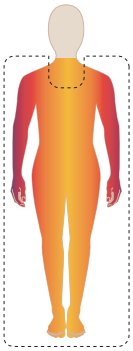
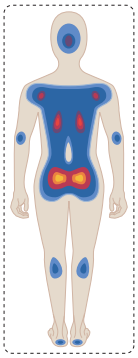
CONVECTIVE VS. CONDUCTIVE WARMING

HEATED AREA



FRONT

Convective warming systems and conductive warming systems warm the patient in very different ways.



BACK

HEATED AREA

Convective

Conductive

KEY ELEMENTS OF WARMING

Convective

- Temperature
- Blanket design
- Air velocity

Conductive

- Temperature
- Contact pressure
- Duration (time)

HEAT EXCHANGE

Convective

- Recruits up to 64% of the body[1]
- Air-to-surface warming

Conductive

- Recruits approximately 15% of the body[2]
- Surface-to-surface contact warming

PRESSURE POINT SAFETY

Convective

- Over the body style blankets
  - Heat does not reach pressure points
- Underbody style blankets
  - Patient weight prevents heat from reaching pressure points
  - Fluid outlets prevent fluid from pooling on blanket

Conductive

- Pressure points of the body provide the most surface-to-surface contact
- Pressure points may become ischemic and prone to thermal injury
- It is warmest at the pressure points
- Fluids can pool on surface

CONVENIENCE

Convective

- No water leaks
- Disposable, no maintenance
- Single use
- Standard storage
- Pre-op, intra-op, recovery, procedure rooms, specialty suites, ER, trauma, etc.

Conductive

- Needs to be cleaned if reused
- Risk of performace degradation
- Special storage needs may be required
- Primarily intra-op

MODALITIES

Convective

- Over the body forced-air blankets
- Underbody forced-air blankets
- Forced-air warming gown

Conductive

- Gel pads
- Conductive table pads
- Electric pads
- Heated water bottles
- Water mattresses

Bair Hugger®

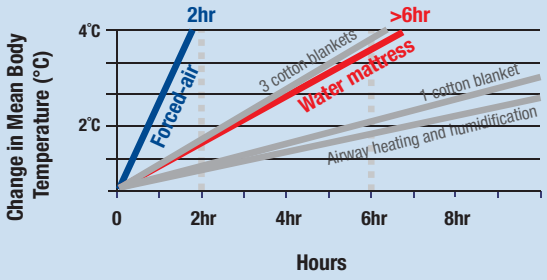
More than 100 scientific studies have been written about the benefits of forced-air warming and the prevention of hypothermia. Studies have shown forced-air warming to be the most effective warming method, in general, for preventing and treating unintended hypothermia.

THE CHOICE IS YOURS

Convective warming systems such as forced-air warming blankets and **conductive warming systems** such as warm cotton blankets, resistive electric covers, heated pads and water mattresses warm patients in different ways.

Because of this, studies have demonstrated that forced-air warming can warm your patients in less than a fraction of the time…without delivering heat directly to pressure points.[2,3]

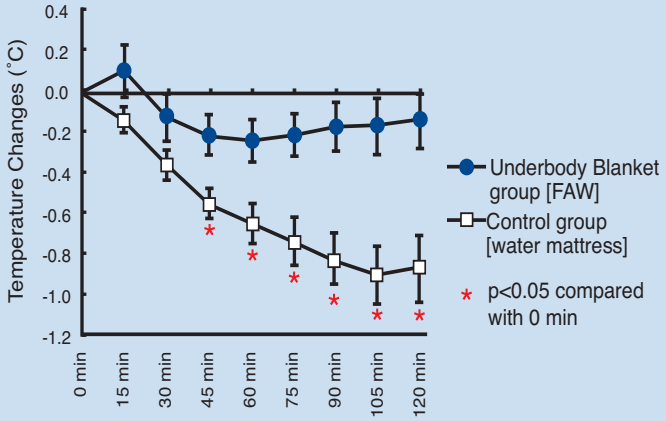
The Relative Effects of Warming Methods on Mean Body Temperature[3]



FORCED-AIR WARMING USING AN UNDERBODY BLANKET

- May prevent the initial temperature decrease caused by redistribution temperature drop[4]
- More effective at preventing hypothermia during abdominal surgery than water mattresses[4]
- Recruits greater body surface area and is more effective in preventing hypothermia during abdominal surgery than an upper body blanket[4]
- Does not deliver heat under pressure points

Changes in Esophageal Temperature[4]



(As studied in abdominal surgery.)

References:

1. Taguchi, A., et al. Effects of a circulating water garment and forced-air warming on body heat content and core temperature. *Anesthesiology.* May 2004, Vol 100, No. 5: 1058-64.
2. Hohn, L., et al. Benefits of intraoperative skin surface warming in cardiac surgical patients. *British Journal of Anesthesia.* 1998; 80: 318-323.
3. Sessler, DI., Current concepts: mild perioperative hypothermia. *N Eng J Med* 1997; 336: 1730-1737.
4. Aki Tominaga, M.D., Toshiya Koitabashi, M.D., Ph.D., Takashi Ouchi, M.D., Rika Ban, M.D., Eri Takano, M.D. Efficacy of an Underbody Forced-Air Warming Blanket for the Prevention of Intraoperative Hypothermia. *Anesthesiology*, 2007; 107:A91

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