As travel across the globe has become an increasingly viable option to more people than ever before, that heightened interaction with one another has opened the door to the threat of coming into contact with a higher number of diseases and infections that, just a few years prior, might have otherwise been unthinkable or untenable.

“While CRE microorganisms might be present on the textiles, if laundry personnel follow universal precautions, there is minimal to negligible risk of actually contracting a CRE from contact with soiled linens.”
It is little surprise, then, yet no less unsettling, that the Centers for Disease Control and Prevention are reporting an increased number of cases of outbreaks of carbapenem-resistant Enterobacteriaceae, or CRE, across the southeastern United States. Yet for all of the concern and reports that are circulating across the local news about what CRE actually is, there is an astounding amount of misinformation being distributed to the general public.

THE DEVIL IS IN THE DETAILS: DEFINING CRE

According to the Centers for Disease Control and Prevention, CRE are a group of germs that are quite difficult to treat and eradicate, as the germs have a high tolerance and resistance to antibiotics.1 This resistance is so high, in fact that, between 2008 and 2012, the reported cases of a CRE-related organisms being present in patients in healthcare facilities across the southeastern part of the United States increased fivefold.2

In general, those people who are most likely to contract a CRE are those who are already sick, including patients in acute or long-term healthcare facilities, the CDC says. Those patients, it should be noted, usually are being treated for some other illness apart from a CRE. The hospital setting and the nature of CREs make those patients prime candidates for falling ill to one of the members of the family of superbugs. The immunosuppressed, those who are contending with compromised immune systems, and patients with invasive devices such as ventilators, urinary catheters, or intravenous catheters, or wounds from surgeries or injuries body are also at higher risk of contracting a CRE. Carbapenem-resistant Enterobacteriaceae is a family of germs including Klebsiella species and Esherichia coli (E. coli). The increase in CRE-reported cases has its roots in the very thing to which CREs are resistant: antibiotics. The overuse in antibiotics in humans and animals, according to medical experts, have led to stronger superbugs that can spread more easily. CRE cases are expected to continue to be on the rise in the foreseeable future. And as infection disease specialist Dr. Joshua Thaden notes, using even stronger antibiotics to fight the CREs might only serve to keep the drug resistance cycle continuing.3 Add to that a 50% mortality rate for those infected with a CRE and the cause for alarm is not necessarily misplaced.4

KNOWLEDGE IS POWER:
PREVENTION AGAINST CREs

As noted above, hospital patients are more likely to contract CREs than others, but it can still be spread from person to person outside of the healthcare environment. Coming into contact with a person infected with a CRE is the most common way for the disease to be passed. However, if a healthy individual comes into contact with infected bodily fluids, particularly stool or wound drainage, he or she is at risk of contracting a CRE.5 Still, as with combatting other microorganisms, prevention is key. Before visiting a patient with a CRE, hospital policy may require you to utilize protective apparel prior to entering the patient’s room. Further, before donning the gloves, perform hand hygiene of soap-and-water or an alcohol-based rub, and repeat the process after leaving the patient’s room and removing the gloves.

Hospitals typically place CRE patients in a private room or if one is unavailable, in a semi-private room with another CRE patient. It may be noted in the patient’s file that “contact precautions” should be taken. Another measure hospitals are taking is in the way that they use antibiotics. As the use of antibiotics is shown to have a direct connection to the growth and spread of CREs in recent years, doctors are becoming more discerning when they prescribe those antibiotics.

It should be noted that the reason that prevention is so largely stressed when it comes to CRE is the fact that once a person is infected, the superbug is incredibly difficult to treat. The most effective way to treat a CRE is taking the steps necessary not to contract one in the first place.
FOREWARNED IS FOREARMED: CRE AND THE LAUNDRY INDUSTRY

While CRE microorganisms might be present on the textiles, if laundry personnel follow universal precautions, there is minimal to negligible risk of actually contracting a CRE from contact with soiled linens. What the handling of the linens does require is a common-sense, careful approach to be cause spreading of CRE. In general, laundry personnel should pay attention to frequent handwashing and avoid touching such things as touching their faces on the soil sort to avoid contracting CRE along with other contact pathogens.

