Indiana Department of Health

CANDIDA AURIS IN LONG-TERM CARE

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SENIOR MDRO EPIDEMIOLOGIST

10/17/2023

OUR MISSION:

To promote, protect, and improve the health and safety of all Hoosiers.

OUR VISION:

Every Hoosier reaches optimal health regardless of where they live, learn, work, or play.

Objectives

- Discuss the background and proliferation of *Candida auris* (*C. auris*) cases in our state based on transmission seen in certain facility types and the use of point prevalence surveys to detect spread
- Communicate common barriers seen in the transfer of *C. auris* patients across the continuum of care from acute care hospitals to post-acute long-term care facilities

Background on *Candida auris*

- First described in Japan in 2009
- *Candida auris* is named for the Latin word for ear, auris
- Earliest known confirmed identification of *Candida auris* originated in South Korea in 1996
- *Candida auris* isolates are grouped by genetically dissimilar clades
- Isolates from clades I-IV have been identified in the United States
- Confirmation of a fifth clade occurred in 2022 with isolates from Iran

Background on *Candida auris*

- The first clinical case was seen in Indiana in 2017
- This case was a bit of an anomaly. Patient was first identified as having *C. auris* while in Kenya.
- Case was included in study by Chow et. al., and attributed to African clade (Clade III)
- Majority of isolates from Indiana are from Clade IV, per Centers for Disease Control and Prevention (CDC) whole genome sequencing (WGS) results
- Many Illinois isolates are also attributed to Clade IV

Fast facts about *C. auris* in Indiana

- It is mandatory to report *C. auris* cases as of April 1, 2023
- Previously, it had been requested, but not mandated, that cases of *C. auris* be reported to the Indiana Department of Health (IDOH)
- The Indiana Department of Health Laboratory (IDOHL) can only perform confirmation testing on isolates that have been sent from clinical labs.
- As of June 2023, IDOHL is not able to perform *C. auris* screenings
- They are bringing this capability online, but an estimated go-live won't occur until the end of 2023

More *C. auris* facts

- No phenotypic characteristics easily distinguish *C. auris* from other Candida species
- The most reliable way to identify *C. auris* is MALDI-TOF MS
- EPA list P products usage appropriate time as specified are needed to appropriately disinfect
- There is increased morbidity and mortality with invasive candidiasis
- People can be colonized without the development of clinical infection but can act as a source of transmission
- There is no way to decolonize someone of *C. auris*

