Over 70% of surgical patients experience postoperative hypothermia every year.¹
Effects of Anaesthesia on patient temperature

Research shows that patients undergoing general or regional anaesthesia are unable to regulate their temperature and can lose approximately 1.6 °C of core body temperature during the first hour of anaesthesia.2,3

The normal core temperature of an adult is somewhere between 36.5 to 37.5°C, which is generally 2-4°C warmer than the periphery.2,4

Thermoregulatory vasoconstriction maintains the temperature gradient between the core and the periphery. Under normal conditions, the core temperature remains unaffected by lower peripheral temperatures.2,4

Anaesthesia causes vasodilation, which allows the warmer blood to flow freely from the core and mix with the blood from the cooler periphery. As the blood circulates, it cools until returning back to the heart where it causes a drop in core temperature. This drop in temperature is called redistribution temperature drop or RTD.2

Prewarming with the 3M™ Bair Paws™ System can increase the temperature of peripheral tissues, limiting the amount of heat lost from the core through redistribution temperature drop (RTD).5 Following induction of anaesthesia, vasodilation again increases blood flow, but the warmer periphery limits the blood’s rate of cooling and allows the blood to return to the core at a higher temperature.
Over 70% of surgical patients experience postoperative hypothermia every year.¹

Unintended hypothermia is easily preventable. Studies show that warming patients to maintain a core temperature of 36.0°C or higher helps improve outcomes by reducing the frequency of complications often associated with inadvertent perioperative hypothermia.¹,²,⁶,⁷,⁸,⁹

**Prevention is the best approach**

- Unintended perioperative hypothermia is easier to prevent than treat, and prevention is most effective when the warming begins preoperatively.¹⁰
- The consequences associated with unintended hypothermia include increased rate of wound infection,² increased length of hospital stay⁴ and higher mortality rates.⁷
- Prewarming with the 3M™ Bair Paws™ System can reduce core temperature drop by decreasing the core-to-periphery temperature gradient.⁵

**Warmth for more patients**

When patients arrive in the operating theatre wearing the 3M™ Bair Paws™ + Warming Gown, the surgical team has immediate access to a convenient patient warming solution.

The Bair Paws system offers comfort and select clinical warming options before, during and after surgery, all in one remarkably convenient product.

Only the Bair Paws system offers active, adjustable warming capabilities in a patient gown, allowing patients the ability to vary the temperature of the air flowing through the gown to a level that’s just right for them.

Patients undergoing shorter procedures may not always receive intraoperative warming, however with the Bair Paws + gown, these patients can be warmed preoperatively helping to reduce the risk of hypothermia and contributing to improved patient outcomes.
A Warm Patient = A Happy Patient

The 3MTM Bair PawsTM System uses forced-air warming to make patients feel cosy and comfortable, and research shows that forced-air warming can reduce surgical patient anxiety.13 Bair Paws + gowns also fully cover your patients, offering modesty at a time when many feel vulnerable.

Patient comfort
Of all the feelings a patient experiences, being cold before and after surgery is the one many remember most.11 With the current focus and increasing interest on patient satisfaction, why leave a chilly impression?

A 2003 study on comfort in the perianaesthesia setting ranked temperature management at the top of patient concerns and found warmth to be the most cited patient comfort complaint.12

The 3M™ Bair Paws™ Warming Gown is designed with patient comfort in mind. Each single-use Bair Paws + gown is thick, soft and generously sized, satisfying patient concerns over modesty.

A Warm Patient = A Happy Patient
The 3M™ Bair Paws™ System uses forced-air warming to make patients feel cosy and comfortable, and research shows that forced-air warming can reduce surgical patient anxiety.13 Bair Paws + gowns also fully cover your patients, offering modesty at a time when many feel vulnerable.
Clinical Warming

Prewarming patients for as little as 10 to 20 minutes prior to general anaesthesia adds to the total heat content of your patient’s body, helping to prevent perioperative hypothermia and reduce postoperative shivering.¹⁴

With its added clinical capabilities, the 3M™ Bair Paws™ System makes continuous warming easy, offering prewarming capabilities before surgery and use for comfort warming in both preoperative and postoperative settings. In addition, the gown is fully compatible with 3M™ Bair Hugger™ Temperature Management Unit for the clinical needs of the operating theatre and PACU/recovery.

