Q18 Outline the consequences of mild hypothermia in a patient following major surgery (Sept 2010)

Temperature – average kinetic energy of the atoms/molecules that make up a substance
Thermoregulatory responses maintain ideal human body temperature between 36-38 degrees
Mild hypothermia – core temperature 34-36 degrees

Physiological consequences of mild hypothermia

- CVS – peripheral vasoconstriction and tachycardia due to sympathetic response to cold, resulting in increased cardiac output and MAP. Increase in cardiac work may lead to myocardial ischaemia in patients with pre existing coronary lesions.
- METABOLIC – Increase in metabolic rate due to involuntary shivering; lactic acidosis due to shivering and impaired tissue perfusion
- RESP – initial tachypnoea followed by reduction in minute volume and hypoxic pulmonary vasoconstriction (may result in hypoxia)
- HAEMATOLOGICAL – impairment of platelet number and function due to sequestration in spleen/liver; impairment of coagulation due to effects of hypothermia on enzymes required for clotting cascade
- CNS – confusion, slow wakening from anaesthesia
- RENAL – cold diuresis due to impairment of solute resorption in LOH; may cause hypovolemic hypotension

Pharmacological consequences of mild hypothermia

- Prolonged onset and offset of action of NDMR
- Prolonged duration of propofol action (? Due to decreased intercompartmental clearance)
- Increase in tissue solubility of volatile agents

Other consequences of mild hypothermia

- Patient discomfort due to 'thermal comfort' not being met
- Impaired wound healing due to decreased tissue perfusion and direct effect of hypothermia on immune function