***Candida auris* Interim Recommendations for Healthcare Facilities and Laboratories**

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[*Candida auris*(https://www.cdc.gov/fungal/diseases/candidiasis/candida-auris.html)](https://www.cdc.gov/fungal/diseases/candidiasis/candida-auris.html) is an emerging pathogen, and understanding of this organism continues to evolve rapidly. This guidance is based on review of currently available information obtained from investigations inside and outside the United States and on input from national and international experts. These recommendations will be updated as new information becomes available.

**Reporting**

Healthcare facilities that suspect they have a patient with *C. auris* infection should contact state or local public health authorities and CDC ([candidaauris@cdc.gov](mailto:candidaauris@cdc.gov)) immediately for guidance.

**Laboratory Diagnosis**

**When should *C. auris* infection be suspected?**

*C. auris* can be misidentified as a number of different organisms when using traditional biochemical methods for yeast identification such as BD Phoenix yeast identification system, MicroScan, and VITEK 2 YST. *C. auris* should be suspected when an isolate is identified as *Candida haemulonii*, because *C. auris* is most commonly misidentified as this species.

*C. auris* should also be suspected when an isolate is identified as follows:

* Simply reported as *Candida* spp. after a validated method of *Candida* species identification was attempted, especially when an infection is not responding to antifungal therapy
* As *Rhodotorula glutinis* by API 20C, and the characteristic red color of *R. glutinis* is not present
* As *Candida* *sake* by API 20C
* As *Candida catenulata* by BD Phoenix
* As *Candida catenulata*, *Candida famata*, *Candida guilliermondii*, or *Candida lusitaniae* by MicroScan
* Please note that *Saccharomyces cerevisiae* no longer appears to be a frequent misidentification for *C. auris*

An increase of unidentified *Candida* species infections in a patient care unit, including increases in isolation of *Candida* from urine specimens, should also prompt suspicion for *C. auris*, since *C. auris* can be transmitted in healthcare settings.

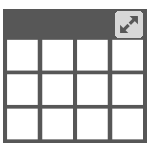
Identification of any of the species listed above, or an increase in unidentified *Candida* species as described, should prompt further characterization using appropriate methodology (see below). Laboratories with capability to characterize these isolates further are encouraged to do so; CDC and some state public health laboratories can also assist with characterizations when local capacity does not exist. All confirmed and suspected *C. auris* isolates should be forwarded to CDC through state public health laboratories.

**How can *C. auris* be identified?**

Diagnostic devices based on matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) can differentiate *C. auris* from other *Candida* species, but not all MALTDI-TOF devices include in the reference database to allow for detection. Currently, accurate identification for *C. auris* can be performed using Vitek MS and Bruker Biotyper brand MALDI-TOF using their “research use only” databases. Molecular methods based on sequencing the D1-D2 region of the 28s rDNA also can identify *C. auris*. As *C. auris* continues to gain recognition, updated versions of other yeast identification platforms may be able to identify *C. auris*; please consult the instrument manufacturer for more information. At the time of this update, VITEK 2 YST (with Ver 8.01 software) can also identify *C. auris*. When in doubt, please forward suspected *C.auris* specimens to CDC through state public health laboratories for further characterization.

**When should antifungal susceptibility testing for *C. auris* be performed and how should results be interpreted?**

All *C. auris* isolates should undergo antifungal susceptibility testing. Because no *C. auris*-specific susceptibility breakpoints have been established, breakpoints are defined based on those established for closely related *Candida* species and on expert opinion. Correlation between microbiologic breakpoints and clinical outcomes is not known at this time. For this reason, the information below should be considered as a general guide and not as definitive breakpoints for resistance. Please note that a finding of an elevated minimum inhibitory concentration (MIC) for an antifungal drug should not necessarily preclude its use, especially if the use of other antifungal drugs for the patient has been ineffective.

