

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





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 \geq 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



May 17, 2017

Epidemiologic Curve



May 17, 2017

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 hospitalacquired candidemia
 - Candida albicans 27%



May 17, 2017

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 1st 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



May 17, 2017

C. auris in the U.S.

State	Clinical Cases
Indiana	1
Maryland	1
Massachusetts	1
Illinois	4
New Jersey	15
New York	53

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



Reporting

- 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

	Communicable	Disease Reportin	a Requirements	
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for reporting rests with the pl 405.3d) and state institutions	hysician; moreover, laboratories (PH (10NYCRR 2.10a) or other locations	andated under the New York State : L 2102), school nurses (10NYCRR 2. providing health services (10NYCR)	12), day care center directors, nursi R 2.12) are also required to report t	ng homes/hospitals (10NYCRR) he diseases listed below.
Anaplasmosis	C Englhorna Illinera	Influenza,	Psittacosis	Streptococcal infection
Amebiasis	Giardiasis	laboratory-confirmed	C Q Fever	(invasive disease) ⁵
CAnimal bites for which	C Glanders ²	Legionellosis	C Rabies ¹	Group A beta-hemolytic
rabies prophylaxis is	Gonococcal infection	Listeriosis	Rocky Mountain spotted fever	strep
given ¹	Haemophilus influenzae ⁵	Lyme disease	C Rubella	Group B strep
CAnthrax'	(invasive disease)	Lymphogranuloma venereum	(including congenital	Streptococcus pneumonia
CArboviral Intection*	C Hantavirus disease	Malana	rubella syndrome)	Syphilis, specify stage
C Rotulism ²	Hemolytic uremic syndrome	Melinidosis ²	Severe Acute Respiratory	Toxic shock syndrome
Brucellosis	Hepatitis A	Meningitis	Syndrome (SARS)	Transmissable spongiform
Campylobacteriosis	handler	Aseptic or viral	Shigatoxin-producing E.coli ⁴	encephalopathies ¹ (TSE)
Chancroid	Henatitis B (sperify arute or	C Haemophitus	(STEC)	Trichinosis
Chlamydia trachomatis	chronic)	C Meningococcal	Shigellosis	C Tuberculosis current
infection	Hepatitis C (specify acute or	Other (specify type)	C Smallpox ²	disease (specify site)
Cholera	chronic)	Meningococcemia	Staphylococcus aureus" (due	Tularemia
Cryptosponatosis	Pregnant hepatitis B carrier	C Mumor	to strains showing reduced	Vaccinia direase?
Dishtheria	Herpes infection, infants	Portursis	to vancomicin)	Vibringis ⁴
E.coli 0157:H7 infection ⁴	aged 60 days or younger	C Plaque?	C Staphylococcal	CViral hemorrhadic fever
Ehrlichiosis	infections (as defined in	C Poliomyelitis	enterotoxin B poisoning?	Yersiniosis
C Encephalitis	section 2.2 10NYCRR)			
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Reporting

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



Infection Control



General

- Applies to both infected <u>and</u> colonized patients
- Standard and Contact Precautions
 - Generally, gown and gloves
- Hand hygiene



May 17, 2017

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
 - <u>https://www.epa.gov/pesticide-registration/list-k-</u> <u>epas-registered-antimicrobial-products-effective-</u> <u>against-clostridium</u>
- 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-environmentalcleaning.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



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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

Hospital Epidemiologists, Infection Preventionists, Laboratory Directors, Infectious Diseases Physicians, Critical Care Medicine Physicians, Medical Directors, Nursing Directors, Risk Managers, Administrations and Pharmacy Directors

Timeline May 2013: First NY case (retrospectively identified in 2016) November 2016: CDC MMWR June 2016: CDC Clinical Alert describing US C. auris cases December 2016: and heater + humor for get Descent + Centrition CDC Centers for Diseque Control and Prevention CDC-NYSDOH Clinical Alert to U.S. Healthcare Facilities Sept/Oct 2016: Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast Candida auris CDC-NYSDOH Epi-Aid #2 March 2017: CDC updates we Control and Presention (CDC) has received reserts from international feedbhcare for River that Constitution vestigation of the First Seven Rep rted Cases of Candidzaunis a Globally Emerging Invasive. Epi-Aid #1 recommendations for - United States, May 2013-August 2016 healthcare facilities and ombin. Verweysola, Bakhtan, and Ba United Kingdom. laboratories July 2016: NYSDOH learns about NY cases May 2017: NYSDOH Advisory November 2016: NYSDOH Updated Dec/Jan 2016-7: and updated webinar NYSDOH webinar Advisory for facilities and laboratories August 2016: NYSDOH Advisory Department of Health NEW YORK Department for facilities and laboratories ANDREW M. CUOMO HOWARD A. ZUCKER, M.D., J.D. SALLY DRESUN, M.S., R.N. of Health DATE: May 5. 2017 ANDREW M. CUOMO HOWARD A. ZUCKER, M.D., J.D. SALLY DRESLIN, M.S., R.N. NEW YORK Stall of OF Health Executive Deputy Commissione Hospitals, Nursing Homes, Diagnostic and Treatment Centers, Clinical Laboratories, Local Health Departments TO NYSDOH Bureau of Healthcare Associated Infections (RHAI) FROM: ANDREW M. CUOMO HOWARD A. ZUCKER, M.D., J.D. SALLY DRESLIN, M.S., R.N. DATE-November 3, 2016 Health Advisory: Update to Healthcare Facilities Regarding Multidrug-Resistant Yeast Candida auris in New York State TO Clinical Laboratories, NYSDOH Regional Offices, Local Health Departments August 17, 2016 FROM: NYSDOH Bureau of Healthcare Associated Infections (BHAI) Please distribute immediately to Hospitals, Nursing Homes, Diagnostic and Treatment Centers, Clinical Laboratories, Local Health Departments, NYSDOH Regional Epidemiologists, Heape annous immodative to annous annous immodative to annous ann Health Advisory: Alert to New York State Clinical Laboratories EROM-NYSDOH Bureau of Healthcare Associated Intertines (BHAI) Identification and Reporting of Suspected Candida auris Isolates Health Advisory: Alert to New York State Healthcare Facilities regarding the Global Emergence of Invasis Infections Caused by the Multidrug-Resistant Yeast Candida auris Please distribute immediately to: Laboratory Directors, Hospital Epidemiologists, Infection Preventionists Please distribute immediately to



- 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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