



SOFT SURFACE BACTERIAL MANAGEMENT:

NEBRASKA METHODIST HOSPITAL ESTABLISHES A NEW STANDARD FOR SOFT SURFACE FABRICS

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INTRODUCTION

Evidence exposing the spread of infection as a critical safety topic in the healthcare environment is massive. However, throughout the past decade, little has been done to emphasize and address safety around soft surface fabrics, compared to hard surfaces. Numerous clinical studies around the world have proven that surfaces such as scrubs, privacy curtains, uniforms, patient apparel, and linens throughout healthcare facilities are contaminated with pathogenic bacteria, including multi-drug resistant organisms (MDROs).^{1,2} These bacteria have been shown to survive for weeks on certain types of fabrics,^{3,4} and to easily transfer onto healthcare workers' hands.⁵ Bacteria's ability to spread far and wide via hands is well known and it's time to think about clothing and fabrics as the source for bacteria that may spread from one patient's gown to another or from a nurse's scrub uniform to their home.

For more clinical literature on the issue of soft surface fabric contamination, see the additional resources.

THE STATUS QUO ISN'T GOOD ENOUGH

Soft surface fabrics have been deemed important for the operating room, evidenced by best practice recommendations concerning attire and laundering from the Association of periOperative Registered Nurses (AORN), but a set of best practices outside of this setting are almost non-existent. This is particularly concerning for other high-risk areas, such as in the Emergency Department, ICU or Oncology units. Recent expert guidance from the Society of Healthcare Epidemiologists of America (SHEA) concerning attire in non-operating room settings offers the most robust set of recommendations to date and takes the lead in establishing the same standard of care found in the operating room to other areas of the healthcare facility. The next step is to follow through from guidance to implementation and make sure we are taking all the precautions we know are available today.





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While it is clearly the first line of defense, proper hand hygiene compliance is far from being 100 percent. High-touch hard surfaces are disinfected daily, if not more. However, solutions such as antimicrobial hard surfaces and UV technology have been implemented as an additional safeguard to reduce environmental contamination and further prevent the spread of healthcare associated infections (HAIs). If you think about the number of times a nurse puts her hand into her pocket or reaches to pull back a privacy curtain, why wouldn't the same due diligence not be employed for soft surface fabrics? PPE is used as a standard precaution to protect healthcare worker clothing in certain situations, but why aren't we leveraging solutions currently available to continually protect the surfaces around our staff and patients?

Recent evidence sheds light on sub-optimal current practices. For instance, in regards to laundering, DeAngelis et al found 37 percent of hospital facilities launder privacy curtains only when they are visibly soiled.⁶ In addition, Munoz-Price et al found white coats were washed every 12.4 ± 1.1 days and scrubs every 1.7 ± 0.1 days.⁷ This doesn't meet minimum requirements as outlined by the SHEA Expert Guidance, which states: "Optimally, any apparel worn at the bedside that comes into contact with the patient or patient environment should be laundered after daily use."⁸



HOW TO ELEVATE SOFT SURFACE STANDARD PRACTICE

Outlined below is an example of how one facility took charge to update standard practice and be vigilant about soft surfaces as a reservoir of bacteria in the patient environment.

Terry Micheels, MSN, RN, CIC, is the Service Leader of the Epidemiology Department at Nebraska Methodist Hospital in Omaha, Nebraska. Micheels took the opportunity to address soft surface fabrics during a recent rebuild on the main OR of her facilities' large surgery center. She leveraged a team approach involving architects, designers, contractors, vendors, and nursing/infection prevention to create a new standard of care and implement a long-term, cost-effective approach for the safe use of privacy curtains used at her facility.

What have you done at Nebraska Methodist Hospital to address the dangers of soft surface fabrics?

"We have a few things we do to address soft surface fabric risk in the facility already. We have minimized the use of drapes on windows where possible and use shades instead. Where we do need to use privacy curtains, we've instituted hand protectors that go over the curtain grab area. However, we felt a better solution was needed for the new Post-Anesthesia Care Unit (PACU) which would contain a number of cubicle curtains for patient privacy needs."

"It is also my responsibility to do an annual onsite audit at our outside linen service. I go through their processes and conduct an infection control and environmental hygiene assessment. This includes things like looking at their trucks and their process for separating dirty linen from clean, among other things. We also frequently educate staff about protecting their uniforms from bacteria in high-risk area through use of PPE."

What was your process for choosing a soft surface solution in the new PACU?

"Anytime a hospital or healthcare facility goes through a design or development project, infection prevention should be a key player, as we are here at Nebraska Methodist Hospital. It is our job to look at the schematics of the building or addition and determine the placement of things like sanitizers and sharps. We also make sure that hard and soft surfaces are cleanable and appropriate for optimal infection prevention and control. Working with

the construction manager and architect engineer, we reviewed several options for the cubical curtains, including antimicrobial fabrics.”

What factors were important in your review of antimicrobial fabric technologies?