[](https://www.cdc.gov/fungal/diseases/candidiasis/recommendations.html#modalIdString_CDCTable_0)

| **Class/Drug** | **Tentative MIC Breakpoints (µg/mL)** | **Comment** |
| --- | --- | --- |
| **Triazoles** | | |
| Fluconazole | ≥32 | Modal minimum inhibitory concentration (MIC) to fluconazole among isolates tested at CDC was ≥256; isolates with MICs ≥32 were shown to have a resistance mutation in the *Erg11* gene, making them unlikely to respond to fluconazole. |
| Voriconazole and other second generation triazoles | N/A | Consider using fluconazole susceptibility as a surrogate for second generation triazole susceptibility assessment. However, isolates that are resistant to fluconazole may respond to other triazoles occasionally. The decision to treat with another triazole will need to be made on case-by-case basis. |
| **Polyenes** | | |
| Amphotericin B | ≥2 | Recent pharmacokinetic/pharmacodynamic analysis of *C. auris* in a mouse model of infection indicates that under standard dosing, the breakpoint for amphotericin B should be 1 or 1.5, similar to what has been determined for other *Candida* species. Therefore, **isolates with an MIC of ≥2** should now be considered resistant. If using Etest for amphotericin B and an MIC of 1.5 is determined, that value should be rounded up to 2. |
| **Echinocandins** | | |
| Anidulafungin | ≥ 4 | Tentative breakpoints are based on the modal distribution of echinocandin MICs of approximately 100 isolates from diverse geographic locations. |
| Caspofungin | ≥ 2 |
| Micafungin | ≥ 4 |

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**Treatment**

**What are the suggested treatment regimens for invasive *C. auris* infections (e.g., bloodstream infections, intra-abdominal infections) in adults?**

Based on the limited data available to date, an echinocandin drug at a dose listed below is recommended initial therapy for treatment of *C. auris* infections**.**

* anidulafungin: loading dose 200 mg, then 100 mg daily
* caspofungin: loading dose 70 mg, then 50 mg daily
* micafungin: 100 mg daily

Although echinocandin-resistant *C. auris* isolates have been reported, most strains found in the United States have been susceptible to echinocandins. Because this organism appears to develop resistance quickly, patients on antifungal treatment should be carefully monitored with follow-up cultures. Both recurrent and persistent *C. auris* bloodstream infections have been documented.

Switching to a lipid formulation of amphotericin B (3–5 mg/kg daily) could be considered if the patient is clinically unresponsive to echinocandin treatment or has persistent fungemia >5 days.

All other considerations for management of *C. auris* are similar to other types of *Candida* infections. Please refer to the [2016 IDSA Clinical Practice Guideline for the Management of Candidiasis](http://cid.oxfordjournals.org/content/early/2015/12/15/cid.civ933.full) for details.

Consultation with an infectious disease specialist is highly recommended when caring for patients with *C. auris* infection.

**Should we treat *C. auris* isolated from noninvasive body sites (e.g., urine, external ear, wounds, and respiratory specimens)?**

CDC does not recommend treatment of *C. auris* cultured from noninvasive siteswhen there is no evidence of infection. Similar to recommendations for other *Candida* species, treatment is generally only indicated if clinical disease is present. However, infection control measures (described in the following section) should be used for all patients with a culture yielding *C. auris*, including those from noninvasive body sites.

There are currently no data on the efficacy of decolonization for patients with *C. auris*, such as the use of chlorhexidine or topical antifungals.

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**Infection Control Measures**

**What infection control measures should be used for patients with *C. auris* infection and for patients colonized with *C. auris*?**

In both **acute-care settings**, such as acute-care hospitals, and in nursing homes, people with *C. auris* infection or colonization should be placed in single rooms on [Standard and Contact Precautions[PDF – 226 pages](https://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf)](https://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf).

If a limited number of single rooms are available, they should be reserved for patients at highest risk of transmitting *C. auris*, including patients requiring higher levels of care. Patients with *C. auris* could be placed in rooms with other patients with *C. auris* infection or colonization. To the extent possible, patients colonized with *C. auris and* other multidrug-resistant organisms (MDROs) should be placed in rooms with patients colonized with the same MDROs. CDC does not recommend placing patients with *C. auris* in rooms with patients with other types of MDROs.

Infected or colonized nursing home residents do not need to be restricted to their rooms, but they should perform hand hygiene before leaving their rooms. If residents colonized or infected with *C. auris* receive physical therapy or other shared services (for example, physical therapy equipment, recreational resources), staff should not work with other patients while working with the affected patient. They should use a gown and gloves when they anticipate touching the patient or potentially contaminated equipment. Ideally, affected patients should be the last to receive therapy on a given day. Shared equipment should be thoroughly cleaned and disinfected after use.

