



Department of Health

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DATE: August 17, 2016

TO: Hospitals, Nursing Homes, Diagnostic and Treatment Centers, Clinical Laboratories, Local Health Departments, NYSDOH Regional Epidemiologists, and Wadsworth Center

FROM: NYSDOH Bureau of Healthcare Associated Infections (BHAi)

Health Advisory:
Alert to New York State Healthcare Facilities regarding the Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast *Candida auris*

Please distribute immediately to:
Hospital Epidemiologists, Infection Preventionists, Laboratory Directors, Infectious Diseases Physicians, Critical Care Medicine Physicians, Medical Directors, Nursing Directors, Risk Managers, Administrators and Pharmacy Directors

The New York State Department of Health (NYSDOH) is distributing the attached clinical alert from the Centers for Disease Control and Prevention (CDC): *Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast Candida auris*: <http://www.cdc.gov/fungal/diseases/candidiasis/candida-auris-alert.html> . The following bullets are a summary of key points:

- *Candida auris* (*C. auris*) is an emerging multidrug-resistant yeast
- Reports from healthcare facilities outside the United States (US) indicate that *C. auris* is causing healthcare associated infections with high mortality and that *C. auris* has a high potential to cause outbreaks in healthcare facilities
- Infections caused by *C. auris* often do not respond to commonly used antifungal drugs, making them difficult to treat.
- Patients who have a long intensive care unit stay or have a central venous catheter, and who have previously received antibiotics or antifungal medications, appear to be at highest risk of infection
- Specialized laboratory methods are needed to accurately identify *C. auris*
- Cases of *C. auris* infection or colonization should be reported to the NYSDOH Regional Epidemiologist. To date, two separate cases of *C. auris* infection in unconnected, hospitalized patients have been reported to the NYSDOH.

Healthcare facilities should place patients with *C. auris* colonization or infection in single rooms and healthcare personnel should use Standard and Contact Precautions. Healthcare facilities should ensure that thorough daily and terminal cleaning and disinfection of these patient's rooms using an EPA-registered hospital grade disinfectant with a fungal claim is conducted.

Healthcare facilities in New York State should be watchful for cases of *C. auris* infection or colonization. Laboratories should forward clinical isolates of *Candida haemulonii*, as well as other clinical isolates that cannot be identified beyond *Candida* spp., to the Mycology Laboratory

at Wadsworth Center for further characterization. Requests for specimen submission to Wadsworth Center should be coordinated through your Regional Epidemiologist.

Cases of *C.auris* infection that occur in hospitals and other healthcare facilities licensed under Article 28 of the NYS Public Health Law should be reported to your NYSDOH Regional Epidemiologist or to the NYSDOH Bureau of Healthcare Associated Infections, Healthcare Epidemiology and Infection Control Program Central Office:

NYSDOH Regional and Central Office Contact Information:

Western Regional Office	(716) 847-4503
Central New York Regional Office	(315) 477-8166
Metropolitan Area Regional Office	(914) 654-7149
Capital District Regional Office	(518) 474-1142
Central Office	(518) 474-1142

Reporting requirements and instructions for NYSDOH facilities licensed under Article 28 of the Public Health Law are available at:

<http://www.health.ny.gov/professionals/diseases/reporting/communicable/infection/reporting.htm>

General questions or comments about this advisory can be sent to icp@health.ny.gov.



Clinical Alert to U.S. Healthcare Facilities

Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast *Candida auris*

Summary: The Centers for Disease Control and Prevention (CDC) has received reports from international healthcare facilities that *Candida auris*, an emerging multidrug-resistant (MDR) yeast, is causing invasive healthcare-associated infections with high mortality. Some strains of *C. auris* have elevated minimum inhibitory concentrations (MICs) to the three major classes of antifungals, severely limiting treatment options. *C. auris* requires specialized methods for identification and could be misidentified as another yeast when relying on traditional biochemical methods. CDC is aware of one isolate of *C. auris* that was detected in the United States in 2013 as part of ongoing surveillance. Experience outside the United States suggests that *C. auris* has high potential to cause outbreaks in healthcare facilities. Given the occurrence of *C. auris* in nine countries on four continents since 2009, CDC is alerting U.S. healthcare facilities to be on the lookout for *C. auris* in patients.

