Clinical Summary:

**Survival of Enterococci and Staphylococci on Hospital Fabrics and Plastic**


**Key Points**

- The environment can play a marked role in the nosocomial transmission of microorganisms.
- One critical factor for transmission of a microorganism from a person (patient or health care worker) to the environment and then to another person is the ability of that microbe to survive on that environmental surface.
- Data in this study indicate enterococci and staphylococci survived for several days to months after drying on materials in the hospital setting.
- Bacteria tested lived longer on polyester than cotton and survived for at least one day on cotton polyester blends; therefore fabric type may influence survival.

**Background**

Infections today are increasingly caused by resistant organisms. Infections caused by antibiotic-resistant gram-positive bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE) are growing concerns, particularly in units in which patients are immunosuppressed.¹ The environmental transfer plays a role in the transmission of these infections. There have been several studies on gram-positive bacteria survival on various surfaces, but very few have studied them on fabrics.²

**Objectives**

This study was designed to determine the survival of gram-positive bacteria on five common hospital materials; 100% cotton (clothing), 100% cotton terry (towels), 60% cotton - 40% polyester (scrub suits and lab coats), 100% polyester (drapes) and 100% polypropylene plastic (aprons). Each was examined for isolates on these fabrics and plastics in the hospital setting and their survival times.
Design

During this three month study, microorganisms were isolated from patients or hospital environmental surfaces. Microbial survival was tested for all included fabrics. All swatches were inoculated and assessed daily.

Results

Indications were that MRSA and VRE will survive for several days to months after drying on materials commonly worn in the hospital setting. On average, bacteria tested in this study lived longer on polyester than cotton. Staphylococci lived up to 56 days on polyester. Fabric type may influence survival. The length of survival of these organisms on the various materials may have significant infection control implications. Privacy drapes are often made from polyester, and are handled by patients and healthcare workers. They could prove to be a significant reservoir for infection transmission. Bacteria survived for at least one day on cotton polyester blends, the most commonly worn fabric by healthcare workers.

Conclusion

It can be concluded that fabrics play a role in the spread of infection from one patient/surface to another. Since scrub suits and jackets are cotton polyester blends (the most commonly worn fabrics by healthcare workers), it can be easily determined that these fabrics could become vectors for the spread of organisms.