Carbapenem-Resistant Organisms (CRO) including Carbapenem-Resistant Enterobacterales (CRE) Investigation FAQ

West Virginia Department of HEALTH
BUREAU FOR PUBLIC HEALTH

What's new with CRO surveillance?

As of January 1, 2023, an expanded case definition will be used for CRO (previously known as Carbapenem-Resistant Enterobacteriaceae or CRE) case ascertainment purposes - see updated West Virginia Department of Health and Human Resources, Bureau for Public Health, Office of Epidemiology and Prevention Services (OEPS) CRO Protocol. www.oeps.wv.gov/Pages/default.aspx.

In summary, CRO, including but not limited to Enterobacterales order, *Acinetobacter baumannii,* and *Pseudomonas aeruginosa*, are multidrug-resistant organisms that can cause serious infections requiring interventions in healthcare settings to prevent spread. CROs that produce carbapenemases, enzymes that break down carbapenems and related antimicrobials making them ineffective, are called carbapenemase-producing organisms or CPO (previously known as Carbapenem Producing Carbapenem Resistant Enterobacteriaceae or CP-CRE). Isolates that demonstrate the production of a carbapenemase (e.g., KPC, NDM, VIM, IMP, OXA-48) by a recognized test (e.g., polymerase chain reaction, metallo-β-lactamase test, modified Hodge test, Carba NP) will be considered a case, even in the absence of carbapenem susceptibility results.

If you have any questions about CRO lab results, case ascertainment, case investigation, or data entry in the West Virginia Electronic Disease Surveillance System (WVEDSS), please contact the Healthcare-Associated Infections (HAI) Program at (304) 558-5358 ext. 2.

Where do laboratories send CRO results?

Laboratories should submit CRO results to local health departments (LHD) as outlined in the Reportable Disease Rule (64CSR7). LHD should complete the investigations. www.oeps.wv.gov/reporting/documents/laws/64_CSR_7.pdf

I haven't had to investigate carbapenem-resistant *Acinetobacter baumannii* (CRAB) or carbapenem-resistant *Pseudomonas aeruginosa* (CRPA) before. Why do I need to investigate these cases now?

In addition to the known dangers of CRE infection, CRAB and CRPA are a growing threat. Gram-negative bacteria cause infections including pneumonia, bloodstream infections, wound or surgical site infections, and meningitis in healthcare and community settings. Selected gram-negative bacteria are becoming resistant to all or nearly all antibiotics, meaning that patients with infections from these bacteria might have few or no treatment options. These infections are mainly associated with healthcare settings and have high death rates, but some resistant bacteria, such as extended-spectrum beta-lactamase (ESBL)-producing *Enterobacterales*, have reportedly increased as a cause of human infection in the community. As mentioned above, the term CPO replaces CP-CRE and expands to include Acinetobacter and Pseudomonas.

The specimen listed on the lab report does not come from a sterile site. Should I still investigate the case?

Yes, for CRO, it does not matter if the specimen comes from a sterile or non-sterile site; if it meets the surveillance case definition, you should complete the investigation and enter the information into WVEDSS.

How do I know if the culture was done for clinical or surveillance purposes?

If the specimen source was a rectal swab, it is a surveillance culture. If the specimen comes from any other source (i.e., wound, urine, blood, or other body fluid) it is a clinical culture.

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What do I do if a carbapenem susceptibility interpretation is not listed on the lab report?

Not all laboratories test all four carbapenems. If no carbapenem results are listed on the lab report, please call the testing facility's Infection Preventionist or the microbiologist at the laboratory to obtain that information. Additionally, knowing the minimum inhibitory concentration (MIC) values, or the lowest concentration of an antibiotic at which bacterial growth is completely inhibited, is important for case ascertainment. Some labs omit certain antibiotic susceptibility results, especially for carbapenems, since they do not want their physicians prescribing those drugs unless necessary, but the labs should be able to verbally provide the results.

Why do I need to interview the patient?

Healthcare providers do not always know whether a patient resides in or will be discharged to a long-term care facility (LTCF). This public health action will assist in more accurate LTCF exposure assessment and provide an opportunity to educate patients and/or their families on CRO to reduce potential community transmission. Patients and/or families should be encouraged to disclose CRO infection/colonization status to all healthcare providers they interact with.

