



There is only one 3M™ Bair Hugger Normothermia System.

Comparison between 3M™ Bair Hugger™ Normothermia System and other competitive warming solutions.

- 1** Maintaining Normothermia
- 2** Not All Warming Systems Warm the Same Way
- 3** 3M Normothermia Solution
- 4** Myths vs Facts

Normothermia: Our passion. Your priority.

Millions of healthcare professionals and their patients across the globe trust 3M's warming products to help maintain normothermia.⁴⁵

We work with clinicians to find the best solution to maintain normothermia throughout the patient's surgical journey to help reduce the risk of surgical site infection, improve patient experience and decrease recovery times. With 3M, clinicians can achieve optimum patient outcomes through prevention of inadvertent perioperative hypothermia.

There is only one 3M™ Bair Hugger™ Normothermia System.

Negative Outcomes of Hypothermia

Perioperative mild hypothermia is defined as core temperatures between 34 °C and 36 °C.¹
Research shows that even mild hypothermia can result in significant negative outcomes including:⁴



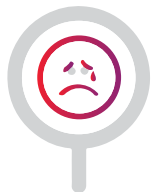
Increased rate of
wound infection^{4,5}



Increased mortality
rates⁶



Coagulopathy⁶⁻⁸



Shivering and
thermal discomfort^{2,3,4,11}



Myocardial ischemia and
cardiac disturbances^{10,14}



Prolonged and
altered drug effect⁹



Delayed emergence
from anaesthesia¹³

To help prevent these negative outcomes of perioperative hypothermia, choose 3M™ Bair Hugger™ Brand.

Not all warming systems warm the same way.

How to find the most suitable forced-air warming system.

The performance of a forced-air warming system depends on three variables: air velocity, temperature and surface area.¹⁵

What makes the 3M™ Bair Hugger™ Warming System different?

The 3M™ Bair Hugger Warming System* has the highest heat transfer rate of all convective warming systems due to the fact the system has the greatest airflow velocity.¹⁶

Bair Hugger™ blankets achieve even heat distribution and efficient heat transfer through their interconnecting air channel design and consistent perforations throughout the blanket.^{16,20}



Interconnecting Channel

Airflow is optimized through the blanket's interconnecting channel design.



Uniform Perforation Patterns

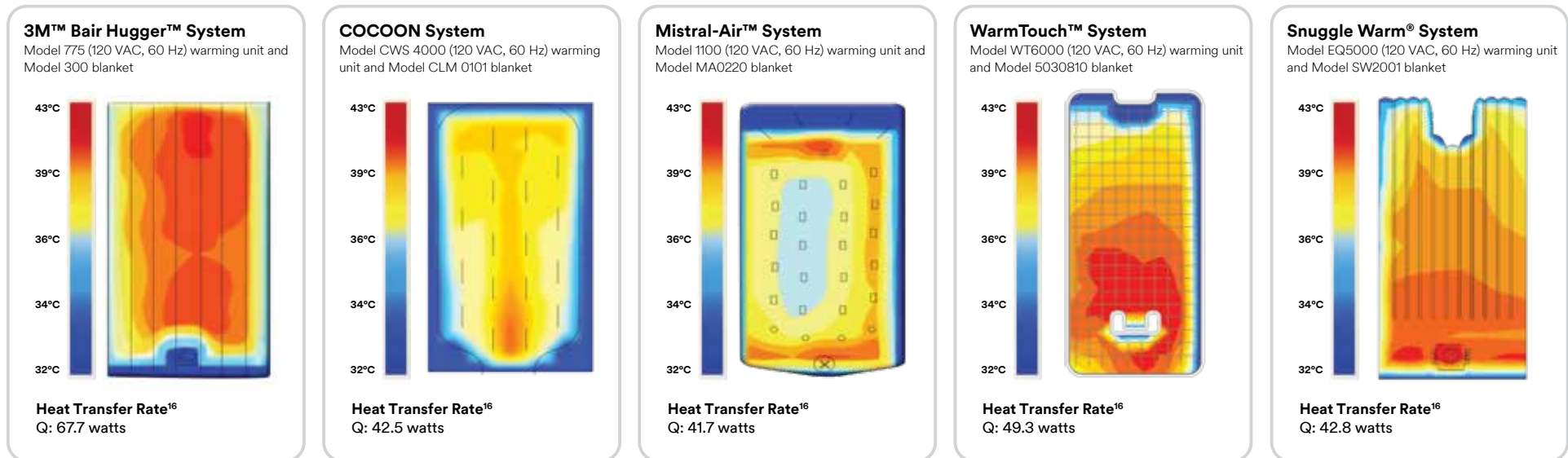
Heat is carried by warm air through the blanket's consistent, evenly distributed perforations ensuring uniform convective warming.

