

Table. Characteristics of patients screened for *C. auris* on admission to LTACH A, May 2019-September 2019.

Covariate	<i>C. auris</i> colonized patients on admission (N=18)	Patients testing negative for <i>C. auris</i> colonization on admission (N=133)	P value
<i>Demographics</i>			
Male, n (%)	10 (56)	88 (66)	>0.05
Age, mean y	64.6	59.2	>0.05
<i>Clinical Risk Factors</i>			
Gastrostomy tube, n (%)	12 (67)	59 (44)	>0.05
Hemodialysis, n (%)	4 (22)	28 (21)	>0.05
Intravenous devices [‡] , n (%)	10 (56)	40 (30)	0.03
Mechanical ventilation, n (%)	6 (33)	41 (31)	>0.05
Tracheostomy, n (%)	8 (44)	49 (37)	>0.05
<i>Prior MDRO[†] history</i>			
Contact Precautions*, n (%)	12 (67)	40 (30)	0.01
XDR0 record**, n (%)	2 (11)	5 (4)	>0.05

[†] Multi-Drug Resistance Organism (MDRO)

[‡] Intravenous devices represent central venous catheter or peripherally inserted central catheter.

* Documented indications for Contact Precautions include: *Clostridioides difficile*, carbapenem-resistance *Enterobacteriaceae* (CRE), carbapenemase-producing organisms (CPO), Extended spectrum beta-lactamase organism, Lice, Methicillin-resistant *Staphylococcus aureus*, and Vancomycin-resistant *Enterococcus*, Shingles, and other MDRO (e.g., *Serratia* sp.).

** Extensively Drug Resistant Organism (XDR0) record indicates documented CRE or CPO history in the Illinois web-based registry.

Presentation Type:

Distinguished Oral

Simplifying Surveillance Sampling: Can Environmental Surveillance Replace Perianal Screening?

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Background: Although active surveillance for multidrug-resistant organism (MDRO) colonization permits timely intervention, obtaining cultures can be time-consuming, costly, and uncomfortable for patients. We evaluated clinical differences between patients with and without attainable perianal cultures, and we

sought to determine whether environmental surveillance could replace perianal screening. **Methods:** We collected active surveillance cultures from patient hands, nares, groin, and perianal area upon enrollment, at day 14, and monthly thereafter in 6 Michigan nursing homes. Methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), and resistant gram-negative bacilli (RGNB) were identified using standard methods. Patient characteristics were collected by trained research professionals. This substudy focused on visits during which all body sites were sampled. To determine the contribution of perianal screening to MDRO detection, site of colonization was categorized into 2 groups: perianal and non-perianal. We evaluated the utility of multisite surveillance (eg, type 1 and type 2 error) using nonperianal sites and environment surveillance. To evaluate

Table 1. Active Surveillance of Multidrug-Resistant Organisms in Six Nursing Homes.

Characteristic ^a	Any MDRO+ No. (%)	MRSA+ No. (%)	VRE+ No. (%)	RGNB+ No. (%)
MDRO Burden (N=1026 Visits)^b				
All Body Sites	620 (60.4)	155 (15.1)	363 (35.4)	386 (37.6)
Hands	248 (24.2)	100 (9.8)	135 (13.2)	57 (5.6)
Nares	134 (13.1)	98 (9.6)	4 (0.4)	33 (3.2)
Groin	261 (25.4)	17 (1.7)	147 (14.3)	161 (15.7)
Perianal Area	465 (45.3)	31 (3.0)	304 (29.6)	284 (27.7)
Environmental Surveillance	672 (65.5)	250 (24.4)	442 (43.1)	302 (29.4)
Return on MDRO Detection Using Multiple Non-Perianal Sites and Environmental Surveillance^c				
Hands	248 (40.0)	100 (64.5)	135 (37.2)	57 (14.8)
Hands + Nares	302 (48.7)	140 (90.3)	135 (37.2)	80 (20.7)
Hands + Nares + Groin	437 (70.5)	143 (92.3)	213 (58.7)	212 (54.9)
Environmental Surveillance Only ^d	471 (76.0)	122 (78.7)	261 (71.9)	132 (34.2)
Hands + Nares + Groin + Environment ^d	549 (88.6)	148 (95.5)	301 (82.9)	262 (67.9)
Total Body Site Colonization	620 (100)	155 (100)	363 (100)	386 (100)

^a Study visits were eligible for analysis if all body sites (hands, nares, groin, and perianal area) were collected.

^b MDRO burden was calculated as the percent of colonized visits divided by the total number of sampling visits.

^c MDRO detection was defined as the number of colonized visits detected by the screening panel divided by the total number of colonized visits.

^d Specificity of room environment surveillance was 50.5%, 85.3%, 72.7%, and 73.4% for Any MDRO, MRSA, VRE, and RGNB, respectively.

Abbreviations: MDRO, multidrug-resistant organism; MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant enterococci; RGNB, resistant gram-negative bacteria.

Table 2. Patient Characteristics, Stratified by Perianal Specimen Collection Status During Eligible Study Visits.

