



3M™ Bair Hugger™ Normothermia System

Designed  
to be different.

# Control what matters the most.

Hypothermia can develop in the hour immediately following the induction of anaesthesia.<sup>1</sup>

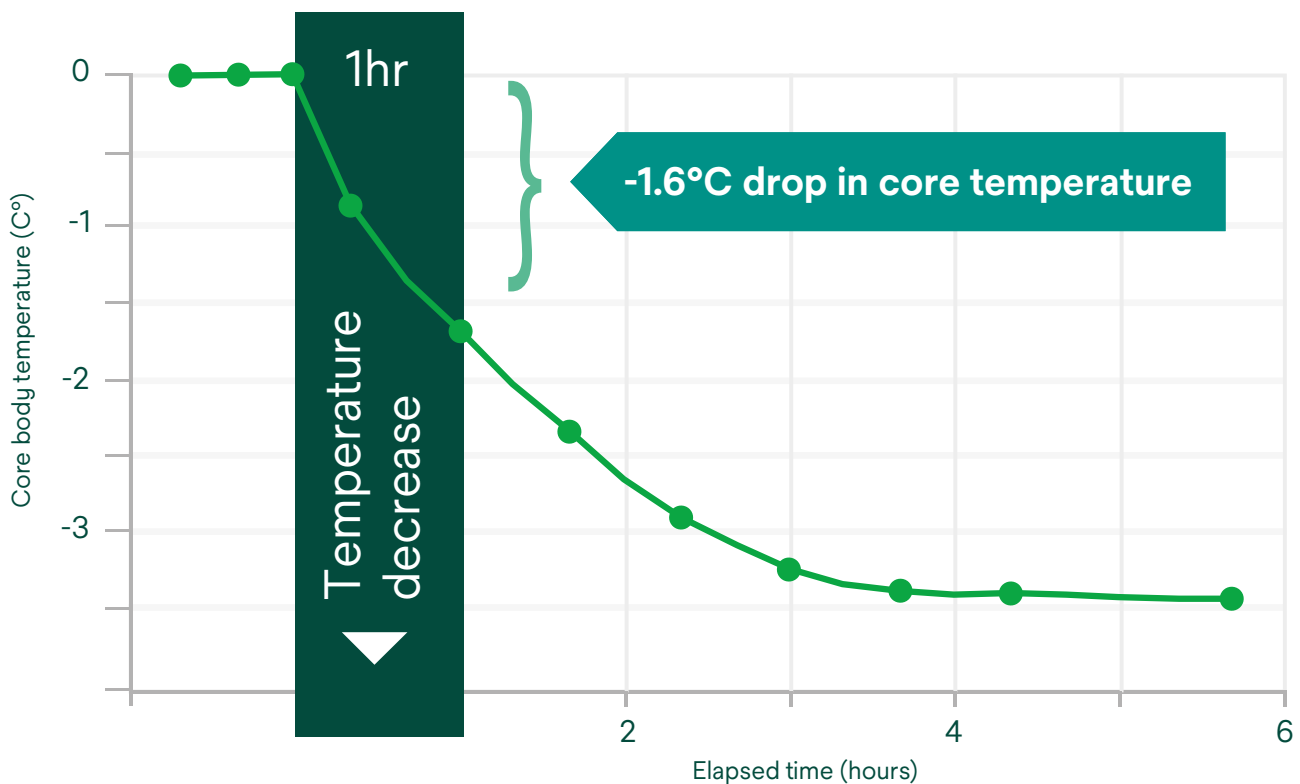


Chart adapted from: Sessler, DI., Perioperative Heat Balance. *Anesthesiology* 2000;92(2):578-96.

# 81%

of hypothermia in the first hour is due to temperature redistribution.<sup>2</sup>

# Solventum is setting the standard in patient warming.

3M™ Bair Hugger™ Temperature Management Solutions provide an easy-to-use, clinically supported method of measuring, monitoring and maintaining your patients' core temperature.



