



AR LABORATORY NETWORK: TESTING OVERVIEW

Carbapenemase-Resistant Enterobacteriaceae (CRE) and *Pseudomonas aeruginosa* (CRPA) Isolate Characterization

PUBLIC HEALTH IMPORTANCE OF TESTING.

Carbapenem-resistant Enterobacteriaceae (CRE) are known as the “nightmare bacteria” because they are resistant to nearly all available antibiotics and cause over 9,000 infections per year. Approximately half of bloodstream infections caused by CRE result in death. Increasing lab capacity to test and characterize CRE and other multidrug resistant organisms, like *Pseudomonas aeruginosa* (CRPA), will allow public health laboratories and public health departments to enhance efforts for monitoring resistance trends, detecting emerging resistance, and increasing the amount of actionable data to help inform strategies for preventing transmission of these infections.

SAMPLE COLLECTION AND SUBMISSION.

The required sample type for this testing is a bacterial isolate. CRE isolate submission should be targeted to at least *Escherichia coli*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, and *Enterobacter* spp. resistant to imipenem, meropenem, doripenem, or ertapenem. For CRPA, all *P. aeruginosa* isolates resistant to imipenem, meropenem, or doripenem should be submitted.

Using an AR Lab Network-funded FedEx shipping account, isolates should be sent to the following address:

WV Office of Laboratory Services
ATTN: ARLN CRE/CRPA
167 11th Avenue
South Charleston, WV 25303
304-558-3530

DESCRIPTION OF TESTING.

Isolate testing is performed by the Office of Laboratory Services to identify bacterial species, phenotypically characterize antimicrobial susceptibility, detect carbapenemase production, and identify carbapenemase genes. The testing workflow involves the following:

- Species identification by mass spectrometry (e.g., MALDI-TOF);
- Antimicrobial susceptibility testing to confirm phenotypic detection of CRE and CRPA using Etest and broth microdilution methods;
- Phenotypic methods to detect carbapenemase production (e.g., mCIM); and
- Molecular detection of carbapenem resistance genes by real-time PCR assays.

OBTAINING TEST RESULTS.

Final reports will be mailed to submitters within 48 hours of receipt of isolates.

CONTACT INFORMATION.

For questions or further information, please contact Lindsay Barr at lindsay.r.barr@wv.gov or Magan Ellis at magan.n.ellis@wv.gov.

Additional information can be found at: <https://dhhr.wv.gov/ols/labs/Pages/SusceptibilityTesting.aspx>.