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CARBAPENEM-RESISTANT ENTEROBACTERALES (CRE) FACT SHEET

BACKGROUND

Enterobacterales are a large order of different bacteria that commonly cause infections in healthcare settings. *Enterobacteriaceae* are now a family of bacteria that are normally found in the human intestines within the order of Enterobacterales. *Klebsiella, Enterobacter* and *Escherichia coli (E. coli)* are three of the well-known types of *Enterobacteriaceae*. When these bacteria spread outside the intestines and get into other areas of the body, they can cause serious infections such as urinary tract (kidney or bladder) infections, bloodstream infections, wounds or surgical site infections, pneumonia and meningitis.

Carbapenem antibiotics (imipenem, meropenem, doripenem, and ertapenem) are broad spectrum antimicrobials that are usually reserved for severe, life-threatening infections. However, some types of Enterobacterales have developed resistance to carbapenems. These bacteria are called carbapenem-resistant Enterobacterales (CRE).

Some CRE possess an enzyme called a carbapenemase (carbapenemase-producing CRE or CP-CRE) that directly breaks down carbapenem antibiotics. CP-CRE are a special type of CRE.

WHO DOES THE ISSUE IMPACT?

Healthy people usually don't get CRE infections. In hospitals and other health care settings, certain patients are at higher risk of developing CRE infection. These include patients whose care requires medical devices such as ventilators (breathing machines), intravenous catheters, or urinary catheters, and patients who are taking antibiotics for a long time.

HOW IS IT TRANSMITTED?

CRE bacteria are mostly spread through direct person-to-person contact, particularly contact with wounds or stool. In healthcare settings, CRE can be spread by the hands of healthcare workers and through contact with contaminated objects such as medical equipment, bed rails, doorknobs, computer keyboards, cleaning supplies, and sink drains. The bacteria are not spread through the air.

WHAT ARE THE COMPLICATIONS?

CRE are often resistant to multiple classes of antibiotics substantially limiting treatment options. Infections caused by these organisms, particularly bloodstream infections, are associated with high rates of death, up to 50 percent.

HOW DO I KNOW IF I HAVE IT?

The only way to identify a CRE infection is to collect and test appropriate specimens in the laboratory. For example, a doctor might collect a blood sample for testing if he or she thinks a person has a blood infection. The laboratory can also test to determine which antibiotic will be the most effective to treat the illness. This is how they will know that the bacteria are resistant to carbapenems.

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HOW IS IT TREATED?

Infections caused by CRE are often difficult to treat. Laboratory testing can determine which antibiotics are effective for treatment. If your provider prescribes you antibiotics, take them exactly as instructed and finish the full course, even if you feel better.

Persons who are colonized might carry the CRE in their body and may never develop serious infections from it; thus, colonized individuals may not require any treatment. Decisions on treatment of infections with CRE should be made on a case-by-case basis by a healthcare provider.

WHAT CAN YOU DO?

The best way to prevent the spread of CRE, and all infections, is to clean your hands often. This includes washing hands with soap and water or using an alcohol- based hand rub. Health care workers should follow specific infection control precautions. These might include wearing gowns and gloves when entering a room of patients with CRE.

Patients and health care workers should clean their hands often, including:

- Before preparing or eating food;
- Before touching their eyes, nose or mouth;
- After using the restroom;
- After blowing their nose, coughing or sneezing;
- Before and after changing wound dressings or bandages;
- Before and after glove use; and
- After touching hospital surfaces such as bed rails, bedside tables, doorknobs, remote controls or the phone.

Research has shown that alcohol-based hand rub is the most effective method for hand hygiene in health care settings and that it is also the least drying and least likely to lead to skin breakdown in health care workers. Therefore, alcohol-based hand rub is the preferred method for routine hand hygiene in health care settings.

DISEASE PATTERNS

Most CRE infections occur in a health care setting. They are associated with high rates of death and have the potential to spread from person to person.

RESOURCES FOR MORE INFORMATION

More information can be found by reviewing the following CDC resources:
Clean Hands Count: https://www.cdc.gov/handhygiene/providers/index.html & Carbapenem-resistant Enterobacterales: https://www.cdc.gov/hai/organisms/cre/index.html.

This fact sheet provides general information. Please contact your physician for specific clinical information.

If you have any questions, contact us at RA-DHHAI@pa.gov.

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