



Disease Investigation Guideline: *Candida auris*

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Healthcare-Associated Infections & Antimicrobial Resistance Program



Revision History

Date of Revision	Staff	Changes made
05/29/2018	BNS	Created <i>C. auris</i> Disease Investigation Guideline
01/29/2019	BNS	Made updates to reflect <i>Candida auris</i> 2019 Case Definition. Replaced Figure 1 with updated version. Updated Resources and References, and associated links.

Case Definition

Clinical Description

Clinical manifestation of *Candida auris* infection depends upon the site of infection. Patients with *C. auris* bloodstream infection typically have sepsis and severe illness. Other invasive infections, such as intraabdominal candidiasis, and meningitis can also occur. *C. auris* has also been found to cause wound infections and otitis and has been cultured from urine and respiratory specimens. *C. auris* has also been found to colonize the skin of asymptomatic people.

Clinical Criteria: None

Laboratory Criteria

Confirmatory laboratory evidence:

- Detection of *C. auris* from any body site using either culture or a culture independent diagnostic test (CIDT) (e.g., Polymerase Chain Reaction [PCR]).

Presumptive laboratory evidence:

- Detection of *C. haemulonii* from any body site using a yeast identification method that is not able to detect *C. auris* (see [CSTE position statement 18-ID-05, Appendix 1](#)), **AND** either the isolate/specimen is not available for further testing, or the isolate/specimen has not yet undergone further testing.

(Note: When additional test results are available, case re-classification may occur, including making this a non-case.)

Epidemiologic Linkage

Person resided within the same household with another person with confirmatory or presumptive laboratory evidence of *C. auris* infection or colonization. **OR**

Person received care within the same healthcare facility as another person with confirmatory or presumptive laboratory evidence of *C. auris* infection or colonization. *

OR

Person received care in a healthcare facility that commonly shares patients with another facility that had a patient with confirmatory or presumptive laboratory evidence of *C. auris* infection or colonization. *

OR

Person had an overnight stay in a healthcare facility in the previous one year in a foreign country with documented *C. auris* transmission (<https://www.cdc.gov/fungal/candida-auris/tracking-c-auris.html>).

*Note: the person with confirmatory or presumptive laboratory evidence of *C. auris* and potentially exposed individuals do not need to be present in a health care facility for any overlapping time period. Any case occurring in a facility with a confirmed or probable case identified in the prior 12 months would be considered epidemiologically linked.

Case Classification

Candida auris, clinical (CDC 2019)

Confirmed

Person with confirmatory laboratory evidence from a clinical specimen collected for the purpose of diagnosing or treating disease in the normal course of care. This includes specimens from sites reflecting invasive infection (e.g., blood, cerebrospinal fluid) and specimens from non-invasive sites such as wounds, urine, and the respiratory tract, where presence of *C. auris* may simply represent colonization and not true infection.

Probable

Person with presumptive laboratory evidence from a clinical specimen collected for the purpose of diagnosing or treating disease in the normal course of care and evidence of epidemiologic linkage. A clinical specimen includes specimens from sites reflecting invasive infection (e.g., blood, cerebrospinal fluid) and specimens from non-invasive sites such as wounds, urine, and the respiratory tract, where presence of *C. auris* may simply represent colonization and not true infection.

Suspected

Person with presumptive laboratory evidence from a clinical specimen collected for the purpose of diagnosing or treating disease in the normal course of care and no evidence of epidemiologic linkage. A clinical specimen includes specimens from sites reflecting invasive infection (e.g., blood, cerebrospinal fluid) and specimens from non-invasive sites such as wounds, urine, and the respiratory tract, where presence of *C. auris* may simply represent colonization and not true infection.

Not a Case (KDHE Use Only)

Any suspected *Candida auris* isolate submitted to public health and verified as not *C. auris*.

Candida auris, screening/surveillance (CDC 2019)

Confirmed

Person with confirmatory laboratory evidence from a swab collected for the purpose of screening for *C. auris* colonization regardless of site swabbed. Typical colonization/screening specimen sites are skin (e.g., axilla, groin), nares, rectum, or other external body sites. Swabs from wound or draining ear are considered clinical.

Probable

Person with presumptive laboratory evidence from a swab collected for the purpose of screening for *C. auris* colonization regardless of site swabbed. Typical colonization/screening specimen sites are skin

(e.g., axilla, groin), nares, rectum, or other external body sites. Swabs from wound or draining ear are considered clinical.

