Candida Auris in Orange County

Matt Zahn, MD
Medical Director
Communicable Disease Control Division
Orange County Health Care Agency
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C. auris Worldwide

- First identified in the ear of a patient in Japan in 2009
- Rapidly identified worldwide
5-10% of patients colonized with *C. auris* develop invasive infections

Blood stream infections  
Wound infections  
Pneumonia

Mortality is **>45% within the first 30 days**

Courtesy: Ellora Karmarkar

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**C. auris** Resistance Patterns

- Multiple resistance mechanisms may be present
- Biofilms and efflux pumps play a role
- 40% of *C auris* isolates will be resistant to 2 or more drug classes
- 10% resistant to all antifungal drugs
- For US isolates:
  - 90% are resistant to fluconazole
  - 30% resistant to amphotericin
  - 5% of isolates are resistant to echinocandins
C. auris Spread

- Most Candida infections result from overgrowth of endogenous flora
- C. auris appears to be acquired exogenously
- Seems to be easily transmitted between patients
- Persistently colonizes host skin and the environment
- Can cause disease months to years after initial colonization

C. auris Pathology

- Cellular morphologies include yeast, pseudohyphae and hyphae
- C. auris switches between white and opaque cellular phenotypes
- Phenotypic switching likely allows for colonization of distinct host niches
- Virulence factors include filamentation, adhesion, biofilm formation, hydrolytic enzyme secretion
C. auris Has Been Identified in Multiple United States Communities

First Identified Case in Orange County:

29 yo resident of Orange County:
- History of Down syndrome, otherwise healthy
- From December, 2018 until January, 2019 had multiple acute care hospital admissions for back surgery and subsequent pulmonary embolus
- Resident of long term acute care hospital A in Orange County from January, 2019-present
- No international travel or known C auris exposure
- Clinical status:
  - Bilateral ischemic cerebral infarcts
  - Ventilator-dependent
  - Tracheostomy
  - PEG
  - Foley Catheter long term
- Urine culture obtained on February 23 was + for Candida auris
Long Term Acute Care Hospital A

- Facility is one of 3 LTACHs in OC
- 42 total residents
- No cases with known exposure to C. auris
- No residents in the facility were reported to have had international travel
- Nationally, LTACHs and SNFs that provide ventilator care have been found to be at risk for C. auris outbreaks:

  "Most cases were in chronically ill patients with long stays at high-acuity skilled nursing facilities (e.g., facilities providing mechanical ventilation)" - CDC.gov

LTACH A’s Clinical Laboratory

- Began speciating urine Candida isolates at suggestion of public health in Sept, 2018
- Speciation of Candida isolates is necessary to identify C. auris
- Most clinical laboratories do not speciate Candida
- Depending on the testing method, C. auris can be misidentified as a different species
  - VITEK-2 can misidentify it as C. haemulonii or C. duobushaemulonii
Why Patients in vSNFs and LTACHs?

- These facilities care for a high proportion of patients at highest risk for *C. auris* colonization and disease:
  - Long term hospitalization
  - Treatment including:
    - Ventilation
    - Tracheostomy
    - Central line
    - Urinary catheter
  - History of multiple courses of antibiotics and antifungals

LTACH A
Point Prevalence Survey

- All patients in LTACH A screened by axilla/groin/nares swabbing for *C. Auris*
- Multiple patients colonized with *C. Auris* identified
- With additional LTACH A patients identified:
  - Additional PPSs planned for vSNFs who frequently share patients with LTACH A
  - Communication plan developed for all patients transferred from LTACH A to other healthcare facilities
Infection Control Precautions for Patients Admitted to Acute Care Hospitals or SNFs with Suspected or Confirmed *C. auris* Colonization

Recommendations for any patient transferred from a vSNF or LTACH with confirmed *C. auris*-positive patients:

- **Consistent Standard and Contact Precautions in acute care hospitals**
- **Consistent Contact or Enhanced Standard Precautions in SNFs**
- **Patient should have screening performed on admit to new facility**
- **Whenever possible, place the patient with in a single-patient room**
- **Emphasize adherence to hand hygiene**
- **Alcohol-based hand sanitizer or soap and water is recommended**
- **Inter-facility communication re *C. auris* status prior to transfer**
Colonization Testing

- For PPSs or for individual patients transferred from facility with suspected ongoing spread
- CDC recommends swabbing of axilla and groin
- During initial OC PPSs, nares screening has identified negligible additional cases, and is no longer recommended
- Laboratory testing performed by national public health laboratories

Colonization Laboratory Testing Options

- Options include:
  - Culture
    - Takes 7-21 days to result
    - Used for individual patients who are transferred from facilities at risk
  - PCR
    - Take 7-14 days to result
- Public Health laboratories are the primary source for screening testing
  - National NLRN laboratories have participated
  - Over 1000 screening tests performed so far, a significant burden for these laboratories
  - Some local hospital labs have developed *C. auris* screening capacity
Additional Point Prevalence Surveys

- Three vSNFs who frequently shared patients with LTACH A had patients identified who were colonized with C. auris.
- With patients at these vSNFs identified, PPSs performed in all 14 vSNFs and all 3 LTACHs in Orange County.
- Goal was to assess the epidemiology and minimize spread of C. auris in Orange County.

