

# NORMOTHERMIA: THE NEW NORM



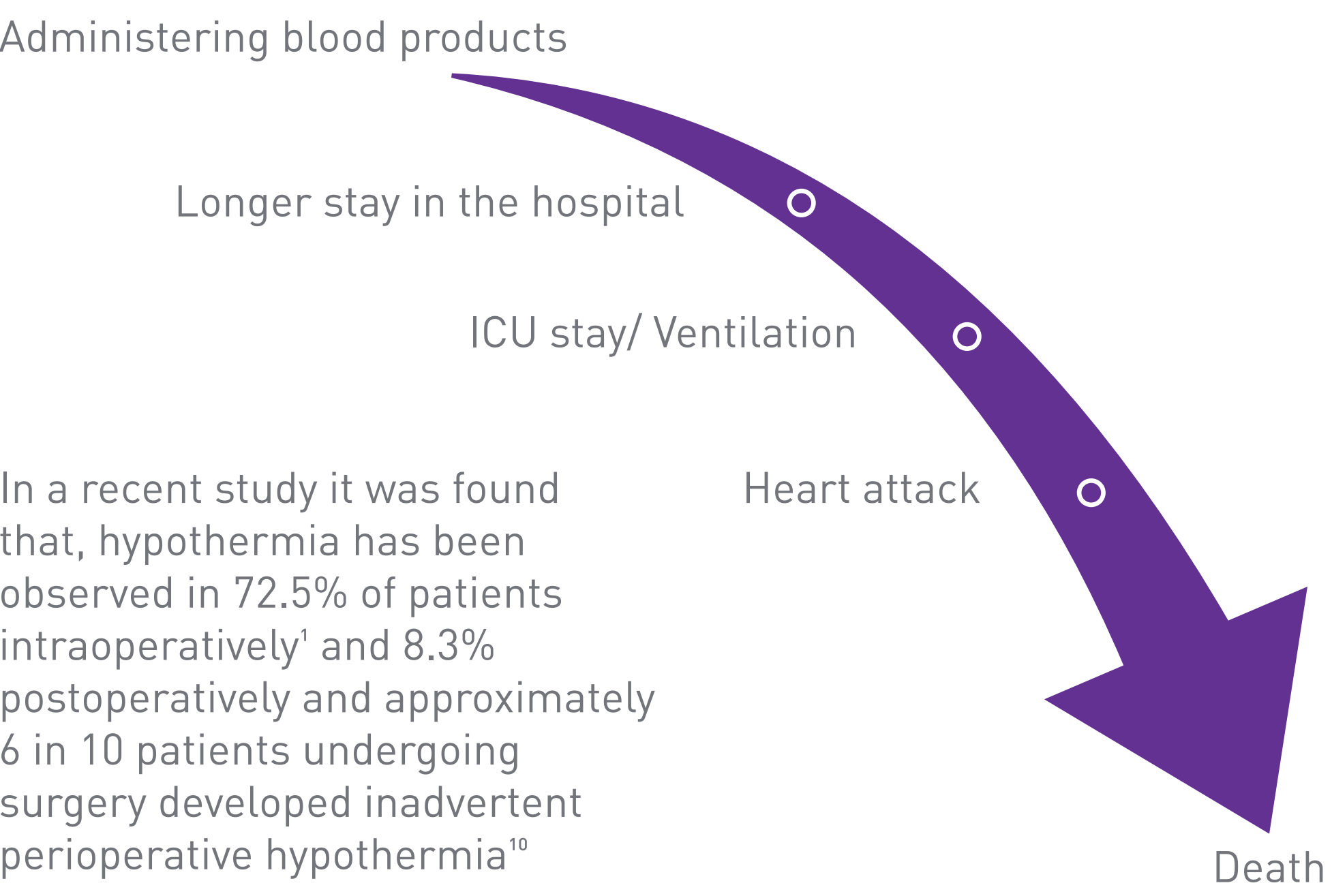
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## BACKGROUND

While preventing surgical related hypothermia is an ongoing struggle for the perioperative team, maintaining normothermia may reduce the hypothermic events associated with surgery. A consistent normothermic state ensures that the patient doesn't suffer the poor outcomes attributed to hypothermia. This evidence-based poster presentation will provide key incites and solutions to maintaining normothermia in the surgical patient population.

### POOR OUTCOMES RELATED TO HYPOTHERMIA



In a recent study it was found that, hypothermia has been observed in 72.5% of patients intraoperatively<sup>1</sup> and 8.3% postoperatively and approximately 6 in 10 patients undergoing surgery developed inadvertent perioperative hypothermia<sup>10</sup>

### MAINTAINING NORMOTHERMIA

All perioperative patients are at risk for developing hypothermia.  
  
