Focus

Inadvertent perioperative hypothermia is a common complication of perioperative procedures and is defined as a core body temperature below 36°C.¹ Hypothermia may be classified into three categories:

• Mild hypothermia (34-36°C)
• Moderate hypothermia (30-34°C)
• Severe hypothermia (≤30°C).

Hypothermia can develop at any stage during the surgical pathway: pre-operatively, intra-operatively or post-operatively. The incidence is known to occur in 60-90% of all surgical patients and results when the body’s ability to maintain normothermia is diminished by absence of protective reflexes such as shivering and pilo-erection due to anaesthesia and loss of heat during surgery.²³

Common risk factors are a cold theatre, wearing a theatre gown, exposure to cool temperatures on transfer to theatre, the use of cool skin preparation fluids, administering unwarmed intravenous fluids or blood products, exposure of body cavities to room temperature and the effects of general anaesthesia.

Pre-medications such as muscle relaxants also predispose a patient to hypothermia by preventing the body from shivering to maintain a regular temperature. Other intrinsic factors may further increase a patient’s susceptibility to hypothermia: age, hypothyroidism, paralysis, cachexia, hypoglycaemia, cardiac disorders, peripheral vascular disease and poor nutritional status.⁴

Complications associated with perioperative hypothermia include risk of surgical site infections, delayed wound healing with wound infection occurring in 40% of hypothermic cases, and associated increase in length of hospital stay and related healthcare costs.

In addition, hypothermia has been found to increase blood loss by 4-6% and slows down the clearance of anaesthetic drugs from the body due to reduced hepatic blood flow. More severe cases have been linked to an increase in morbidity and mortality rates.⁵⁶

Prevention of hypothermia

Nurses need to be cognisant of the risks associated with each phase of the patient’s perioperative journey. The pre-operative phase commences one hour before the administration of anaesthesia. During this stage it is important to assess for any factors relating to hypothermia such as a temperature below 36°C, the type of anaesthesia being used and the duration of the surgery.

Once anaesthesia has been given, the intra-operative phase commences and includes the total time from delivery of the anaesthetic agent to transfer to the recovery area. The nurse must control many environmental factors that may contribute to the development of hypothermia including the temperature of the operating theatre, IV fluids and skin preparations.

The ideal temperature for the operating theatre is a minimum of 21°C. The patient’s temperature needs to be recorded before anaesthesia is delivered and every 30 minutes thereafter until surgery ends. The completion of an incident report form for any patient who arrives in theatre with a core body temperature under 36°C is advisable.

Before surgery, the surgical site must be prepared with a skin preparation fluid. This solution, along with any irrigation fluids, should be warmed in a warming cabinet and maintained at a temperature of 38-40°C. Intravenous fluids or blood
products greater than 500ml should be administered through a thermostatically controlled warming device to 37°C.

Anaesthetic gases should be humidified and warmed to reduce hourly heat loss by 10-15%. The use of a forced air warming device, such as a Bair-Hugger, assists in maintaining normothermia. Until recent years, these devices were only used intra-operatively.

Now, there is a range of evidence suggesting that warming patients in the pre-operative phase is also effective in the prevention of inadvertent hypothermia and reduces the risk of post-operative complications.¹

The National Institute of Clinical Excellence (NICE) guidelines recommend that a patient be pre-warmed only if their temperature reads below 36°C. All patients undergoing a procedure longer than 30 minutes must be warmed using a forced air device, set at maximum temperature until the patient maintains a core temperature of at least 36.5°C.

Patients often highlight that the feeling of being cold was worse than the actual surgery. The use of warming devices throughout the perioperative period can help reduce a patient’s feelings of anxiety and promote comfort. Intra-operative warming also minimises the length of time spent in the recovery area as hypothermia slows the metabolism of anaesthetic drugs such as propofol.⁷

The final perioperative phase lasts for 24 hours after the patient has entered the recovery area. In the recovery area the patient’s temperature should be monitored every 15 minutes and they should only be discharged to the ward when their temperature is above 36°C. Warm blankets, socks and head covers may also be used to retain heat in addition to a forced air warming device.

On return to the ward, a patient’s temperature, along with the other vital signs must be monitored for four hours. As in the recovery area, active warming should be commenced if the patient’s temperature decreases during this period.

Points to remember:

- It is the responsibility of the nurse to competently assess, intervene and evaluate the care been given to the patient during the perioperative journey.
- The importance of vigilantly monitoring the patient’s temperature throughout is essential to ensure that the patient maintains normothermia, to reduce associated complications and to promote patient comfort and the perioperative experience.

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References: