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| 2-8 Peri-operative hyperthermia v.1 |
| If prolonged or ≥ 39oC 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
 |

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| **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 **(→ 3-14)** e.g. during manipulation of a urological device
* Blood transfusion
* Allergic reaction / anaphylaxis **(→ 3-1)**

**Drug induced:*** Neuroleptic malignant syndrome (e.g. haloperidol and other antipsychotics)
* Malignant hyperthermia crisis (late sign) **(→ 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
* Phaeochromocytoma

**Neurologic:*** Meningitis
* Intracranial blood
* Hypoxic encephalopathy
* Traumatic brain injury
 |

 START.

❶ Call for help. Inform theatre team of problem. Measure and record core temperature.

❷ Remove cause of hyperthermia including any insulation and heating devices.

❸ 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? (**→ 3-8**)

❹ Start active cooling WITH CAUTION if core temp ≥ 39oC (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.

❺ Give benzodiazepines to treat shivering and consider tracheal intubation and muscle paralysis if core temperature ≥ 40oC

❻ If fever, give antipyretics such as paracetamol and treat underlying cause if known.

❼ Give chlorpromazine if serotonin syndrome is suspected (Box B)

❽ Monitor and manage life-threatening complications especially:

* Hyperkalaemia, hypoglycaemia, acidosis
* Hypotension **(→ 2-4)**, malignant hypertension
* Altered conscious level, convulsions
* Coagulopathy and disseminated intravascular coagulation

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| **Box B: CHLORPROMAZINE DOSE** |
| Chlorpromazine (Largactil) 25-50 mg **i.m.** 6-8 hourly. Caution in elderly. |

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2-8

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