

## CRE Frequently Asked Questions

### **What is a CRE?**

Carbapenem-resistant Enterobacteriaceae (CRE) are organisms that develop resistance to one or more carbapenem antimicrobial (i.e., ertapenem, doripenem, imipenem, meropenem) or organisms that are documented to produce carbapenemase. CRE utilize various resistance mechanisms (e.g., extended-spectrum  $\beta$ -lactamase (ESBL), porin mutations). One mechanism in particular, carbapenemase, is believed to be associated with the increase of CRE in the United States. Carbapenemase is an enzyme that directly breaks down carbapenems. CRE that produce carbapenemase are known as carbapenemase producing CRE (CP-CRE). Additionally, CP-CRE contain the genetic instructions for creating carbapenemase in mobile elements that facilitate the transfer of resistance to other organisms (i.e., Enterobacteriaceae, gram-negative organisms).

### **Why should the culture be sent to KDHE?**

The Centers for Disease Control and Prevention (CDC) and the Kansas Department of Health and Environment (KDHE) are working to track emerging antimicrobial resistant threats. Kansas' state public health laboratory, KHEL (Kansas Health and Environmental Laboratories), works closely with CDC's Antimicrobial Resistance Laboratory Network (ARLN) to test specimens for the identification of carbapenemase. Once KHEL receives an isolate, it is forwarded to CDC's Regional ARLN in Minnesota for identification of carbapenemase producing CRE. In the near future, KHEL will be able to perform laboratory testing to identify CP-CRE.

### **How do commercial reference labs identify CP-CRE?**

Most commercial laboratories use what is referred to as a phenotypic definition for identifying CP-CRE. This means, that the laboratory relies upon susceptibility reports and other laboratory methods that suggest a likelihood that the CRE is a carbapenemase producer. Absent recognized carbapenemase detection test, you should treat all laboratory reports of CP-CRE as such until confirmatory testing at KHEL can be performed.

### **What should a CRE patient be treated with?**

KDHE is not able to provide any recommendations of treatment(s) for patients with CRE; however, we strongly recommend clinicians consult infectious disease specialists and pharmacists to determine an appropriate treatment plan for your patient.

### **When should a CRE patient be removed from Contact Precautions?**

Currently, there is not enough evidence to make a recommendation when contact precautions can be discontinued. Staff and clinicians need to be cognizant of the risk of transmission in patients that are colonized (i.e. asymptomatic). More than one surveillance culture should be performed to rule out CRE as one negative result might not detect colonization.

### **What type of infections are associated with CRE?**

CRE can cause infections in almost any part body including bloodstream infections, ventilator-associated pneumonia, and intra-abdominal abscesses. According to CDC, most CRE infections involve the urinary tract, often in people who have a urinary catheter or have urinary retention. It is important to note that CRE kill up to half of patients who get bloodstream infections from them.

### **Are CRE that don't produce carbapenemase important?**

“Yes, CRE that do not produce carbapenemase are generally still resistant to multiple antibiotics and likely warrant use of infection control interventions such as use of contact precautions when patients with these organisms are being cared for in acute care healthcare settings. However, more aggressive interventions like the implementation of screening cultures of contacts and patient and staff cohorting could be reserved for CP-CRE which are believed to have greater potential for spread.” – CDC, 2015

### **Additional Online Resources**

CDC's CRE-Toolkit: <https://www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html>

CDC Clinician FAQ: <https://www.cdc.gov/hai/organisms/cre/cre-clinicianfaq.html>

KDHE HAI Program: <http://www.kdheks.gov/epi/hai.htm>

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