

## **Study Confirms Forced-Air Warming Safety**

*Authors conclude patient warming's "gold standard" does not disrupt laminar flow in ORs*

The use of forced-air warming to maintain patient normothermia and help prevent surgical site infections (SSIs) and other complications does not disturb laminar air flow in operating rooms or compromise the protection of the surgical site, a newly published study has concluded.<sup>1</sup>

“The addition of this research to the significant body of existing science should leave no doubts regarding the safety of forced-air warming when used in laminar flow conditions,” said Bob Buehler, Vice President of 3M’s Patient Warming business. “While makers of competing technologies continue their efforts to deceive health care practitioners and disrupt our business, we will rely on the evidence and our 24-year history of safe, effective care to speak on our behalf.”

This is excellent news for orthopedic surgeons, a group especially vigilant about contaminants entering the surgical site. They often perform surgery in suites equipped with laminar air flow ventilation systems. Laminar air flow is designed to reduce airborne bacteria that may cause SSIs by dispensing highly filtered air over the surgical field.

At least six independent, peer-reviewed studies have demonstrated that forced-air warming does not increase bacteria dispersion near the patient.<sup>2-7</sup> In fact, independent randomized control studies have shown that perioperative temperature management with forced-air warming actually decreases SSI risk<sup>8,9</sup> in patients.

A peer-reviewed study published online ahead of print by *Anesthesia & Analgesia* extends those results by showing that forced-air warming systems do not impair operating room air quality, with or without laminar flow ventilation.<sup>1</sup>

The authors evaluated the effect of forced-air warming on laminar air flow performance in class 1a operating rooms at two hospitals in the Netherlands. The testing methodology met a rigorous European standard, DIN 1946-4:2008-12, that includes quantitative testing of particle counts and was conducted by an independent organization.

Two forced-air warming blankets were tested: an upper-body blanket and an underbody blanket. At the same time, the concentration of particles at the surgical site was assessed at a test point just above the volunteer’s abdomen. Use of the FAW blankets caused no statistically significant difference in particle counts, regardless of whether the forced-air warming unit was set to off, ambient air or high heat settings.

In all cases, the particle concentration at the test point was reduced 3-log to 5-log (1,000x to 100,000x) compared to background particulate levels in the room. This far surpassed the 2-log reduction required by the European performance standard.

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The authors also deployed a vapor generator to assess airflow patterns above the patient with the forced-air blower set to high and the laminar flow system activated. Neither the forced-air warming blanket nor the forced-air blower generated upward air that interfered with the normal unidirectional stream of the laminar air flow system.

The study's conclusions align with published computational fluid dynamic models that show the downward stream of laminar air flow effectively reduces particle concentrations around the operative site.<sup>10</sup>

The authors conclude by confirming that, "activation of forced-air warming does not reduce operating room air quality, even during laminar flow ventilation."<sup>1</sup>

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#### References

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