Criteria to Distinguish a New C. auris Case from an Existing C. auris Case

- A person with a clinical case should not be counted as a colonization/screening case thereafter (e.g., patient with known infection who later has colonization of skin is not counted as more than one case).
- A person with a colonization/screening case can be later categorized as a clinical case (e.g., patient with positive screening swab who later develops bloodstream infection would be counted in both categories).

Laboratory Analysis

The Kansas Health and Environmental Laboratories (KHEL) performs organism identification by MALDI-TOF (Matrix Assisted Laser Desorption/Ionization – Time of Flight). If available, non-suppressed Antimicrobial Susceptibility Testing (AST) from the laboratory machine (e.g. Vitek2) AND lab/culture report should be faxed to the Epidemiology Hotline (877-427-7318).

Isolate Submission to KHEL

By law, any organism that is suspected or confirmed to be *Candida auris* is required to be submitted to KHEL for confirmatory testing. Many laboratory instruments are unable to differentiate *C. auris* from other *Candida* species, and *C. auris* phenotypically resembles *Candida haemulonii*. Unlike *C. auris*, strains of *C. haemulonii* are typically unable to grow above 37°C, so have been less commonly observed to cause invasive infections, whereas numerous wound infections with *C. haemulonii* have been reported. Therefore, *C. auris* should be suspected when *C. haemulonii* is identified on culture of blood or other normally sterile site unless the method used can reliably detect *C. auris*. *Candida* isolates from the urine and respiratory tract ultimately confirmed as *C. auris* have been initially identified as *C. haemulonii*; less data are available about the ability of *C. haemulonii* to grow in urine or the respiratory tract, although true *C. haemulonii* infections in general appear to be rare in the United States. Refer to Figure 1 for submission criteria.

Figure 1: Isolate Submission Criteria

Identification Method	<i>Candida auris</i> is possible if the following results are given by your identification system. Please send to KHEL for further workup.	
Bruker or Biomerieux MALDI-TOF	<i>C. auris</i> <i>Candida</i> spp. not identified ¹	<i>C. haemulonii</i>
VITEK 2 YST	<i>C. auris</i> <i>C. duobushaemulonii</i>	<i>C. haemulonii</i> <i>Candida</i> spp. not identified ¹
API 20C	<i>Rhodotorula glutinis</i> ² <i>Candida</i> spp. not identified ¹	<i>C. sake</i>
BD Phoenix	<i>C. haemulonii</i> <i>Candida</i> spp. not identified ¹	<i>C. catenulate</i>
MicroScan	<i>C. famata</i> <i>C. guilliermondii</i> <i>Candida</i> spp. not identified ¹	<i>C. lusitaniae</i> <i>C. parapsilosis</i>
RapID Yeast Plus	<i>C. parapsilosis</i>	<i>Candida</i> spp. not identified ¹
¹ Identification attempted and species could not be determined. ² Characteristic red color not present. Please note that this list is based on current knowledge about <i>C. auris</i> misidentification. It may change from time to time as we learn more about misidentification of <i>C. auris</i> . Refer to www.cdc.gov/fungal/candida-auris/recommendations.html for additional information. Inpatient settings: lab facilities should notify Infection Control and Prevention staff on confirmation or suspicion of <i>Candida auris</i> and have patient placed on transmission-based precautions (i.e. contact precautions).		
Submission instructions: Complete and fax MDRO reporting form (www.kdheks.gov/epi/disease_reporting.html) and fax non-suppressed susceptibility report from lab instrument (e.g. Vitek 2) WITH numerical values AND culture (if available) report to (877) 427-7318. Isolates submitted without requested information may be rejected. Epidemiology Hotline (877) 427-7317 Fax (877) 427-7318		

Epidemiology

Candida auris is an emerging multidrug-resistant yeast that can cause invasive infections and is associated with high mortality. *C. auris* strains have been found to have resistance to one or more of the three major classes of antifungals, with some resistant to all three classes, severely limiting treatment options. It can spread from patient to patient within healthcare settings, can contaminate healthcare environments, and cause outbreaks, much like methicillin-resistant *Staphylococcus aureus* and multidrug-resistant *Acinetobacter*. *C. auris* has become the leading cause of candidemia, accounting for up to 40% of *Candida* isolates in some hospitals. *C. auris* infections have been reported from over twenty countries, including the United States. Because identification of *C. auris* requires specialized laboratory methods, infections likely have occurred in other countries but have not been identified or reported. *C. auris* can be misidentified as other yeast (especially *Candida haemulonii*) by some testing methods (see Figure 1). Unlike *C. auris*, strains of *C. haemulonii* are typically unable to grow above 37°C; therefore, *C. auris* should be suspected when *C. haemulonii* is identified on culture of invasive body sites (e.g. blood) unless the method used can reliably detect *C. auris*.

