

ELABORATIONS

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Updates to Antimicrobial-Resistant Organism Surveillance (Effective Immediately)

The Washington State Department of Health performs surveillance for highly antimicrobial resistant organisms. Some of these isolate-types are mandated for submission statewide, and some are requested to be submitted by sentinel labs on a voluntary basis. This article describes updates to surveillance for antibiotic resistant organisms, as of January 2024.

Since 2016, the Washington State Department of Health Public Health Laboratories (WA PHL) has served as the Antimicrobial Resistance (AR) Laboratory for the western U.S. The AR Lab Network is funded by the Centers for Disease Control and Prevention (CDC) and performs multidrug resistant organism (MDRO) surveillance and advanced antibiotic resistance testing. Isolates submitted by clinical labs to the AR Lab Network West Regional Laboratory undergo identification, mechanism testing, and susceptibility testing.

The AR Lab performs antibiotic resistance testing on isolates and samples listed in Table 1.

Table 1: Isolates or samples submitted to Washington Antibiotic Resistance Lab and the testing performed

Isolate/Sample Type	Testing Performed
Bacterial	
Carbapenem-resistant Enterobacterales (CRE) (isolate)	<ul style="list-style-type: none"> • Species identification (ID) • Mechanism testing: <ul style="list-style-type: none"> ○ PCR: IMP, KPC, NDM, OXA-48, and VIM ○ mCIM • Antibiotic susceptibility testing (AST) • Whole genome sequencing (WGS), if applicable
Carbapenem-resistant <i>Pseudomonas aeruginosa</i> (CRPA) (isolate)	<ul style="list-style-type: none"> • Species ID • Mechanism testing <ul style="list-style-type: none"> ○ PCR: IMP, KPC, NDM, OXA-48, VIM ○ mCIM • AST • WGS, if applicable
Carbapenem-resistant <i>Acinetobacter baumannii</i> (CRAB) (isolate)	<ul style="list-style-type: none"> • Species ID • Mechanism testing: <ul style="list-style-type: none"> ○ PCR: IMP, KPC, NDM, OXA-48, VIM, OXA-23-like, OXA-24/40-like, OXA-58-like, OXA-235-like • AST • WGS, if applicable
Carbapenemase-producing organism (CPO) colonization screening sample (swab)	<ul style="list-style-type: none"> • Mechanism testing (Cepheid GeneXpert CarbaR) • Species ID (performed if carbapenemase positive and bacterial isolate is obtained)
Targeted surveillance colonization screening sample (Culture-based colonization screening for OXA-23-like, OXA-24/40-like, OXA-58-like, OXA-235-like carbapenemases in CRAB) (swab)	<ul style="list-style-type: none"> • Species ID • Mechanism testing
Fungal	
<i>Candida auris</i> (isolate)	<ul style="list-style-type: none"> • Species ID • Antifungal susceptibility testing (AFST) • WGS, if applicable
Non- <i>albicans</i> <i>Candida</i> species (isolate)	<ul style="list-style-type: none"> • Species ID • Antifungal susceptibility testing (AFST)
<i>Candida auris</i> colonization screening sample (swab)	<ul style="list-style-type: none"> • <i>Candida auris</i> ID • AFST, by request only

SURVEILLANCE UPDATES

1. Notifiable conditions reporting for carbapenem resistant organisms was updated January 1, 2023.

- As of January 1, 2023, laboratories in Washington must report to public health and submit to the WA PHL all carbapenem resistant isolates of Enterobacterales, *Pseudomonas aeruginosa*, and *Acinetobacter baumannii* per [WAC 246-101-201](#) and [246-101-015](#) (refer to the January 1, 2023 [provisional reporting letter](#) for more details). Antibiotic susceptibility criteria for submission of these isolates are described in Table 2.