*Testing performed by 3M using Bair Hugger Model 775 (120 VAC, 60 Hz), Cocoon CWS 4000 (120 VAC, 60 Hz), Mistral-Air Model 1100 (120 VAC, 60 Hz), Covidien WT6000 (120 VAC, 60 Hz), and Smiths Medical Equator EQ5000 (120 VAC, 60 Hz) warming units. Testing performed by 3M using Bair Hugger Model 300 & 525, Cocoon Model CLM 0101 & CLM 0102, Mistral-Air Model MA0220 & MA0250, Covidien Model 5030810 & 5030880 and Smiths Medical Model SW2001 & SW2004.^{17,18}

Why choose the 3M™ Bair Hugger™ Normothermia System?

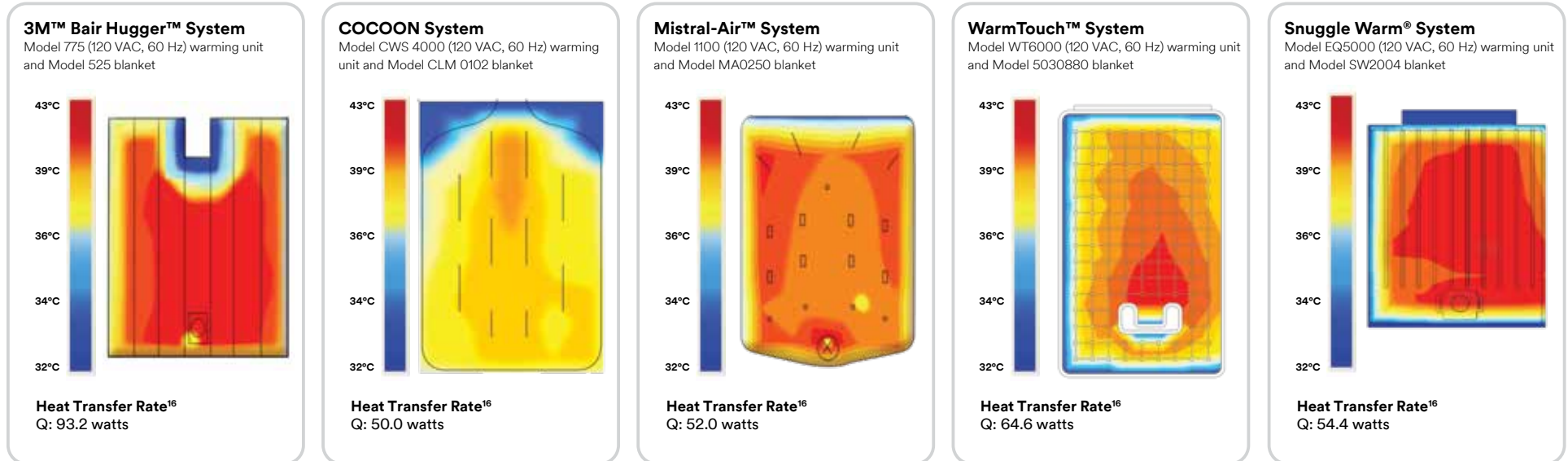
The 3M™ Bair Hugger™ Normothermia System has the highest heat transfer rate in the industry.^{16*}