According to Angela Becker, senior technical account program leader with Textile R&D at Ecolab, universal precautions should be taken by all personnel handling healthcare linens, including wearing gloves, gowns, and eye protection when handling CRE infected linen. Further, all surfaces that have come into contact with a CRE-infected linen should be cleaned with a disinfectant. This is particularly important when handling linens that have been cleaned of CREs, as they can become infected again by contact with CRE-infected surfaces.

PROTECTION OF LAUNDRY PERSONNEL

Proper processing provides linen customers with hygienically clean textiles. However, reducing the spread of infection to laundry workers requires education as to how an infection occurs, protective equipment that serves as a barrier between the hazard and the laundry worker, and work practice controls.

ENGINEERING CONTROLS

Following universal/standard precautions and the proper use of PPE can protect employees from the risk of infection from the pathogens present on contaminated healthcare textiles. Healthcare laundry personnel at risk of exposure to bloodborne pathogens are offered Hepatitis B vaccinations and the public is encouraged to get a flu shot annually. The proper use of PPE (appropriate gowns and gloves) are required for protection against exposure to bloodborne pathogens.

CRE have been associated with high mortality rates (up to 40 to 50% in some studies.)

CRE have spread throughout many parts of the United States and have the potential to spread more widely.

In the hospital, the most common source for CRE was urine (almost 90%) and then blood at 10%. While most of the isolates were collected from cultures outside of the hospital, most of the community-associated CRE isolates had recently been exposed in a healthcare setting, the report noted.

From Guidance for Control of carbapenem-resistant Enterobacteriaceae (CRE) – 2012 CRE Toolkit

See more at: http://formularyjournal.modernmedicine.com/formulary-journal/news/user-defined-tags/cre/cdc-warns-health-departments-about-need-cre-prevention#sthash.o4cDi2AM.dpuf

WORK PRACTICE CONTROLS

Work practice controls are methods or steps to change the way employees performs their work. Laundry personnel working on the soiled side of an operation are likely to be exposed to harmful pathogens in sufficient quantity to cause/result in an infection. Lack of adequate sleep, stress, diet, smoking and other factors can weaken the immune system and the laundry personnel can become susceptible hosts. Therefore, it is essential to pay attention to the last two elements in the chain of infection to prevent the transfer of the pathogen to open wounds or mucus membranes.

Simply observe laundry personnel’s behavior on the soiled side of the operation. Do they scratch their noses with a gloved hand, do they sneeze into the sleeve of their soiled gown, do they wipe their eyes with the back of the gloved hand? On the average, human beings touch their faces 3.6 times an hour….this means over 28 times during an eight-hour work shift. These simple touches provide the pathogens both with a mode of transportation (hands) to a portal of entry (eyes, nose, and mouth). Awareness helps, but this automatic action may require some assistance to quit. Use of a face shield can raise awareness and prompt personnel to reduce face touches while wearing PPE.

Education of frontline wash technicians can reduce the spread of infection.

How an infection occurs

For an infection to occur five things MUST happen, commonly referred to as the “chain of infection.” To prevent the spread of infection it only requires that one of these five things is missing.

1. There is a harmful pathogen
2. There is a sufficient quantity of the pathogen present
3. There is a susceptible host
4. There is a mode of transportation (for the pathogen to transfer to the host)
5. Portal of entry (an opening for the pathogen to enter such as an open wound, eyes, nose, mouth etc.)

