

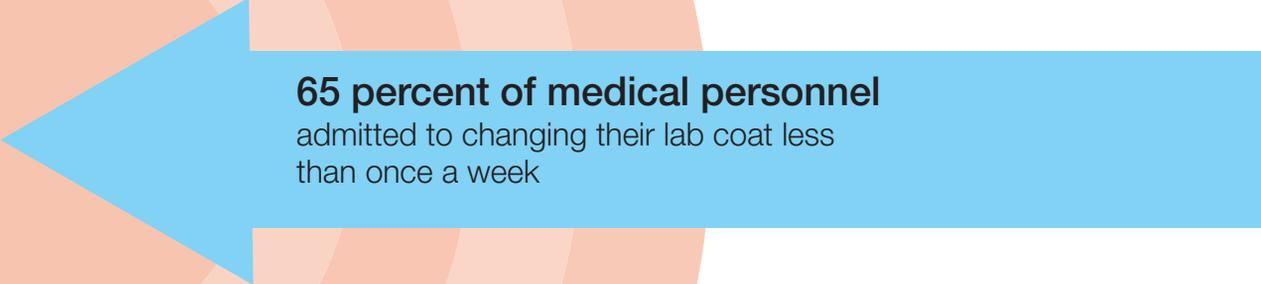


Clean Up Your Act!

MRSA, *C. diff*, other harmful bacteria lurk in unexpected places

Busy, overburdened hospitals, ever-mutating strains of bacteria and spotty handwashing compliance – these are just a few of the reasons behind increasing rates of healthcare-acquired infection (HAI). But with multiple and varied contributing factors, it's difficult to get a handle on this widespread, worldwide problem. According to the Centers for Disease Control and Prevention (CDC), HAIs account for an estimated 1.7 million infections and 99,000 deaths in U.S. hospitals each year.¹

The so-called “bad bugs” behind many HAIs are so insidious, they can be found lurking practically anywhere within a healthcare facility. Several new studies show that healthcare professionals’ scrubs, lab coats and stethoscopes are carriers of deadly bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* (*C. diff*) that easily can be transmitted to patients.



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Bacteria-laden stethoscopes

Ill patients are obvious carriers of bacteria, and any surface or piece of medical equipment is a potential vector for that bacteria. For example, bacterial contamination of a stethoscope increases markedly after it is used to examine more than five patients without cleaning.² Several studies, however, suggest that many healthcare professionals use bacteria-laden stethoscopes, potentially transferring bacteria from patient to patient.

A recent study at one tertiary care center suggests roughly one third of stethoscopes carried by EMS professionals harbor MRSA. A microbiologic analysis of 50 stethoscopes provided by EMS professionals in an emergency department revealed that 16 had MRSA colonization. Similarly, 16 of the EMS workers could not remember the last time they cleaned their stethoscope. For those who did remember, the median time from the last stethoscope cleaning was one to seven days. MRSA colonization rates fell considerably in the stethoscopes that were cleaned more recently.³

Another study cultured 99 stethoscopes on four medical floors of a 600-bed hospital. All were positive for bacteria growth. Half of the stethoscopes were cleaned using ethanol-based cleaner (hand-sanitizing gel) and the other half were cleaned using isopropyl alcohol pads. Cleaning with the ethanol gel and isopropyl alcohol pads significantly reduced the bacteria counts (by 92.8 percent and 92.5 percent, respectively).²

A similar study at a large academic medical center took cultures from 40 randomly selected clinicians' stethoscopes. *Staphylococcus aureus* was found on 38 percent of them. When comparing the bacteria-removing

ability of isopropyl alcohol, bleach, benzalkonium chloride swabs and soap and water, isopropyl alcohol was proven to be most effective to rid the stethoscopes of *S. aureus*.⁴

The same study also addressed whether bacteria could be transferred to human skin from the stethoscope diaphragm. *Micrococcus luteus* was inoculated onto a stethoscope diaphragm, and the study showed that it did transfer to human skin. The authors concluded that the transfer of *M. luteus* to human skin made it likely that other bacteria could be transferred as well.

Stethoscopes are an extension of the hand in clinical settings and should be cleaned with the same frequency; that is, after contact with each patient. Cleaning a stethoscope takes little time and effort, requires no special equipment – and it could avoid a deadly infection.

