Candida auris in New York State Healthcare Facilities: An Update for Clinical Staff

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Outline

• Background
• Emergence in New York State
• Infection control
• Identifying and reporting *C. auris*
• NYSDOH prevention and control activities
Background
Rapid Emergence Since 2009

<table>
<thead>
<tr>
<th>Country</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>2009, 2010</td>
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<tr>
<td>South Korea</td>
<td>2011, 2012</td>
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<tr>
<td>India</td>
<td>2013, 2014</td>
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<tr>
<td>S. Africa</td>
<td>2015</td>
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<tr>
<td>Kuwait</td>
<td>2016</td>
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<tr>
<td>Pakistan</td>
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<tr>
<td>Venezuela</td>
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<td>Israel</td>
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<td>United Kingdom</td>
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</table>
C. auris around the World

• Lockhart 2016: 54 isolates from Pakistan, India, South Africa, Venezuela, and Japan
  – Susceptibility testing
    • 93% resistant to fluconazole, 54% to voriconazole, 35% to amphotericin B, 7% to echinocandins, 6% to flucytosine
    • 41% resistant to ≥2 classes, 2 isolates resistant to 3 classes
  – Whole genome sequencing
    • 4 clades: South Asia, South Africa, South America, East Asia
    • Minimal differences among isolates within a geographic cluster
    • Suggests simultaneous emergence rather than spread
  – Surveillance
    • SENTRY: 15,271 Candida isolates 2004-2015, four C. auris identifications after 2009
Reasons for Concern

• Challenging to identify
  – MALDI-TOF or sequencing required to correctly identify *C. auris*

• Often multi-drug resistant
  – Usually resistant to fluconazole
  – Variable susceptibility to other azoles, amphotericin B, and echinocandins
  – Some have been resistant to all 3 classes of antifungal medications

• Transmitted within healthcare facilities
  – Outbreaks in multiple countries
  – Persistent colonization
  – Survives for long periods in the hospital environment
Emergence in New York State
Candida auris: Confirmed Clinical Cases in New York State, May 2013–April 2017

Month First Positive C. auris Culture Collected
The Future
The Future

• India
  – Chowdhary 2013: *C. auris* represented 5% of candidemia in pediatric hospital, 30% of candidemia in tertiary general hospital
  – Chakrabarti 2015: *C. auris* isolated from 19/27 ICUs throughout India, 5.2% of ICU Candida isolates

• Kenya
  – Okinda, 2014: *C. auris* accounted for 38% of hospital-acquired candidemia
    • *Candida albicans* 27%
Case Counts as of May 5, 2017

- 53 clinical cases
- 18 screening cases
- 4 probable cases

- All infected persons had other serious medical conditions
Geographic Distribution

- All but 2 diagnosed in New York City facilities
  - Greatest numbers in Brooklyn, Queens
- One diagnosed in Monroe County (Rochester)
  - Recent admission to involved NYC hospital
- One diagnosed in Westchester County
  - No obvious link to NYC facilities
Facility Involvement

• From 90 days before 1\textsuperscript{st} positive culture to the present
  – 23 NYS hospitals
  – 22 NYS nursing homes
  – 1 LTACH
  – Additionally, 1 hospital outside the US, 1 LTACH in another state, numerous private medical offices, private homes
Geographic Distribution
# C. auris in the U.S.

<table>
<thead>
<tr>
<th>State</th>
<th>Clinical Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana</td>
<td>1</td>
</tr>
<tr>
<td>Maryland</td>
<td>1</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1</td>
</tr>
<tr>
<td>Illinois</td>
<td>4</td>
</tr>
<tr>
<td>New Jersey</td>
<td>15</td>
</tr>
<tr>
<td>New York</td>
<td>53</td>
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[https://www.cdc.gov/fungal/diseases/candidiasis/candida-auris.html](https://www.cdc.gov/fungal/diseases/candidiasis/candida-auris.html)
Resistance

• All but one case resistant to fluconazole
  – Variable resistance to other azoles
• Most cases resistant to amphotericin B
• Only one case resistant to echinocandins
  – Recent development, NYC case
  – The resistant case’s isolates were initially susceptible to echinocandins but later developed resistance, a known treatment challenge
Identifying and Reporting *C. auris*
When to Suspect *C. auris*

- *C. haemulonii*
- “*Candida* spp.” after identification attempted, especially if infection not responding to treatment
- *Rhodotorula glutinis* or *Candida sake*, *catenulate*, *famata*, *guilliermondii*, or *lusitaniae*, depending on type of laboratory identification system
- Increase in unidentified *Candida* spp. Infections on a patient care unit, including in urine
Mandated reporting under New York State Sanitary Code

Candida auris not explicitly listed

However:

“In addition to the diseases listed above, any unusual disease (defined as a newly apparent or emerging disease or syndrome that could possibly be caused by a transmissible infectious agent or microbial toxin) is reportable.”

Additionally:

“…a cluster or outbreak of cases of any communicable disease is a reportable event.”

