



*National Institute for
Health and Clinical Excellence*

Quick reference guide

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Inadvertent perioperative hypothermia

The management of inadvertent perioperative hypothermia in adults

About this booklet

This is a quick reference guide that summarises the recommendations NICE has made to the NHS in 'Inadvertent perioperative hypothermia: the management of inadvertent perioperative hypothermia in adults' (NICE clinical guideline 65).

Who should read this booklet?

This quick reference guide is for healthcare professionals and other staff who care for people who are having surgery under general and/or regional anaesthesia.

Patient-centred care

Treatment and care should take into account patients' individual needs and preferences. Good communication is essential, supported by evidence-based information, to allow patients to reach informed decisions about their care. Follow Department of Health advice on seeking consent if needed. If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

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This guidance is written in the following context

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

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Introduction

Inadvertent perioperative hypothermia is a common but preventable complication of perioperative procedures, which is associated with poor outcomes for patients. Prevention of inadvertent perioperative hypothermia requires the use of simple measures to keep patients comfortably warm, alongside more active interventions such as forced air warming and fluid warming in the intraoperative phase. Regular measurement and recording of patient temperature is key to the prompt identification and treatment of inadvertent perioperative hypothermia where preventative measures have failed. Any patient whose core temperature drops below 36.0°C at any stage of the perioperative pathway (from the hour before induction of anaesthesia until 24 hours after entry into the recovery area) should be warmed using a forced air warming device.

Key to terms

Temperature means core temperature when used in relation to patients.

Hypothermia is defined as a patient core temperature of below 36.0°C.

'Comfortably warm' refers to the expected normal core temperature range of adult patients (between 36.5°C and 37.5°C).

Preoperative phase is defined as the 1 hour before induction of anaesthesia (when the patient is prepared for surgery on the ward or in the emergency department).

Intraoperative phase is defined as total anaesthesia time.

Postoperative phase is defined as the 24 hours after entry into the recovery area in the theatre suite (which will include transfer to and time spent on the ward).

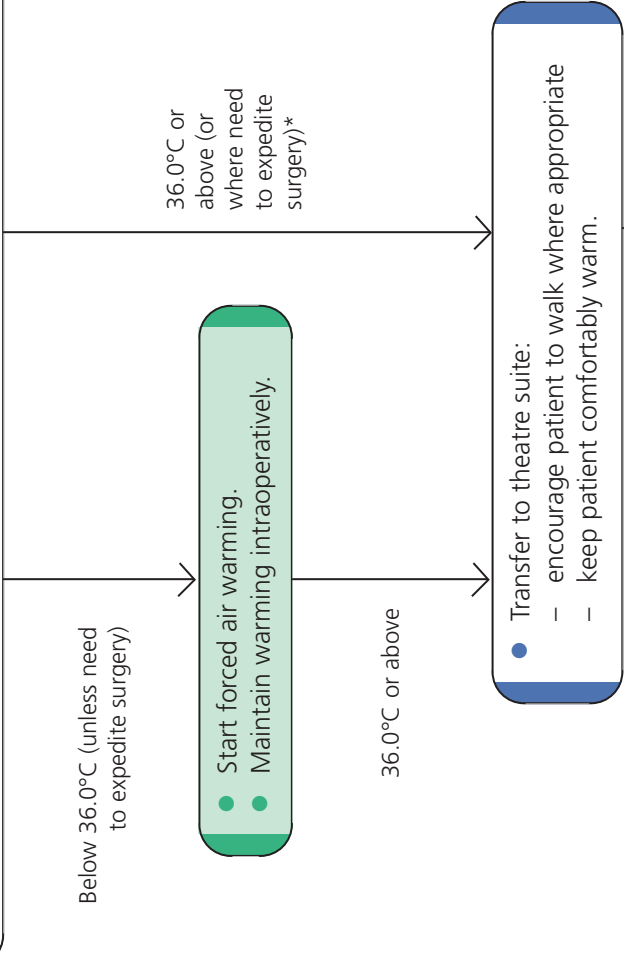
Management of perioperative hypothermia in adults

Information

- Inform patients (and families and carers) that:
 - staying warm before surgery will lower their risk of postoperative complications
 - the hospital may be colder than their home
 - they should bring extra clothing to help them keep comfortably warm
 - they should tell staff if they feel cold at any time.