Dirty scrubs

How about your scrubs? Some medical personnel wear the same uniform to work more than once before laundering, meaning they could be starting their shift with *C. diff*, MRSA and who knows what other bacteria already on their scrubs. A study conducted at the University of Maryland revealed that 65 percent of medical personnel admitted to changing their lab coat less than once a week; 15 percent changed once a month.⁵ Healthcare workers often touch their own uniforms, potentially transferring bacteria from the fabric to their patients. Studies confirm that the more bacteria found on surfaces touched often by doctors and nurses, the higher the risk for the bacteria to be carried to the patient and cause infection.⁵

In one study, 65 percent of nurses who cared for patients with MRSA contaminated their uniforms with MRSA.⁶ *Staphylococci* and *Enterococci* were found to survive for days to months after drying on commonly used hospital fabrics, such as scrubs made from 100 percent cotton or 60 percent cotton and 40 percent polyester, as shown in a study conducted by the Shriners Hospital for Children and the Department of Surgery at the University of Cincinnati.⁶

St. Mary's Health Center in St. Louis, Mo., reduced infections after cesarean births by more than 50 percent by providing staff with hospital-laundered scrubs.⁵ Similarly, Monroe Hospital in Bloomington, Ind., which has a near-zero rate of hospital-acquired infections, requires all staff to wear hospital-laundered scrubs and bans them from wearing scrubs outside the hospital building.⁵

Surgical staff are exposed to possible bacteria-containing debris and fluid much more often than staff in other areas of a hospital

Home laundering or hospital laundering?

There is ongoing debate whether hospitals should launder staff uniforms or allow staff to wash their own uniforms at home. The Association of Perioperative Registered Nurses (AORN) recommends that all reusable surgical attire, including scrubs, be laundered in a facility-approved and monitored laundry.⁷

AORN recommendations further state, "Surgical attire should be changed daily or whenever it becomes visibly soiled, contaminated, or wet. Worn surgical attire should be placed in an appropriately designed container for washing or disposal and should not be hung or placed in a locker for wearing at another time. This promotes high-level cleanliness and hygiene within the practice setting. It has been reported that bacterial colony counts are higher when scrub clothing is removed, stored in a locker, and used again."

Surgical staff are exposed to possible bacteria-containing debris and fluid much more often than staff in other areas of a hospital, however, microbial contamination still can occur outside the surgical suite, in patient rooms where patients have MRSA or VRE.⁸



On the other side of the debate, a 1997 state-of-the-art report (SOAR) compiled by the Association for Professionals in Infection Control and Epidemiology (APIC) states, "There is no scientific evidence to suggest that home laundering versus institutional laundering poses any increased risk of infection transmission."⁹

Yet the report also says, "OSHA holds employers responsible for laundering any clothing, including scrubs worn by health care workers, that becomes contaminated with blood or other potentially infectious body fluids, regardless of who owns the scrubs."⁹

The CDC supports home laundering of scrub uniforms in its Guideline for Isolation Precautions (2007), which states, "In the home, textiles and laundry from patients

with potentially transmissible infectious pathogens do not require special handling or separate laundering, and may be washed with warm water and detergent."¹⁰ Conversely, the state health departments in Pennsylvania and Massachusetts, among others, recommend that patients infected with MRSA launder their clothing at home in hot water and laundry detergent. They also suggest drying clothes in a hot dryer to help kill the bacteria.^{11,12}

The CDC's laundering recommendation is based on the outcome of two small, limited studies. One of the studies examined the scrub clothing of 68 labor and delivery employees. The scrubs were laundered at home in warm water and detergent and also dried in a clothes dryer on the hot setting. The authors concluded that home-laundered scrub clothing can be worn safely in labor and delivery units.¹³ What about other areas of a hospital?

The other study tested the left front shoulders only of 30 home-laundered scrubs and 20 hospital-laundered scrubs. No pathogenic growth was found on either the

home- or hospital-laundered fabrics.¹⁴ It could be argued, however, that the front shoulder of a scrub uniform is one of the least likely areas to be touched or contaminated.

Fewer bacteria = fewer HAIs

When it comes to preventing HAIs, it's better to be safe than sorry. If there's even a small chance you could be transferring bacteria to patients, why not take a little extra time and a small amount of effort to clean up your act? Hand rub dispensers are conveniently located throughout most facilities, so go ahead and disinfect your stethoscope between patients. When you wash your scrubs, turn those dials to hot, and of course – keep washing your hands. Pass the word along to colleagues, and you may be surprised to see your facility's HAI rates go down.

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Change your habits for infection prevention

- Keep isopropyl alcohol wipes or ethanol-based hand cleaner available and wipe down your stethoscope after each patient encounter.
- Wear street clothes to work, and then change into clean scrubs every day. Keep an extra set on hand and change mid shift if your scrubs get visibly dirty or notably splattered with any substance possibly containing bacteria. Change back into street clothes before leaving the facility to avoid carrying bacteria into your car, public places and your home. If you wear a lab coat, keep a clean supply at your facility and change into a new one each day.
- If your facility allows you to launder your own uniforms at home, be sure to use hot water (110 to 125 degrees F or 43.33 to 51.67 degrees C)⁷ with 50 to 150 parts per million of chlorine bleach.⁶ (Note: Bleach is the only known cleaner proven to kill *C. diff*.)¹⁵ Above all, drying laundered linen in a hot clothes dryer plays the most significant role in eliminating bacteria.⁶