“The most important consideration for me was the effectiveness over time. One product that my colleague had previously used had been certified for up to 40 washings. I had heard of X-STATIC® Technology and brought those materials in for comparison. They stood behind the product for 200+ washings. That was a major factor in deciding to purchase those curtains. In addition, the curtains powered by X-STATIC® had the technology permanently woven throughout. We looked at the efficacy claims and mechanism of action but again, to me, if the results are similar, then it’s about efficacy over time, or the durability, knowing we’d be laundering these on a regular basis.”

What are your next steps?

“We’re going to take a look at installing them in our Emergency Department. We use cubicle curtains there because we have glass doors. It will be our standard drapery that we use moving forward. In addition, when we get them up in the surgery and recovery areas, I think there will be value in educating the staff about the change, the mechanism of action so they understand how it’s working to help them, since it doesn’t require any action or compliance on their part.”

How do you see soft surface fabrics fitting into a complete infection prevention protocol?

“For me, the priority is hand hygiene. Whether it’s a computer you bring into a room or a curtain you need to pull closed or open, it’s about cleaning your hands before touching the patient. That being said, this is a secondary reduction of bacteria in the patient environment and an engineering control that provides an extra layer of protection. The more research and literature we can get that supports the risk of soft surfaces and what the prevention initiatives and technologies are, the better off we’ll be in instituting the right best practices throughout our facility.”

Taking advantage of a new facility design is one way to start the conversation. Recognizing that these opportunistic times may not happen frequently, another way is to determine what current costs are associated with soft surface fabrics in your facility. For instance, a large, university hospital recently looked at how much was spent annually on changing and cleaning privacy curtains. Estimating the number of curtains changed monthly and the annual number of curtains changed due to patients with a MDRO, multiplied by the cost of labor per curtain and cleaning, the facility determined it spent approximately \$121,000 annually on cleaning curtains. After uncovering this cost, it’s interesting to think about whether that money can be better spent elsewhere.

Soft surfaces need to be recognized as high-touch surfaces in the patient environment and an integral component of infection prevention programs. A real solution depends on what the industry does to recognize the issue,

implement updated policies and standard procedures and plan a course of action to address this genuine, real-life danger. Three initial steps include educating staff and administration about the risk of cross contamination from soft surface fabrics, taking inventory of what soft surface items are found in your facility and how you're currently maintaining "hygienically clean" standards and consulting with laundry and uniform providers regarding their soft surface infection prevention strategies and antimicrobial solutions. Antimicrobial fabrics powered by X-STATIC® are an EPA-registered, proven, and permanent solution for bacteria reduction on the surface of the fabrics and are a viable long-term solution for healthcare. It is proven to reduce 99.9% of bacteria on the surface of fabrics within one hour*. X-STATIC® has undergone extensive safety testing and the company tests and certifies the antimicrobial efficacy of finished products using its technology. Keep in mind, all antimicrobial technologies are not created equal. Ask the right questions and educate yourself. Any step you take to elevate the level of standard practice for soft surface fabrics is a step in the right direction toward targeting zero HAIs.

For more information on X-STATIC®, visit www.arc-com.com/xstatic

¹ Perry C, Marshall R, Jones E. Bacterial contamination of uniforms. *Journal of Hospital Infection* 2001;48:238-41.

² Ohl, et al Hospital privacy curtains are frequently and rapidly contaminated with potentially pathogenic bacteria *American Journal of Infection Control*; Dec, 2012; 40; 10; p904-p906.

³ Neely AN and Maley MP. Survival of enterococci and staphylococci on hospital fabrics and plastic. *Journal of Clinical Microbiology* 2000;38:724–6.

⁴ Neely AN. A survey of gram-negative bacteria survival on hospital fabrics and plastics. *Journal of Burn Care & Rehabilitation* 2000;21:523-7.

⁵ Trillis F 3rd et al. Contamination of hospital curtains with healthcare-associated pathogens. *Infection Control and Hospital Epidemiology* 2008, 29:1074-6

⁶ DeAngelis, Dianne L. et al. Hospital Privacy Curtains: Cleaning and Changing Policies - Are We Doing Enough? *American Journal of Infection Control*, 2013; Volume 41, Issue 6, Supplement. Page S33.

⁷ Munoz-Price, L et al. Brief report: Differential laundering practices of white coats and scrubs among health care professionals. *American Journal of Infection Control*, 2013; 41; 565-567.

⁸ Bearman, Gonzalo et al. Healthcare Personnel Attire in Non-Operating-Room Settings. *Infection Control and Hospital Epidemiology*, Vol. 35, No. 2 (February 2014), pp. 107-121

ADDITIONAL RESOURCES

Society for Healthcare Epidemiologists of America (SHEA) Expert Guidance

[Healthcare Personnel Attire in Non-Operating-Room Settings](http://www.jstor.org/stable/10.1086/675066)

<http://www.jstor.org/stable/10.1086/675066>

Centers for Disease Control and Prevention (CDC)

[Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008](http://www.cdc.gov/hicpac/disinfection_sterilization/3_4surfacedisinfection.html)

http://www.cdc.gov/hicpac/disinfection_sterilization/3_4surfacedisinfection.html

Whitepapers

[Soft Surface Fabrics: The Other High Touch Surfaces](#)

[Soft Surface Bacterial Contamination: Considerations for a Complete Infection Prevention Program](#)

<http://www.infectionpreventiontextiles.com/download-whitepaper.php>