Preoperative care

- Assess risk of perioperative hypothermia and its consequences (see box A).
- Keep patient comfortably warm (36.5–37.5°C):
 - provide at least one sheet and two blankets, or a duvet
 - take special care if the patient is given premedication (for example, nefopam, tramadol, midazolam or opioids).
- At all times, use temperature recording and warming devices correctly (see box B).
- Measure and document patient temperature in hour before transfer to theatre.

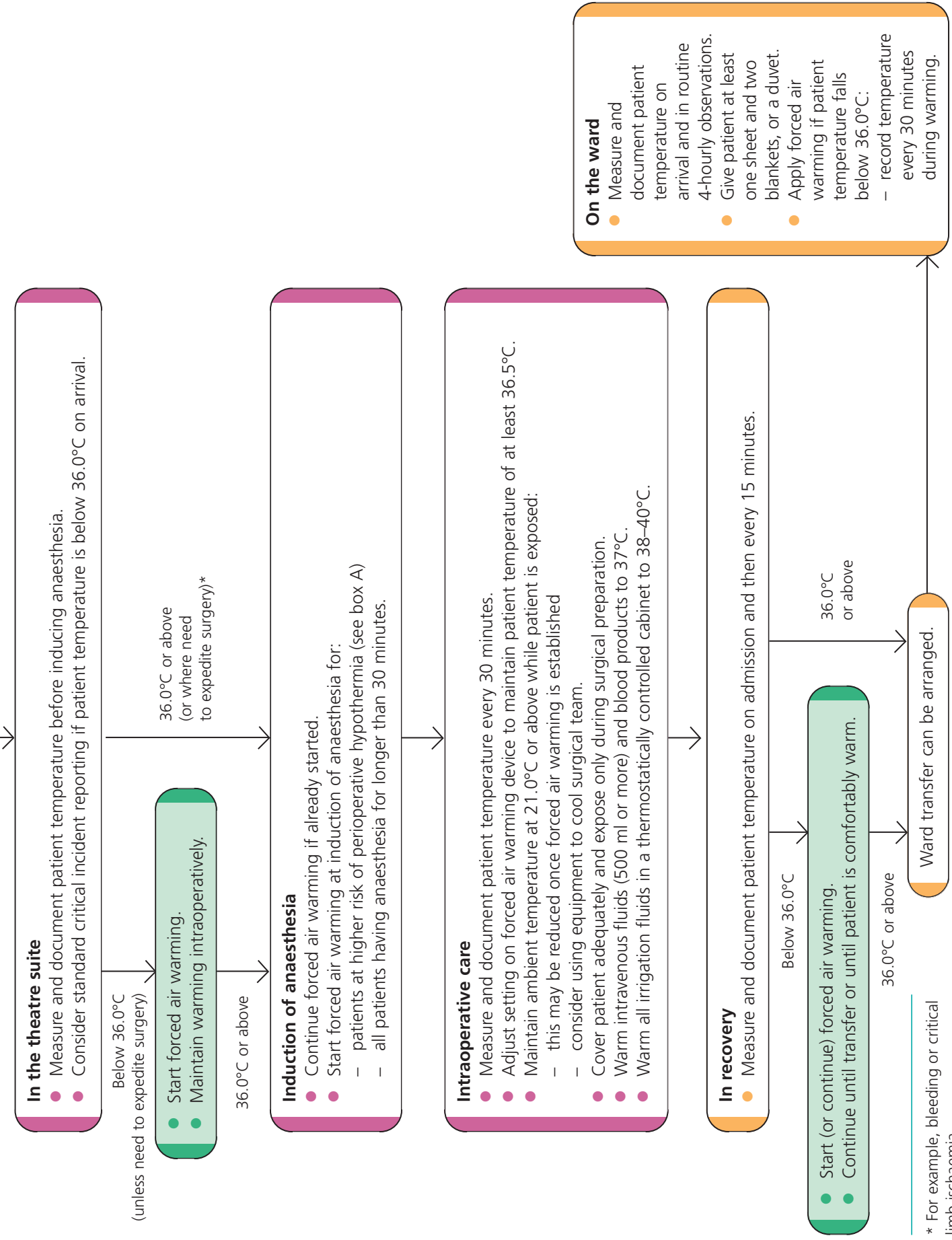


Box A: risk assessment

- Manage patient as higher risk if any two of the following apply:
 - ASA grade II–V
 - preoperative temperature below 36.0°C
 - combined general and regional anaesthesia
 - major or intermediate surgery
 - at risk of cardiovascular complications.