Characteristic	All Patients (N=641) ^a	Patients With Perianal Cultures (N=533)	Patients Without Perianal Cultures (N=108)	P value ^b
Age, y, mean (SD)	74.7 (12.2)	74.5 (12.1)	75.8 (12.7)	0.32
Male Gender, No. (%)	270 (42.1)	227 (42.6)	43 (39.8)	0.59
Non-Hispanic White, No. (%)	397 (61.9)	324 (60.8)	73 (67.6)	0.18
Charlson Comorbidity Index Score, mean (SD)	2.6 (2.1)	2.5 (2.0)	3.0 (2.2)	0.04
Cognitive Function Score (BIMS), mean (SD) ^c	12.8 (3.5)	13.0 (3.3)	12.2 (4.2)	0.07
Physical Self-Maintenance Score, mean (SD)	14.4 (4.6)	14.0 (4.5)	16.7 (4.6)	<0.001
Antibiotic Usage in Past 30 Days, No. (%)	384 (59.9)	319 (59.9)	65 (60.2)	0.95
Device Usage (Baseline), No. (%)	66 (10.3)	52 (9.8)	14 (13.0)	0.32
Wounds (Baseline), No. (%)	281 (43.8)	221 (41.5)	60 (55.6)	0.007
Previous Hospitalization, No. (%)	608 (94.9)	507 (95.1)	101 (93.5)	0.49
Hospital Stay > 2 Weeks, No. (%)	59 (9.2)	52 (9.8)	7 (6.5)	0.28
Length of Stay, mean (SD)	45.0 (46.4)	47.7 (47.7)	31.5 (37.1)	<0.001

^a Patients were included in this analysis if they had a study visit where all three body site specimens were collected: hands, nares, and groin. Eligible patients were then stratified by whether a perianal area specimen was collected during any of their eligible study visits.

^b Chi-square test of associated was used to assess significance for categorical variables while Student's t-test was used to assess significance for continuous variables.

^c Cognitive function was evaluated using the Brief Interview for Mental Status (BIMS). Nineteen patients had missing or incomplete BIMS assessments on study enrollment.

Abbreviations: BIMS, Brief Interview for Mental Status; SD, standard deviation.

characteristics associated with the acquisition of perianal cultures (eg, selection bias), we compared clinical characteristics, overall patient colonization, and room environment contamination of patients in whom all body sites were sampled during a study visit (533 patients; 1,026 visits) to patients with all body sites except the perianal culture sampled during a study visit (108 patients; 168 visits). **Results:** Of 651 patients, 533 met the inclusion criteria; average age was 74.5 years, 42.6% were male, and 60.8% were white. Of 1,026 eligible visits, 620 visits detected MDRO colonized patients; 155 MRSA, 363 VRE, and 386 RGNB (Table 1). If perianal cultures were not collected, nonperianal surveillance misses 7.7%, 41.3%, and 45.1% of MRSA, VRE, and RGNB colonized visits, respectively. The addition of environmental surveillance to non-perianal screening detected 95.5%, 82.9%, and 67.9% of MRSA, VRE, and RGNB colonized visits, respectively. The specificity of environmental screening was 85.3%, 72.7%, and 73.4% for MRSA, VRE, and RGNB, respectively. Patients without attainable perianal cultures had significantly more comorbidities, worse functional status, shorter length of stay, and higher baseline presence of wounds than patients with attainable perianal cultures; introducing potential selection bias to surveillance efforts (Table 2). No significant differences in overall patient colonization and room contamination were noted between patients with and without attainable perianal cultures. **Conclusion:** Perianal screening is important for the detection of VRE and RGNB colonization. Infection prevention must be cognizant of the tradeoff between reducing type 2 error and the selection bias that occurs with required attainment of perianal cultures. In the absence of perianal cultures, environmental surveillance improves MDRO detection while introducing type 1 error.

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Case of *Candida auris* Identified From the External Ear Canal of a Healthy Minnesota Outpatient With Travel to South Korea

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Background: *Candida auris* is a globally emerging, multidrug-resistant fungal pathogen that causes healthcare-associated outbreaks and can be misidentified in clinical laboratories. Most US *C. auris* cases occur in hospitalized or long-term care patients with underlying medical conditions. Also, 4 global phylogenetic *C. auris* clades largely cluster geographically. Receiving health care abroad is a risk factor for US *C. auris* cases. In December 2019, the Minnesota Department of Health (MDH) confirmed Minnesota's first *C. auris* case, isolated from the external ear canal of a healthy young adult outpatient with right-sided otitis externa. We describe the investigation and response for this uncommon US presentation of *C. auris*. **Methods:** The MDH initiated mandatory reporting and submission of confirmed or possible *C. auris* isolates in August 2019. The MDH Public Health Laboratory (MDH-PHL) confirmed *C. auris* by MALDI-TOF (Bruker) from an isolate submitted by a hospital laboratory as *C. duobushaemulonii* to rule out *C. auris*. The MDH-PHL performed broth microdilution antifungal susceptibility testing (AFST). The CDC Mycotics Diseases Branch laboratory performed whole-genome sequencing (WGS). The MDH epidemiologists obtained a patient history through interviews with healthcare staff and the patient, and they collected environmental samples from otoscopes. The MDH-PHL tested environmental samples by *C. auris* RT-PCR and culture. The MDH recommended disinfection of examination rooms and otoscopes and 3 months of *C. auris* surveillance for patients evaluated with otoscopes who later returned with otic inflammation. Swabs from the patient's axilla, groin, and external ear canals were tested for *C. auris* by PCR at the MDH-PHL. **Results:** The patient reported recurrent right ear infections in 2016 during a 16-month visit to South Korea, with treatment in multiple ENT clinics. December 2019 otitis resolved after treatment with oral amoxicillin/clavulanate and otic ciprofloxacin/dexamethasone. AFST showed resistance to fluconazole and susceptibility to 8