# *Candida auris*

## Investigative Guidelines

**November 2023**

## 1. DISEASE REPORTING

### 1.1 Purpose of Reporting and Surveillance

1. To prevent transmission of *Candida auris* (*C. auris*) between patients, within or among healthcare facilities, or between healthcare facilities and the community.
2. To prevent or delay, to the extent possible, *C. auris* from becoming endemic in Oregon.
3. To identify outbreaks and potential sources or sites of ongoing transmission.
4. To provide clinicians with information on the incidence of infection by this resistant *Candida* species in Oregon.

### 1.2 Laboratory and Physician Reporting Requirements

1. Providers and laboratories must report cases to local public health authorities (LPHAs) within one working day.
2. Clinical and reference laboratories must forward isolates from any body site, sterile or non-sterile site (e.g., urine, blood, sputum, endotracheal aspirate, bronchoalveolar lavage, wound), that meet the confirmed *C. auris* case definition below, along with results of antifungal susceptibility tests, to the Oregon State Public Health Laboratory (OSPHL).
3. Laboratories must also forward fungal isolates (from any body site) that may be *C. auris* but that are commonly misidentified as other fungal species:
    a. These include *Candida haemulonii* if using Vitek 2; and *C. famata, C. guilliermondii, C. lusitaniae, and C. parapsilosis* if using Microscan.
    b. For a complete list of commonly misidentified species by identification method, refer to the Centers for Disease Control and Prevention (CDC) website: www.cdc.gov/fungal/candida-auris/identification.html

### 1.3 Local Public Health Authority Reporting and Follow-Up Responsibilities

1. Confirm that a case meets the case definition by reviewing the laboratory report; consult the Acute and Communicable Disease Prevention (ACDP) on-call epidemiologist or Healthcare-Associated Infections (HAI) Multidrug-Resistant Organism (MDRO) Epidemiologist as needed.
2. Report cases to ACDP within one working day. Use the Orpheus *Candida auris* case report.
3. Begin investigation of the case within one working day.

4. Intervene, in collaboration with ACDP, to prevent the spread of the organism.

# 2 THE DISEASE AND ITS EPIDEMIOLOGY

## 2.1 Etiologic Agent

*C. auris* is an emerging *Candida* species first identified in Japan in 2009[1]. Whole genome sequencing suggests that various clades of *C. auris* emerged independently in multiple regions of the world at about the same time[2]. The species is classified into five clades isolated from different regions of the world: South Asian (Clade 1), East Asian (Clade II), African (Clade III), South American (Clave IV), and Iranian (Clade V)[3]. The first *C. auris* cases in the United States were reported in 2016 and the first Oregon cases in 2021[4]. Most *C. auris* infections are identified in high-acuity patients, particularly those with exposure to ventilator units in nursing facilities or long-term acute-care hospitals, or those who received healthcare in countries or areas of the United States with high *C. auris* transmission.

## 2.2 Description of Illness

C. *auris* often causes bloodstream infections, urinary tract infections, or wound infections but can infect other parts of the body as well[1]. *C. auris* can also colonize patients' skin or other body sites without causing infection[5]. Mortality associated with *C. auris* infection is estimated at 30–60%. Many of these deaths were in people with serious pre-existing conditions[2]. In the United States, *C. auris* has mainly caused healthcare-associated infections, primarily affecting those with medical conditions that require invasive lines or tubes and who have compromised immune systems.

## 2.3 *Candida auris* in Oregon

As of March 2023, four cases of *Candida auris* had been identified in Oregon. Three of these cases were associated with a single outbreak at an acute-care hospital in December 2021. The fourth case was a resident of another state whose *C. auris* was first identified while the case was visiting Oregon. Other U.S. states such as New York, California, Illinois, Florida, and Nevada have experienced large outbreaks of *C. auris* and reported hundreds of cases in 2022.

## 2.4 Reservoirs and Routes of Transmission

*C. auris* can colonize human skin and other body sites. People colonized with *C. auris* can serve as reservoirs of infection and are also more likely to develop invasive infection themselves. *C. auris* can persist in the environment for long periods of time and can be transmitted via the hands of healthcare workers or via contaminated environmental surfaces, medical devices, or equipment. It can also withstand some disinfectants commonly used in healthcare settings. Transmission of *C. auris* has occurred even when contact precautions were in place. Colonized patients are at greater risk of developing an invasive infection if indwelling devices are used[1].

### 2.5 Incubation Period

Because people can be colonized for long periods of time, the incubation period for *C. auris* has not been clearly defined. The time between exposure and colonization is not known.

### 2.6 Period of Communicability

People can transmit *C. auris* if the organism is present in their body or on their skin. Individuals can be colonized with *C. auris* for long periods of time and potentially indefinitely. Surveillance has identified patients who remained colonized for longer than 2 years[6]. *C. auris* can also persist in the environment for long periods of time. Persons who are most at risk of transmitting or acquiring *C. auris* include high-acuity patients requiring intensive care or who have wounds or indwelling devices.

