



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**
Division of Public Health

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DEVPUTTA SANGVAI • Secretary

KELLY KIMPLE • Director, Public Health

SCOTT M. SHONE, PhD, HCLD (ABB) • Laboratory Director, State
Laboratory of Public Health

Memo

To: North Carolina Clinical Laboratories

From: Scott M. Shone, PhD, HCLD(ABB), Laboratory Director

Date: June 29, 2026

Re: Updated guidance for the submission of Carbapenemase-producing and/or Carbapenem-resistant Enterobacterales, *Pseudomonas aeruginosa*, and *Acinetobacter baumannii* isolates for Characterization. (June 2026, version 2)

The North Carolina State Laboratory of Public Health (NCSLPH) requests that clinical laboratories in the state submit all Carbapenemase-producing organism (CPO) isolates including Carbapenem-resistant Enterobacterales (CRE), *Pseudomonas aeruginosa* (CRPA), and *Acinetobacter baumannii* (CRAB) to NCSLPH.

Submission of CPO and Carbapenem-resistant organism (CRO) isolates (CP-CRE, CP-CRPA, CP-CRAB), to NCSLPH is requested to support statewide efforts to prevent the spread of multidrug-resistant organisms (MDROs) and facilitate coordination between clinical and public health partners. Please reference isolate submission criteria in the table below for more details. Submission is not requested to confirm the results of completed clinical testing.

Since 2019, this testing has identified novel, uncommon, and rare carbapenem resistance mechanisms, enabling a robust public health response. NCSLPH also works with the Centers for Disease Control and Prevention (CDC) to conduct whole genome sequencing (WGS) when further genetic characterization is necessary.

Submission of CPO and CRO isolates supports the following key public health goals:

- Characterize carbapenemase production using both molecular and phenotypic testing methods, allowing identification of rare carbapenemases that may be missed by PCR testing alone.
- Conduct further genetic characterization through whole genome sequencing (WGS) to identify transmission patterns and enable epidemiologic investigation of linked cases.
- Contribute isolates to databases of MDRO sequencing results, improving nationwide readiness to respond to evolving antimicrobial resistance threats.
- Bolster NCSLPH's testing capabilities, increasing capacity for MDRO response and containment.

Duplicate isolates:

NCSLPH will not perform CP testing on duplicate isolates unless otherwise requested by NC Epidemiology or the submitter. Duplicate isolates are isolates from the same patient, the same anatomical site, the same submitter, and the same genus and species with a positive carbapenemase mechanism that has been tested within the past 12 months. If the history of an isolate is in question, submit to NCSLPH for assessment.

NCSLPH CRE, CRPA, and CRAB Submission Guidelines (June 2026, version 2)	
Pathogen	Submit to NCSLPH if ANY apply
Enterobacterales^a (CRE) – Resistant to meropenem, imipenem, or ertapenem Pseudomonas aeruginosa^b (CRPA) – Resistant to meropenem or imipenem (non-mucoid, non-cystic fibrosis)	1. Positive enzymatic carbapenemase production test (e.g. mCIM, Carba-NP) 2. Positive carbapenemase gene identification test (e.g. Cepheid Carba-R, Hardy NG-Test Carba-5) 3. Enzymatic carbapenemase production test not performed (e.g. mCIM, Carba-NP) 4. Discrepant results between gene identification and enzymatic carbapenemase production tests
Acinetobacter baumannii^c (CRAB) – Resistant to any carbapenem	1. Resistant to any carbapenem 2. Positive carbapenemase gene identification test (e.g. Cepheid Carba-R)

^a) Elevated minimum inhibitory concentrations (MICs) to imipenem in *Morganella* spp., *Proteus* spp., and *Providencia* spp. are frequently due to mechanisms other than carbapenemases. Only submit isolates of *Morganella* spp., *Proteus* spp., and *Providencia* spp. that exhibit resistance to other carbapenems. If carbapenemase confirmatory testing is performed, please submit per the criteria outlined in the table.

^b) Only submit non-mucoid, non-cystic fibrosis CRPA isolates. If a facility is unable to perform CP testing on CRPA, NCSLPH will perform testing. If a facility performs CP testing, send CRPA isolates that are Meropenem and/or Imipenem resistant and shown to harbor a carbapenemase enzyme and/or gene. CDC has recommended CP testing be performed for CRPA that are pan-resistant to all drugs tested or CRPA that are either: a) not-susceptible to cefepime or ceftazidime ($\geq 16\mu\text{g/ml}$) or b) resistant to ceftolozane/tazobactam ($\geq 16/4\mu\text{g/ml}$).

^c) As of June 1, 2026, extended OXA gene mechanism testing will cease for CRAB isolates received at NCSLPH. The CDC AR Lab Network limits testing to outbreak investigation and response.

Review steps for isolate submission:

1. If shipping materials are needed, including TSA slant media and labels, please contact the NCSLPH ALRN team at slph.arln@dhhs.nc.gov.
2. Completely fill out NCSLPH [Enteric Bacteriology \(Enterobacterales\) Form DHHS 3390](#)
 - a. For “Specimen Type” select “Reference isolate” and provide the identification of the organism in the section box titled “Microbiology Test request/Pathogen(s) identified”.
 - i. Also, mark “ARLN Panel” box in this section
3. Submission of CRE, CRPA, or CRAB on TSA slant is preferred.
4. Label agar with two patient identifiers. Place completed DHHS form 3390 (one form per specimen) in outer container to avoid contamination in case of breakage or leakage.
5. All specimens must be packaged as [UN3373 Category B, Biological Substance](#).

Shipping:

All CRO and CPO CRE, CRPA, and CRAB testing and shipping is free through NCSLPH. Alternatively, laboratories can work with their Local Health Department to ship through the NC DOA Medical Courier.

Please ship isolates via FedEx to the following address:

NCSLPH ARLN
North Carolina State Laboratory of Public Health
4312 District Drive
Raleigh, NC 27607

For questions related to isolate submission, please contact the NCSLPH Microbiology Unit at 919-733-7367 or slph.arln@dhhs.nc.gov.