170+

studies and more than 60 randomised controlled clinical trials.<sup>3,5</sup>



35+

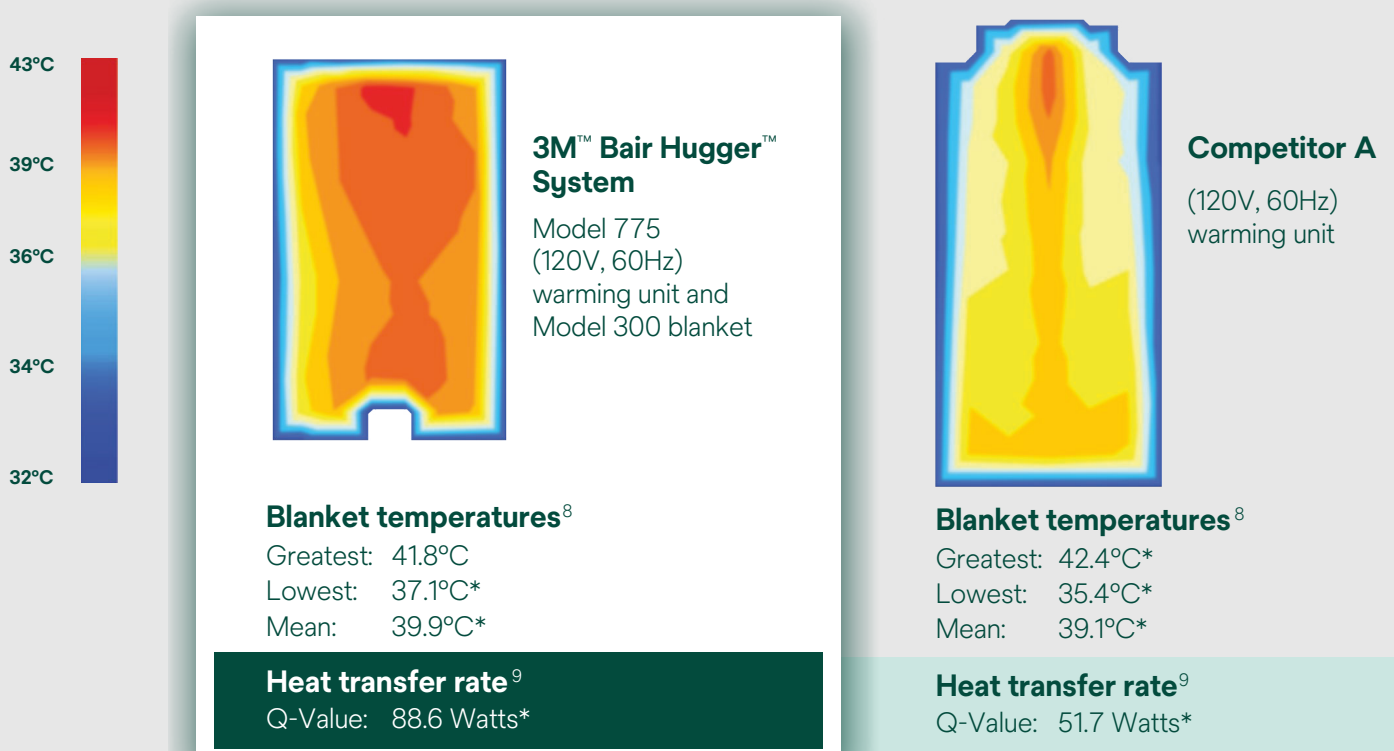
years helping to protect patients from unintended hypothermia.<sup>3</sup>



400M+

patients effectively warmed globally with 3M™ Bair Hugger™ Warming System.<sup>10</sup>

## The science behind blankets – heat transfer rate.

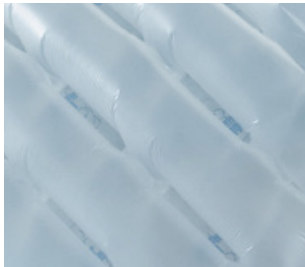


\*Denotes a statistically significant difference represented by a p (probability) value below 0.05.