Maintaining normothermia by preventing hypothermia is supported by clinical practice guidelines<sup>2</sup>  
  
Implement methods for preventing or treating hypothermia for all patients during all phases of perioperative care<sup>3</sup>.

### WARMING TYPES

ACTIVE WARMING			PASSIVE WARMING
Forced Air Warming 	Water 	Conductive 	Cotton Blankets or Reflective Blankets ("Space Blankets") 
Blow warm air over patient.	Circulate warm water into pad.	Uses electricity to activate a resistive heater that provides warmth primarily through direct contact. Under and Over body pads and blankets.	Use blanket to capture patient heat. Can be warmed in cabinets. Goal is to reduce heat loss.

### ACTIVE VS PASSIVE WARMING

#### Active Warming Methods

Active warming is aimed at transferring heat to a patient and includes:

- Forced air warming
- Warm irrigation and IV fluids
- Conductive under body and over body warming
- Circulating water mattresses

#### Passive Warming Methods

Passive warming is aimed at reducing heat loss and includes:

- Cotton blankets
- Heated drapes
- Space blankets
- Increasing operating room temperature
- Limited body exposure

High-quality evidence supports the use of active warming for prevention of unplanned hypothermia<sup>4</sup>.



### ASSESS THE PATIENT FOR EXTRINSIC (MODIFIABLE) AND INTRINSIC (NON-MODIFIABLE) RISK FACTORS THAT MAY CONTRIBUTE TO HYPOTHERMIA.

#### Patient-specific intrinsic risk factors<sup>2</sup>:

- Age (eg, prematurity and other low-birth-weight infants, older than 65 years)
- Sex (ie, female, male)
- Low body-surface area or weight
- Congestive heart failure
- Cardiac vessel disease
- Previous cardiac surgery
- Preexisting medical conditions (eg, hypothyroidism, hypoglycemia; malnourishment, burns, trauma, infantile neuronal ceroid lipofuscinosis, neurologic disorders)
- Hypotension
- History of organ transplantation

#### Extrinsic (outside) risk factors<sup>2</sup>

- Type and duration of the surgical procedure
- Type and duration of the planned anesthesia
- Patient positioning
- Use of a pneumatic tourniquet
- Use of an intermittent pneumatic compression
- Warming equipment constraints (eg, access to the surgical site, skin surface area contact, device size)<sup>5</sup>

Surface temperature measurement may not reflect the true temperature of the patient, where as a Core temperature measurement will reflect the true patient temperature measurement.

### HYPOTHERMIC RISK MITIGATION IN ALL THREE PHASES OF CARE

#### Preoperative phase

- Record baseline temperature
- Pre warm the patient up to 30 min before surgery<sup>7</sup>
- Use warmed IV fluids<sup>8</sup>
- Communicate hypothermia risk to the operating room nurse

#### Intraoperative phase

- Maintain pre warming by immediately warming the patient upon table transfer
- Use warming technology that is evenly distributed and covers the most available surface area under the body and on top of the body<sup>9</sup>
- Use warm irrigation fluids<sup>9</sup>
- Keep ambient operating room temperature between 68- and 72-degrees F<sup>9</sup>
- Monitor temperature
- Communicate temperature management techniques and patient risk to the post operative nurse

#### Postoperative phase

- After general and regional anesthesia, shivering occurs in 10 to 60% of patients postoperatively
- Measure core temperature
- Use active warming techniques
- Actively warm until reaching normothermia<sup>8</sup>
- Conductive under body and over body warming

### EVIDENCE ON SAFE WARMING TECH

#### Forced air warming devices

- Linked to increase particle count airflow contamination in the operating room that may contaminate the sterile field<sup>6,14</sup>
- Warming is delayed until after the patient is draped
- Cause of instrument/suction/cautery pencil falling off the sterile field
- Contributes to the noise pollution and communication barriers in the operating room
- Easy to forget to turn on and or apply the disposable blanket
- Warming effectiveness limited by surgical procedures
- Disposable blankets are costly and increase land fill waste

#### Conductive warming devices

- Double body surface heat transfer capabilities (under body/ above body)
- No risk of airflow contamination
- Immediate patient warming 2.3 times more efficient<sup>7</sup>
- Conductive Fabric Warming (CFW) relies on conductive heat transfer
- Decrease noise pollution in the OR

The use of forced-air warming is common practice, however, there may be more risk than reward to using these devices.<sup>9</sup>

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