Known risk factors for *C. auris* infection are similar to those for invasive *Candida* infection in general, including invasive lines/devices, recent surgery, diabetes, received international healthcare, and recent broad-spectrum antibiotic or antifungal use. In the United States, *C. auris* has been observed predominantly among patients with extensive exposure to nursing homes and short-term and long-term acute care hospitals. *C. auris* is known to cause bloodstream infections, wound infections, and otitis,

although it has also been cultured from bile, urine and the respiratory tract, which may involve colonization or infection.

Notification to Public Health Authorities

Suspected or confirmed cases of *Candida auris* shall be reported within 24 hours, except if the reporting period ends on a weekend or state-approved holiday, the report shall be made by 5:00 p.m. on the next business day after the 24-hour period:

1. Healthcare providers and hospitals: report the local public health jurisdiction or KDHE-BEHI (see below)
2. Local public health jurisdiction: report to KDHE-BEPHI (see below)
3. Laboratories: report to KDHE-BEPHI (see below)

**Kansas Department of Health and Environment (KDHE)
Bureau of Epidemiology and Public Health Informatics (BEPHI)**

Phone: 877-427-7317

Fax: 877-427-7318

Further responsibilities of state and local health departments to the CDC:

As a nationally notifiable condition, *Candida auris* cases require a ROUTINELY NOTIFIABLE report to the Centers for Disease Control and Prevention (CDC).

1. ROUTINE reporting requires KDHE-BEPHI to file an electronic report for cases within the next reporting cycle.
 - a. KDHE-BEPHI will file electronic reports weekly with CDC.
2. The local public health jurisdiction will:
 - a. Ensure that all reports of *Candida auris* are forwarded to KDHE-BEPHI on the same day received (or next business day if afterhours).
3. KDHE-BEPHI will:
 - a. Ensure that all information is entered in the Kansas EpiTrax system as soon as possible, ensuring that the electronic form is completed within 7 days of receiving a notification of a report.

Standard Case Investigation and Control Methods

Case Investigation

Healthcare exposures are the main risk factor for *Candida auris* infection; therefore, the Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) Program at KDHE will conduct *C. auris* disease investigations in Kansas. Despite investigations being performed by HAI/AR at KDHE, local health departments are able to view any *C. auris* cases that reside in their jurisdiction in EpiTrax. Please report any suspect *C. auris* cases to KDHE, so that an investigation can be initiated. If you have any questions or need to report suspect *C. auris*, contact the HAI/AR Program's Antimicrobial Resistance Epidemiologist at the Epidemiology Hotline (877-427-7317). The case investigation will generally consist of the information and actions below.

- 1) If the index case is currently in an inpatient healthcare setting (e.g., nursing home, hospital) ensure that they have been placed on appropriate isolation (i.e. Contact + Standard) in accordance with the Centers for Disease Control and Prevention (CDC) "Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)." Additionally, ensure that the patient's medical record is "flagged" so isolation precautions can be applied in future inpatient healthcare visits.
- 2) Coordinate with diagnostic laboratory for submission of *C. auris* isolate to KHEL for confirmatory identification testing.
- 3) Contact medical provider to request copy of medical records.
- 4) Contact the patient to access for risk factors of acquisition of multi-drug resistance organisms.
- 5) Perform contact investigation (see section below).