CDC Epi-Aid Requested

- 3-5 CDC staff were assigned at a time to OC for 2 months.
- Included physicians, laboratorians, infection preventionists.
- Performed outreach education to facilities.
- Assisted with swabbing of patients.
- Assessed infection control processes.
Repeated PPS help assess for ongoing transmission

- Swab new patients
- Swab previously negative patients

Point Prevalence Surveys

- Recommended only for:
  - Subacute sides of skilled nursing facilities
  - Long term acute care hospitals
  - Subacute SNF resident colonization and disease rates are 10x the rates of “regular” residents
  - Surveys in acute care facilities have rarely found cases
  - Not because transmission doesn’t occur, but because of transient patient population
Current Situation: Affected Facilities

- 9 facilities with at least one colonized case:
  - 3 LTACs
  - 6 vSNFs
- Number of colonized residents range from 2-30
- Most facilities with at least one colonized case were directed to inform accepting facilities of the situation and accepting facilities were directed to place patients in empiric precautions on transfer
- 2 vSNFs had one patient each who was found to be colonized by PPS:
  - Each patient had recently come from another facility with known C. auris cases
  - Neither facility had patients placed in empiric precautions on transfer
- 1 vSNF and 1 LTAC continue to have point prevalence surveys performed every two weeks
- 2 LTACs and 5 vSNFs in Orange County have gone >1 month with no evidence of internal spread
  - Transferred patients from these facilities no longer need empiric precautions
  - These facilities generally are having monthly PPSs performed
Underlying medical conditions at time of screening (n=52)

- Chronic Lung Disease
- Cardiovascular Disease
- Neurologic Condition
- Skin Condition

Most frequently recorded medical devices in the last 7 days (n=52)

- Gastrointestinal Tube
- Tracheostomy
- Urinary Catheter
- Mechanical Ventilation
Underlying cardiovascular conditions at time of screening (n=52)

- Cerebrovascular Disease
- Congestive Heart Failure
- Peripheral Vascular Disease
- Myocardial Infarction

Number of Case-Patients

Testing Patients for Clearance

- CDC website:
  - Evidence suggests that patients remain colonized for many months, perhaps indefinitely.
  - Periodic reassessments for presence of *C. auris* colonization (e.g., every 3 months) for a patient with known *C. auris* colonization could help inform duration of infection control procedures.

- OCHCA has not routinely screened patients for clearing
- May consider in patients who clinically improve

[cdc.gov](http://www.cdc.gov)
Enhanced Standard Precautions

- Recently rolled out by CDPH
- Emphasizes clinical risk based rather than pathogen-based infection control
- Applies to SNFs
  - NOT acute care hospitals or LTACHS
  - Not applied to facilities experiencing outbreaks

Should Environmental Testing Be Done?

- Environmental testing performed in facilities in other communities when outbreaks occurred
- This testing frequently identified *C. auris*
- At this point, it is most appropriate to assume that the environment is contaminated
- Cleaning must be carried out with list K products from EPA
Colonized Patients Discharged to Home

- For patients who are colonized: once discharged to home, risk of remaining colonized goes down
- No precautions taken at home in most situations
- Each patient was sent a letter to be taken to any healthcare provider that they see informing them of the situation
- If readmitted, admitting facility should place in contact precautions

Treatment of C. auris

- Initial C. auris isolates in OC have been resistant to fluconazole but susceptible to caspofungin and amphotericin B
- Echinocandins are initial treatment of choice
- Resistance can develop over time
Infection Control Issues Identified at vSNFs and LTACHs

- Inconsistent Contact Precaution adherence
- Inconsistent hand washing
- Alcohol-based hand sanitizer is regarded with suspicion
- Unclear signage
- Environmental cleaning issues
  - Uncertainty as to who cleans what
  - Inappropriate products
  - Chlorhexidine’s effect is uncertain

Recommendations for Acute Care Hospitals

- Facilities that frequently share patients with facilities with colonized patients should speciate clinical Candida isolates

- OCHCA has reached out to these facilities directly

- OCHCA Laboratory is now able to identify C. auris

- PPSs in acute care hospitals in the past have not been found to be high yield, not routinely recommended
Ripple Effects of This Investigation:

- Increased emphasis on infection control and identification of MDROs in SNFs
- Affected facilities feel stigmatized
  - Can’t discharge patients
  - Can’t get referrals
  - Families are angry
- Dialysis facilities are refusing to take *C. auris*-colonized patients

Summary:

*C. Auris* in Orange County

- Colonized patients continue to be identified
- Number of illnesses remains low
- Multiple healthcare facilities have seen apparent internal spread
- Most facilities have been able to halt spread in their facilities
- Long-term colonization of patients will present an ongoing infection control risk
Thank you!

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Contact info:
• Phone: 714-834-8180
• Email: mzahn@ochca.com