Don’t assume someone else is reporting
Reporting

• As described in previous NYSDOH health alert to laboratories, report to and coordinate with regional epidemiologist to forward suspicious isolates to Wadsworth Center
General

• Applies to both infected and colonized patients

• Standard and Contact Precautions
  – Generally, gown and gloves

• Hand hygiene
Acute care

• Standard and Contact Precautions
• Single room
Long Term Care

- Single room
  - If not available, may cohort with other resident(s) colonized or infected with *C. auris*

- Standard and Contact Precautions
  - Consult with NYSDOH to modify Contact Precautions for highly functional residents who can perform hand hygiene
Cleaning and Disinfection

• EPA-registered hospital grade disinfectant effective against *Clostridium difficile* spores

• Confirm your product(s) meet this specification
Cleaning and Disinfection

- Known to persist in healthcare environments
- All healthcare settings
- Rooms, units, and procedure/treatment areas where colonized or infected patients/residents are located or have been present
- Both daily and terminal cleaning
Monitoring

• Infection preventionists are strongly encouraged to monitor compliance with infection control practices
  – Environmental cleaning and disinfection
  – Procedures and competencies for implementing Standard and Contact Precautions should be in place
  – Hand hygiene observations
  – Personal protective equipment
    • Proper use
    • Availability
Monitoring Environmental Cleaning and Disinfection

• Proper use of disinfectant (preparation, contact time, etc.)

• Objective evaluation of thoroughness
  – Direct observation
  – Fluorescent markers
  – ATP bioluminescence

• https://www.cdc.gov/hai/toolkits/evaluating-environmental-cleaning.html
Infection Control Breach Observations

• Contact Precautions and PPE
  – Frontline staff, DON, physicians entering room with no PPE, no hand hygiene
  – Gowns untied, hanging off, no sleeves
  – PPE down the hall in locked cabinet, facility could not locate the key
  – Incorrect statements that no PPE needed if room had just been cleaned
  – Color-coded signs, but frontline staff couldn’t recall what the color meant
Infection Control Breach Observations

• Environmental Cleaning
  – Ventilators not cleaned with sporicidal agent (two tested positive after terminal cleaning)
  – Shared equipment such as mechanical lifts not cleaned with sporicidal agent
  – Spray on, immediately wipe off
  – Using inappropriate products (e.g. inadequate kill claims, not intended for healthcare environment)
Persistent Colonization

- Affected persons remain colonized for undefined but usually lengthy durations
- Remain under Standard and Contact Precautions indefinitely unless clearance documented
- Need at least 2 rounds of negative surveillance cultures (not on antifungals) at least 1 week apart before a person can be considered “cleared” – discuss with your NYSDOH regional epidemiologist
- No data and no recommendations for decolonization
Healthcare Personnel

- NYS - several healthcare personnel hands cultured – all negative
- Schelenz, 2016: UK hospital outbreak
  - Cultured 258 healthcare personnel
    - Hands, nose, axilla, groin, throat
    - Only 1 positive in nose
- *C. auris* is not generally considered a risk for healthcare personnel
Communication

• Notify NYSDOH regional epidemiologist of impending transfer or discharge
• Notify receiving facility by telephone
  – Infection or colonization with *C. auris*
  – Level of precautions required
• Include *C. auris* diagnosis prominently on discharge or transfer documentation
Education

• Frontline staff (environmental services, CNAs, etc.)
  – We are planning to create and make available additional materials focused on these groups
• New house staff and medical students starting in July
• Other new staff
Patient/Resident Management

- Multidrug-resistant organisms are common
- It is expected that healthcare facilities, including nursing homes, maintain the capacity to manage infection control for patients or residents infected or colonized with *C. auris* or any MDRO
NYSDOH Prevention and Control Activities
Goals

• Prevent transmission and further spread in affected facilities
• Define the extent of the problem
• Delay and blunt the impact of this organism in New York and the US
When We Find a Case

- NYSDOH regional epidemiologists contact facility
- Ensure appropriate infection control measures are in place
- Case investigation (e.g. medical record review, location tracking)
- Surveillance cultures of contacts (e.g. roommates)
- Point prevalence surveys of affected units
- Environmental cultures of surfaces
- Site visit
Laboratory Investigation

• Wadsworth Center
  – Support affected facilities (supplies, shipping)
  – Culture, susceptibilities, PCR
    • Isolates and also primary clinical and environmental samples
May 17, 2017

Timeline

May 2013: First NY case (retrospectively identified in 2016)

June 2016: CDC Clinical Alert

Sept/Oct 2016: CDC-NYSDOH Epi-Aid #1

November 2016: CDC MMWR describing US C. auris cases

December 2016: CDC-NYSDOH Epi-Aid #2

March 2017: CDC updates recommendations for healthcare facilities and laboratories

July 2016: NYSDOH learns about NY cases

August 2016: NYSDOH Advisory for facilities and laboratories

November 2016: NYSDOH Updated Advisory for facilities and laboratories

Dec/Jan 2016-7: NYSDOH webinar

May 2017: NYSDOH Advisory and updated webinar
Current Activities

• Required webinar for NYC hospitals and nursing homes Thursday, May 11, 2017
• On-site reviews of hospitals and nursing homes in Brooklyn and Queens to assess compliance with infection control requirements
• Continued testing of patient and environmental samples at Wadsworth Center
• Roundtable with healthcare leadership to discuss guidelines, infection control, and *C. auris* response
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References