# Designed to be different.

Effectiveness of forced-air warming systems depends on blanket design, particularly the evenness of heat distribution through the blanket.<sup>6,7</sup>

Moving air loses heat very quickly. Air has a low specific heat capacity; therefore, it is important to channel it efficiently throughout the blanket to provide a uniform distribution of heat.



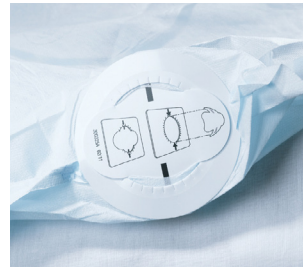
### Interconnected air channel system

Interconnected air channels run the length of the blanket providing even distribution of warm air throughout the blanket.



### Air hole perforation

A symmetrical pattern of small holes extends across the entire surface of the blankets. Maximising heat transfer to a greater body surface area.



### Pre-sealed hose port

Two re-sealable hose ports enable versatile and convenient positioning of the warming unit.



### Fluid outlets

Unique fluid outlets minimise pooling of fluids on the surface of the blanket and cooling effect of excess fluids.



### Competitor B

(120V, 60Hz) warming unit

### Blanket temperatures<sup>8</sup>

Greatest: 44.3°C  
Lowest: 38.2°C\*  
Mean: 40.9°C\*

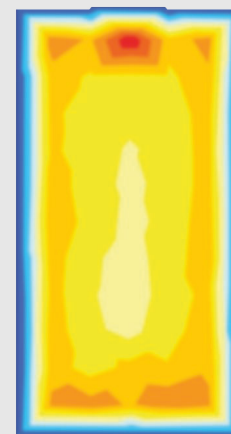


### Competitor C

(120V, 60Hz) warming unit

### Blanket temperatures<sup>8</sup>

Greatest: 42.3°C  
Lowest: 36.1°C\*  
Mean: 39.7°C\*



### Competitor D

(120V, 60Hz) warming unit

### Blanket temperatures<sup>8</sup>

Greatest: 41.8°C  
Lowest: 36.4°C\*  
Mean: 38.1°C\*

### Heat transfer rate<sup>9</sup>

Q-Value: 60.1 Watts\*

### Heat transfer rate<sup>9</sup>

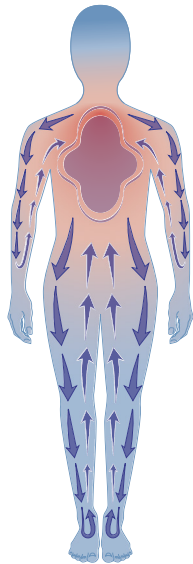
Q-Value: 57.0 Watts\*

### Heat transfer rate<sup>9</sup>

Q-Value: 39.9 Watts\*

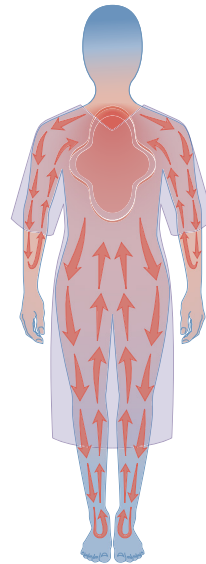
\*Images reflect the temperature of the portion of the blanket that transfers heat when inflated (tested per IEC 60601-2-35:2020), without showing additional brand identifying features. Competitive (full/lower/upper) body blanket used in conjunction with a full sized blower (120V/60hz) on its highest temperature and fan speed settings. \*\*Temperature measurements were taken in accordance with IEC 60601-2-35:2020, heat transfer coefficients were measured using the method of Brauer *et al.*<sup>16-18</sup> and skin temperatures for the calculation of 'Q' were assumed to be 34°C.<sup>20</sup> Heat rates are estimates based upon a typical use case, actual heat rate may vary depending on the patient circumstances and clinical practice.

Pre-warming prior to the induction of anaesthesia helps to maintain normothermia and mitigate the effects of heat redistribution.<sup>11</sup>



**Induction of anaesthesia**

Vasodilation allows warmer blood from the core to cool as it flows through the periphery which lowers the body temperature.



**Pre-warmed patient**

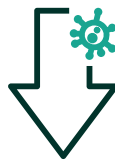
Pre-warming before surgery increases the peripheral temperature, so the blood's rate of cooling is reduced.

