HOVERTECH International

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TECHNICAL STUDY

HOVERMATT® AIR TRANSFER SYSTEM

Comparative Lint Tests of Single-Patient Use Air-Assisted Lateral Transfer Devices

Situation

A need to understand the amount of lint released into the surgical environment by three different single-patient use air-assisted lateral transfer devices under controlled conditions

Hospital-acquired infections (HAI) account for $9.8 billion of healthcare costs annually, with surgical site infections contributing the highest percentage (33.7%), or upwards of $3.2 billion, of this amount.[1] As hospitals realize savings from prevention of these complications under payment reforms, they may be more likely to invest in preventative strategies, particularly if insurance companies refuse to pick up the tab. "Medicare's nonpayment policy for treating...certain surgical-site infections is an important part of the movement toward paying for quality, not quantity, of care."[2]

It is well documented that fabrics used in surgical gowns and drapes should be as lint-free as possible. Lint circulating in the operating room is undesirable for many reasons; therefore this same standard should be extended to all materials used in the surgical suite:

- "If linting occurs during a surgical procedure, lint may enter the wound, increasing the risks for nosocomial infections and foreign body reactions."[3]
- "Contaminating particles in the 10 micron range can become the nucleus of a clot or lesion (or a granuloma-clot hybrid). The larger the contaminating particle, generally, the more severe the consequences."[4]
- "Lint particles are disseminated into the (Operating Room) environment where bacteria attach to them."[5]
- "Bacteria carrying lint may settle in surgical sites and wounds and may increase postoperative patient complications."[6]

Technical Data – Particle Shed Analysis – Gelbo Flex Test, ISO 9073

Gelbo Flex Tests were conducted on three Single-Patient Use Air-Assisted Lateral Transfer Devices to determine and compare the level of material particle shed (linting)

Two sets of five test articles were cut to a size of 220 mm x 285 mm from each device, one set from the patient side and one set from the non-patient side. The test articles were subjected to a combined twisting and compression action in a test chamber using a Gelbo Flex mechanism. During the flexing, air was withdrawn from the chamber and the particulates generated were enumerated and sized using a laser particle counter.

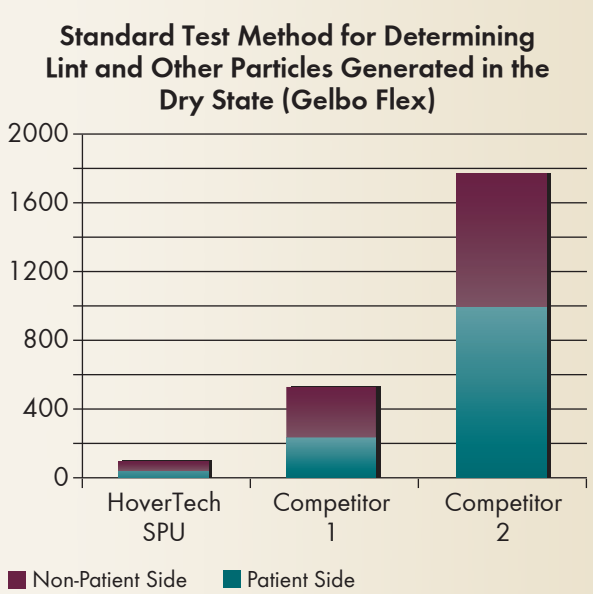

Figure 1: Particulate ≥10 microns in size

As illustrated in Figure 1, the Single-Patient Use HoverMatt® Air Transfer System produced 96 particles ≥ 10 microns in size during testing. This is 81.9% fewer than Competitor 1's comparative product, which produced 530 particles, and 94.6% fewer than Competitor 2's product, which produced 1773 particles under the same testing conditions.

Compliance Statement: *The test was conducted in accordance with USFDA (21 CFR Part 58) Regulations.*

The study plan, raw data, and final report are on file at HoverTech International.

Conclusion

Workers' compensation injuries among health care workers have been widely documented. As a means to prevent staff injuries caused by lateral transfer and positioning of patients, single-patient use air-assisted lateral transfer devices are gaining in popularity in the surgical suite. In order to maintain the benefits of the use of these devices, their impact on the operating room environment should be considered. Ensuring that materials used in the operating room are as lint-free as possible is one strategy for reducing surgical site infections. Available devices in this category vary widely in lint generation, with HoverTech's HoverMatt SPU offering a significant advantage over competitive devices.

Sources

1 Zimlichman E et al., Health care–associated infections: A meta-analysis of costs and financial impact on the US health care system. *JAMA Intern Med*. Published online September 02, 2013.

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3 Rutala WA, Weber DJ. A review of single use and reusable gowns and drapes in healthcare. *Infect Control Hosp Epidemiol*. 2001; 22(4):248-257.

4 Truscott W. Lint and particle contamination during diagnostic and interventional procedures in the cardiac catheterization lab. *Cath Lab Digest*. 2006; 14(9).

5 Edmiston CE Jr, Sinski S, Seabrook GR, Simons D, Goheen MP. Airborne particulates in the OR environment. *AORN J*. 1999; 69(6):1169-72, 1175-7, 1179.

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