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Candida auris screening in the acute care setting: An infection control partnership between hospitals and skilled nursing facilities

Brittany S. Thorp MPH

Peggy Brown MPH, CIC

R. Scott Stienecker MD

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Brittany Thorp, MPH, Peggy Brown, MPH, CIC,
R. Scott Stienecker, MD, FIDSA, FSHEA, CIC

Abstract

Background: *Candida auris* (*C. auris*) is a drug-resistant fungus that can spread easily between hospitalized patients and nursing home residents. To mitigate risk of *C. auris* spread, a nine-hospital healthcare system developed a *C. auris* screening tool in January 2020. Infection Preventionists (IPs) use the screening tool to determine which patients qualify for *C. auris* screening, looking specifically at the facility type where the patient came from. The IP then initiates the isolation and testing protocol with the bedside nurse and provider.
Methods: Over the course of three years, the hospital epidemiologist collected data on all screening events, such as date of lab testing and results, location of residence, and history of other multidrug resistant organisms (MDROs) to evaluate, educate, and report on the screening process. Epidemiological surveillance data were evaluated using pivot tables to identify possible epidemiological trends.
Results: Data analysis revealed three out of the thirty-five facilities had residents who tested positive for *C. auris*. Of the three facilities, all were skilled nursing facilities (SNFs), two of which provide ventilator care (v). The SNFs were de-identified with new labels – vSNF1, vSNF2, and SNF. Of the three facilities found to have *C. auris* positive residents (n=88), 3.4% (3/88) came from vSNF1, 5.7% (5/88) and 2.3% (2/88) were from vSNF2 and SNF, respectively. Outbreak clusters emerged from the pivot table using screening dates, which were organized into yearly quarters. The first two clusters occurred at the SNF and vSNF2 facilities during the same timespan from 2021Q2 to 2021Q4. No additional screens resulted positive in 2022 for both facilities. The third cluster occurred between 2022Q3 to 2022Q4 at vSNF1.
Conclusion: Receiving a positive *C. auris* result allows the IP department to promptly reach out to the facility where the patient came from and begin assisting with intervention needs and staff education, if requested. Additionally, all positive results are reported to the state department of health, who also duly assists with control measures necessary to mitigate risk and prevent future outbreaks.

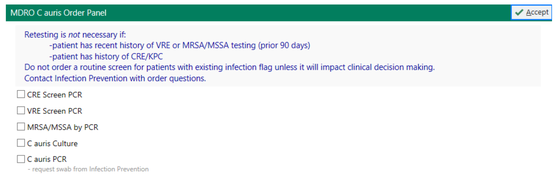
Introduction

Candida auris (*C. auris*) was first discovered in Japan in 2009 and has since been considered an increasing threat to human health due to its intrinsic resistance to one or all classes of antifungal drugs.[2] The prevalence of multidrug resistant *C. auris* and its frequency of infections globally are obscure.[3] Data submitted to the Centers for Disease Prevention and Control (CDC) between 2019 to 2021 revealed an 80% increase in colonization screening volume and a 200% increase in screening cases.[3] Additionally, it was found that 17 states identified their first *C. auris* case.[4]
Unlike other Candida species, *C. auris* is associated with nosocomial infections involving hospitalized patients and nursing home residents.[3] During the COVID-19 pandemic, both *C. auris* and Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) were found on IV poles and bedrails, among other surfaces in the hospital setting.[6] Furthermore, C. auris and SARS-CoV-2 share common risk factors, such as chronic kidney disease and diabetes mellitus.[6]
To prevent *C. auris* nosocomial transmission and healthcare facility outbreaks, the CDC recommends prompt identification of patients who are either colonized or infected with *C. auris* and placed in single-patient rooms while following contact precautions in addition to standard precautions.[3] A study by Sansom and colleagues demonstrated an association between *C. auris* colonization and environmental contamination of the patient care environment.[5] The higher odds of environmental contamination within acute care hospitals (ACHs) versus long-term care facilities were likely due to the increased frequency of provider-patient interactions in ACHs.[5]

Methodology

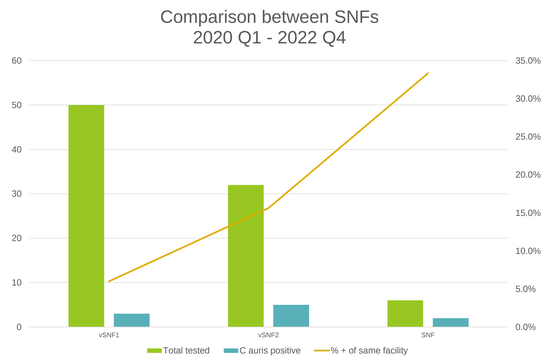
A *C. auris* and multidrug resistant organism (MDRO) screening tool was developed and went into effect in January 2020. In addition to *C. auris*, other MDROs included in the screening tool were methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* (VRE), and carbapenem-resistant *Enterobacteriaceae* (CRE) or *Klebsiella pneumoniae* carbapenemase (KPC). To ensure appropriate ordering of isolation type and lab testing, a *C. auris* order panel was developed and built into the electronic medical record (EMR).
The original screening tool definition for high-risk patients included any patient who had been in either a long-term acute care (LTAC) or skilled nursing facility (SNF) within the past year and had a history of carbapenem-resistant *Pseudomonas*, CRE, or KPC. After routine evaluation of the screening tool by the hospital epidemiologist, the definition of high-risk patients was modified to include a history of >2 MDROs, or a history of mechanical ventilation or tracheotomy, or chronic or unhealing wounds.
The Infection Preventionists (IPs) utilized an EMR workbench report that included patient data necessary to determine whether screening criteria met. If criteria were met, the IP would then initiate *C. auris* screening by contacting the bedside nurse and/or attending provider. The hospital epidemiologist collected and managed data on all screening events, such as date of lab testing and results, location of residence, and history of other MDROs among other pertinent data to evaluate, educate, and report on the screening process. Additionally, the epidemiologist would contact all facilities where the patients had resided and provide consultative support to those facilities.

