Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

American Journal of Infection Control 50 (2022) 1258–1262

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Brief Report

Novel case of *Candida auris* in the Veterans Health Administration and in the state of South Carolina

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Key words:
Emerging pathogen
Infection control
Surveillance
Electronic alerts
Cleaning and disinfection
Isolation

The emerging pathogen *Candida auris* poses major infection prevention challenges as the organism can remain on surfaces for unknown timeframes and can cause severe illness. These challenges are exacerbated in the health care environment with potential spread to a vulnerable population. This report describes the Columbia Veterans Administration Health Care System's encounter with this significant pathogen beginning in October 2020 during the COVID19 pandemic.

BRIEF REPORT

Candida auris (*C. auris*) is a multidrug resistant fungus identified by the Centers for Disease Control and Prevention (CDC) as an emerging pathogen with a rating of "Serious" on the CDC's Threat Scale.[1] Some *C. auris* strains are treated with multiple antifungal therapies, however, there are *C. auris* strains that are resistant to all 3 available classes of antifungals. More than 1 in 3 patients expire within 1 month of diagnosis of invasive *C. auris* infection.[2] *C. auris* was first reported in 2009 in Japan[3] in an external ear culture and later in the same year South Korea reported additional *C. auris* ear infections. In 2011, invasive infections were reported from Korea in blood isolates.[4] One challenge of *C. auris* is that it not only spreads between patients and patient care units,[5] but it also spreads between patient care facilities within a community.[6] Standard laboratory culturing makes *C. auris* difficult to discern from other *Candida* species which results in the absence of appropriate and timely infection control interventions. Previous hospitalizations in facilities or countries [7] with known *C. auris* leave individuals at risk of acquiring *C. auris* especially if care involved invasive devices such as central venous catheters, endotracheal tubes/mechanical ventilation, feeding tubes, and indwelling urinary devices.[7] Groups at risk of *C. auris* infections include diabetics, recent postoperative patients, and people treated with broad spectrum antibiotics or antifungals. Other risk factors include history of stroke or other severe neurologic conditions, presence of tracheostomies, percutaneous feeding tubes, and inability to perform any activities of daily living.[6] *C. auris* can survive on patient's skin and other body parts for months.[8] Individuals can be colonized for an extended and indeterminate period with screening results alternating between detected and not detected.[9] Skin cells may shed and persist in the environment for up to 120 days[3,10] which poses major infection control challenges. Environmental disinfection plays a significant role in preventing transmission of this emerging pathogen. This brief report describes a clinical case of *C. auris* and a subsequently identified colonized patient at the Columbia Veterans Administration Health Care System (CVAHCS), both of which were determined to be not only the first cases in our state, but also the first cases within the Veterans Health Administration System.

The identification of this emerging pathogen is of clinical interest on its own and although our cases did not test positive for Covid-19, of additional interest is the timing of the case identification during the global Covid-19 Pandemic. With the Covid-19 Pandemic, nursing, laboratory, infection prevention, and Environmental services were significantly stressed while handling the influx of Covid-19 cases following the first July/August 2020 surge and on the cusp of the upswing for the subsequent surge in mid-October 2020. Since Covid-19 vaccines were not available until mid-December 2020, Covid-19 staff illness affected the availability of nursing and support staff thus

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Conflicts of interest: None to report.

Author contributions: All authors have read and approved the submission of the manuscript to AJIC.

https://doi.org/10.1016/j.ajic.2022.05.020
0196-6553/Published by Elsevier Inc. on behalf of Association for Professionals in Infection Control and Epidemiology, Inc.

impacting investigation and management of the *C. auris* situation. Nursing staff resources were required for patient swabbing and subsequent 1:1 nurse staffing for the *C. auris* patient. Infection Preventionist time was required for assisting with swabbing, communication coordination, and isolation monitoring. Lab resources were utilized for accessioning, labeling, and shipping specimens. Additional Environmental services staff resources were needed for intensified cleaning of the nursing unit, patient rooms, and treatment areas. The Graph 1 below shows the timing of the *C. auris* case identification amidst the COVID-19 surge for the CVAHCS.