Background

Candida auris is an emerging multidrug-resistant (MDR) yeast that can cause invasive infections and is associated with high mortality. It was first described in 2009 after being isolated from external ear discharge of a patient in Japan ¹. Since the 2009 report, *C. auris* infections, specifically fungemia, have been reported from South Korea ², India ³, South Africa ⁴, and Kuwait ⁵. Although published reports are not available, *C. auris* has also been identified in Colombia, Venezuela, Pakistan, and the United Kingdom.

It is unknown why *C. auris* has recently emerged in so many different locations. Molecular typing of strains performed by CDC suggests isolates are highly related within a country or region but highly distinct between continents ⁶. The earliest known infection with *C. auris*, based on retrospective testing of isolate collections, occurred in South Korea in 1996 ². *C. auris* may not represent a new organism so much as one that is newly emerging in various clinical settings. Although the causes for such emergence are unknown, they may include new or increasing antifungal selection pressures in humans, animals, or the environment.

C. auris infections have most commonly been hospital-acquired and occurred several weeks into a patient's hospital stay. *C. auris* has been reported to cause bloodstream infections, wound infections, and otitis ². It has also been cultured from urine and the respiratory tract; however, whether isolation from these sites represented infection versus colonization in each instance is unknown. *C. auris* has been documented to cause infections in patients of all ages. Patients were found to have similar risk factors for infections with other *Candida* spp. ^{6,7}, including: diabetes mellitus, recent surgery, recent antibiotics, and presence of central venous catheters ³. Co-infection with other *Candida* spp. and detection of *C. auris* while the patient was being treated with antifungals have also been reported ².

Although no established minimum inhibitory concentration (MIC) breakpoints exist for *C. auris*, resistance testing of an international collection of isolates conducted by CDC demonstrated that nearly all isolates are highly resistant to fluconazole based on breakpoints established for other *Candida* spp. More than half of *C. auris* isolates were resistant to voriconazole, one-third were resistant to amphotericin B (MIC ≥ 2), and a few were resistant to echinocandins. Some isolates have demonstrated elevated MICs to all three major antifungal classes, including azoles, echinocandins, and polyenes, indicating that treatment options would be limited.

C. auris phenotypically resembles *Candida haemulonii* ¹. Commercially available biochemical-based tests, including API strips and VITEK-2, used in many U.S. laboratories to identify fungi, cannot differentiate *C. auris* from related species. Because of these challenges, clinical laboratories have misidentified the organism as *C. haemulonii* and *Saccharomyces cerevisiae*. Some clinical laboratories do not fully identify all *Candida* to the species level, and *C. auris* isolates have been reported as "other *Candida* spp." Clinical, state, and public health laboratories should be aware of this organism and of the limitations in its identification.

At least two countries have described healthcare outbreaks of *C. auris* infection and colonization involving more than 30 patients each. Analysis of isolates from these clusters demonstrate a high degree of clonality within the same hospital, supporting the idea that the organisms are being transmitted within those healthcare facilities. The precise mode of transmission within the healthcare facility is not known. However, experience during these outbreaks suggests that *C. auris* might contaminate the environment of rooms of colonized or infected patients. Good infection control practices and environmental cleaning may help prevent transmission.

Interim Recommendations

CDC is concerned that *C. auris* will emerge in new locations, including the United States. CDC and partners continue to work closely, and new information will be provided as it becomes available. CDC recommends the following actions for U.S. healthcare facilities and laboratories:

- **Reporting** — Healthcare facilities who suspect they have a patient with *C. auris* infection should contact state/local public health authorities and CDC (candidaauris@cdc.gov (<mailto:candidaauris@cdc.gov>)).
- **Laboratory Diagnosis** — Diagnostic devices based on matrix-assisted laser desorption/ionization-time of flight (MALDI-TOF) can differentiate *C. auris*, but not all devices currently include *C. auris* in the reference database to allow for detection. Molecular methods based on sequencing the D1-D2 region of the 28S rDNA can also identify *C. auris*. CDC requests that laboratories identifying *C. auris* isolates in the United States notify their state or local health departments and CDC (candidaauris@cdc.gov (<mailto:candidaauris@cdc.gov>)). *C. haemulonii* isolates and other isolates from clinical specimens that cannot be identified beyond *Candida* spp. by conventional methods can be forwarded through state public health laboratories to CDC for further characterization.
- **Infection Control** — Until further information is available, healthcare facilities should place patients with *C. auris* colonization or infection in single rooms and healthcare personnel should use Standard and Contact Precautions. In addition, state or local health authorities and CDC should be consulted about the need for additional interventions to prevent transmission. CDC is working with domestic and international partners to develop definitive infection control guidance.
- **Environmental Cleaning** – Anecdotal reports have suggested that *C. auris* may persist in the environment. Healthcare facilities who have patients with *C. auris* infection or colonization should ensure thorough daily and terminal cleaning and disinfection of these patient's rooms using an EPA-registered hospital grade disinfectant with a fungal claim.