Why do I need to assess healthcare exposures in the six months prior to initial CRO diagnosis?

Reviewing the patient's healthcare exposures prior to and after the initial positive culture, including overnight stays in healthcare settings, outpatient visits, and home health visits, can help identify facilities where transmission could have occurred.

In general, healthcare exposures over the preceding 30 days should be investigated. If information is available about the time the organism was most likely acquired (e.g., patient was hospitalized outside of the United States in a country where the organism and mechanism is known or believed to be common), then this period could be considered the risk period for transmission. If the index patient had recent inpatient healthcare exposure, colonization screening of epidemiologically-linked patients should be performed.

If you are in a low incidence area, or you notice multiple CRO cases associated with the same healthcare provider/facility, including outpatient, you should reach out to provide information on CRO transmission and prevention to potentially reduce the spread of CRO. Please consult with the HAI/AR Program to assist with determining if you have an outbreak.

Additional information on CRO containment can be found here: www.cdc.gov/healthcare-associated-infections/php/preventing-mdros/mdro-containment-strategy.html

Why do I need to follow up with LTCFs with CRO cases?

Since CROs are highly transmissible and are associated with high mortality rates (up to 40-50%), preventing transmission among LTCF residents is critical.

Ensure the LTCF is:

- Aware of their resident's CRO status.
- Taking measures to prevent transmission in their facility (hand hygiene, contact precautions, education of patients/visitors/staff, etc.).

These steps may help prevent CRO outbreaks. The OEPS Initial Assessment for LTCFs Reporting CRO will help you make sure the LTCF in question is doing what they should to prevent transmission in their facility. If you have any concerns about infection control practices related to CRO patients after conducting the initial assessment, please consult with the HAI Program.

What if the patient only stayed in the LTCF for a short time?

The duration of stay does not matter. Even if the facility only had a CRO case for 24 hours, there is still the potential for transmission. Following up with LTCFs with CRO patients is critical to ensure they are aware of the appropriate infection control measures, and they have the resources they need to prevent transmission in their facility from the current patient, as well as future CRO cases they may have.

What do I do if I receive multiple CRO cases from the same LTCF?

If you have already conducted an initial assessment with a particular LTCF, and you receive a lab report for another resident in the same LTCF, please do a quick check in with the LTCF:

- Is the same Infection Preventionist (IP) still there?
    - If not, go through the assessment with the new IP.
- Is the IP aware of this patient's CRO status?
    - If not, recommend the IP speak to the facility the patient came from and/or the lab where the testing was performed, as appropriate, about Multidrug-Resistant Organism (MDRO) notification.
- Did these cases acquire CRO at the LTCF in question (is there evidence of transmission)?
- Do they need anything from DHHR's Bureau for Public Health or have questions since the last time you spoke?
- Follow up on previous recommendations.

Discuss the situation with the IP to determine if there is an outbreak in their facility, including their baseline CRO rate and whether the cases are epi-linked. If you are concerned there may be a CRO outbreak in a particular LTCF, please consult with the HAI Program.

What do I do if I receive multiple CRO labs for known cases?

Review the patient's file to see if there has been a previous investigation for the same organism.

If the lab result reports the **same** organism (i.e., *E. coli*, *Klebsiella pneumoniae*) as reported in the previous investigation:

- Do not create a new investigation or enter additional labs in WVEDSS.
- Follow up with the ordering facility's IP to see if that patient is a LTCF resident (they may have moved since the last time you received a lab for them).
- If the patient is in the same LTCF, please complete the quick check-in as outlined in the above question, ***What do I do if I receive multiple CRO cases from the same LTCF?***, with the facility IP.
- If the patient is a recent LTCF admission or has moved to a new LTCF, please conduct an initial assessment with the new LTCF.

If the lab result reports a **different** organism as reported in the previous investigation:

- Initiate a new investigation in WVEDSS.
- Complete a new CRO report form.
- Enter laboratory and investigation results into WVEDSS.

If you have additional questions, please call the HAI/AR Program at (304) 558-5358 ext. 2.