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

Clinical Alert to Healthcare Facilities

Date: June 29, 2016

Intended Audience: ☒ All public health partners ☒ Healthcare providers ☒ Infection preventionists ☒ Local health departments ☐ Schools/child care centers ☐ ACOs ☐ Animal health professionals ☒ Other: Laboratories

Key Points or Updates:
(1) Candida auris is an emerging multidrug-resistant yeast that causes invasive healthcare-associated infections with high rates of mortality, and has been found in nine countries since 2009, including one isolate of Candida auris was found in the United States in 2013.

Action Items:
(1) Healthcare facilities that suspect they have a patient with Candida auris should contact the Antimicrobial Resistance Coordinator at the New Jersey Department of Health.
(2) Laboratories identifying Candida auris isolates in the United States should notify the Antimicrobial Resistance Coordinator at the New Jersey Department of Health.
(3) Any patients with Candida auris infections or colonization should be placed on standard and contact precautions, including placement in a single room. Facilities should complete daily and terminal cleaning and disinfection of the patient’s room using EPA-registered hospital grade disinfectant with a fungal claim.

Contact Information:
• Patricia M. Barrett, Antimicrobial Resistance Coordinator, at patricia.barrett@doh.nj.gov or (609) 826-5964;
• Rebecca Greeley, Infectious Disease Team Lead, at Rebecca.greeley@doh.nj.gov or (609) 826-5964; or
• The Communicable Disease Service at (609) 826-5964 during business hours

References and Resources:
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.

Since the 2009 report, *C. auris* infections, specifically fungemia, have been reported from South Korea, India, South Africa, and Kuwait. 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. The earliest known infection with *C. auris*, based on retrospective testing of isolate collections, occurred in South Korea in 1996. *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. 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., including: diabetes mellitus, recent surgery, recent antibiotics, and presence of central venous catheters. Co-infection with other *Candida* spp. and detection of *C. auris* while the patient was being treated with antifungals have also been reported.

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. 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).
- **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). 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.
For more information:

8. Laboratory Submission Information: http://www.cdc.gov/fungal/lab_submission.html