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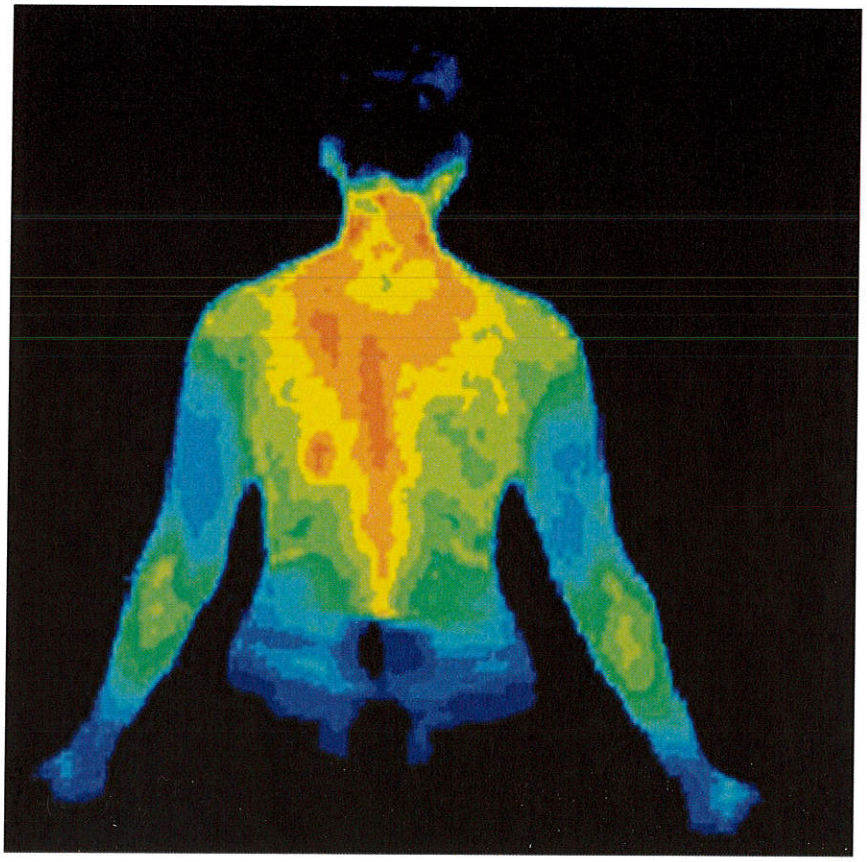
Hypothermia Better Managed With Underbody Warming Blankets Than Overbody



Chicago—Underbody warming blankets ultimately may prove to be a better choice than their overbody counterparts, with respect to both treating and preventing hypothermia, according to a recent study.

"A few years have passed since underbody-type blankets were introduced to the market," began Hiroshi Sumida, MD, a staf f anesthesiologist at the Tohoku University School of Medicine, in Sendai, Japan. "Many clinicians think these underbody blankets are useful, but there are only a few reports evaluating their efficacy. So we wanted to determine how well they might work."

The efficiency of perioperative forced-air warming is largely dependent on the surface area of the skin that is directly adjacent to the blanket, Dr. Sumida explained, who added that this is why conventional forced-air warming with a single blanket does not adequately warm the entire body, except during cranial or ENT (ear, nose and throat) surgery. Underbody blankets, on the other hand, warm efficiently because they heat a larger surface area.

Warm, But How Effective?

Hiroshi Sumida, MD

To help determine the relative efficacy of the two systems, Dr. Sumida and his colleagues studied the records of 8,032 patients who underwent surgery at the institution between April 2014 and November 2015, 5,413 of whom had their body temperature measured (at the bladder) during surgery. Propensity score matching was used to reduce bias due to lack of randomization. The researchers compared changes in body temperature between groups, as well as the incidence of hypothermia (body temperature <36.0° C at the end of surgery).

"We incorporated a number of variables into the propensity score matching, including age, gender, height, weight, ASA [American Society of Anesthesiologists] physical status, type of surgery, type of anesthesia and the type of warming blanket used," Dr. Sumida explained.

As reported at the ASA 2016 annual meeting (abstract A2110), a total of 435 propensity score–matched pairs were generated; there were no differences between groups with respect to various patient characteristics. It was found that among patients in the underbody group, body temperature at the end of surgery was significantly higher than at the start of surgery (37.1° C±1.7° C vs. 36.6° C±1.3° C; $P<0.0001$). Patients with traditional overbody blankets, on the other hand, saw no change in their body temperature between the beginning and end of surgery (36.3° C±2.6° C vs. 36.2° C±2.6° C; $P=0.07$).

What's more, the temperature at the end of surgery was significantly greater in the underbody group than their conventional counterparts ($P<0.0001$). Not surprisingly, although 59 patients undergoing conventional warming had hypothermia (14%), only 37 of those in the underbody group (9%) were hypothermic ($P=0.02$).

"These results," Dr. Sumida said, "suggest that underbody-type blankets result in superior warming performance compared with controls. This type of blanket may help warm anesthetized patients more efficiently than its predecessors."

Session co-moderator Steven M. Shulman, MD, was impressed by the results of the analysis. "As an anesthesiologist, however, I'm a bit disappointed with the new warming technique," said the assistant professor of anesthesiology at Rutgers New Jersey Medical School, in Newark. "With the overbody blanket, it feels like half the heat goes to the anesthesiologist. So underbody warming—where all the heat goes to the patient—might be good for the patient, but we anesthesiologists will be cold as a result."

As Leslie Jameson, MD, pointed out, forced-air underbody warming systems are not without their potential drawbacks. "There are some people who believe that underbody warming increases the risk of infection because it blows bacteria from the skin to the wound," said the associate professor of anesthesiology at the University of Colorado School of Medicine, in Aurora. "Do you believe that?"

"There are some publications that corroborate that," replied session co-moderator Uday Jain, MD, PhD, a staff anesthesiologist at the Alameda Health System, in Oakland, Calif., who cited a study in the *AORN Journal* (2014;99:350-351). "So it is a known fact, but the incidence of infection is nevertheless very low."

Nonetheless, it is relevant to note that the CDC's Healthcare Infection Control Practices Advisory Committee has advised against blowing air in the operating room (*Emerg Infect Dis* 2016;22:1008-1013), and that there are commercially available patient underbody warming systems that do not use forced air.

—Michael Vlessides