Highly functional infected or colonized nursing home residents without wounds or indwelling medical devices (e.g., urinary and intravenous catheters and gastrostomy tubes) who can perform hand hygiene might be at lower risk of transmitting *C. auris*. Facilities may consider relaxing the requirement for Contact Precautions for these residents. However, in these instances, healthcare personnel should still use gowns and gloves when performing tasks that put them at higher risk of contaminating their hands or clothing. These tasks include changing wound dressings and linens and assisting with bathing, toileting, and dressing in the morning and evening.

When patients are transferred to other healthcare facilities, receiving facilities should receive notification of *C. auris* infection or colonization and the level of precautions recommended.

In addition, state or local health authorities and CDC should be consulted about the need for additional interventions to prevent transmission.

**How can we assess whether a patient is colonized with *C. auris*?**

Colonization status can be assessed by obtaining screening cultures, typically using a composite swab of the patient’s axilla and groin. Patients have also been colonized with *C. auris* in the nose, external ear canals, oropharynx, urine, wounds, rectum, and stool. However, axilla and groin appear to be the most common and consistent sites of colonization. Consult with your local or state public health department or CDC for more information on assessing patients for colonization.

**How long should infected or colonized patients remain on infection control precautions?**

The optimal **duration for use of infection control precautions** in healthcare settings (acute-care hospitals, long-term acute-care hospitals, and nursing homes) is unclear since we don’t know the typical duration of *C. auris* colonization. The current recommendation is to continue Contact Precautions as long as the person is colonized with *C. auris*.

Periodic reassessments for presence of *C. auris* colonization (every 1–3 months) can help inform duration of infection control measures. Assessments of colonization should involve testing of, at minimum, swabs of the axilla and groin and also may include sites yielding C. auris on previous cultures (for example, urine and sputum). Two or more assessments performed at least one week apart with negative results are needed before discontinuing infection control precautions. The patient or resident should not be on antifungal medications active against C. auris at the time of these assessments. The optimal time between last receipt of antifungal medications and testing for C. auris colonization has not been established, but it is reasonable to wait one week. Wait at least 48 hours after administration of topical antiseptic (e.g., chlorhexidine), if such products are being used, before performing any testing for C. auris colonization. Note that decisions to discharge the patient from one level of care to another should be based on clinical criteria and the ability of the accepting facility to provide care and not on the presence or absence of colonization.

**How should rooms of patients with *C. auris* be cleaned*?***

*C. auris* can persist on surfaces in healthcare environments. Healthcare facilities that have patients with *C. auris* infection or colonization should ensure thorough daily and terminal cleaning and disinfection of these patients’ rooms. CDC recommends use of an Environmental Protection Agency (EPA)-registered hospital-grade disinfectant effective against *Clostridium difficile* spores ([List K](https://www.epa.gov/pesticide-registration/list-k-epas-registered-antimicrobial-products-effective-against-clostridium/t_self)). This is a change from the original recommendation for use of a disinfectant with a fungal claim. Follow all manufacturers’ directions for use of the surface disinfectant, including applying the product for the correct contact time. CDC’s interim disinfection recommendation for *C. auris* will continue to be updated as new information becomes available.

**Should hand hygiene practices be modified when caring for patients with *C. auris*?**

Always wear gloves as part of Contact Precautions to reduce hand contamination. Remember to avoid touching surfaces outside the immediate patient care environment while wearing gloves, and always perform hand hygiene following glove removal. When caring for patients for *C. auris*, follow [standard hand hygiene practices(https://www.cdc.gov/handhygiene/providers/index.html)](https://www.cdc.gov/handhygiene/providers/index.html) which include alcohol-based hand sanitizer use or, if hands are visibly soiled, washing with soap and water. Remember that wearing gloves is not a substitute for hand hygiene.

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**Additional Resources**

* [General Information about *Candida auris* (https://www.cdc.gov/fungal/diseases/candidiasis/candida-auris-qanda.html)](https://www.cdc.gov/fungal/diseases/candidiasis/candida-auris-qanda.html)
* [Questions and Answers for Healthcare Workers(https://www.cdc.gov/fungal/diseases/candidiasis/qa-healthcare-workers.html)](https://www.cdc.gov/fungal/diseases/candidiasis/qa-healthcare-workers.html)

**Related Links**

* [Fungal Meningitis(https://www.cdc.gov/meningitis/fungal.html)](https://www.cdc.gov/meningitis/fungal.html)
* [National Center for Emerging and Zoonotic Infectious Disease(https://www.cdc.gov/ncezid/index.html)](https://www.cdc.gov/ncezid/index.html)
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