Temperature Distribution¹⁶⁻²⁰ – Full Body Blanket



*Testing performed by 3M using 3M Bair Hugger Model 300, 525 & 635 (120 VAC, 60 Hz), Cocoon CWS 4000 (120 VAC, 60 Hz), Mistral-Air Model MA0220, MA0250 & MA0400 (120 VAC, 60 Hz), Covidien WT6000 (120 VAC, 60 Hz), and Smiths Medical Model SW2001, SW2004 & SW2113 (120 VAC, 60 Hz) warming units. Testing performed by 3M using Bair Hugger Model 300 & 525, Cocoon Model CLM 0101 & CLM 0102, Mistral-Air Model MA0220 & MA0250, Covidien Model 5030810 & 5030880 and Smiths Medical Model SW2001 & SW2004.¹⁶⁻¹⁹ EQUATOR and Snuggle Warm are trademarks of the Smiths Medical family of companies. Mistral-Air is a registered trademark of The Surgical Company International. Warm Touch is a trademark of Metronic.

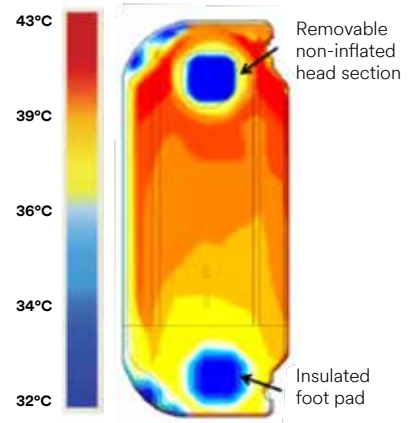
Temperature Distribution¹⁶⁻²⁰ – Lower Body Blanket



Temperature Distribution²⁰ – Underbody Blanket

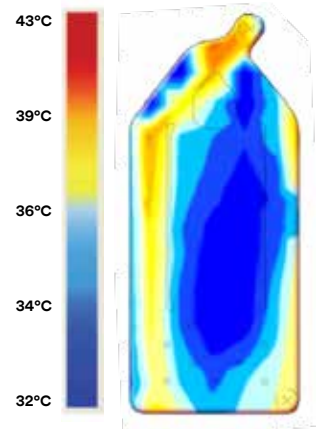
3M™ Bair Hugger™ System

Model 775 (120 VAC, 60 Hz) warming unit and Model 635 blanket



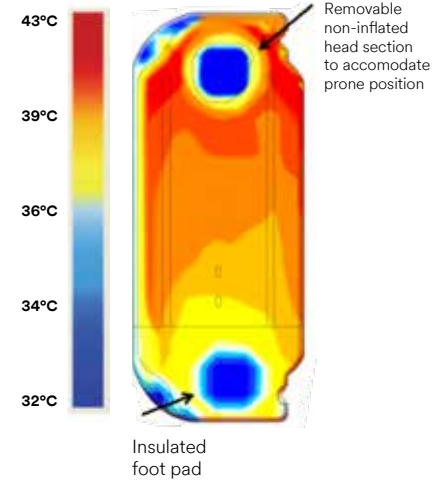
Mistral-Air™ System

Model 1100 (120 VAC, 60 Hz) warming unit and Model MA0400 blanket



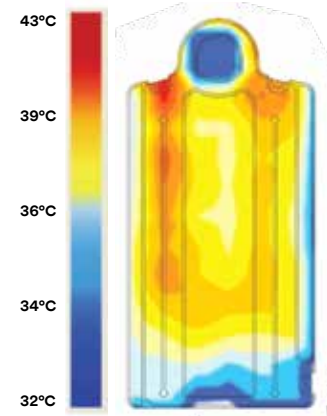
3M™ Bair Hugger™ System

Model 775 (120 VAC, 60 Hz) warming unit and Model 635 blanket



Snuggle Warm® System

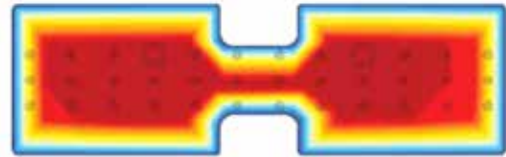
Model EQ5000 (120 VAC, 60 Hz) warming unit and Model SW2113 blanket