Table 2. Reporting and submission criteria for carbapenem resistant Enterobacterales, *Acinetobacter baumannii*, and *Pseudomonas aeruginosa*

Bacterial Order, Family or Genus	Antibiotic Resistance Criteria
Carbapenem-resistant Enterobacterales ¹ (excluding <i>Morganella</i> , <i>Proteus</i> , and <i>Providencia</i> spp.)	Resistant to ≥ 1 carbapenem: Minimum inhibitory concentrations (MIC) ≥4 µg/ml for Meropenem, Imipenem, or Doripenem, or ≥ 2 µg/ml for Ertapenem OR Kirby-Bauer zone of inhibition diameter (ZID) ≤ 19 mm for Meropenem, Imipenem, or Doripenem, or ≤ 18 mm for Ertapenem
Carbapenem-resistant <i>Morganella</i> , <i>Proteus</i> and <i>Providencia</i> spp.	Resistant to ≥ 1 carbapenem <u>excluding imipenem</u> : MIC ≥ 4 µg/ml for Meropenem or Doripenem, ≥ 2µg/ml for Ertapenem OR Kirby-Bauer ZID ≤ 19 mm for Meropenem or Doripenem, or ≤ 18 mm for Ertapenem
Carbapenem-resistant <i>Acinetobacter baumannii</i>	Resistant to ≥1 carbapenem <u>excluding Ertapenem</u> : MIC ≥8 µg/mL for Meropenem, Imipenem, or Doripenem OR Kirby-Bauer ZID ≤ 14 mm for Doripenem or Meropenem, or ≤ 18 mm for Imipenem
Carbapenem-resistant <i>Pseudomonas aeruginosa</i> (non-mucoid)	Resistant to ≥1 carbapenem, <u>excluding Ertapenem</u> : MIC ≥ 8 µg/mL for Meropenem, Imipenem, or Doripenem, AND MIC ≥ 16 µg/mL for Ceftazidime or Cefepime OR Kirby-Bauer ZID ≤ 15 mm for Meropenem, Imipenem, or Doripenem, AND Kirby Bauer ZID ≤ 17 mm for Ceftazidime or cefepime

¹Refer to [National Center for Biotechnology Information Taxonomy Browser](#) for a list of bacterial families, genera and species in the taxonomic order, Enterobacterales.

2. *C. auris* identified in Washington State.

- *C. auris* is a yeast (fungus) that can cause bloodstream and other invasive infections, particularly in patients who have serious medical problems and are in hospitals and nursing homes. *C. auris* is often resistant to antifungal medications commonly used to treat other *Candida* infections.
- The first locally acquired case of *C. auris* in Washington was reported in July 2023. Additional locally acquired and imported cases have been reported in Washington.
- Laboratories in Washington should report to public health and submit to the WA PHL all *Candida auris* isolates as described in [WAC 246-101-201](#).

3. Electronic Test Ordering and Reporting (ETOR)/Lab Web Portal (LWP) for requisition form creation and result retrieval.

- ETOR/LWP is used to create requisition forms electronically and retrieve results via the online portal, as opposed to using fax.

- As of February 1, 2023, ETOR is the only approved method for submission of colonization screening (*C. auris* and CPO).
 - However, other AR Lab Network submissions (CRE, CRPA, CRAB, and *Candida* isolate testing and Targeted Surveillance Screening) are not yet available for submission through ETOR/LWP. Additional information will be communicated when these tests become available in ETOR/LWP.
 - Please contact ARLN@doh.wa.gov for more information on ETOR and use of ETOR for submission of colonization screening swabs.
- 4. The [ARLN test menu](#) has recently been updated** and should be used to access specimen collection and submission instructions and forms for all multidrug resistant organism testing (except tuberculosis). The ARLN test menu is an important resource for all clinical laboratories.
- 5. Washington State Department of Health recommends that health care providers consider screening patients with the following risk factors for CPOs and for *C. auris* when they are admitted to a health care facility.**
- Close contact in a health care setting to someone diagnosed with *C. auris* or CPO infection or colonization. Close contact may include:
 - i. Sharing a room, bathroom, or patient care equipment,
 - ii. Being cared for by the same health care staff, or
 - iii. Staying in a room near a person with *C. auris* or CPO.
 - An overnight stay in the prior year in a health care facility :
 - i. Outside the U.S., or
 - ii. In a region of the U.S. with a high burden of *C. auris* cases.
 - Direct admission from a ventilator-capable skilled nursing facility or a long-term acute care hospital.
 - Colonization or infection with a carbapenemase-producing organism.
- For more details, please review the [Partners for Patient Safety Program](#) and contact your local health jurisdiction (LHJ) to arrange colonization screening.