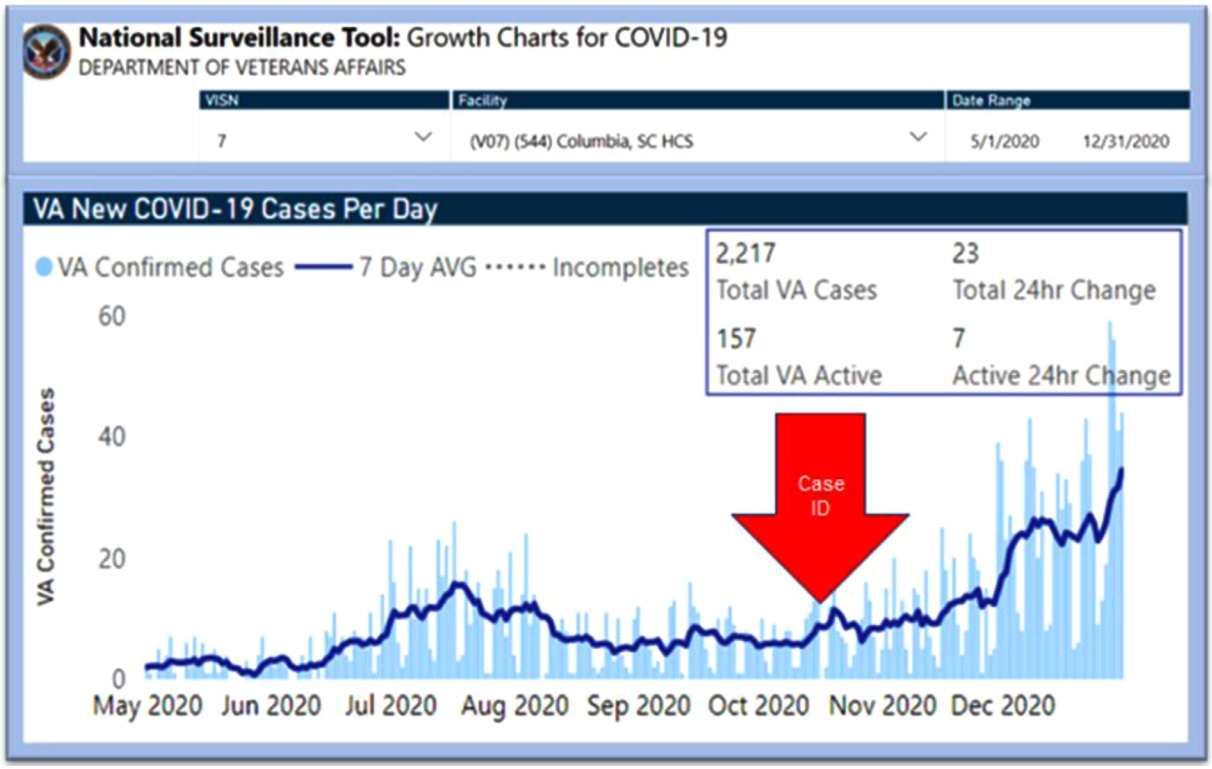
CASE REPORT PATIENT A

The microbiology lab, at the CVAHCS reported to infection prevention a positive urine result for *C. auris* >100,000 cfu/mL on a specimen collected in the emergency department (ED) from Patient A. Since Patient A was admitted, infection prevention immediately contacted nursing to place the patient in a private room with dedicated equipment and to follow contact precautions [10] to include strict hand hygiene, and the use of gowns and gloves. Infection prevention staff reviewed the literature to determine other necessary interventions such as cleaning requirements[11] and the benefit of ultraviolet C (UVC) light disinfection. The patient, a 76-year-old male, had just been discharged from the CVAHCS medical center following a 10-day stay prior to this ED visit. No other patient or family encounters with travel or hospitalizations were found to be contributory sources for *C. auris* in this patient. On the 10-day admission, the patient had a positive urine culture which grew *Enterococcus faecalis* (Group D) 25,000 cfu/mL. He also had a surgical incision and debridement of a sacral ulcer performed with wound vacuum placement, after which he was discharged to home.

Due to the family's inability to care for the patient at home, the patient returned to the ED the next day following discharge. The ED Medical provider noted a history of urinary tract infections and ordered urine with reflex to culture. The urinalysis showed large leukocytes and met the criteria for reflex to culture; therefore, a urine culture was performed with *C. auris* being identified. In accordance with CDC's recommendations for Treatment and Management of Infections and Colonization,[12] initiation of antifungal therapies normally utilized for treatment were not necessary or initiated due to the patient being asymptomatic/colonized.