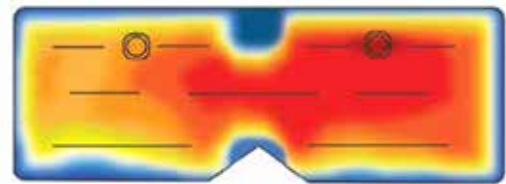
Temperature Distribution²⁰ – Multi-Position Upper Body Blanket

Temperature distribution

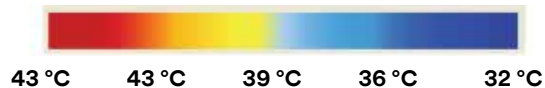
New 3M™ Bair Hugger™ blanket offers a more uniform temperature distribution.²⁰



New 3M™ Bair Hugger blanket

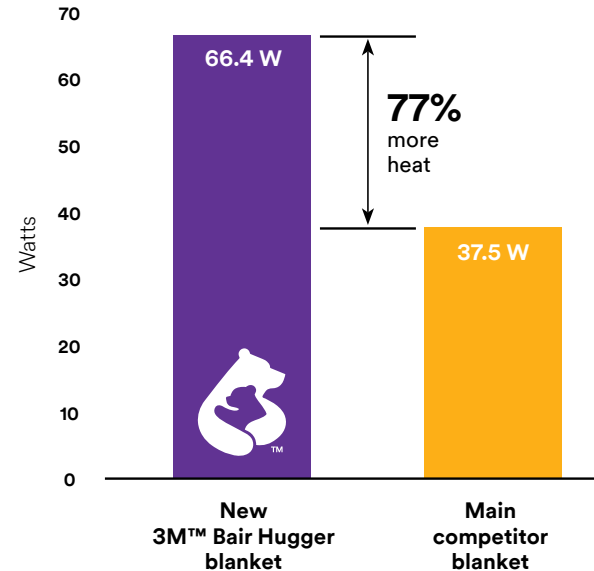


Main competitor blanket



Heat transfer

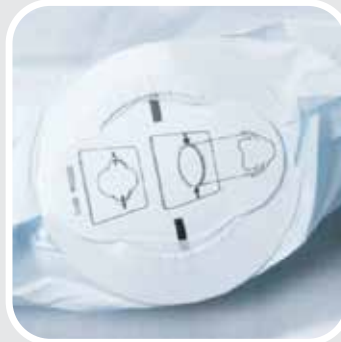
New 3M™ Bair Hugger™ blanket delivers 77% more heat transfer.^{17,20}



Why choose the 3M™ Bair Hugger™ Normothermia System?

The 3M™ Bair Hugger™ Underbody Blanket series provides full access to the patient without compromising warming performance.

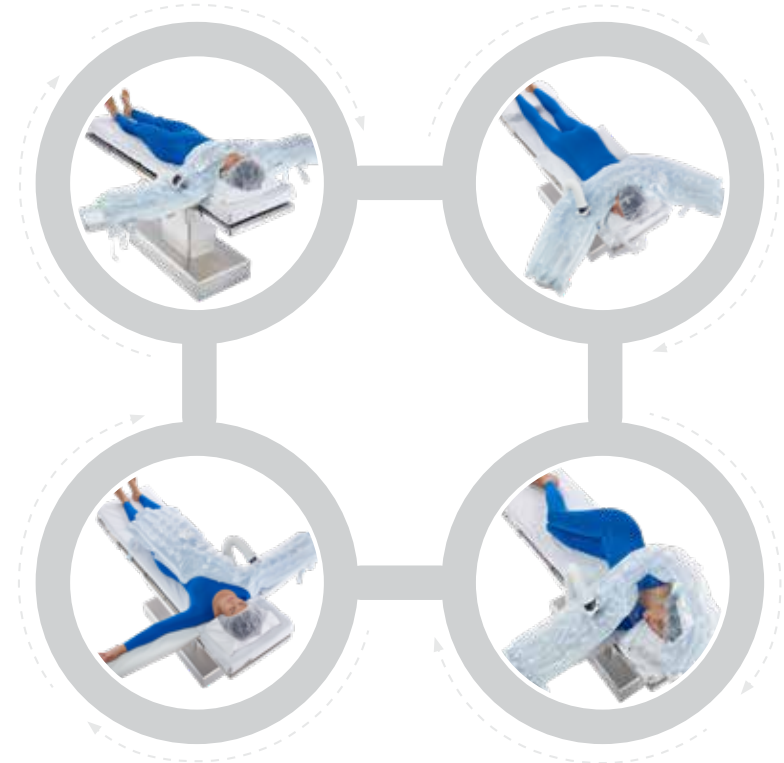
- Fluid outlets prevent fluid from pooling on blanket.
- Blankets compress with the patient's natural pressure points preventing heat from reaching potentially ischemic tissue.
- Resealable hose ports enable versatile and convenient positioning of the warming unit.
- Full access underbody blanket model 635 can be used in supine, lateral or prone positions. Two perforated apertures down the length of the blanket allow the patient's arms or table attachments to pass through without occluding the air channel. The perforated head sections can be removed when using a horse-shoe head support in the full prone position, providing access to the patient's airway.