Characteristic Patterns of General Anaesthesia Induced Hypothermia

Hypothermia can develop rapidly in the hour immediately following the induction of anaesthesia.

Relative Effectiveness

The Effects of Warming Methods on Mean Body Temperature

Studies have suggested that maintaining normothermia in some general type surgeries may yield improved outcomes such as:⁷⁻⁹

- Reduction in the rate of postoperative wound infections
- Decreased likelihood of postoperative myocardial infarction
- Decreased time in the Intensive Care Unit
- Shortened length of hospital stay
- Lowered mortality rates
- Reduction in the use of blood products
- Decreased likelihood of mechanical ventilation
- Reduced probability of needing a transfusion


The 3M™ Bair Paws™ System is revolutionising forced-air warming by providing clinicians options for comfort and clinical warming throughout the perioperative process in one convenient gown. When connected to a 3M™ Bair Paws™ Warming Unit, the Bair Paws + Gown can be used to prewarm patients awaiting surgery. In the operating theatre, the same gown offers clinical warming for select surgical procedures when connected to a Bair Hugger warming unit. The gown can then be used to continue warming in the PACU/recovery unit.

Versatile Warming Options

In the PACU/recovery setting, the Bair Paws system can provide a versatile warming solution to meet your patient’s needs.

For patient warming

Shivering or feeling cold after surgery is a common patient complaint.1 To provide warming, simply attach the Bair Paws warming unit to the Bair Paws + gown’s lower hose port. By providing patients with the system’s hand-held controller, they can adjust the temperature of the air flowing through the gown to a comfortable level. Patients are now in control of their own comfort.

For clinical warmings

For the hypothermic patient, clinical warming is immediately available by connecting a 3M™ Bair Hugger™ Temperature Management Unit to the gown’s Bair Hugger hose port.

An ideal solution

• With its perioperative capabilities, the Bair Paws system can meet patient warming needs in many surgical situations.
• The performance of forced-air warming technology is widely accepted as an effective way of preventing and treating inadvertent perioperative hypothermia.2,15,16,17,18
• The negative effects of redistribution temperature drop can be overcome through prewarming. Prewarm your patients with the Bair Paws system and help stop hypothermia before it begins.
How the 
3M™ Bair Paws™ System works

The 3M™ Bair Paws™ Warming Unit provides:
- The ability to prewarm patients and help in the prevention of unintended hypothermia
- Personalised comfort as patients control the unit’s airflow and temperature
- Flexibility to mount the unit to a wall, a bedrail or an IV pole
- Convenient, built-in hose storage
- Small, lightweight design

Bair Paws system recommendations:
- Have the patient put the gown on immediately upon entry to the preoperative area
- Connect the warming unit’s hose to the gown’s lower Bair Paws hose port
- Turn the temperature controller into the red area on the dial
- Explain to the patient the potential therapeutic benefits of prewarming. Ask the patient to keep the dial/temperature in the red area for as long as they can, but that they can control the air temperature to ensure their own comfort, so that they do not get too hot or cold
- Encourage the patient to place their hands in the hand pouch
- If a patient becomes uncomfortable or begins to sweat, adjust the temperature accordingly but remember to make sure air is circulating through the gown at all times

For prewarming, connect the Bair Paws warming unit to the gown’s lower right hose port. For clinical warming, treat the Bair Paws + gown as a gown that has a Bair Hugger blanket inside it. Connect a Bair Hugger warming unit to either the gown’s upper or lower Bair Hugger hose ports.
The National Institute for Clinical Excellence (NICE) identified a clinical need for guidance on managing inadvertent perioperative hypothermia. In April 2008, NICE clinical guideline 65 – “The management of inadvertent peri-operative hypothermia in adults” was published.

**Warmth for more patients**

Patients undergoing shorter procedures may not always receive intraoperative warming. Now, patients who arrive in the operating theatre wearing a 3M™ Bair Paws™ + Gown are ready for immediate warming by just connecting the gown to a 3M™ Bair Hugger™ Warming Unit.

