CARBAPENEM-RESISTANT *ENTEROBACTERIACEAE* (CRE) FACT SHEET

What is carbapenem-resistant Enterobacteriaceae (CRE)?

Carbapenem-resistant *Enterobacteriaceae* is a type of gram-negative bacteria that is resistant to a class of antibiotics called carbapenems. This is considered a threat to patient safety because carbapenem antibiotics often are the last line of defense against gram-negative infections that are resistant to other antibiotics. Resistance to carbapenems can be due to a few different mechanisms.

One of the more common ways that *Enterobacteriaceae* become resistant to carbapenems is due to production of *Klebsiella pneumoniae* carbapenemase (KPC). KPC is an enzyme that is produced by some CRE. KPC breaks down carbapenems making them ineffective. Other enzymes, in addition to KPC, can breakdown carbapenems and lead to the development of CRE, but they are uncommon in the United States.

Currently, *carbapenem*-resistant *Klebsiella pneumoniae* (CRKP) is the species of CRE most commonly encountered in the United States. It has been associated with high rates of disease and death.

How is CRE spread?

CRE must enter the respiratory tract to cause pneumonia, or the blood to cause a bloodstream infection.

In healthcare settings, CRE bacteria can be spread through person-to-person contact and from patient-to-patient on the hands of healthcare personnel, not through the air.

What type of health problems are caused by CRE?

Common Enterobacteriaceae include *Klebsiella* and *Escherichia coli (E. coli).* These germs are found in normal human intestines (gut). Sometimes these bacteria can spread outside the gut and cause serious infections, such as pneumonia, bloodstream infections, urinary tract infections, wound infections, and meningitis.

Who is most at risk?

Healthy people usually do not get a CRE infection. The infections are most often seen in patients with prolonged hospitalization and those who are critically ill. Patients may be exposed to CRE when they are on ventilators (breathing machines), or have intravenous (vein) catheters or wounds (caused by injury or surgery). Unfortunately, these medical tools may allow CRE to enter the body and cause infection.

How is CRE treated?

Klebsiella infections that are not drug-resistant can be treated with antibiotics. Infections caused by CRE are difficult to treat because fewer antibiotics will treat the infections. A

microbiology laboratory must run tests to determine which antibiotics will treat the infection.

How can CRE be prevented?

To prevent spreading *CRE* infections between patients, healthcare personnel must follow specific infection control precautions.

All patients colonized (people who have the bacteria, but do not have symptoms) or infected with *CRE* should be placed on contact precautions. These precautions include wearing gowns and gloves when they enter carbapenem-resistant *Enterobacteriaceae* patient rooms and strict adherence to hand hygiene. Healthcare facilities also must follow strict cleaning procedures to prevent the spread of CRE.

To prevent the spread of infections, patients should also clean their hands very often, including:

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

Also, it is important that you take antibiotics *only* when your healthcare provider prescribes them, and take them exactly as instructed. Finish the course, even if you feel better.

Where can I get more information?

- Your personal healthcare provider
- Utah Healthcare Associated Infections Prevention Program – 801-538-6191
- Centers for Disease Control & Prevention

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