Why choose the 3M™ Bair Hugger™ Normothermia System?

The 3M™ Bair Hugger™ Multi-Position Upper Body Blanket (622) is the world's first conformable forced-air warming blanket.

- The blanket's ability to conform to different positions was inspired by the clinician's need to optimize the patient's body surface area to help maintain normothermia and drive positive outcomes.
- The quilted channel design of the Multi-Position Upper Body Blanket model 622 allows the blanket to be manipulated to maximize the surface area contact and heat transfer of the blanket. When used as an upper body blanket, neck vents help circulate warm air around the patient's neck.



Why choose the 3M™ Bair Hugger™ Normothermia System?

The 3M™ Bair Hugger™ Flex Gown (81003) helps prevent hypothermia, which has been shown to improve patient outcomes^{3,21} and reduce levels of anxiety and apprehension, and helps to standardize care, which can reduce cost.^{22,23,24}

- The Bair Hugger™ Flex Gown (81003) allows your surgical patients to enjoy the comfort and therapeutic benefits of forced-air warming before, during and after surgery.
- The Bair Hugger™ Flex Gown features the same unique channel design and consistent perforations as our warming blankets, providing uniformity of temperature distribution and heat transfer rate to the patient. Clinically prewarming for as few as 15 minutes helps avoid intraoperative hypothermia.²¹
- The Bair Hugger™ Flex Gown can be used throughout the patient's perioperative journey, replacing the traditional cotton gown. The use of the gown across the surgical journey allows standardization on one product and less reliance on cotton blankets and gowns.^{22,23} Use of the Bair Hugger™ Flex Gown can lower the spend on linen: studies have shown that the cost per use of a cotton blanket is a surprising \$1.63 US.^{22,23,24} Continuous warming can save nursing time by reducing trips to the blanket warmer.
- The wrap-around coverage, opaque material and four size options help to protect the patient's modesty and helps to improve their satisfaction.^{25,26,27}
- Patients warmed with the Bair Hugger™ Flex Gown experience decreased levels of anxiety and apprehension, along with increased comfort.²⁷
- With a simple turn of the dial on the handheld controller, patients are able to adjust the temperature and speed of the air flowing through the gown to a level that is right for them.

The Bair Hugger™ Flex Gown (81003) adds a new dimension to patient warming – a single-use patient gown that provides both comfort and clinical warming options throughout the perioperative journey.



1

Myth

FAW systems with HEPA filters improve surgical infection risk.

Fact

There is no scientific evidence that supports this claim. One study found the 3M™ Bair Hugger™ system was not associated with a higher risk of infection when compared to devices with HEPA filters.²⁸

HEPA filtration imposes measurable airflow limitations which can impact heat transfer performance of HEPA-equipped warming units.²⁹

Evidence:

A recent study of 5,405 primary joint arthroplasties, 2,792 were warmed with non-HEPA FAW devices and 2,613 warmed with HEPA warming devices.²⁸

