

Carbapenem-Resistant Organisms (CRO) including Carbapenem-Resistant Enterobacterales (CRE) Response and Control

Guidance for Local Health Departments and Regional Epidemiologists January 2023

Carbapenem-resistant organisms (CRO), including carbapenem-resistant Enterobacterales (CRE), are multidrug-resistant organisms that can cause serious infections requiring interventions in healthcare settings to prevent spread. Many different mechanisms can lead to carbapenem resistance. CRO that produce carbapenemases, enzymes that break down carbapenems and related antimicrobials making them ineffective, are called carbapenemase-producing CRO, which is a subset previously known as CP-CRE. With the updated case definition, effective January 1, 2023, the term carbapenemase-producing organisms (CPO) replaces CP-CRE and expands to include *Acinetobacter* and *Pseudomonas*.

Background

- The previous position statement limited the case definition of CPO to *Escherichia coli* (*E. coli*), *Enterobacter* and *Klebsiella* species (spp.). Recent studies have shown, however, that other genera in the Enterobacterales order (e.g., *Citrobacter*, *Morganella*, *Serratia*, *Providencia*, *Proteus*) and non-fermenting bacteria (*Pseudomonas*, *Acinetobacter*) play an important role in the epidemiology of CPO.
- Laboratory criteria and case definitions in the previous position statement described both phenotypic and genotypic carbapenemase testing methods that did not include next generation sequencing (NGS).

Laboratory Criteria for Reporting

- **In West Virginia, CRO (including CPO) is a category IV disease and is reportable to the local health department within 1 week.**
- Laboratories should report any of the following laboratory results for any specimen:
 - Positive phenotypic test result for carbapenemase production, with or without identification of a specific carbapenemase gene, OR
 - Positive molecular test result detecting a carbapenemase gene, OR
 - Detection of a carbapenemase gene by NGS, OR
 - Specimen positive for a carbapenemase gene without bacterial species identification, (e.g., Xpert Carba-R rectal swabs, other Culture-Independent Diagnostic Test).

Case Definition for Reporting

Confirmatory lab evidence:

- Positive phenotypic test result for carbapenemase production, OR
- Positive molecular test result detecting a carbapenemase gene (with or without organism identification), OR
- Detection of carbapenemase gene NGS.

Public Health Response

- Promptly detect the presence of CRO and CPO in specimens.
- Provide education to the patient and/or family.
- Collect information needed to determine appropriate recommendations based on Centers for Disease Control and Prevention (CDC) Containment Strategy Guidance, found at: www.cdc.gov/hai/mdro-guides/containment-strategy.html.
- Verify appropriate infection control measures are implemented by the healthcare facility to stop transmission.
 - Private room with a bathroom and dedicated non-critical equipment.
 - Recommend Enhanced Barrier Precautions for nursing home residents.
- Identify affected patients, determine whether transmission to other patients is occurring, and recommend appropriate infection control measures to stop further transmission.
- Review the patient's healthcare exposures (outpatient visits, home health visits, overnight stays in healthcare settings) for possible notification to healthcare facilities.
- Recommend colonization screening of high-risk healthcare contacts so additional infection prevention measures can be put into place.

For additional information:

- www.cdc.gov/hai/organisms/cre/index.html
- www.cdc.gov/hai/containment/PPE-Nursing-Homes.html