- 6. Expanded Antimicrobial Susceptibility Testing for Hard-to-Treat Infections (ExAST) is available at WA PHL, starting in 2020. Health care providers and clinical laboratories can request ExAST to determine effectiveness of new-to-market antibiotics for treating infections caused by metallo- β -lactamase (MBL)-producing Enterobacterales.**
- Eligible isolates undergo standard testing (see table 1), as well as susceptibility testing for ceftazidime/avibactam, aztreonam, and aztreonam/avibactam.
 - Eligible isolates include Enterobacterales that:
 - Test non-susceptible to all beta-lactams, including either ceftazidime/avibactam or meropenem/vaborbactam (these isolates may be MBL-producing isolates with few effective treatment options)

OR

- Possess MBL genes (NDM, VIM, or IMP) confirmed by molecular test
- Turn-around-time is 3 business days
- Pre-approval is required. Please contact ARLN@doh.wa.gov.

7. Consider speciating *Candida* from some non-sterile sites, if possible. When one or more cases of *C. auris* have been identified in a health care facility, speciating *Candida* from non-sterile sites may identify additional *C. auris* cases that would otherwise go undetected. *Candida* isolates from urine are suggested as highest priority for speciation, and second priority are *Candida* isolates from wound or skin sources.

8. Several automated identification methods can misidentify *C. auris* as other rare *Candida* species. See Table 3 for identification methods and *Candida* species that should be suspected as *C. auris* and submitted to PHL for confirmatory testing. Please identify the fungal identification method used in your lab and educate lab personnel regarding *Candida* species that should raise concern for *C. auris*.

Table 3. When to Suspect *Candida auris*

Identification Method	Organisms <i>C. auris</i> can be misidentified as
Vitek 2YST*	<i>Candida haemulonii</i> <i>Candida duobushhaemulonii</i>
API 20C	<i>Rhodotorula glutinis</i> (characteristic red color not present) <i>Candida sake</i>
API ID 32C	<i>Candida intermedia</i> <i>Candida sake</i> <i>Saccaromyces kluyveri</i>
BD Phoenix yeast identification system	<i>Candida haemulonii</i> <i>Candida catenulata</i>
MicroScan	<i>Candida famata</i> <i>Candida guilliermondii</i> ** <i>Candida lusitaniae</i> ** <i>Candida parapsilosis</i> **
RapID Yeast Plus	<i>Candida parapsilosis</i>

Table 3 is reproduced from CDC.

*There have been reports of *C. auris* being misidentified as *Candida lusitaniae* and *Candida famata* on VITEK 2. A confirmatory test, such as cornmeal agar, may be warranted for these species.

**On cornmeal agar, *C. guilliermondii*, *C. lusitaniae*, and *C. parapsilosis* generally make pseudohyphae and *C. auris* does not make hyphae or pseudohyphae. If hyphae or pseudohyphae are not present on cornmeal agar, any *C. guilliermondii*, *C. lusitaniae*, and *C. parapsilosis* isolates identified on MicroScan or any *C. parapsilosis* isolates identified on RapID Yeast Plus should be submitted for further identification.

9. Gradient Strip *Neisseria gonorrhoeae* Antimicrobial Susceptibility Testing for suspected treatment failures.

- In partnership with the University of Washington *Neisseria* Reference Lab (UW NRL), the AR Lab Network can now provide additional testing for suspected gonorrhea treatment failures.

- Pre-approval is required before submitting isolates and patient samples. Please contact ARLN@doh.wa.gov for more information and to arrange testing.

SURVEILLANCE REMINDERS

All Washington labs should submit the following isolate-types to PHL:

- Carbapenem-resistant Enterobacteriales (CRE)
- Suspected or confirmed *Candida auris*
- Carbapenem-resistant *Acinetobacter baumannii* (CRPA)
- Carbapenem-resistant *Pseudomonas aeruginosa* (CRAB)