Outcomes	Non HEPA (n=2792)	HEPA (n=2613)	P-Value
Infections (%)	46 (1.65)	42 (1.61)	>0.99
SSI (%)	33 (1.18)	22 (0.84)	0.27
PJI (%)	13 (0.47)	20 (0.77)	0.22

Adapted from Curtis *The Journal of Arthroplasty*. 2018

Postoperative infection rates were similar for both systems; 1.65% (non-HEPA) vs 1.61% (HEPA). There is no correlation between a higher risk of surgical site infection (SSI) or periprosthetic joint infection (PJI) during total joint arthroplasty (TJA), when using a non-HEPA compared to a HEPA forced-air warming unit.²⁸

2

Myth

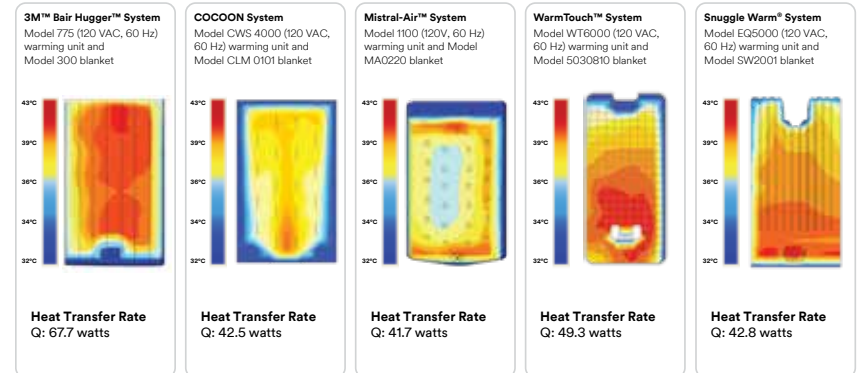
3M™ Bair Hugger™ Warming Units are too noisy.

Fact

The noise emitted from a Bair Hugger™ Warming Unit is the result of effective air flow from the warming unit to the blanket or gown. Reducing airflow will also reduce the performance of the warming system.

Evidence:

- The purpose of a warming system is to reduce the increased consequential risk to the patient from perioperative hypothermia by helping to prevent anesthesia-induced redistribution temperature drop through normothermia maintenance.
- The performance of a forced-air warming system depends on three variables: air velocity, temperature and surface area.¹⁵ The design of the blanket and warming device greatly impacts the overall performance of the warming system. A good forced-air warming system can easily be detected by measuring the temperature difference between the highest blanket temperature and the lowest blanket temperature.³⁰
- The temperature difference across the blanket should be as low as possible.⁶
- Reducing airflow can reduce the heat transfer of the warming system.



3

Myth

Forced-air warming therapy increases the risk of wound infection or operating room contamination.

Fact

Multiple articles find insufficient evidence that the use of forced-air warming leads to an increase in SSIs. Published national guidelines⁴¹ recommend the use of active forced-air warming to maintain normothermia. In 2017 the FDA, following a thorough review of the evidence, recommended the continued use of forced-air warming.³¹

Evidence:

- 3M's surgical warming products have been used on more than 300 million patients in the last 30 years and continue to be used thousands of times each day in medical facilities around the world.⁴⁵
- Studies performed on patients in surgical settings found that forced-air warming does not contaminate the sterile field or increase bacterial counts.^{32,33,34}
- Tests demonstrate that Bair Hugger™ airflow has no significant effect on operating room airflow. The downward stream of laminar air flow effectively reduces particle concentrations around the operative site, regardless of whether a FAW system is in use.^{35,36,37}
- Independent systematic reviews found no sufficient evidence to establish that the use of FAW systems lead to an increase in surgical site infections compared to other warming methods.^{38,39}
- The findings of the International Orthopedic Consensus Meeting on Periprosthetic Joint Infection in 2018 recognized that despite the theoretical risk, there is no sufficient evidence to link forced-air warming to an increased risk of SSI and they "...cannot recommend discontinuing the use of these devices at this time".⁴⁰
- A randomized study measuring airborne contamination during minor orthopaedic surgery found the type of patient warming system used (convective or conductive) had no significant influence on bacterial counts.⁴²