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For more information:

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1. Satoh, K., et al., *Candida auris* sp. nov., a novel ascomycetous yeast isolated from the external ear canal of an inpatient in a Japanese hospital. *Microbiol Immunol*, 2009. 53(1): p. 41-4.
 2. Lee, W.G., et al., First three reported cases of nosocomial fungemia caused by *Candida auris*. *J Clin Microbiol*, 2011. 49(9): p. 3139-42.
 3. Chowdhary, A., et al., New clonal strain of *Candida auris*, Delhi, India. *Emerg Infect Dis*, 2013. 19(10): p. 1670-3.
 4. Magobo, R.E., et al., *Candida auris*-associated candidemia, South Africa. *Emerg Infect Dis*, 2014. 20(7): p. 1250-1.
 5. Emara, M., et al., *Candida auris* candidemia in Kuwait, 2014. *Emerg Infect Dis*, 2015. 21(6): p. 1091-2.

6. Ben-Ami, R., et al., Antibiotic exposure as a risk factor for fluconazole-resistant *Candida* bloodstream infection. *Antimicrob Agents Chemother*, 2012. 56(5): p. 2518-23.
 7. Wey, S.B., et al., Risk factors for hospital-acquired candidemia. A matched case-control study. *Arch Intern Med*, 1989. 149(10): p. 2349-53.
 8. Laboratory Submission Information: http://www.cdc.gov/fungal/lab_submission.html
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National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (/ncezid/)

Division of Foodborne, Waterborne, and Environmental Diseases (DFWED) (/ncezid/dfwed/index.html)



Candida auris Questions and Answers

Healthcare facilities in several countries have reported that a type of yeast called *Candida auris* has been causing severe illness in hospitalized patients. In some patients, this yeast can enter the bloodstream and spread throughout the body, causing serious invasive infections. This yeast often does not respond to commonly used antifungal drugs, making infections difficult to treat. Patients who have been in the intensive care unit for a long time or have a central venous catheter placed in a large vein, and have previously received antibiotics or antifungal medications, appear to be at highest risk of infection with this yeast.

Specialized laboratory methods are needed to accurately identify *C. auris*. Conventional lab techniques could lead to misidentification and inappropriate treatment, making it difficult to control the spread of *C. auris* in healthcare settings.

Because of these factors, CDC is alerting U.S. healthcare facilities to be on the lookout for *C. auris* in their patients.

CDC and partners continue to work closely, and new information will be provided as it becomes available. **To learn more about *Candida auris*, read the Q&A below and the [CDC Clinical Alert](#).**

Why is CDC concerned about *C. auris* infections?

CDC is concerned about *C. auris* for three main reasons:

1. It is often multidrug-resistant, meaning that it is resistant to most antifungal drugs commonly used to treat *Candida* infections.
2. It is difficult to identify with standard laboratory methods, and it can be misidentified in labs without specific technology. Misidentification may lead to inappropriate treatment.
3. It has caused outbreaks in healthcare settings. For this reason, rapid identification of *C. auris* in a hospitalized patient is particularly important so that hospitals can take special precautions to stop its spread.

What types of infections can *C. auris* cause?

C. auris has caused bloodstream infections, wound infections, and ear infections. It also has been isolated from respiratory and urine specimens, but it is unclear if it causes infections in the lung or bladder.

How is *C. auris* infection diagnosed?

Like other *Candida* infections, *C. auris* infections are usually diagnosed by fungal culture of blood or other body fluids. However, *C. auris* is harder to identify from cultures than other, more common types of *Candida*. For example, it can be confused with other types of yeasts, such as *Candida haemulonii* and *Saccharomyces cerevisiae*. Special laboratory tests that use molecular methods are needed to identify *C. auris*. For more information about laboratory testing, please see the [CDC Clinical Alert](#).