Box B: equipment

- When using any temperature recording or warming device, healthcare professionals should:
 - be trained in their use, and maintain them in accordance with instructions
 - comply with local infection control policies.
- When using any device to measure patient temperature, healthcare professionals should:
 - be aware of, and carry out, adjustments needed to estimate core temperature from recorded temperature
 - be aware of adjustments made automatically by the device.



* For example, bleeding or critical limb ischaemia.

Key priorities for implementation

Perioperative care

- Patients (and their families and carers) should be informed that:
 - staying warm before surgery will lower the risk of postoperative complications
 - the hospital environment may be colder than their own home
 - they should bring additional clothing, such as a dressing gown, a vest, warm clothing and slippers, to help them keep comfortably warm
 - they should tell staff if they feel cold at any time during their hospital stay.
- When using any device to measure patient temperature, healthcare professionals should:
 - be aware of, and carry out, any adjustments that need to be made in order to obtain an estimate of core temperature from that recorded at the site of measurement
 - be aware of any such adjustments that are made automatically by the device used.

Preoperative phase

- Each patient should be assessed for their risk of inadvertent perioperative hypothermia and potential adverse consequences before transfer to the theatre suite. Patients should be managed as higher risk if any two of the following apply:
 - ASA grade II to V (the higher the grade, the greater the risk)¹
 - preoperative temperature below 36.0°C (and preoperative warming is not possible because of clinical urgency)
 - undergoing combined general and regional anaesthesia
 - undergoing major or intermediate surgery
 - at risk of cardiovascular complications.
- If the patient's temperature is below 36.0°C:
 - forced air warming should be started preoperatively on the ward or in the emergency department (unless there is a need to expedite surgery because of clinical urgency, for example bleeding or critical limb ischaemia)
 - forced air warming should be maintained throughout the intraoperative phase.

Intraoperative phase

- The patient's temperature should be measured and documented before induction of anaesthesia and then every 30 minutes until the end of surgery.
- Induction of anaesthesia should not begin unless the patient's temperature is 36.0°C or above (unless there is a need to expedite surgery because of clinical urgency, for example bleeding or critical limb ischaemia).

¹ ASA = American Society of Anesthesiologists.

- Intravenous fluids (500 ml or more) and blood products should be warmed to 37°C using a fluid warming device.
- Patients who are at higher risk of inadvertent perioperative hypothermia and who are having anaesthesia for less than 30 minutes should be warmed intraoperatively from induction of anaesthesia using a forced air warming device.
- All patients who are having anaesthesia for longer than 30 minutes should be warmed intraoperatively from induction of anaesthesia using a forced air warming device.

Postoperative phase

- The patient's temperature should be measured and documented on admission to the recovery room and then at 15-minute intervals.
 - Ward transfer should not be arranged unless the patient's temperature is 36.0°C or above.
 - If the patient's temperature is below 36.0°C, they should be actively warmed using forced air warming until they are discharged from the recovery room or until they are comfortably warm.

Implementation tools

NICE has developed tools to help organisations implement this guidance (listed below).

These are available on our website (www.nice.org.uk/CG065).

- Slides highlighting key messages for local discussion.
- Implementation advice on how to put the guidance into practice and national initiatives that support this locally.
- Costing tools:
 - costing report to estimate the national savings and costs associated with implementation
 - costing template to estimate the local costs and savings involved.
- Audit support for monitoring local practice.

Further information

Ordering information

You can download the following documents from www.nice.org.uk/CG065

- A quick reference guide (this document) – a summary of the recommendations for healthcare professionals.
- The NICE guideline – all the recommendations.
- ‘Understanding NICE guidance’ – information for patients and carers.

- The full guideline – all the recommendations, details of how they were developed, and reviews of the evidence they were based on.

For printed copies of the quick reference guide or ‘Understanding NICE guidance’, phone NICE publications on 0845 003 7783 or email publications@nice.org.uk and quote:

- N1557 (quick reference guide)
- N1558 (‘Understanding NICE guidance’).

Related NICE guidance

For information about NICE guidance that has been issued or is in development, see the website (www.nice.org.uk).

Published

Preoperative tests: the use of routine preoperative tests for elective surgery. NICE clinical guideline 3 (2003). Available from: www.nice.org.uk/CG003

Updating the guideline

This guideline will be updated as needed, and information about the progress of any update will be posted on the NICE website (www.nice.org.uk/CG065).

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