4 Myth

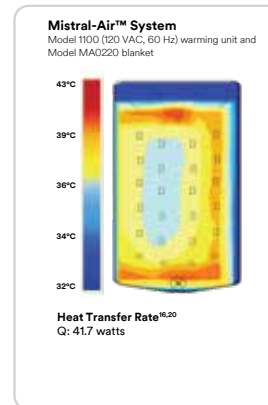
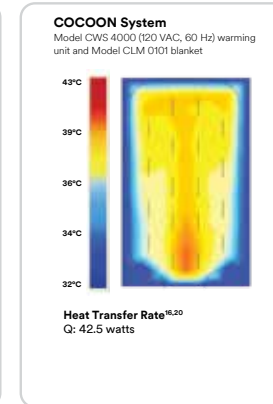
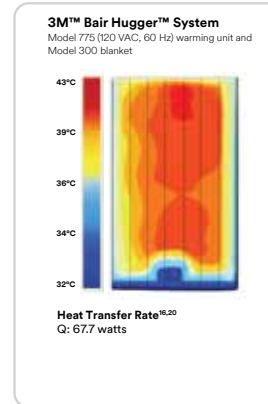
All convective warming systems deliver the same heat transfer rate performance.

Fact

The performance of a forced-air warming system depends on three variables: air velocity, temperature and surface area.¹⁵ The design of the blanket and warming device greatly impacts the overall performance of the warming system. A good forced-air warming system can easily be detected by measuring the temperature difference found in each blanket.³⁰ The temperature difference within each blanket should be as minimal as possible.⁶

Evidence:

- Forced-air warming blankets with consistent, engineered perforations show superior heat transfer rate compared to blankets with a microporous design.¹⁶⁻¹⁹



5

Myth

Prewarming is not necessary/provides no added benefit to the patient.

Fact

Evidence suggests that clinically prewarming for as few as 15 minutes helps avoid intraoperative hypothermia.²¹ The 3M™ Bair Hugger™ Flex Gown can be used throughout the perioperative journey to help prevent unintended hypothermia and patient shivering in recovery.⁴³

Evidence:

- Patients subjected to prewarming showed an intraoperative hypothermia rate of 15.8% and a postoperative hypothermia rate of 5.1%. Patients without prewarming showed an intraoperative hypothermia rate of 30.4% and a postoperative hypothermia rate of 12.4%.⁴⁴
- The practice of prewarming is now being recommended in clinical practice guidelines and quality improvement initiatives such as NICE, ERAS, ORNAC and AORN.
- Effective prewarming reduces the need for postoperative warming.⁴⁴

6 Myth

There is no harm in using a hose port tie system that enables blankets from one manufacturer to be used with another manufacturer's warming unit.

Fact

A patient thermal injury can result from commingling of different manufacturers' warming blankets and warming units. Any blanket feature enabling use with another manufacturer's warming unit which has not been tested could have serious consequences for the patient.

Evidence:

- The use of forced-air warming blankets or gowns from one manufacturer with a warming unit from another manufacturer can raise safety and efficacy concerns.
- The 3M™ Bair Hugger™ Normothermia System has undergone extensive internal testing and clinical studies to ensure it will provide patients safe and effective therapeutic warming.
- 3M has not tested the compatibility of Bair Hugger™ brand components—the disposable blankets or gowns, or warming units—with any other manufacturer's devices. The Bair Hugger™ brand components have been designed to operate safely ONLY with one another.
- Use with other manufacturer's products may cause thermal injury. Our manual and instructions for use for the Bair Hugger™ brand blankets and gowns expressly warns against commingling Bair Hugger™ brand components with other manufacturer's products.

Summary



Designed to be different

Not all warming systems warm the same way. The 3M™ Bair Hugger™ Warming System is designed for maximum performance.



Positive results

The effectiveness of a warming system helps improve a clinician's ability to prevent the negative effects of perioperative hypothermia.



170+* scientific studies

3M has identified over 170 scientific studies supporting the benefits of forced-air warming with the Bair Hugger™ Warming System.



Continued support

3M's team of experts provide support with continued product education and temperature reviews to help enhance patient experience and help improve total cost of patient care.

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