Contact Investigation

Contact investigation will consist of screening and identifying high-risk contacts for MDRO acquisition. Screening will be based on CDC's "Interim Guidance for a Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs)." Response will be based on the tier type of organism/mechanism. The primary goals of prompt response and containment include:

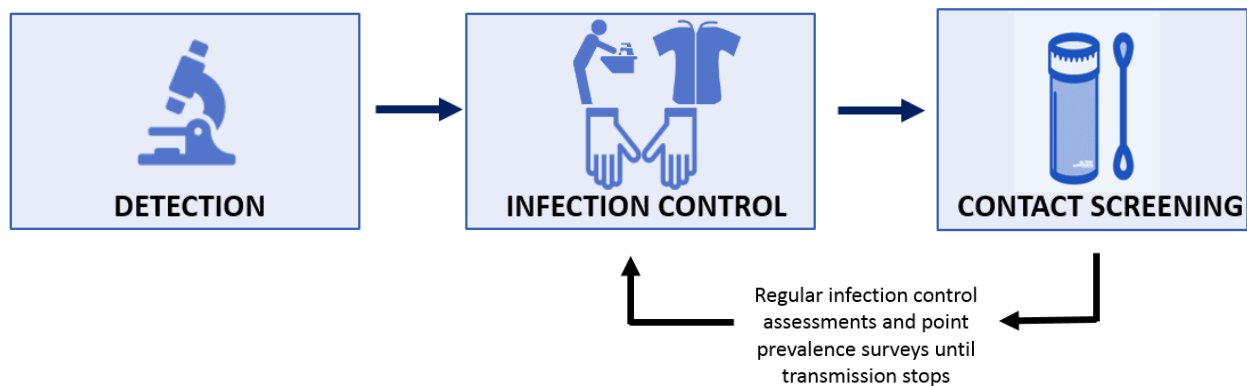
- 1)** Identifying if transmission/dissemination is occurring,
- 2)** Identifying affected patients,
- 3)** Ensuring appropriate control measures are promptly initiated/implemented to contain potential spread, and
- 4)** Characterizing the organism or mechanism in order to guide further response actions, patient management, and future responses.

Control Measures

For each person hospitalized with *Candida auris*, contact precautions shall be followed during infection or colonization (refer to Requirements for Isolate and Quarantine of Specific Infectious or Contagious Disease document for additional information).

Containment Strategy

KDHE implements CDC's Containment Strategy to control the spread of *C. auris*. The Containment Strategy is a systematic and aggressive approach led by public health and designed to slow the spread of antimicrobial resistance. It has three central elements: detection, infection control, and contact screening.



Detection

Detection focuses on identifying emerging resistance and launching a public health investigation in response to a single case. This is differentiated from past approaches, in which the threshold was two or more clinical cases with suspicion for transmission.

Infection Control

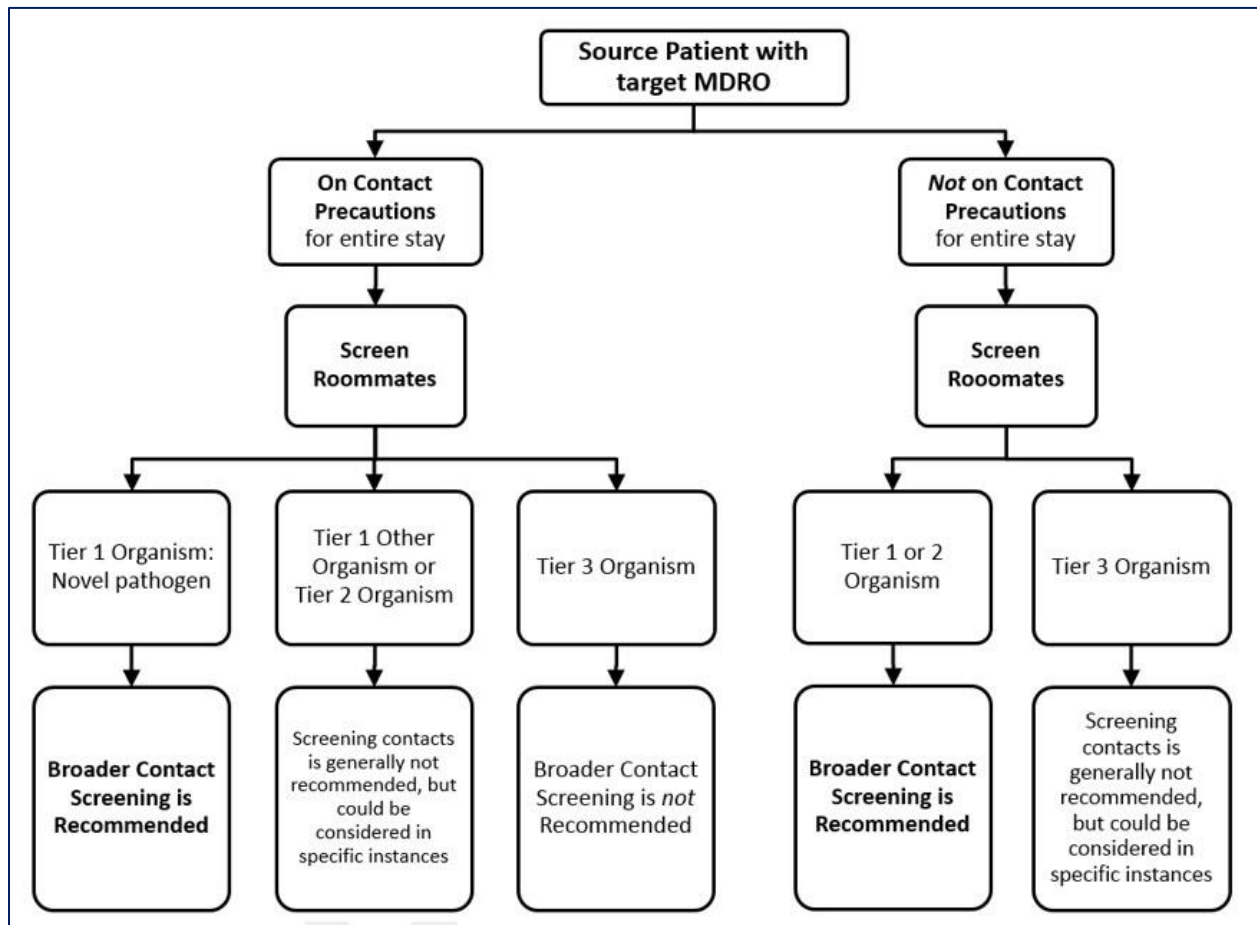
The infection control element includes on-site assessments at facilities where the patient has been admitted in the prior 30 days. All facility types are targeted, with a special emphasis on facilities that care for high acuity patients with longer lengths of stay, which have previously been shown to be amplifiers of transmission.