## 3 CASE DEFINITIONS, DIAGNOSIS AND LABORATORY SERVICES

### 3.1 Confirmed Case Definition

A person with laboratory confirmation on a clinical specimen collected for diagnosing or treating disease or from a swab collected for screening for *C. auris* colonization from any body site[7].

Laboratory confirmation includes detection of *C. auris* in a specimen using either culture or a validated culture-independent test (e.g., nucleic acid amplification test [NAAT])[7].

### 3.2 Services Available at the Oregon State Public Health Laboratories (OSPHL)

The Oregon State Public Health Laboratory (OSPHL) does not offer testing for *C. auris*. Specimens should be sent to the Washington State Department of Health's Antibiotic Resistance Laboratory Network (ARLN) laboratory. Consult the ACDP MDRO Epidemiologist for assistance with testing.

## 4 CASE INVESTIGATION

### 4.1 Case Investigation

Determine whether the case meets the confirmed case definition described above. If case meets criteria, create a case record in Orpheus, and commence investigation as soon as possible, but no later than within one working day.

Remember: even one case of *C. auris* will warrant a full investigation and collection of specimens from healthcare contacts for screening. Given the current epidemiology of *C. auris* in Oregon, ACDP HAI epidemiologists will generally lead case response in collaboration with LPHAs. As the epidemiology of *C. auris* in Oregon changes, LPHAs may be asked to take on a greater role in single case and outbreak response. In general, the goals of case and outbreak response are:

- To determine whether transmission is occurring

- To identify affected patients and contacts
- To implement infection control measures promptly
- To evaluate the impact of control measures to better characterize transmission of *C. auris* and improve future response efforts

If case does not meet confirmed case definition, but had laboratory detection of *C. haemulonii* or other commonly misidentified species from any body site using a yeast identification method that is not able to detect *C. auris*:

- If isolate or specimen is available, it should be tested by MALDI-TOF (matrix-assisted laser deionization/ionization time of flight) mass spectrometry at ARLN to confirm the species. If a species other than *C. auris* is confirmed, then update the case as a no-case.

- If the specimen is unavailable for retesting, recollect specimen as soon as possible, regardless of whether the case was a clinical one or a colonization/screening one.

## 4.2 Case Investigation Follow-up

Note that because *C. auris* is rare in Oregon, the Oregon Health Authority (OHA) HAI team will be involved in response and will reach out to the LPHA where the case is located within one working day of the case being reported to ACDP. The OHA HAI team will work with the LPHA to schedule a call to discuss response steps if case meets the case definition.

The LPHA should:

1. Confirm that a case meets the case definition by reviewing the case definition and laboratory results or in consultation with the ACDP on-call epidemiologist or ACDP MDRO epidemiologists (See Confirmed Case §3.1).
2. Plan to attend a partner call held by the OHA HAI team within one working day of the case being reported to OHA.

If case meets the case definition, begin an Orpheus case record and investigation as soon as possible, but no later than within one working day. Create a case record in Orpheus for confirmed cases and ensure the following are completed:

- Name, address, date of birth (age)
- REALD and SOGI data
- Types of infection associated with culture(s)
- Date of initial culture collection, culture site, and facility location of culture collection
- Risks (including dates, locations, and types of care received)
    - If interviewed and reason
    - Who was interviewed and who conducted the interview

    - Any international travel history in the year before collection
    - Any history of living outside of Oregon
    - Any international medical care in the past year
    - Any domestic healthcare outside of Oregon in the past year
    - Travel Module, if applicable
- Follow-up
    - Whether case was in contact precautions if case was hospitalized or resided in a skilled nursing facility
    - Whether the transferring facility provided written notification to the receiving facility
    - Was education, including hand hygiene, provided
- MDRO
    - Patient location on 4th calendar date prior to initial culture date
    - History of healthcare exposures in the year before specimen collection, including the name of each facility and dates the patient was there.
- Notes
    - Provide a summary history of current and past healthcare and underlying conditions. This includes symptoms, hospital or long-term care admissions, surgeries, dialysis, indwelling devices such as a catheter or any other lines or tubes.

For case patients who return to a home setting, educate cases and caretakers on the importance of hand hygiene after touching the infected site, wound dressings, using the bathroom, before and after handling medical devices, or touching other contaminated surfaces or objects. Case patients and caretakers should also wear gloves if there will be contact with bodily fluids or blood.

- It is especially important if the caregiver cares for more than one person. While caregivers don't typically become ill from *C. auris*, they can become colonized and lead to further spread.

The OHA HAI team will:

- Be available for consult to the LPHA co-leading the investigation.
- Work with the health care facility or physician (if case is an outpatient) to investigate and institute control measures and conduct screening.
- If multiple healthcare facilities are involved, OHA will work with all facilities to institute appropriate control measures. If a case is to be transferred to a new facility, OHA will work with the receiving facility to ensure they are prepared to implement appropriate infection control measures. Note that OHA may ask LPHAs to assist with this work, leveraging existing relationships with facilities.