Notification of the emerging pathogen was made to the CVAHCS facility leadership. The South Carolina Department of Health and Environmental Control (SCDHEC) was promptly notified of the *C. auris* lab report by Infection Control. Environmental Services was contacted to initiate recleaning of areas where the patient had been treated. Infection Prevention and the Infectious Disease Chief recommended cleaning and disinfecting the environments where the patient was cared for using bleach 1:10 solution followed by UVC light disinfection.[13] *C. auris* educational materials were provided to those involved in the care of the Veteran to include nursing, environmental management services, laboratory, radiology, cardiology, and medical staff. Patient A remained hospitalized for 7 days when he was again discharged to home.

Following SCDHEC confirmation of *C. auris,* SCDHEC/CDC recommended conducting *C. auris* point prevalence screening for all current inpatients and all Community Living Center (CLC)/Long Term Care/Rehab unit residents via axilla/groin swabs. The recommendation to include the CLC in *C. auris* screening resulted from Patient A having had a surgical procedure in the Operating Room which could have been subsequently used by patients who were later transferred to CLC/Rehab unit. During the Covid-19 pandemic, every effort was made to segregate CLC from the Acute hospital setting and staff. However, CLC residents utilize services in the Acute hospital for test and/or treatments and the buildings are connected by a common corridor. CVAHCS also maintains an Acute/outpatient hemodialysis unit



Graph 1. – VA National Surveillance Tool: Charts for COVID-19, Date range 5/1/2020 to 12/31/2020
COVID-19 NST - Power BI (powerbigov.us)

Table 1
Candida auris microbiology screening results

Demographic Aggregates			
Patient Group	Initial Screening	2 week follow up screening	4 week follow up screening on index inpatient unit
Inpatients. N=	36	49	11
Inpatients positive	1	0	0
% positive rate	3%	0%	0%
Mean age; (range)	69.14; (39.27, 89.52)	71.07; (52.67, 95.50)	65.80; (31.28, 88.65)
Sex			
Male	33 (94%)	47 (96%)	10 (91%)
Female	2 (6%)	2 (4%)	1 (9%)
Race			
AA	22 (63%)	24 (49%)	8 (73%)
W	11 (31%)	25 (51%)	3 (27%)
Unk	2 (6%)	0 (0%)	0 (0%)
Hx of Previous MDRO			
Y(%)	27 (77%)	10 (20%)	2 (18%)
N (%)	8 (23%)	39 (80%)	9 (82)%)
LOS Mean (range)	7.89 (0, 90)	7.34; (0, 103)	18.82; (1, 117)
CLC/LTC N=	27	27	
CLC/LTC residents positive	0	0	
% positive rate	0%	0%	
Mean age; (range)	79.51; (65.42, 98.67)	79.4	
Sex			
Male	26 (96%)	26 (96%)	
Female	1 (4%)	1 (4%)	
Race			
AA	19 (70%)	18 (67%)	
W	8 (30%)	9 (33%)	
Unk	0 (0%)	0 (0%)	
Hx of Previous MDRO			
Y(%)	9 (33%)	8 (30%)	
N (%)	18 (67%)	19 (70%)	
LOS Mean, range	1580.22; (1, 6209)	1592.81; (6, 6222)	
Hemodialysis N=	21	21	
Hemodialysis patients positive	0	0	
% positive rate	0%	0%	
Mean age; (range)	69.82; (46.81, 91.98)	69.82; (46.81, 91.98)	
Sex			
Male	21 (100%)	21 (100%)	
Female	0 (0%)	0 (0%)	
Race			
AA	18 (86%)	18 (86%)	
W	2 (10%)	2 (10%)	
Unk	1 (4%)	1 (4%)	
Hx of Previous MDRO			
Y(%)	13 (62%)	13 (62%)	
N (%)	8 (38%)	8 (38%)	
LOS = Length of Stay			
MDRO = Multidrug Resistant Organism			

Table 1 Created by authors

that is physically inside the Acute hospital facility with staff that dedicated to providing dialysis to the CLC on set days each week and shared in the Acute Hemodialysis unit on the opposite days.

Once swab kits were received from the Maryland Antibiotic Resistance Lab Network (ARLN), training was provided to the nurses who were dedicated to performing the swabbing and screening for *C. auris*. Because specimens could remain at room temperature for only 4 days, close coordination was required for ordering, collecting, accessioning, tracking, and shipping the specimens back to the Maryland lab.