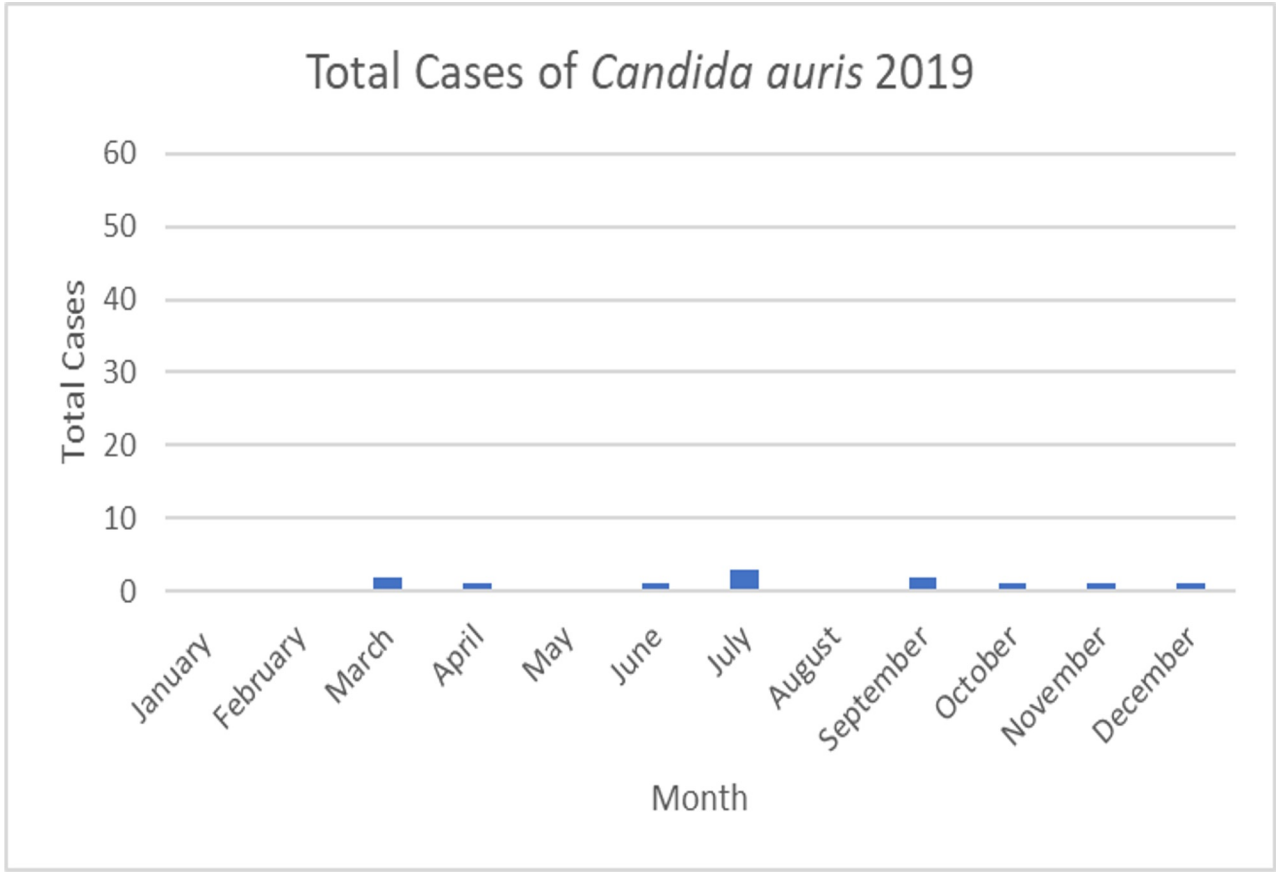
Total cases in 2019

- Two cases during the previous two-year period

Total cases: 12

Clinical cases: 4

Screening cases: 8



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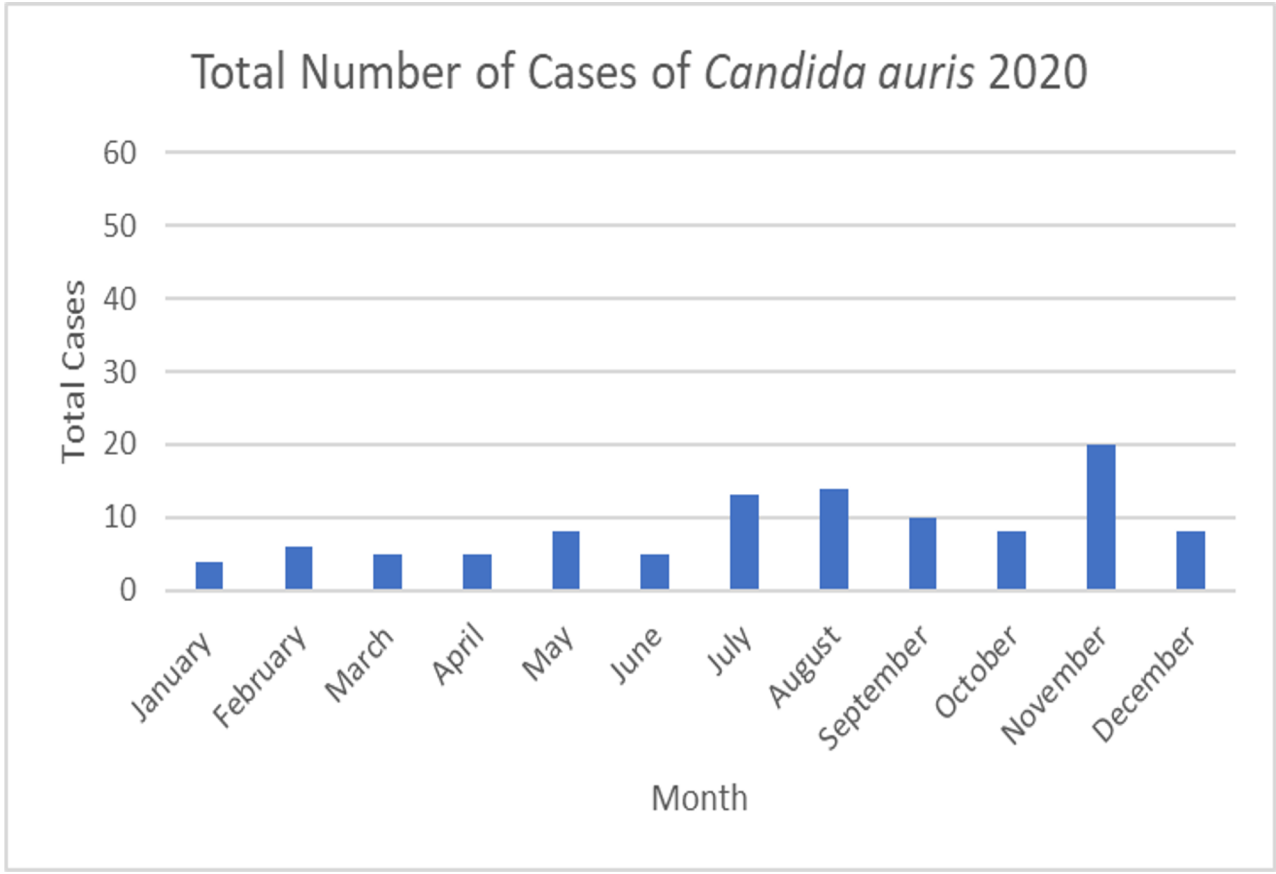
Total cases in 2020

- 783% increase in the total number of cases from 2019

Total cases: 106

Clinical cases: 23

Screening cases: 83



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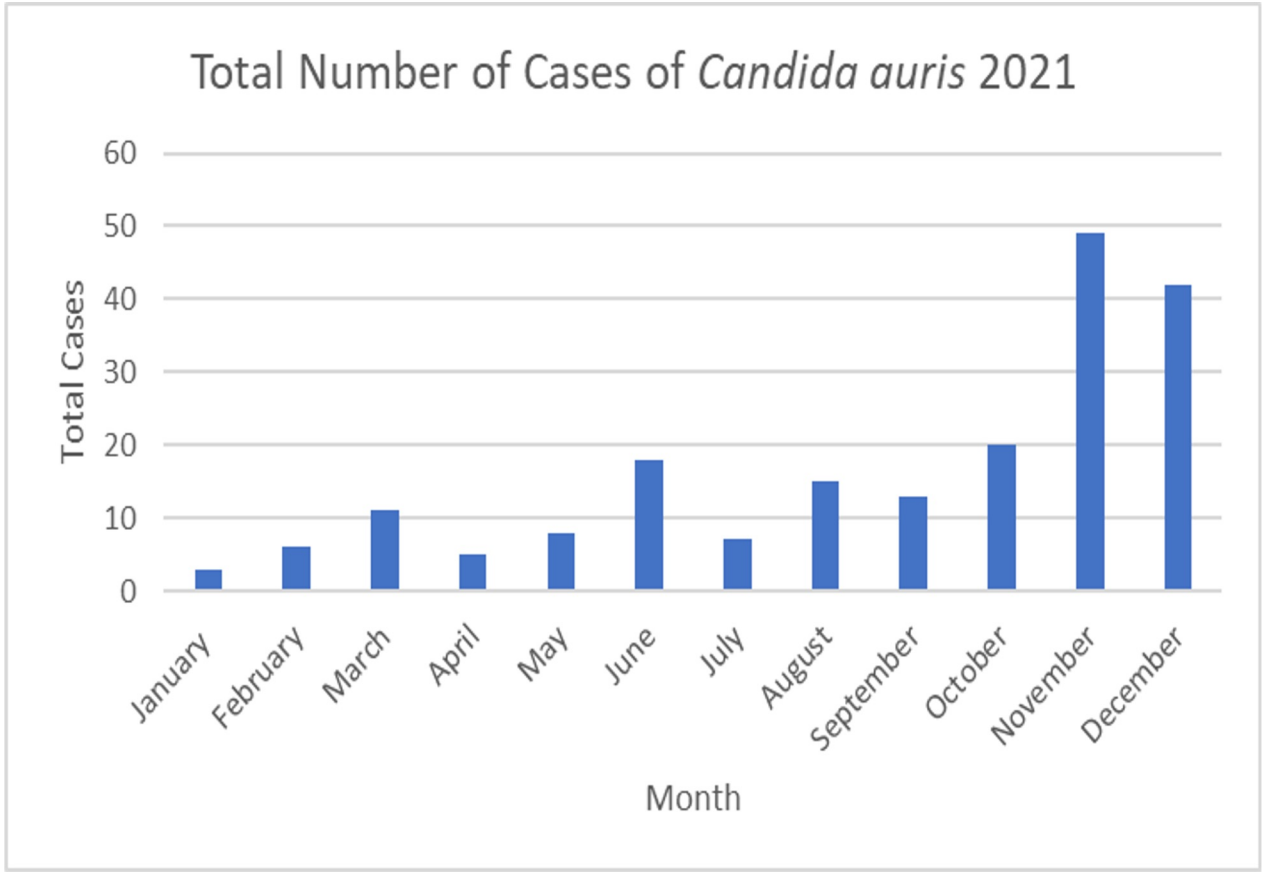
Total cases in 2021