Who is at risk for infection from *C. auris*?

Limited data suggest that the risk factors for *Candida auris* infections are generally similar to risk factors for other types of *Candida* infections. These risk factors include recent surgery, diabetes, broad-spectrum antibiotic and antifungal use, and central venous catheter use. Infections have been found in patients of all ages, from preterm infants to the elderly. Further study is needed to learn more about risk factors for *C. auris* infection.

When was *C. auris* first reported?

C. auris was first identified in 2009 in Japan. Retrospective review of *Candida* strain collections found that the earliest known strain of *C. auris* dates to 1996 in South Korea. CDC considers *C. auris* an emerging pathogen because increasing numbers of infections have been identified in multiple countries since it was recognized.

How did *C. auris* get its name?

Auris is the Latin word for ear. Despite its name, *C. auris* can also affect many other regions of the body and can cause invasive infections, including bloodstream infections and wound infections.

Where have *C. auris* infections occurred globally?

Published reports have described *C. auris* infections in Japan, South Korea, India, South Africa, and Kuwait. Infections also have occurred in Pakistan, Colombia, Venezuela, and the United Kingdom. Because identification of *C. auris* requires specialized laboratory methods, infections

likely have occurred in other countries but have not been identified or reported. Based on a review of *Candida* specimens collected in the past, CDC is aware of one possible *C. auris* infection in the United States that occurred in 2013.

How did *C. auris* infection spread globally?

CDC conducted whole genome sequencing of *C. auris* specimens from countries in the regions of eastern Asia, southern Asia, southern Africa, and South America. Whole genome sequencing produces detailed DNA fingerprints of organisms. CDC found that isolates within each region are quite similar to one another, but are relatively different across regions. These differences suggest that *C. auris* has emerged independently in multiple regions at roughly the same time.

Would someone be likely to get a *C. auris* infection if they travel to any of these countries?

It is unlikely that routine travel to countries with documented *C. auris* infections would increase the chance of someone getting sick from *C. auris*. Infections have occurred primarily in patients who were already in the hospital for other reasons. People who travel to these countries to seek medical care or who are hospitalized there for a long time may have an increased risk for *C. auris* infection.

Have *C. auris* infections occurred in the United States?

Based on a review of *Candida* specimens collected in the past, CDC is aware of one possible *C. auris* infection in the United States that occurred in 2013.

What should someone do if they suspect they have a *C. auris* infection?

CDC recommends that anyone who believes they have any fungal infection or healthcare-associated infection see a healthcare provider.

Are *C. auris* infections treatable?

Most *C. auris* infections are treatable with a class of antifungal drugs called echinocandins. However, some *C. auris* infections have been resistant to all three main classes of antifungal medications, making them more difficult to treat. In this situation, multiple classes of antifungals at high doses may be required to treat the infection. Treatment decisions should be made in consultation with a healthcare provider experienced in treating patients with fungal infections.

Can a person die from infection with *C. auris*?

Yes. Invasive infections with any *Candida* species can be fatal. We don't know if patients with invasive *C. auris* infection are more likely to die than patients with other invasive *Candida* infections. Based on information from a limited number of patients, 60% of people with *C. auris* infections have died. However, many of these people had other serious illnesses that also increased their risk of death.

How does *C. auris* spread?

We are still learning how *C. auris* spreads. Early evidence suggests that the organism might spread in healthcare settings through contact with contaminated environmental surfaces or equipment, or from person to person. More work is needed to understand how it spreads.

How can the spread of *C. auris* be prevented?

Certain infection control practices will likely prevent spread of *C. auris* within healthcare settings. These practices include careful adherence to hand hygiene (<http://www.cdc.gov/handhygiene/index.html>) and using contact precautions, which involve wearing gowns and gloves. Thorough environmental cleaning of hospital rooms also may help prevent the spread of *C. auris*.

What is CDC doing to address *C. auris*?

CDC is providing guidance for clinicians and infection control personnel. CDC also is working with state and local health agencies, healthcare facilities, and clinical microbiology laboratories to ensure that laboratories are using proper methods to detect *C. auris* and know the limitations of certain tests for detecting *C. auris*. For more information about *C. auris*, please see the CDC Clinical Alert. This website includes interim recommendations for reporting, laboratory diagnosis, infection control, and environmental cleaning.

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