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The physiological effects of hypothermia, ranging from mild to severe, can have a significant impact on patient outcomes.<sup>1,4</sup>



Myocardial events



Surgical site infections (SSIs)



Blood loss and risk of transfusion



Prolonged recovery



Thermal discomfort



Postoperative shivering

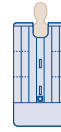
# Warming for every procedure.

## Pre- and post-operative blankets

Full body  
Model 30000-12



Multi-access  
Model 31500-12



## Intraoperative blankets

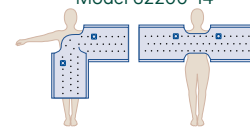
Lower body  
Model 52500-14



Dual port torso  
Model 54200-14

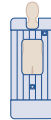


Multi-position  
upper body  
Model 62200-14



## Speciality and cardiac blankets

Surgical access  
Model 57000-10



Sterile cardiac  
Model 63000



## Underbody blankets

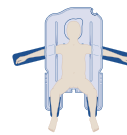
Adult underbody  
Model 54500



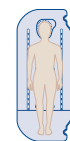
Spinal  
underbody  
Model 57501



Lithotomy  
underbody  
Model 58501



Full access  
underbody  
Model 63500



## Paediatric blankets

Small lower body  
Model 53700



Large paediatric  
under body  
Model 55000



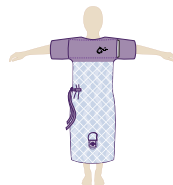
Paediatric  
under body  
Model 55501



## Patient warming gowns

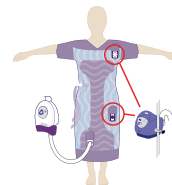
Universal gown made with 3M™ Thinsulate™ Insulation

Small: 81105  
Standard: 81106  
X-Large: 81107



Plus gown

Paediatric: 81501  
Small: 81102  
Standard: 81002  
X-Large: 81202



1 Sessler DI. Perioperative thermoregulation & heat balance. *Lancet*, 2016. 387:2655-64.

2 Matsukawa T, et al. Heat flow and distribution during induction of general anaesthesia. *Anaesthesiology*, 1995, 82(3): p. 662-73.

3 3M™ Bair Hugger™ System Research Compendium, 2017 at: FAWFACTS.com.

4 Madrid E, et al. Active body surface warming systems for preventing complications caused by inadvertent perioperative hypothermia in adults. *Cochrane Library*, 2016.

5 3M data on file: EM-05-297733, EM-05-711315.

6 Brauer A, et al. What determines the efficacy of forced air warming systems? A manikin evaluation with upper body blankets. *Anesth Analg*, 2009. 108(1): p. 192-8.

7 Brauer A and Quintel M. Forced-air warming: technology, physical background and practical aspects. *Curr Opin Anaesthesiol*, 2009.

8 3M data on file. In vitro study performed without body weight. Contact surface temperature testing performed under IEC Standard 80601-2-35 which does not require the use of a mannequin. Testing performed by 3M using Bair Hugger Model 775 (120V, 60Hz).

9 3M data on file. In vitro study. Testing performed using a test stand configuration of the human body (Ref: Brauer A, et al. Comparison of forced-air warming systems with upper body blankets using a copper manikin of the human body. *Acta Anaesthesiol Scand*. 2002;46:965-972. Brauer A, et al. Construction and evaluation of a manikin for perioperative heat exchange. *Acta Anaesthesiol Scand*. 2002;46:43-50. Brauer A, et al. Comparison of forced-air warming systems with lower body blankets using a copper manikin of the human body. *Acta Anaesthesiol Scand*. 2003;47:58-64). Testing performed by 3M using: 3M Bair Hugger 775 (120V, 60 Hz) warming unit.

10 3M data on file: EM-05-233213, EM-05-268428.

11 Brandes IF, Jipp M, Popov AF, Seipelt R, Quintel M, Brauer A. Intensified thermal management for patients undergoing transcatheter aortic valve implantation (TAVI). *J Cardiothor Surg*. 2011 Sep 25;6(1):1.