- 86% increase in the total number of cases from 2020

Total cases: 197

Clinical cases: 63

Screening cases: 134



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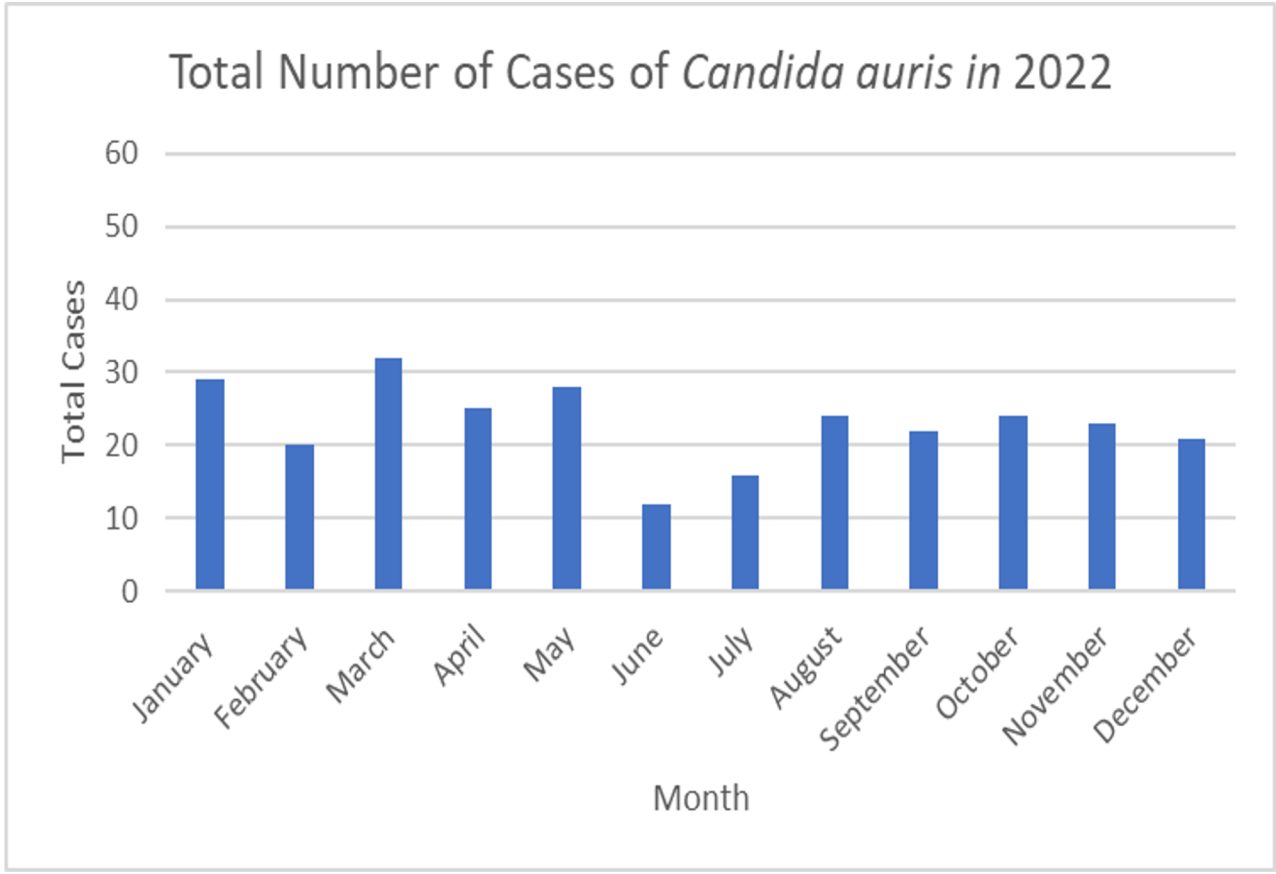
Total cases in 2022

- 40% increase in the total number of cases from 2021

Total cases: 276

Clinical cases: 87

Screening cases: 189



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Screening: colonization vs. clinical cases

Screening cases - Detection of *C. auris* in a specimen from a swab obtained for the purpose of colonization screening

Clinical cases - Detection of *C. auris* in a clinical specimen obtained during the normal course of care for diagnostic or treatment purposes

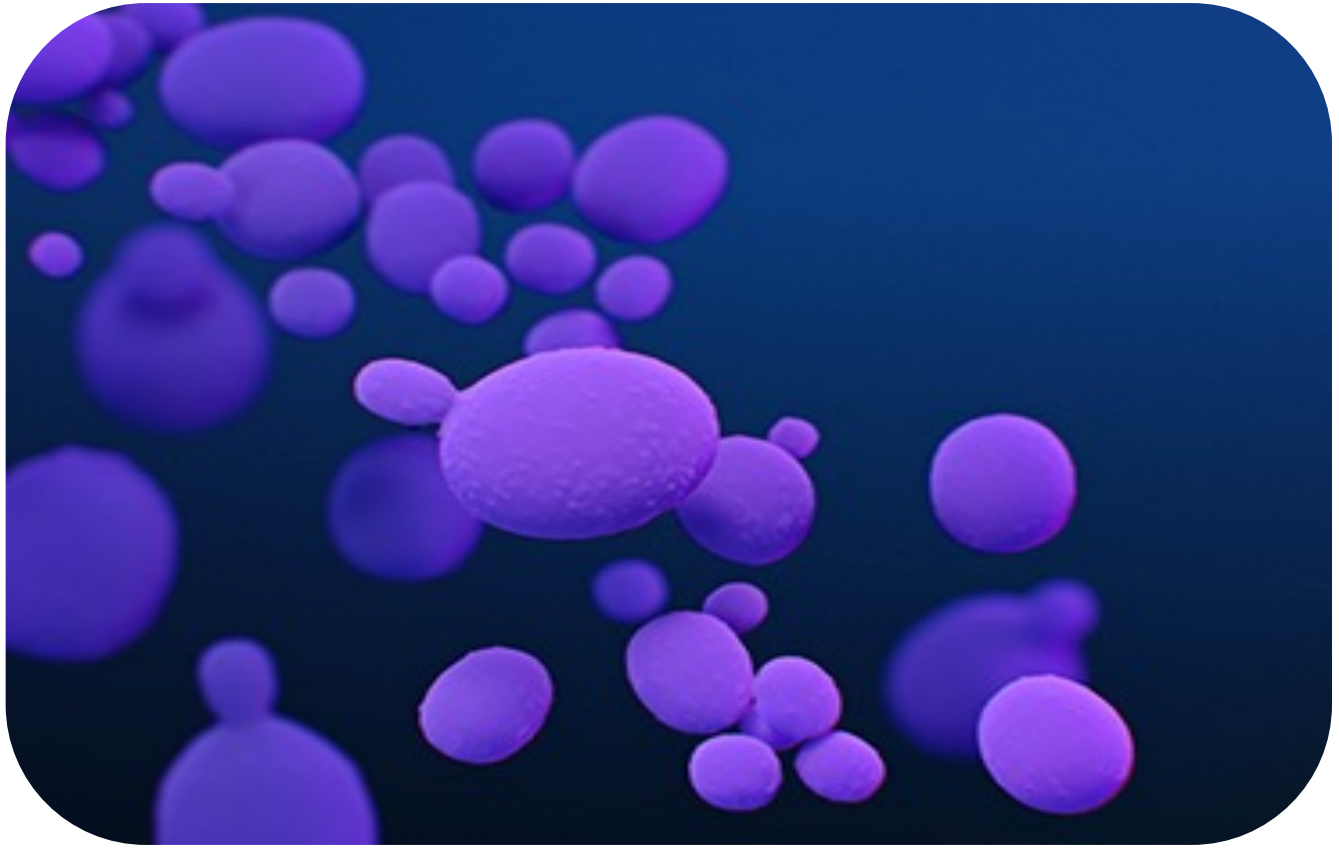
Both result in a person being considered colonized indefinitely.

