CRE Infection: Clinician Fact Sheet

Kansas Department of Health and Environment
Division of Public Health

What are CRE?

CRE stands for "carbapenem-resistant Enterobacteriaceae." Enterobacteriaceae are a family of bacteria that are often found in people's gastrointestinal tract that can cause infections both in community and healthcare settings. Some Enterobacteriaceae have become resistant to all or almost all antibiotics. In general, CRE test nonsusceptible to at least one of the carbapenem antibiotics and/or produce an enzyme (carbapenemase) that can make them resistant to these antibiotics. These bacteria often have other resistance mechanisms that render them nonsusceptible to many other classes of commonly used antibiotics.

These bacteria were uncommon in the United States before 1992. Since then they have become more common primarily due to the spread of Enterobacteriaceae that produce a carbapenemase called KPC (Klebsiella pneumoniae carbapenemase). KPC was first recognized in the United States in 2001.

How do CRE become resistant?

Unlike other multi-drug resistant organisms (MDRO) like MRSA for which a single mechanism leads to methicillin resistance, CRE can become nonsusceptible to carbapenems due to a number of mechanisms. Before the recent emergence of carbapenamases like KPC, most CRE in the United States likely were resistant to carbapenems through a combination of mechanisms. The genes that code for KPC are on a highly mobile genetic element that can be transmitted from one bacterium to another thereby spreading resistance. KPC-producing bacteria have spread widely across the United States.

In addition to KPC, a number of other carbapenemases exist that can lead to carbapenem resistance; examples of these include New Delhi Metallo-beta-lactamase (NDM), Verona Integron-Encoded Metallo-beta-lactamase (VIM), and Imipenemase Metallo-beta-lactamase (IMP). These metallo-beta-lactamases are uncommon in the United States but have been identified rarely in this country, most commonly in patients with exposure to healthcare in endemic countries. Enterobacteriaceae that produce carbapenemase are referred to as Carbapenemase-producing CRE (CP-CRE).

What should my CRE patient be treated with?

KDHE strongly recommends consultation with an infectious disease specialist (i.e., ID physician, ID pharmacist) as this infection in your patient is multi-drug resistant and producing a carbapenemase enzyme.

Will Public Health Officials be contacting my patient?

Please inform your patient that public health officials may contact them to conduct a public health investigation. One of the main reasons for a public health investigation is to limit the spread of communicable disease and ensure containment strategies are implemented. Investigation of CP-CRE is similar to other infectious diseases. CRE infections and colonization is reportable to KDHE's Bureau of Epidemiology and Public Health Informatics (www.kdheks.gov/epi/disease_reporting.html).

What isolation guidelines are recommended to prevent the spread of CRE?

Hand hygiene is the single most important practice to reduce the transmission of infectious agents in healthcare settings. Standard Precautions (e.g. hand hygiene) should be used each and every time the patient is seen in your office. If your patient is admitted in an inpatient setting (e.g., hospital, rehab facility), Contact Precautions should be utilized to prevent further spread. The Centers for Disease Control and Prevention (CDC) strongly recommends Contact Precautions including single patient rooms or cohorting with other CP-CRE patients in acute care hospitals. Additionally, KDHE strongly recommends to have the patient's medical record flagged as CP-CRE so that Contact Precautions can be in place for future hospitalizations.

Healthcare-Associated Infections & Antimicrobial Resistance Program

The Kansas Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) Program expanded its scope in 2016 to include activities involving antimicrobial resistance. The HAI/AR program performs activities pursuant of developing state level infrastructure and monitoring of healthcare-associated infections and antimicrobial resistance. The HAI/AR program is guided by the objectives to enhance prevention and response efforts, and collaborate with key healthcare organizations in the state, and nationally, to promote prevention initiatives. Additionally, several resources have been developed to address CRE.

Clinician CRE Resources:

www.cdc.gov/hai/organisms/cre/cre-clinicianfaq.html

www.kdheks.gov/epi/hai.htm

KDHE 24/7 Epidemiology Hotline: 877-427-7317

Patient CRE Resources:

www.cdc.gov/hai/organisms/cre/cre-patientfaq.html

This fact sheet is for information only and is not intended for self-diagnosis or as a substitute for consultation. If you have any questions about the disease described above or think that you may have an infection, consult an ID specialist.

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