



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

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Division of Public Health

September 28, 2018

To: North Carolina Clinicians and Laboratories
From: Zack Moore, MD, MPH, State Epidemiologist
Scott J. Zimmerman, DrPH, MPH, HCLD (ABB), Director, NC State Laboratory of Public Health

Subject: Reporting Carbapenemase-Producing Carbapenem-Resistant *Enterobacteriaceae* and *Candida auris* in North Carolina

Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CRE) and *Candida auris* (*C. auris*) will be added to the list of conditions that are reportable in North Carolina (NC) as of October 1st, 2018. This memo is intended to provide information to NC clinicians and laboratories regarding implementation of reporting requirements.

Background:

Carbapenem-resistant Enterobacteriaceae (CRE)

Enterobacteriaceae are a normal part of the human gastrointestinal flora and include *Klebsiella* species, *Enterobacter* species, and *Escherichia coli*, among other types of commensal bacteria. Infections caused by CRE are difficult to treat and are associated with higher mortality rates because they have developed resistance to carbapenems, which are often considered antibiotics of last resort. Some CRE produce enzymes called carbapenemases, which break down carbapenem antibiotics. The genes that produce these carbapenemases can be easily transferred to other bacteria. Carbapenemases include: *Klebsiella pneumoniae* carbapenemase (KPC), New Delhi metallo- β -lactamase (NDM), Verona integron encoded metallo- β -lactamase (VIM), imipenemase metallo- β -lactamase (IMP), and oxacillinase-48 (OXA-48). Because of their ability to transfer resistance, carbapenemase-producing CRE (CP-CRE) are of particular public health concern.

***Candida auris* (*C. auris*)**

C. auris is an emerging drug resistant fungus. *C. auris* infections have been reported in more than twenty countries since it was first identified in 2009. Infections with *C. auris* are often invasive and can be difficult to both identify and treat. In the United States, *C. auris* has been identified in 11 states, causing prolonged outbreaks in hospitals and other health care settings. *C. auris* has not yet been identified in North Carolina.

Both CRE and *C. auris* can persist in the environment, facilitating spread. Early detection and aggressive infection prevention are necessary to prevent further spread. When CP-CRE or *C. auris* are identified, NC Division of Public Health (DPH) is available to provide infection prevention guidance and screening recommendations as well as additional resistance mechanism and/or confirmatory testing.

Surveillance:

- Communicate with your institution's clinical laboratory regarding diagnostic testing for CRE and *C. auris*, specifically to:
 - Ensure use of appropriate methods for CRE identification (including adoption of the most recent Clinical & Laboratory Standards Institute breakpoints for carbapenem susceptibility testing); and
 - Assess their capacity to test for CP-CRE. If your laboratory does not have the capacity to perform carbapenemase testing, the State Laboratory of Public Health (SLPH) is available to perform this

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES • DIVISION OF PUBLIC HEALTH

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- testing.
 - Know whether the yeast identification method used in your laboratory accurately identifies *C. auris*. SLPH can coordinate testing to confirm suspect *C. auris*.
- Healthcare facilities should:
 - Implement a system to facilitate timely notification of infection prevention staff when CRE are identified and when *C. auris* is suspected or identified;
 - Perform periodic reviews of laboratory data to quantify incidence of CRE and detect changes in overall trends; and
 - Consider performing rectal screening to detect CRE colonization when admitting patients who have been hospitalized outside the U.S. within the past 6 months.

Reporting:

Report cases to your local health department when CP-CRE are identified or *C. auris* is suspected/identified. Be sure to save the isolate(s).

1. Report identification of CP-CRE from a clinical specimen associated with either infection or colonization, including all susceptibility results and all phenotypic or molecular test results. For the purposes of reporting, CP-CRE are defined as:
 - (a) *Enterobacter* spp., *E.coli* or *Klebsiella* spp. positive for a known carbapenemase resistance mechanism or positive on a phenotypic test for carbapenemase production; or
 - (b) *Enterobacter* spp., *E.coli* or *Klebsiella* spp. resistant to any carbapenem in the absence of carbapenemase resistance mechanism testing or phenotypic testing for carbapenemase production.
2. Report isolation of *C. auris* from any body site.

Note: *C. auris* requires specialized laboratory methods for identification and can be [misidentified](#) as other yeast (often *C. haemulonii*) by some testing methods. We continue to request notification of NC DPH from any clinician, laboratory or facility that suspects *C. auris* infection or colonization.

Isolate submission:

Enterobacter spp., *E. coli* or *Klebsiella* spp. resistant to any carbapenem in the absence of carbapenemase resistance mechanism or phenotypic testing should be sent to the SLPH for additional testing. Identification of a CRE producing carbapenemase other than KPC may also be requested for isolate submission. If your facility identifies CP-CRE among Enterobacteriaceae species other than *Enterobacter* spp., *E. coli* or *Klebsiella* spp., consider sending these isolates for testing to SLPH as well. All suspect and confirmed *C. auris* isolates are requested for additional testing.

Please send CRE isolates and *C. auris* isolates to SLPH per Category B packaging and shipping guidelines: https://slph.ncpublichealth.com/bioterrorism/shipping_guidelines.asp#catB.

Please complete form [DHHS 3390](#) for shipping CRE isolates and form [DHHS 2010](#) for shipping *C. auris* isolates.

Please contact Shermalyn Greene (Shermalyn.Greene@dhhs.nc.gov) if shipping materials are needed or if transport assistance is needed. Submitted isolates should be on agar slants. If available, provide any test results.

Additional information regarding infection prevention and response to these conditions can be found at:

<https://www.cdc.gov/hai/outbreaks/docs/Health-Response-Contain-MDRO.pdf>
<https://www.cdc.gov/fungal/candida-auris/pdf/C-Auris-Lab-Workers-FactSheet-H.pdf>

If you have questions related to investigation or follow-up, please call the NC DPH epidemiologist on call at 919-733-3419. For questions related to laboratory submission of isolates please call SLPH at 919-807-8978