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FOR FURTHER READING

Some of the leading Healthcare-associated Infections (HAIs) of current concern:

- **Acinetobacter** - is a group of bacteria commonly found in soil and water. Outbreaks of Acinetobacter infections typically occur in intensive care units and healthcare settings housing very ill patients.
- **Clostridium difficile** - is a bacterium that causes an inflammation of the colon; this condition is called colitis. Diarrhea and fever are the most common symptoms of Clostridium difficile infection. Overuse of antibiotics is the most important risk for getting Clostridium difficile infection.
- **Gram-negative bacteria** - Gram-negative bacteria cause infections including pneumonia, bloodstream infections, wound or surgical site infections, and meningitis in healthcare settings. Gram-negative bacteria are resistant to multiple drugs and are increasingly resistant to most available antibiotics.
- **Hepatitis** - The word hepatitis means inflammation of the liver and also refers to a group of viral infections that affect the liver. The most common types are hepatitis A, hepatitis B, and hepatitis C. The delivery of healthcare has the potential to transmit hepatitis to both healthcare workers and patients. Outbreaks have occurred in outpatient settings, hemodialysis units, long-term care facilities, and hospitals, primarily as a result of unsafe injection practices; reuse of needles, fingerstick devices, and syringes; and other lapses in infection control.
- **Human Immunodeficiency Virus (HIV)** - is the virus that can lead to acquired immune deficiency syndrome (AIDS). HIV destroys blood cells called CD4+ T cells, which are crucial to helping the body fight disease. This results in a weakened immune system, making persons with HIV or AIDS at risk for many different types of infections. Transmission of HIV to patients while in Healthcare Settings is rare. Most exposures do not result in infection. [Human immunodeficiency virus is also called HIV]
- **Influenza** - is primarily a community-based infection that is transmitted in households and community settings. Each year, 5% to 20% of U.S. residents acquire an influenza virus infection, and many will seek medical care in ambulatory healthcare settings (e.g., pediatricians’ offices, urgent-care clinics). In addition, more than 200,000 persons, on average, are hospitalized each year for influenza-related complications.
- **Klebsiella** - is a type of Gram-negative bacteria that can cause healthcare-associated infections including pneumonia, bloodstream infections, wound or surgical site infections, and meningitis. Increasingly, Klebsiella bacteria have developed antimicrobial resistance, most recently to the class of antibiotics known as carbapenems. Klebsiella bacteria are normally found in the human intestines (where they do not cause disease). They are also found in human stool (feces).
- **Methicillin-resistant Staphylococcus aureus** - is a type of staph bacteria that is resistant to certain antibiotics called beta-lactams. These antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin, and amoxicillin. In the community, most MRSA infections are skin infections.
- **Norovirus** - are a group of viruses that cause gastroenteritis [gas-trō-en-ter-ī-tis] in people. Gastroenteritis is an inflammation of the lining of the stomach and intestines, causing an acute onset of severe vomiting and diarrhea. Norovirus illness is usually brief in people who are otherwise healthy. Young children, the elderly, and people with other medical illnesses are most at risk for more severe or prolonged infection. Like all viral infections, noroviruses are not affected by treatment with antibiotics.
- **Staphylococcus aureus** - is a bacterium commonly found on the skin and in the nose of about 30% of individuals. Most of the time, staph does not cause any harm. These infections can look like pimples, boils, or other skin conditions and most are able to be treated.
- **Tuberculosis (TB)** - is caused by a bacterium called Mycobacterium tuberculosis. Transmission of Mycobacterium tuberculosis is a recognized risk to patients and healthcare personnel in healthcare facilities.
- **Vancomycin-intermediate Staphylococcus aureus** and **Vancomycin-resistant Staphylococcus aureus** - are specific staph bacteria that have developed resistance to the antimicrobial agent vancomycin. Persons who develop this type of staph infection may have underlying health conditions (such as diabetes and kidney disease), devices going into their bodies (such as catheters), previous infections with methicillin-resistant Staphylococcus aureus, and recent exposure to vancomycin and other antimicrobial agents.


References
5. [http://www.dhs.wisconsin.gov/publications/P0/P00470.pdf](http://www.dhs.wisconsin.gov/publications/P0/P00470.pdf)

**Fighting a New Battle** Earn one Laundry & Linen Management credit hour by completing the quiz over the material from this educational offering. To maintain ALM credentials individuals must submit proof of continuing education in laundry & linen specific programs every three years. Access to contact hour quizzes are a benefit of membership in ALM.

Check your current continuing education status [here](http://www.cdc.gov/hai/organisms/organisms.html)