Contact Screening

Contact screening aims to detect asymptomatic colonization, to stop the silent spread of resistant organisms. Healthcare contacts of index patients, such as roommates or other patients on a unit or wing, are screened to identify transmission.

When transmission is identified, regular infection control assessments and point prevalence surveys are conducted until transmission stops.

Figure 3: Approach to Screening Healthcare Contacts



Note:

If Contact Precautions are ordered but are not being adhered to regularly, consider the patient as not on Contact Precautions.

If more than one new patient identified with the same mechanism, more widespread screening should be conducted.

Resources and References

Patient Resources

CDC General Information about *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/candida-auris-qanda.html>

CDC (*C. auris*) Fact Sheet:

<https://www.cdc.gov/fungal/candida-auris/c-auris-drug-resistant.html>

CDC *Candida auris* Information for Patients and Family Members:

<https://www.cdc.gov/fungal/candida-auris/patients-qa.html>

CDC FAQs about Screening for *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/c-auris-screening-info.html>

Healthcare Provider and Facility Resources

CDC (*C. auris*) Healthcare Professionals:

<https://www.cdc.gov/fungal/candida-auris/health-professionals.html>

CDC Recommendations for Identification of *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/recommendations.html>

CDC Recommendations for Treatment of *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/c-auris-treatment.html>

CDC Recommendations for Infection Prevention and Control for *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/c-auris-infection-control.html>

CDC FAQs about Screening for *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/c-auris-screening-info.html>

State Health Department Resources

CDC Tracking *Candida auris*:

<https://www.cdc.gov/fungal/candida-auris/tracking-c-auris.html>

CDC Guidance for Targeted MDROs:

<https://www.cdc.gov/hai/outbreaks/docs/Health-Response-Contain-MDRO.pdf>

References

“National Notifiable Diseases Surveillance System (NNDSS): *Candida auris* – 2019 Case Definition.”

Centers for Disease Control and Prevention. 2019. <https://www.cdc.gov/nndss/conditions/candida-auris/case-definition/2019/>. Accessed 29 January 2019.

Council of State and Territorial Epidemiologists. 18-ID-05. Standardized case definition for *Candida auris* clinical and colonization/screening cases and National Notification of *C. auris* case, clinical. Atlanta, GA: Council of State and Territorial Epidemiologists; December 2018.

https://cdn.ymaws.com/www.cste.org/resource/resmgr/2018_position_statements/18-ID-05.pdf