The point prevalence survey (PPS)

- A key tool for public health
- Per CDC recommendations:
  - Should be used if evidence of transmission in a facility
  - Every patient on a given unit or floor where transmission is suspected should be screened
- IDOH facilitates supplies through our AR (antimicrobial resistance) lab network reference facility

Classes of antifungals

- Azoles
  - fluconazole
  - voriconazole
  - posaconazole
- Echinocandins
  - micafungin
  - caspofungin
  - anidulofungin
- Polyenes
  - amphotericin B



C. auris anti-fungal susceptibility testing (AFST) in Indiana*

Class	Antifungal	Number of Isolates tested	Frequecy Resistant	Percentage Resistant
Echinocandin	Micafungin	242	1	0.41
	Anidulafungin	251	1	0.4
	Caspofungin	249	0	0
Azoles	Fluconazole	251	185	73.71
	Voriconazole	250	0	0
	Itraconazole	251	0	0
	Isavuconazole	226	0	0
	Posaconazole	251	0	0
Polyene	Amphotericin B	251	9	3.59
Antimetabolite Agent	5-Fluorocytosine	29	0	0

- Based on results from Wisconsin State Laboratory of Hygiene (WSLH) testing
- All clinical specimens are sent for susceptibility testing. Screening isolates sent by special request
- Results are used for epidemiological purposes only
- Resistance based on MIC breakpoints established by CDC

*Data from IDOH current through Dec. 31, 2022.

Inter-Facility Infection Control Transfer Form

Inter-Facility Infection Control Transfer Form

This form must be filled out for transfer to accepting facility with information communicated prior to or with transfer. Please attach copies of latest culture reports with if available.

Sending Healthcare Facility:

Patient/Resident Last Name	First Name	Date of Birth	Medical Record Number

Name/Address of Sending Facility	Sending Unit	Sending Facility Phone

Sending Facility Contacts	Contact Name	Phone	E-mail
Transferring RN/Unit			
Transferring physician			
Case Manager/Admin/SW			
Infection Preventionist			

Does the person* currently have an infection, colonization OR a history Colonization Active infection of positive culture of a multidrug-resistant organism (MDRO) or other or history potentially transmissible infectious organism?	Colonization or History (*Check if Yes*)	Active Infection on Treatment (*Check if Yes*)
Methicillin-resistant *Staphylococcus aureus* (MRSA)	☐Yes	☐Yes
Vancomycin-resistant *Enterococcus* (VRE)	☐Yes	☐Yes
Clostridioides difficile	☐Yes	☐Yes
Acinetobacter, multidrug-resistant	☐Yes	☐Yes
Enterobacteriaceae (e.g., f. *coli, Klebsiella, Proteus)* producing- Yes Extended Spectrum Beta-Lactamase (ESBL)	☐Yes	☐Yes
Carbapenem-resistant Enterobacteriaceae (CRE)	☐Yes	☐Yes
Pseudomonas aeruginosa, multidrug-resistant	☐Yes	☐Yes
Candida auris	☐Yes	☐Yes
COVID-19 Choose a Test Type: ☐PCR ☐POC Antigen	☐Yes	☐Yes
Other, specify (e.g., scabies, norovirus, influenza):	☐Yes	☐Yes

Inter-Facility Infection Control Transfer Form • Updated December 2020
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Does the person* currently have any of the following? (☐Check here if none apply)

☐ Cough or requires suctioning	☐ Hemodialysis catheter
☐ Diarrhea	☐ Urinary catheter (Approx. date inserted
☐ Vomiting	☐ Suprapubic catheter
☐ Incontinent of urine or stool	☐ Percutaneous gastrostomy tube
☐ Open wounds or wounds requiring dressing change	☐ Tracheostomy
☐ Central line/PICC Approx. date inserted:	
☐ Drainage (source):	

Is the person* currently in Transmission-Based Precautions? ☐ **NO** ☐ **YES**

Type of Precautions (check all that apply): ☐ Contact ☐ Droplet ☐ Airborne
☐Other:
☐Reason for Precautions:

Vaccine	Date administered (If known)	Lot and Brand (If known)	Year administered (If exact date not known)	Does the person* self-report receiving vaccine?
Influenza (seasonal)				☐ Yes ☐ No
Pneumococcal (PPSV23)				☐ Yes ☐ No
Pneumococcal (PCV13)				☐ Yes ☐ No
COVID-19				☐ Yes ☐ No
Other:				☐ Yes ☐ No

*Refers to patient or resident depending on transferring facility

Required PPE

Name of staff completing form (print):
Signature:

If information communicated prior to transfer:
Name of individual at receiving facility:
Phone of individual at receiving facility:

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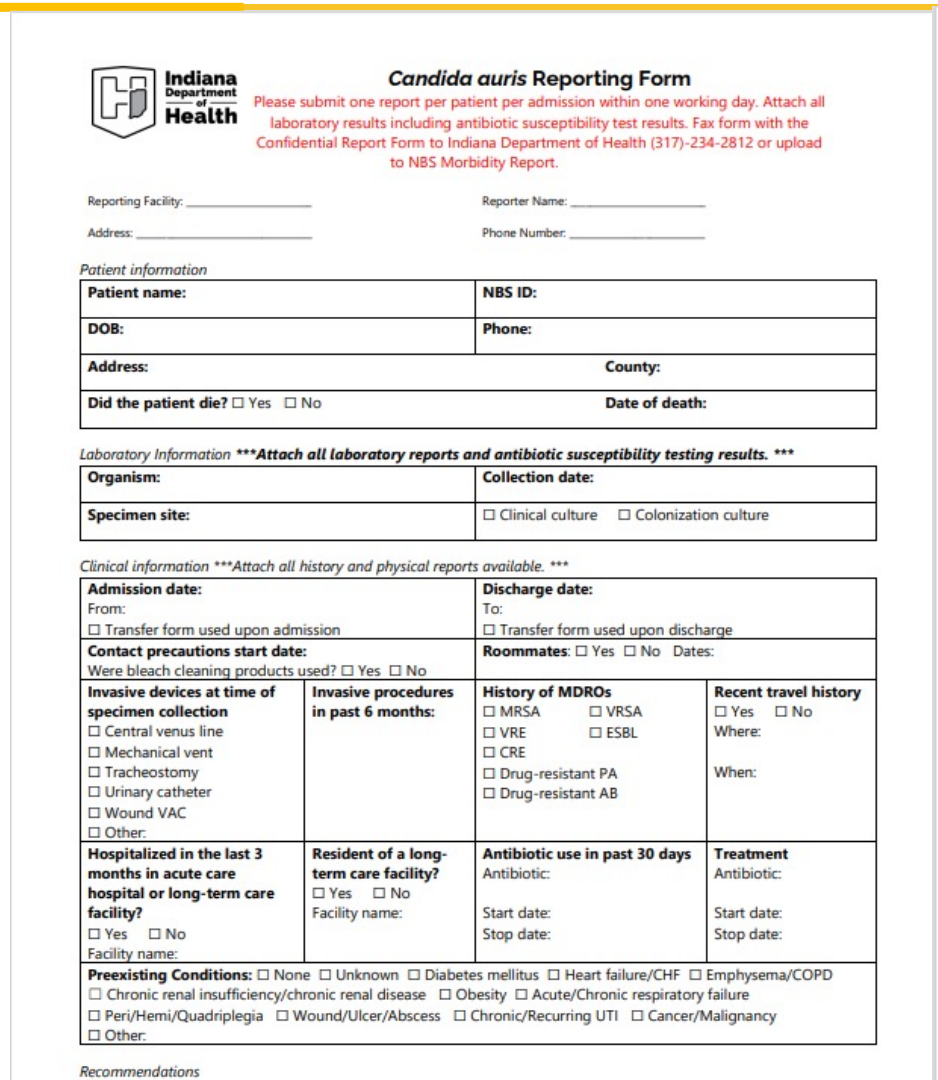
When a patient with *C. auris* is identified

A report of *Candida auris* is received by the Indiana Department of Health (IDOH) in the following ways:

- **Morbidity report:** An infection preventionist (IP), or other staff fill out and submit a report that they have received a positive result for *C. auris*
- **Lab report:** Lab reports are transmitted into the IDOH notification system and are present for IDOH staff to review
- **Fax:** The appropriate staff at a facility fax the lab result and/or reporting form for a positive *C. auris* result to IDOH
- **Direct call:** Appropriate staff at a facility call IDOH directly and report a positive *C. auris* result

C. auris reporting form



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Candida auris Reporting Form

Please submit one report per patient per admission within one working day. Attach all laboratory results including antibiotic susceptibility test results. Fax form with the Confidential Report Form to Indiana Department of Health (317)-234-2812 or upload to NBS Morbidity Report.

Reporting Facility: _____ Reporter Name: _____

Address: _____ Phone Number: _____

Patient information

Patient name:	**NBS ID:**
DOB:	**Phone:**
Address:	**County:**
Did the patient die? ☐ Yes ☐ No	**Date of death:**

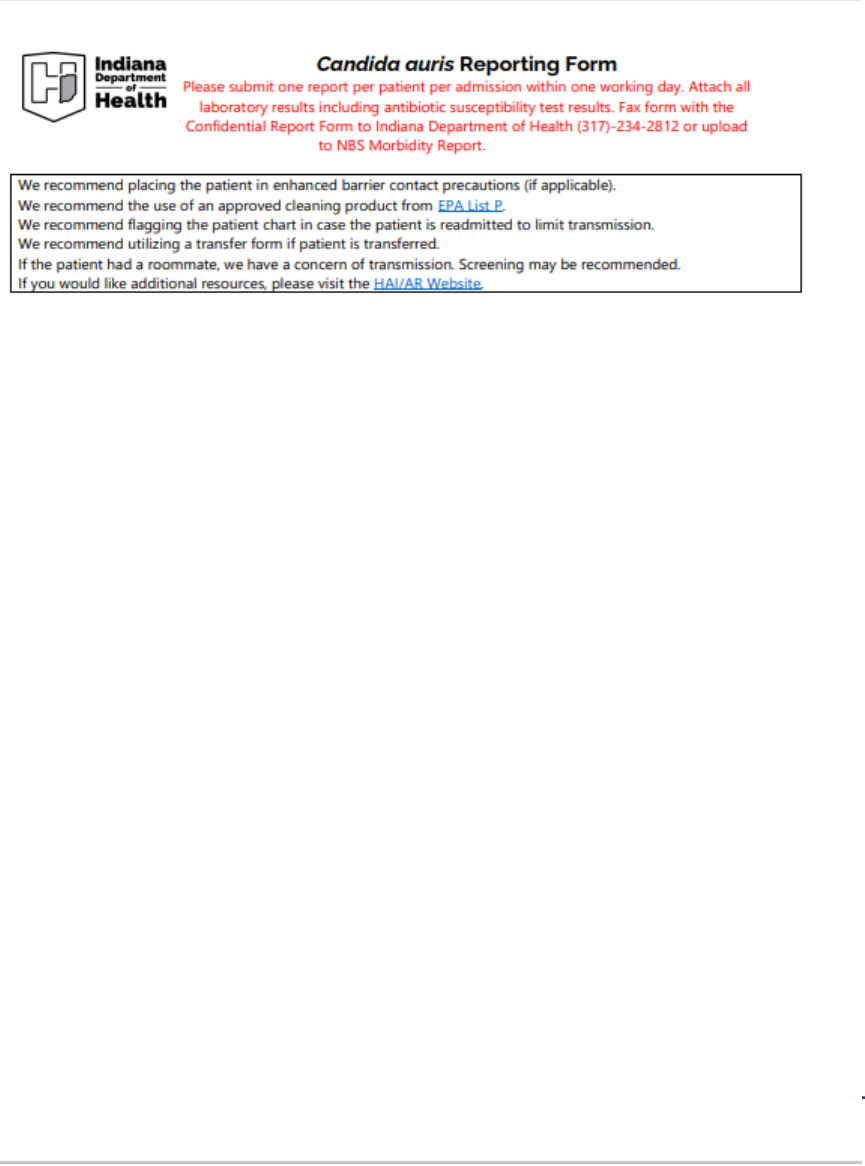
Laboratory Information ******Attach all laboratory reports and antibiotic susceptibility testing results. ******