**Who should be warmed?**

**NICE recommendations:**

The risk of inadvertent perioperative hypothermia should be assessed for each patient:

- Prevention of hypothermia for all patients undergoing surgery
- Warm all patients if *anaesthesia* lasts more than 30 minutes
- Warm if patient’s temperature falls below 36°C

**Which patients are at higher risk of inadvertent perioperative hypothermia?**

Manage patients as a higher risk if any two of the following apply:

- ASA grade II to V (the higher the grade, the greater the risk)
- 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

**Why avoid inadvertent perioperative hypothermia?**

Inadvertent perioperative hypothermia is associated with:

- Increased perioperative blood loss
- Longer post-anaesthetic recovery
- Postoperative shivering and thermal discomfort
- Morbid cardiac events including arrhythmia
- Increased risk of wound infection
The 3M™ Bair Paws™ System can help you achieve your patient warming goals before, during and after surgery.

### NICE guideline summary

- Keep patient comfortably warm (36.5-37.5°C)
- Encourage patient to walk where appropriate
- **Below 36.0°C**
  - Start forced-air warming

### The 3M™ Bair Paws™ System

#### perioperative warming options

**Preoperative**
- Comfort warming
- Patients can walk when wearing the 3M™ Bair Paws™ + Gown; it fully covers the patient to protect modesty
- **Clinical prewarming**

**Intraoperative**
- Clinical warming using a 3M™ Bair Hugger™ Warming Unit
- Connect the Bair Paws + gown to a Bair Hugger warming unit
- Maintain warming to at least 36.5°C
- Induction of anaesthesia
  - Continue forced-air warming if already started
  - Start forced-air warming for patients:
    - at higher risk of perioperative hypothermia
    - having anaesthesia for longer than 30 minutes

**Postoperative**
- **In recovery**
  - Clinical warming using a 3M™ Bair Hugger™ Warming Unit
    (connect the Bair Paws + gown to a Bair Hugger warming unit)
  - Comfort warming using a Bair Paws warming unit
- **On the ward**
  - Clinical postwarming using a Bair Hugger warming unit
  - Comfort warming using a Bair Paws warming unit

As little as 10 to 20 minutes of prewarming adds to the total heat content of the body, helping to prevent perioperative hypothermia and reduce postoperative shivering.¹⁴
The 3M™ Bair Paws™ + Gown provides flexible warming options. Two clinical hose ports make clinician access simple – just select the most convenient hose port for upper or lower body warming needs.

**Bair Paws + gown positioning**

Bair Paws + gown on patient with right sleeve fasteners undone and gown folded away from surgical site. Upper 3M™ Bair Hugger™ Therapy Hose Port used.

*Potential procedure: right shoulder*

Bair Paws + gown removed from patient and laid across patient lengthwise. Upper Bair Hugger therapy hose port used.

*Potential procedure: hip*

Bair Paws + gown on patient with lower portion of the gown folded up. Upper Bair Hugger therapy hose port used.

*Potential procedures: knee, lower extremity, feet*

Bair Paws + gown sleeve fasteners undone and gown slid down on the patient. Lower Bair Hugger therapy hose port used.

*Potential procedures: shoulder, breast, neck*
Bair Paws + gown on patient. Lower Bair Hugger therapy hose port used. Potential procedures: eyes, ENT, plastic facial

Bair Paws + gown removed from patient and laid across patient lengthwise. Upper Bair Hugger therapy hose port used. Potential procedures: urology, gynaecology

3M™ Bair Paws™ + Gown sleeve fasteners undone and gown slid down on patient as patient is moved into lateral position. Lower 3M™ Bair Hugger™ Therapy Hose Port used. Potential procedures: thoracotomy, shoulder

Bair Paws + gown sleeve fasteners undone and gown slid down on patient as patient is moved into prone position. Lower Bair Hugger therapy hose port used. Potential procedure: spinal

Bair Paws + gown on patient. Lower Bair Hugger therapy hose port used. Potential procedures: eyes, ENT, plastic facial
3M™ Bair Paws™ Gown Ordering Information

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<th>Product</th>
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For more information about the 3M™ Bair Paws™ System please visit www.bairpaws.co.uk

3M Academy of E-Learning

Online courses are available to health care professionals who would like to learn more about patient warming.

Log in and register at www.3m.co.uk/elearning.

References: