit website for details. The guidelines in this handbook are not intended to be standards of medical care.

The ultimate judgement with regard to a particular clinical procedure or treatment plan must be made by the clinician in the light of the clinical data presented and the diagnostic and treatment options available.