CASE REPORT PATIENT B

When the wide-sweeping *C. auris* screening results were received, another new case was identified. Patient B, a 73-year-old male inpatient from an 8-bed residential care facility, admitted for 23 days became our second case. Patient B's admitting diagnosis was altered mental status, schizoaffective disorder, fall, diabetic ketoacidosis (DKA), and confusion. He was also a chronic dialysis patient receiving routine outpatient hemodialysis at CVAHCS with a permanent tunneled dialysis catheter in the right chest. The patient was immediately placed on contact precautions with a private room. Patient movement reports were generated to assess possible commonalities between Patient A and Patient B and it was determined that the patients shared a semi-private room for 1 day. Patient B had procedures performed prior to *C. auris* swabbing in interventional radiology, gastrointestinal laboratory, and hemodialysis. Therefore, thorough cleaning and UVC light disinfection of those areas was performed. Because of the newly identified *C. auris* transmission, a meeting was held with nursing, environmental management services, laboratory, radiology, cardiology, hemodialysis, and medical staff to discuss all Infection Control aspects of managing this *C. auris* event including hand hygiene, isolation, cleaning, disinfection, and staffing. Infectious Diseases recommended 1:1 nurse staffing for Patient B. Infection Control implemented enhanced monitoring and observation of hand hygiene and isolation compliance during both patients stays. Also, heightened communications regarding the pathogen during patient transfers within and outside the facility were emphasized. SC DHEC/CDC also recommended rescreening for point prevalence all inpatients, CLC residents, and Hemodialysis patients 2 weeks after the initial screening. Furthermore, a final screening was recommended at 4 weeks on the unit where the initial *C. auris* patient was found (index nursing unit). It is noteworthy that the patients in the initial screening group may be different than the patients in the subsequent screening group(s) due to new admissions or discharges that normally occur in health care facilities. Table 1 below shows the results of those screening activities. To address staff safety concerns, SCDHEC/ CDC noted that testing of staff and the environment is not recommended since *C. auris* does not pose a risk to immunocompetent individuals.

Keeping VHA National partners informed was a key priority following identification of this organism since this was the first identified in the VHA system. This was accomplished via a conference call between the CVAHCS, the VHA National Infectious Disease Service , and the VHA Multidrug Resistant Organism offices. The intent of the call was to share salient details of the cases, report action plans developed by the CVAHCS Infection Control team, and to seek additional guidance. While the actions taken were timely, Veteran-centric, and consistent with the published evidence-based guidance, the national team recommended the creation of a clinical alert using a "Patient Record Flag" (PRF) in the Computerized Patient Record System to ensure care provider awareness. With the assistance of the VA Clinical Application Coordinators , PRFs were established for both Patient A and Patient B. PRF present as a "pop-up" notice immediately on accessing the patient record in computerized patient record system. The PRFs remain in place indefinitely on the chart until they are discontinued by the author, who in this case is Infection Prevention and Control. Included in the PRF are a notice about the emerging pathogen, instructions for contact precautions for inpatient or outpatient visits, placement in a private room, measures to include for prevention of transmission to include hand hygiene, environmental cleaning with bleach, patient/family education, and a notice to alert Infection Prevention and Control to the patient's presence if readmitted to the facility. An additional recommendation was made to educate and inform the CVAHCS Public Affairs Office in the event of media inquiries. Talking points were prepared and reviewed with the public affairs office and the facility Director to ensure continuity of messaging.

DISCUSSION

Since Patient A and Patient B had shared a semi-private inpatient room, it is unknown whether Patient A or Patient B was colonized with C. auris first. While the difficulty of containing *C. auris* transmission in the health care setting under the ideal of circumstances (ie, prompt lab identification, active surveillance, and isolation precautions) has been reported,[14] the presentation of this emerging pathogen at the CVAHCS amid a global pandemic presented even greater potential challenges. For example, significant infection prevention resources were already required for the daily monitoring and reporting requirements for COVID19 to the state health department. Additionally, the management of both staff and Veteran COVID19 exposures and contact tracing placed demands on the infection prevention department and nursing staff who performed *C. auris* surveillance swabs. The staffing difficulties were exacerbated when 1:1 staffing recommendations were implemented to prevent transmission of *C. auris*. Laboratory resource demands were also increased as staff were required to properly process *C. auris* specimens along with the ongoing COVID19 testing. CVAHCS successfully managed these competing priorities to reduce the risk of transmitting a virulent and resistant organism throughout a vulnerable population of hospitalized patients.

CONCLUSION

To date, no further transmission has been identified of *C. auris* at the CVAHCS. The support of experts at the CDC, SCDHEC, VHA, and the active involvement of key stakeholders at the CVAHCS medical center was essential to guiding actions and averting further transmission.

Acknowledgments

The authors would like to thank Michael J. Ryan, PhD Columbia Veterans Health Care System Associate Chief of Staff for Research for his assistance in reviewing this publication.

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