ABSTRACT

Do forced-air patient-warming devices disrupt unidirectional downward airflow?

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Legg, A.J.; Cannon, T; Hammer, A.J. Do forced air patient-warming devices disrupt unidirectional downward airflow? *Journal of Bone and Joint Surgery Br*. 2012;94-B:244-256.

Summary:

> **"Forced-air warming resulted in a significant mean increase in the temperature (1.1°C vs 0.4°C, p<0.0001) and number of particles (1038.2 vs 224.8, p=0.0087) over the surgical site when compared with [HotDog®] warming, which raises concern as bacteria are known to require particles for transport."**

Methods: The researchers studied the temperature and the number of particles over the surgical site comparing forced-air warming (Bair Hugger®), radiant warming (HotDog), and control (no warming). The set-up was for lower-limb arthroplasty.

Results:

> **"The temperature over the surgical site increased significantly when the forced air warming device was used in comparison to the radiant warming devices, or control." (1.1°C vs 0.4°C, p<0.0001)**
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> **"The number of particles over the surgical site was significantly higher when the forced air warming device was used in comparison to the radiant warming device, or control." (1038.2 vs 224.8, p=0.0087)**

The researchers did not link the increase in temperatures and particle counts to infections, however, the results suggest that convection currents generated from the forced-air warming device disrupt the downward flow of air. In addition, the researchers wrote, "Bacteria require particles to transport them, and although we are unable to confirm if any of the particles were transporting bacteria, the significant increase in the number of particles that we found in this study at the surgical site is of concern."

This study was completely independent of Augustine Temperature Management. Orthopedic surgeons from Northern General Hospital, Sheffield, UK, conducted the research.