Organism:	**Collection date:**
Specimen site:	☐ Clinical culture ☐ Colonization culture

*Clinical information ***Attach all history and physical reports available. ****

Admission date: From: ☐ Transfer form used upon admission		**Discharge date:** To: ☐ Transfer form used upon discharge	
Contact precautions start date: Were bleach cleaning products used? ☐ Yes ☐ No		**Roommates**: ☐ Yes ☐ No Dates:	
Invasive devices at time of specimen collection ☐ Central venus line ☐ Mechanical vent ☐ Tracheostomy ☐ Urinary catheter ☐ Wound VAC ☐ Other:	**Invasive procedures in past 6 months:**	**History of MDROs** ☐ MRSA ☐ VRSA ☐ VRE ☐ ESBL ☐ CRE ☐ Drug-resistant PA ☐ Drug-resistant AB	**Recent travel history** ☐ Yes ☐ No Where: When:
Hospitalized in the last 3 months in acute care hospital or long-term care facility? ☐ Yes ☐ No Facility name:	**Resident of a long-term care facility?** ☐ Yes ☐ No Facility name:	**Antibiotic use in past 30 days** Antibiotic: Start date: Stop date:	**Treatment** Antibiotic: Start date: Stop date:
Preexisting Conditions: ☐ None ☐ Unknown ☐ Diabetes mellitus ☐ Heart failure/CHF ☐ Emphysema/COPD ☐ Chronic renal insufficiency/chronic renal disease ☐ Obesity ☐ Acute/Chronic respiratory failure ☐ Peri/Hemi/Quadriplegia ☐ Wound/Ulcer/Abscess ☐ Chronic/Recurring UTI ☐ Cancer/Malignancy ☐ Other:			

Recommendations



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We recommend placing the patient in enhanced barrier contact precautions (if applicable).
We recommend the use of an approved cleaning product from EPA List P.
We recommend flagging the patient chart in case the patient is readmitted to limit transmission.
We recommend utilizing a transfer form if patient is transferred.
If the patient had a roommate, we have a concern of transmission. Screening may be recommended.
If you would like additional resources, please visit the HAI/AR Website.

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Making contact with the facility

- Attempted contact within one business-day
- Education is immediately provided with initial contact with facility
  - *C. auris* toolkit is emailed to facility after contact
  - Proper disinfection techniques and strategies are described
    - A focus is placed on ensuring the facility has an appropriate cleaner
      - Must be effective against *C. auris*
      - Should be on EPA's List P- List of cleaners that are found to be effective against *C. auris*
  - Understanding appropriate transmission-based precautions
    - Contact precautions for all active infections across the continuum of care includes long term care
    - Enhanced barrier precautions for colonized cases in long-term care facilities

Importance of a facility history

After a patient is identified as having *C. auris*, a history of the individual's recent healthcare exposures is collected:

- Previous facilities that the individual stayed at are contacted
- This allows for facilities to flag that individual's chart so their status of having an MDRO is documented
- If multiple individuals with *C. auris* were at the same facility, it may indicate a more detailed follow-up is warranted with that facility

Infection Control Assessment and Response (ICAR)

- What if multiple individuals who test positive for *C. auris* were at the same facility?
  - Confirmation that all individuals were at the facility would occur
- IDOH would work with the facility and suggest an onsite visit
  - A team from IDOH would meet with stakeholders at the facility
  - An ICAR tool would be completed by the infection prevention team at IDOH
  - Usually takes two to three hours:
    - Roundtable discussion with leadership, facility infection preventionist (IP), and housekeeping manager
    - Involves walking through the facility and observing staff performing their routine work where the cases reside

Benefits of an ICAR

- Potential identification of gaps in infection prevention practices that should be corrected
- Performance of the ICAR is collaborative and in no way punitive
- Increased awareness by:
  - Staff regarding the target organism
  - Staff regarding IP practices
  - Leadership regarding need for resources

CDC: screening of close healthcare contacts

Screening for *Candida auris* Colonization | *Candida auris* | Fungal Diseases | CDC

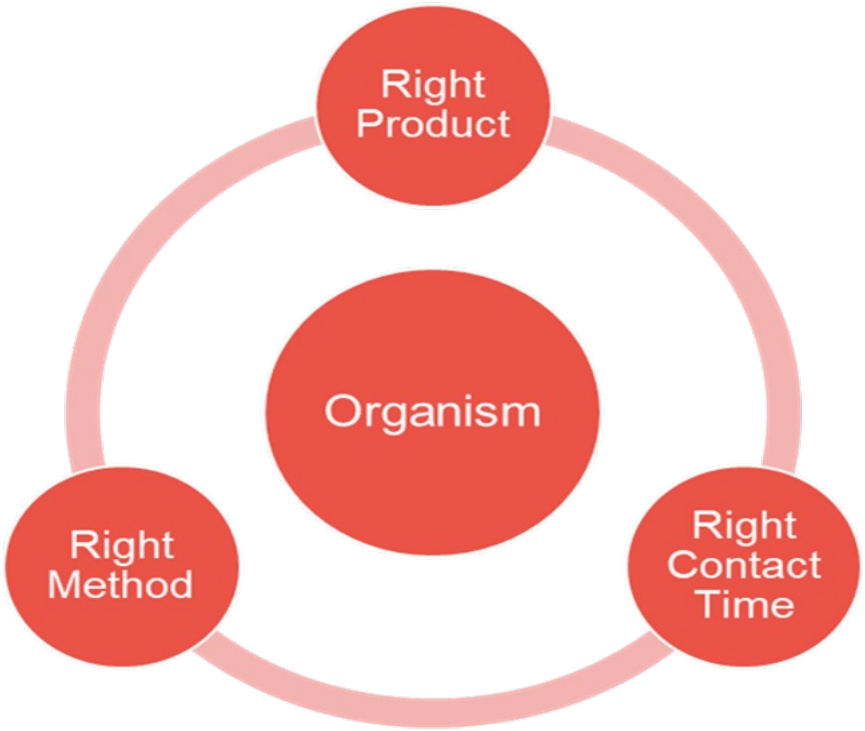
- Health departments and healthcare facilities should consider several factors when deciding which patients to screen
- Patients with newly identified *C. auris* infection or colonization might have been colonized for months before detection of the organism; therefore, it is also important to consider the patient's prior healthcare exposures and contacts when devising a screening strategy.
- At a minimum, screen roommates at healthcare facilities, including nursing homes, where the index patient resided in the previous month
- Consider also screening patients who require higher levels of care (e.g., mechanical ventilation) and who overlapped on the ward or unit with the index patient for three or more days, as these patients are also at substantial risk for colonization

Cleaning and disinfecting

- Proper environmental disinfection is very important as *C. auris* can persist in the environment for weeks
- Use appropriate products (list P) to clean and disinfect the patient care environment thoroughly frequently and for terminal cleaning
- Remember high-touch surfaces such as handrails, tabletops, and armrests. Be sure to wear gloves and perform hand hygiene when contact is inevitable with high-touch surfaces. Pay special attention to cleaning such surfaces.
- Disposable vs reusable equipment (Follow all manufacturer's directions for the use of surface disinfectants and apply the product for the correct contact time)
- May need to designate who is responsible for cleaning each piece of equipment or surface if there can be assumptions or ambiguity that someone else may be responsible for cleaning a certain surface

Cleaning and disinfecting

Use the right product for the organism and use the right method to allow the right contact/kill time.