- Ensure that the *C. auris* diagnosis is clearly labeled in the case patient's medical record to ensure that appropriate infection control measures are implemented when admitted or transferred to other facilities.
- For cases with laboratory detection of *C. haemulonii* and other commonly misidentified species from any body site:
  - If isolates are available, ask that they be forwarded to ARLN for additional testing.
  - If isolates are no longer available, work with facilities to request recollection of the clinical specimen or repeat colonization screening. Recollection or colonization screening for suspect cases will be determined based on risk factors identified during the investigation and case interview. OHA's HAI team will work with the LPHA to decide if retesting is necessary and how to facilitate retesting.

## 5 CONTROLLING FURTHER SPREAD

### 5.1 Infection Control Recommendations

- In general, infection control recommendations include placing patients with *C. auris* infection or colonization in single rooms, implementing standard and contact precautions, and reinforcing hand hygiene. Other control measures include restricting sharing of medical equipment and limiting the number of health care personnel caring for a patient with *C. auris*. Enhanced environmental cleaning, such as daily cleaning and disinfection of high-touch, shared, and contaminated surfaces and spaces with an Environmental Protection Agency (EPA)-registered disinfectant effective against *C. auris* (List P) should be employed. List K EPA-registered disinfectants are also believed to be effective against *C. auris*.
- Because patients in healthcare settings may remain colonized for several months or indefinitely, CDC recommends continuing contact precautions for patients with either *C. auris* infection or colonization for the duration of their inpatient stays, including in long-term care facilities[8].
- Acute health care facilities should use contact precautions for patients with either *C. auris* infection or colonization to reduce transmission among high-risk populations.
- Long-term care facilities should use contact precautions for patients with *C. auris* infection or colonization.
- OHA HAI epidemiologists will also evaluate the healthcare setting(s) for lapses in infection control and assess the risk of transmission to other patients. This includes an on-site assessment of all facilities to which the patient has been admitted in the 30 days prior to positive specimen collection.
- Interfacility transfer notification is required by OAR 333-019-0052 to ensure communication about case's *C. auris* status during transfers.

# 6 ROUTINE PREVENTION

- Refer to the CDC https://www.cdc.gov/hai/pdfs/mdro-guides/Health-Response-Prevent-MDRO-508.pdf
- Routine surveillance, rapid identification of colonized and infected patients, and implementation of effective facility-wide and regional infection-control policies can help prevent transmission and outbreaks of *C. auris*.
- Core infection prevention recommendations for facilities include:
  - proper hand hygiene, including frequent handwashing, especially before and after changing wound dressings and bandages.
  - contact precautions, education of healthcare personnel, minimizing shared devise use, cohorting staff.
  - antimicrobial stewardship.
  - surveillance screening.

# 7 APPENDIX

## 7.1 Additional Resources

- CDC. *Candida auris*. https://www.cdc.gov/fungal/candida-auris/index.html.
- CDC. National Notifiable Diseases Surveillance System (NNDSS) Surveillance Case Definitions: *Candida auris* 2023 Case Definition. https://ndc.services.cdc.gov/case-definitions/candida-auris-2023/.
- CDC. Infection Prevention and Control for *Candida auris.* https://www.cdc.gov/fungal/candida-auris/c-auris-infection-control.html.

# 8 REFERENCES


1. Washington State Department of Health. *Candida auris*. https://doh.wa.gov/sites/default/files/legacy/Documents/5100//420-345-CandidaAurisReportingGuidelines.pdf. Last revised December 2022.
2. CDC. About *Candida auris*. https://www.cdc.gov/fungal/candida-auris/candida-auris-qanda.html. Last reviewed October 4. Last reviewed October 4, 2023.
3. Safari F, Madani M, Badali H, *et al.* A chronic autochthonous fifth clade case of *Candida auris* otomycosis in Iran. *Mycopathologia* 2022; **187:**121–7. Available at https://doi.org/10.1007/s11046-021-00605-6.
4. Vallabhaneni S, Kallen A, Tsay S, et al. Investigation of the first seven reported cases of *Candida auris*, a globally emerging invasive, multidrug-resistant fungus—*United States*, May 2013–August 2016. MMWR 2016; 65:1234–7. Available at https://www.cdc.gov/mmwr/volumes/65/wr/mm6544e1.htm.
5. Du H, Bing J, Hu T, Ennis CL, Nobile CJ, Huang G. *Candida auris*: epidemiology, biology, antifungal resistance, and virulence. PLOS Pathogens 2020; *16*:, e1008921. Available at https://doi.org/10.1371/journal.ppat.1008921.
6. CDC. *Candida auris*. https://www.cdc.gov/fungal/candida-auris/index.html. Last reviewed September 26, 2023.

7. CDC. National Notifiable Diseases Surveillance System (NNDSS) Surveillance Case Definitions: *Candida auris* 2023 Case Definition. https://ndc.services.cdc.gov/case-definitions/candida-auris-2023/.
8. CDC. Infection Prevention and Control for *Candida auris*. https://www.cdc.gov/fungal/candida-auris/c-auris-infection-control.html. Last reviewed January 17, 2023.

## UPDATE LOG

November 2023: Newly created guidelines in line with reporting requirement that became effective October 26, 2023. (Elizabeth Slocum, Evelyn Donahoe)