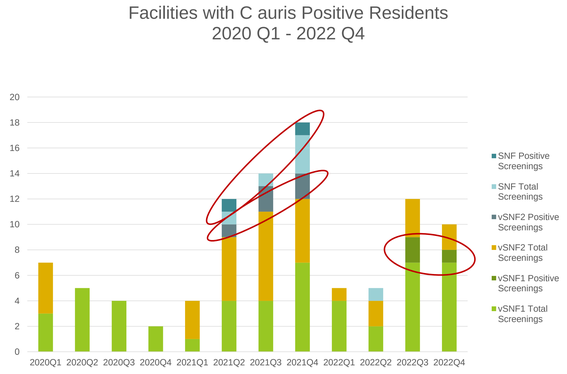
Patient Screening Criteria	
Admitted to any of the following facilities in the past year*:	High-acuity long-term-care (LTACH/vSNF)*
	Skilled nursing or rehab
AND	
Have one or more of the following:	History of >2 multi-drug resistant organisms (MDRO)
	History of mechanical ventilation or tracheostomies
	Chronic or unhealing wounds



Results

Data analysis revealed 3 facilities out of the 35 facilities had residents who tested positive for *C. auris*. A total of 88 screenings from the affected 3 facilities occurred. All 3 facilities were skilled nursing facilities (SNFs), 2 of which provide ventilator care (v). The SNFs were de-identified with new labels, as follows: vSNF1, vSNF2, and SNF. Further data analysis revealed 3.4% (3/88) came from vSNF1, and 5.7% (5/88) and 2.3% (2/88) were from vSNF2 and SNF, respectively. Using a pivot table, 3 outbreak clusters emerged. The first two clusters occurred at the SNF and vSNF2 facilities during the same timespan from 2021Q2 to 2021Q4. No additional screens resulted positive in 2022 for both facilities. The third cluster occurred between 2022Q3 to 2022Q4 at vSNF1. When contacted by the hospital epidemiologist, vSNF1 was the only facility open to receiving assistance and training support, whereas vSNF2 and SNF were not receptive to the epidemiologist's offered support.
Case demographics for the 10 positive screens revealed a mean age of 45.4 with 80% (8/10) having a tracheostomy present and 70% (7/10) having a MDRO prior to screening. The mean days to expiration post-positive screen date was 89.





Positive *C. auris* Case Demographics

AGE	
Mean	45.4
GENDER	
Male	6
Female	4
POSITIVE RESULT DATE TO DEATH (DAYS)	
Mean	89
TRACH PRESENT	
Yes	8
No	2
PREVIOUS MDRO	
Yes	7
No	3

Discussion

Since implementing the *C. auris* screening process, the IPs have utilized the 5 infection control measures recommended by the CDC, which are as follows: to provide *C. auris* education to healthcare personnel (HCP); to ensure appropriate and adequate supplies are available; to perform audits to ensure HCP are practicing proper hand hygiene, as well as donning and doffing personal protective equipment (PPE) correctly; to ensure the correct transmission-based precautions are in place; and to flag the patient's chart as an alert to HCP for the current and any future admissions.[1]
In addition to the above guidance, the CDC also recommends notifying the receiving facility or unit of the patient's *C. auris* status when transferring the patient with *C. auris* colonization or infection to another healthcare facility or to another unit within a facility.[1] To ensure this communication occurred, the hospital epidemiologist would contact the facility where the patient resided. In addition to notifying the SNF of the patient's *C. auris* infection or colonization status, the epidemiologist would also provide general *C. auris* education, cleaning product recommendations, appropriate PPE to use, instructions on following-up with the state health department, and offer training support, if requested.
Of the 3 SNFs that had *C. auris* infected or colonized residents, vSNF1 was receptive to the assistance and education offered by the hospital epidemiologist. A comprehensive screening and surveillance plan has been developed and implemented at vSNF1 in response to our *C. auris* and MDRO screening results. Furthermore, because the state health department was and continues to be informed of facilities with *C. auris* colonized or infected residents, necessary follow-up and completion of surveillance testing in affected facilities are provided by the state, as well.

Conclusion

Receiving a positive *C. auris* result allows the IP department to promptly reach out to the facility where the patient resided and begin assisting with intervention needs and staff education, if requested. Additionally, all positive results are reported to the state department of health, who duly assists the SNFs and LTACs with infection control measures necessary to mitigate risk and prevent future outbreaks. *C. auris* screening upon admission to the hospital not only serves multiple preventative purposes within the hospital setting but also increases awareness of *C. auris* within SNFs and LTACs to mitigate and prevent transmission risk among residents.
Given the timing of the outbreak clusters, the lack of receptivity from vSNF2 and SNF was likely complicated by surrounding factors both during and after the COVID-19 pandemic, as well as by known staffing shortages. The key point is to initiate communication with local facilities that have residents with *C. auris* as recommended by the CDC. Fostering an IP relationship between the acute care and long-term care settings is advantageous in preventing the transmission of *C. auris* through prompt identification and appropriate actions.

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Disclosure statement: Nothing to disclose