Skin colonization and transmission

Clinical Infectious Diseases

MAJOR ARTICLE

Positive Correlation Between *Candida auris* Skin-Colonization Burden and Environmental Contamination at a Ventilator-Capable Skilled Nursing Facility in Chicago

D. Joseph Sexton,[1] Meghan L. Bentz,[1] Rory M. Welsh,[1] Gordana Derado,[2] William Furin,[3] Laura J. Rose,[3] Judith Noble-Wang,[3] Massimo Pacilli,[4] Tristan D. McPherson,[4,5] Stephanie Black,[4] Sarah K. Kemble,[4] Owen Herzegh,[6] Ausaf Ahmad,[6] Kaitlin Forsberg,[1] Brendan Jackson,[1] and Anastasia P. Litvintseva[1]

[1]Mycotic Diseases Branch, Centers for Disease Control and Prevention, Atlanta, Georgia, USA; [2]Division of Foodborne, Waterborne, and Environmental Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia, USA; [3]Clinical and Environmental Microbiology Branch, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, USA; [4]Chicago Department of Public Health, Chicago, Illinois, USA; [5]Epidemic Intelligence Service, Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention, Atlanta, Georgia, USA; and [6]Enhanced Capacity Surge Laboratory, Reagent and Diagnostic Services Branch, Division of Scientific Resources, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA

Skin colonization and transmission

- *C. auris* was quantified in residents' bilateral axillary/inguinal composite skin swabs and environmental samples during a point-prevalence survey at a ventilator-capable skilled-nursing facility with documented high colonization prevalence
- Environmental samples were collected from all doorknobs, windowsills, and handrails of each bed in 12 different rooms
- *C. auris* was detected in 70/100 tested environmental samples and 31/57 tested resident skin swabs
- A positive correlation was identified between the concentrations of *C. auris* in skin swabs and associated handrail samples based on culture (two uncolonized residents had positive bedrail swabs)

