Candida auris: an emerging resistant organism

Jose Antonio Serrano, MPH
Mycotic Disease Coordinator
Intro/Background

- **C. auris** - sub-species - *Candida* genus

- First reported in 2009 in Japan - S. Korea in 1996?

- Affects many regions of the body, causing wound and bloodstream infections
What is C. auris?

- *Candida auris* is a type of pathogenic yeast causing severe illness in hospitalized patients.

- Patients at higher risk of infection include those who have:
  - previously received antibiotics or antifungal treatment
  - spent a long time in a healthcare facility
  - a central line catheter, or other lines or tubes connected
  - weakened immune systems
Why is *C. auris* a problem?

- **Potential for serious infections**
  - bloodstream

- **Difficult to identify**

- **Easy to mis-identify**
  - when using traditional methods for identification
  - could lead to a wrong diagnosis/treatment

*Photo Credit: Shawn Lockhart, CDC*
Why is C. auris a problem? (cont’d)

- It can spread aggressively in healthcare facilities
  - Responsible for outbreaks in hospitals and nursing homes
  - Good hand hygiene and cleaning in healthcare facilities is important. C. auris can survive on surfaces for several weeks

- Becoming more common
  - Only discovered in 2009, it has spread quickly

- Often resistant to anti-fungal medications
  - Most C. auris infections are treatable with echinocandins
  - Some strains have been found to be resistant to all three main classes of anti-fungals
Infection and colonization with *C. auris*

- Can cause invasive infection requiring antifungal therapy.

- Also has been found in non-invasive body sites. Can colonize a person without causing active infection.

- Patients have been found to be colonized for several months after active infection has resolved.
  - Not enough data available to provide a maximum amount of time of colonization
  - Not enough data on the efficacy of decolonization with chlorhexidine or other topical agents
Current National Situation (as of July 14, 2017)

- As of May 2017, a total of 77 US clinical cases were reported to CDC.
  - Screening of close contacts of these patients identified an additional 45 patients resulting in a total of 122 patients from whom C. auris has been isolated.

- Median age: 70 years (21-96) and 55% were male
  - Multiple underlying conditions and health care facility exposure
  - Epi-links have been found between most cases

- Resistance: The first 35 clinical isolates tested for antifungal susceptibility testing:
  - 30 (86%) were resistant to fluconazole
  - 14 (43%) were resistant to amphotericin B
  - 1 (3%) was resistant to echinocandins
Case count and geographical distribution

**Candida auris cases in the United States**

- **Number of Cases Reported**
  - 1 - <18
  - 18 - <35
  - 35 - <51
  - 51 - 68

**FIGURE. Number of health care-associated cases of Candida auris infection reported to CDC (N = 77)**

- Seven states, May 2013–May 2017

- States: New York, New Jersey, Maryland, Illinois, Massachusetts, Indiana, Oklahoma
Environmental testing and IC recommendations

- Environmental testing of patients’ rooms identified *C. auris* from mattresses, beds, windowsills, chairs, infusion pumps, and countertops, indicating *C. auris* contamination.
- *C. auris* was not isolated from rooms after thorough cleaning with a sodium hypochlorite-based disinfectant.

Current infection control recommendations for *C. auris*-colonized or infected patients include:

1. Standard and Contact Precautions,
2. private room for patient
3. daily and terminal cleaning of a patient’s room with a disinfectant active against *Clostridium difficile* spores
4. notification of receiving health care facilities when a patient is transferred.
Case classification is determined based on laboratory evidence and epidemiologic linkage:

- A case that meets the confirmatory laboratory evidence for infection:
  - Culture of *C. auris* from any body site, including blood, wound, skin, ear, urine, rectum, secretions, or other body fluids.

- A case with supportive laboratory evidence and evidence of epidemiologic linkage:
  - Detection of *C. haemulonii* from urine, resp. tract, or normally sterile site by a laboratory instrument not equipped to detect *C. auris* and isolate is not available for further testing.
Epidemiologic linkage: isolate from a person who is within the same household, same healthcare facility, or in a healthcare facility that commonly shares patients with a facility, with another person with confirmatory laboratory evidence.

Confirmed: a case that is laboratory-confirmed

Probable: a case with supportive laboratory evidence and evidence of epidemiologic linkage

Suspect: a case with supportive laboratory evidence and no evidence of epidemiologic linkage
Antibiotic Resistance Lab Network

- The CDC Antibiotic Resistance Lab Network (ARLN) regional lab for Louisiana - based in Tennessee

- The HAI team is in the process of planning to train hospital laboratories to submit Candida spp. samples directly to this regional lab

- The ARLN will perform fungal susceptibility testing to identify emerging resistance
### Candida Auris Infection

**Collapse Subsections**

**Lab Testing**

<table>
<thead>
<tr>
<th>Type of case:</th>
<th>Clinical</th>
</tr>
</thead>
</table>

**If clinical case, did patient previously have a positive screening/surveillance culture?**

- Yes

**Was antifungal susceptibility testing (AFST) performed?**

- Yes

**Fluconazole MIC:**

**Voriconazole MIC:**

**Amphotericin MIC:**

**Caspofungin MIC:**

**Anidulafungin MIC:**

**Mycophenolic MIC:**

**(Use Ctrl to select more than one)**

- Automatic
- Broth microdilution
- E-test

**What methods are used on-site for AFST?**

- Automatic
- Broth microdilution
- E-test

**Other What methods are used on-site for AFST?**

**Was the organism initially misidentified?**

- Yes

**Using what method?**

**Other Using what method?**

**As what?**

**Other As what?**
### IDRIS Supplemental Information (cont’d)

**Known to be colonized with other multidrug-resistant organisms?**
- Yes

**Specify other MDROs:**

**Was the patient admitted to the intensive care unit (ICU)?**
- Yes

**Length of stay in ICU (in days):**

**Date of admission to the ICU:**

**Date of discharge from the ICU:**

**Infant (or wardmates if in a general ward) while not on contact precautions?**
- Yes

**Hospitalization Unit/Floor:**

**Room:**

**From:**

**To:**

**On contact precautions:**

**Known exposure to confirmed C. auris case patient?**
- Yes

**Medical conditions**

- Cancer: hematologic malignancy
- Cancer: solid tumor
- Chronic renal failure

**Other Medical conditions:**

**Was the patient admitted to the intensive care unit (ICU)?**
- Yes

**Length of stay in ICU (in days):**

**Date of admission to the ICU:**

**Date of discharge from the ICU:**

**Traveled to or lived outside U.S.**

**International Destination(s) or Residence(s):**

**Did the patient receive healthcare while travelling?**

**Did the patient receive broad-spectrum antibiotics?**
- Yes

**Did the patient receive antifungal medication?**
- Yes

**Specify antifungal:**

**After C. auris was identified, did patient receive antifungal medication?**
- Yes

**Specify antifungal:**

**Medication begin date:**

**Medication end date:**

**Selected Values:**
- Central venous catheter
- Endotracheal intubation
- Gastrostomy tube
Questions or Comments?