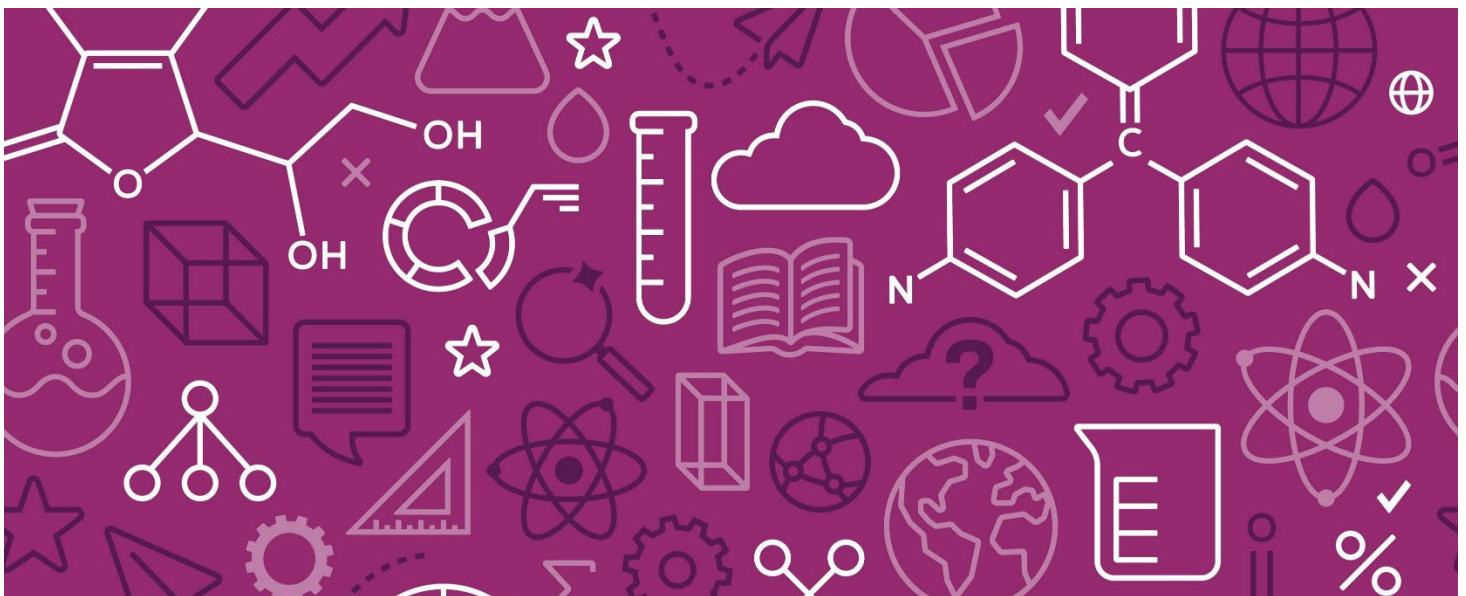
Resistance criteria for CRE, CRPA, and CRAB can be found in Table 2.

In addition to submitting the isolate-types above, volunteer **sentinel labs (and other interested labs) are encouraged to submit the following isolate-types to PHL:**

- All *Candida* species EXCEPT *albicans*

Please contact ARLN@doh.wa.gov if your laboratory is interested in becoming a sentinel laboratory.

We thank laboratories for their diligence in reporting and submitting antibiotic resistant organisms to public health. The AR Lab Network will cover shipping costs associated with MDRO submission upon request. Please contact ARLN@doh.wa.gov if you are interested in sentinel laboratory participation or if you have any questions or concerns regarding testing or shipping. Contact MDRO-AR@doh.wa.gov for questions about admission or surveillance-screening.



Practice Guidelines

The following practice guidelines have been developed by the Washington Clinical Laboratory Advisory Council. They can be accessed at the [Medical Test Site Program website](#).

- Acute Diarrhea
- Anemia
- ANA
- Bioterrorism Event Management
- Bleeding Disorders
- Chlamydia
- Diabetes
- Group A Strep Pharyngitis
- Group B Streptococcus
- Hepatitis
- HIV
- Infectious Diarrhea
- Intestinal Parasites
- Lipid Screening
- PAP Smear Referral
- Point-of-Care Testing
- PSA
- Rash Illness
- Red Cell Transfusion
- Renal Disease
- STD
- Thyroid
- Tuberculosis
- Urinalysis
- Wellness



2024 Virtual Joint Spring Seminar (ASCLS-WA, ASCLS-OR, & ASCLS-AK), April 18-19

2024 Virtual Northwest Laboratory Symposium (NWMLS), October (date TBA)

The Calendar of Events is a list of upcoming conferences, deadlines, and other dates of interest to the clinical laboratory community. If you have events that you would like to have included, please mail them to chuck.talbert@doh.wa.gov. Information must be received at least one month prior to the scheduled event. The editor reserves the right to make final decisions on inclusion in *ELABORATIONS*.

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