Skin colonization and transmission

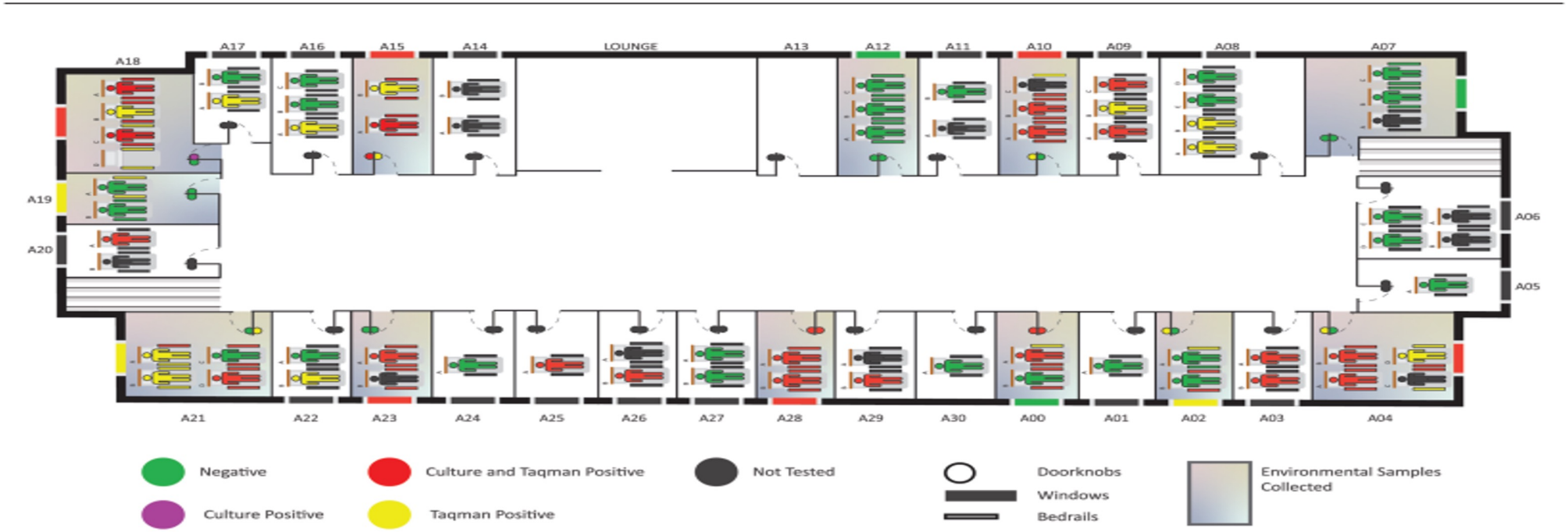


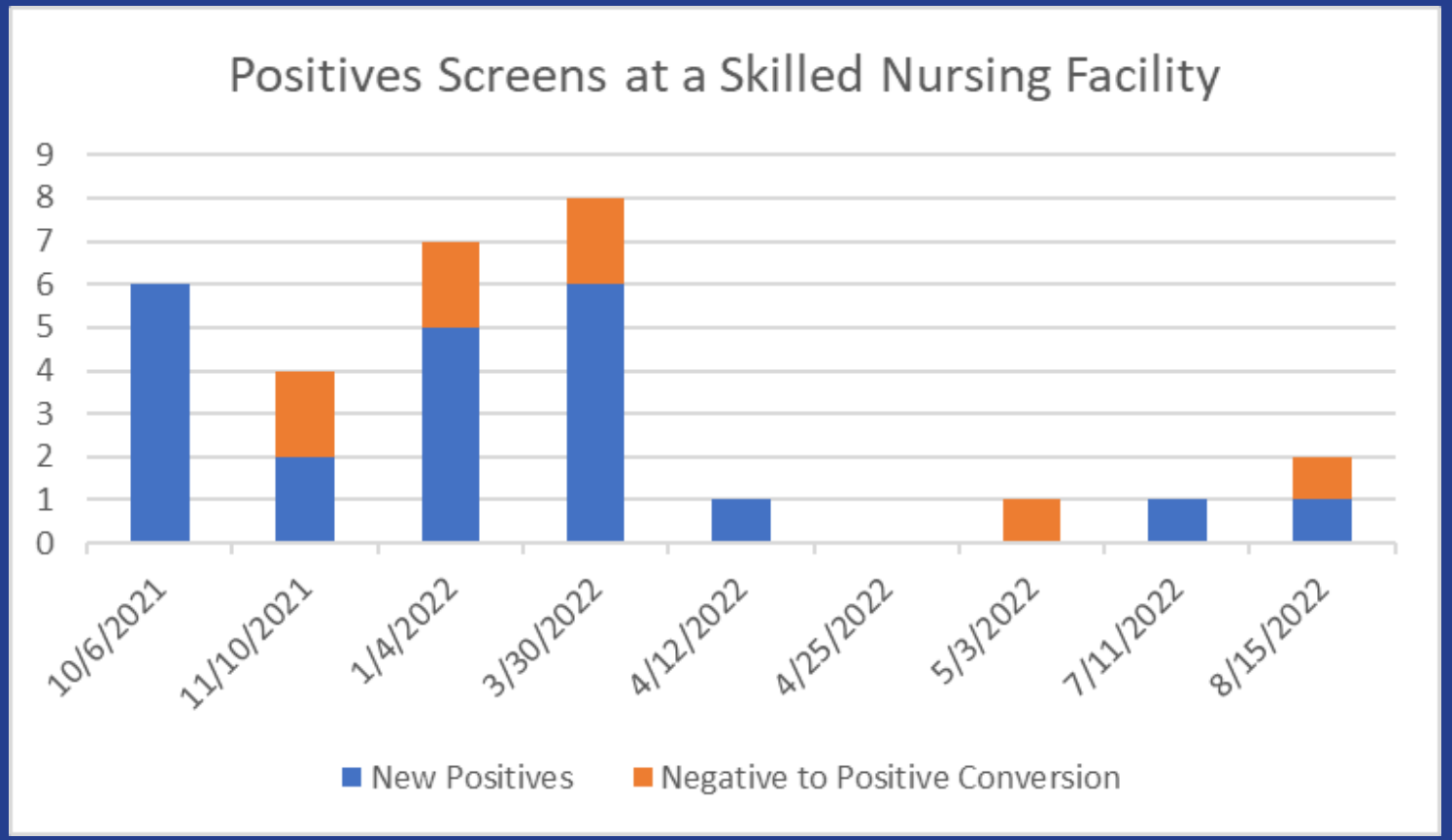
Figure 1. Facility map with culture-based and qPCR results for residents and associated environmental surfaces. The specific organization of beds within a room may differ from the image.

Indiana Department of Health

Sexton, et. al Study, *CID* Oct. 21

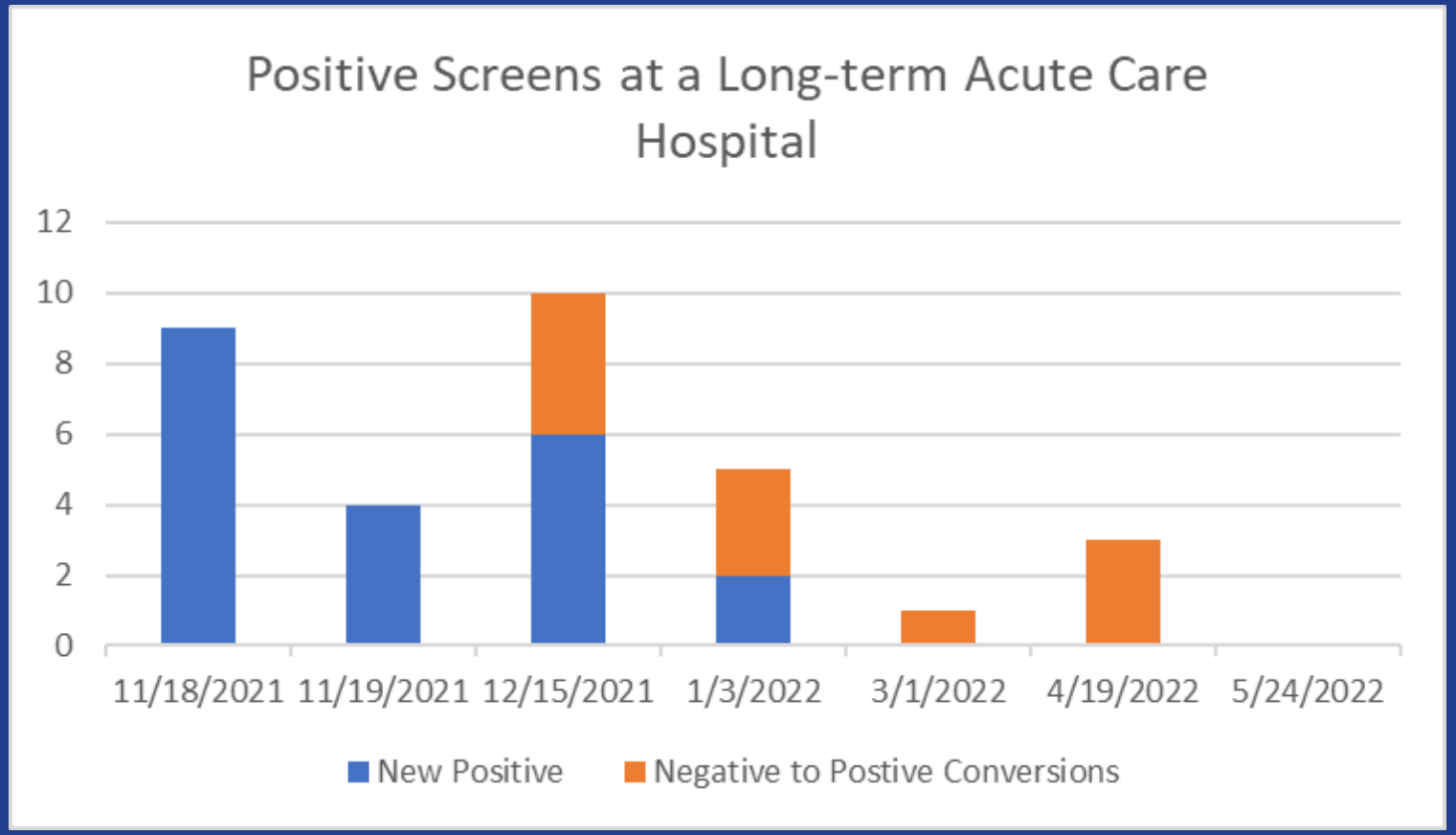
Success stories

- Index case (clinical) stayed in three rooms
- Additional positives in adjacent rooms
- Indication of potential transmission



Success stories

- Two index cases - one clinical, one colonized
- Clinical case positive after discharge from facility
- Patients stayed in adjacent rooms
- The two index cases had overlap at the same time



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Questions?

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