Results. Fifty-three patients were identified with a culture-proven CRE diagnosis. CRE was isolated from the following sites: urine, sputum, bronchial wash, blood, and tissue/wound culture. True infection was identified in 32 cases. For the 18 cases with likely colonization, urine was the most common site. Klebsiella pneumoniae was the most common organism identified with carbapenem-resistance. Fluoroquinolones, either alone or in combination with other agents, were the most commonly used agents to treat CRE infection. The average duration of targeted antibiotic therapy was 9 days. Mortality rates at 30 and 90 days were 10% and 14%, respectively.

Conclusion. The prevalence of CRE infections is on the rise, and may be a result of increased broad-spectrum antibiotic use combined with inappropriate carbapenem use. Unconventional agents, such as fluoroquinolones, are being utilized to manage patients with documented CRE infection at Union Hospital.

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510. Exposure Investigation Following a Confirmed Case of *Candida auris* and Multiple Carbapenemase-Producing Carbapenem-Resistant Organisms

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Session: 54. HAI: MDRO – GNR Epidemiology, CRE

Thursday, October 3, 2019: 12:15 PM

Background. Co-infections of *Candida auris* and carbapenemase-producing carbapenem-resistant Gram-negative organisms (CP-CRO) are an increasing global concern and rarely seen in the United States. We report the case of a 59-year-old male, with recent hospitalization in India, admitted to our facility with *C. auris* isolated from urine and axilla/groin specimens and CP-CRO from five body sites.

Methods. Travel screening in the emergency department identified a patient at high risk for colonization/infection with multidrug-resistant organisms (MDRO). Contact precautions were initiated. Eight CP-CRO isolates were subsequently identified from clinical and routine surveillance cultures from five separate sites. Of the isolates, seven contained one or more carbapenemase-producing genes detected by Xpert Carba-R assay (Cepheid, Sunnyvale, CA) (Table 1). The microbiology laboratory alerted the infection control department of a presumptive positive *C. auris* from a clinical urine culture from the same patient. Enhanced mitigation strategies were initiated in regards to cleaning and disinfection.

An exposure investigation was also conducted using a point prevalence approach. Surveillance cultures were obtained from inpatients currently admitted to the same unit as the index patient. Axilla/groin specimens were collected for *C. auris* testing, and rectal specimens were collected for CP-CRO gene testing (CRE Real-Time PCR).

Results. Eighteen patients in addition to the index patient were hospitalized on the acute medicine unit. One patient refused testing for CP-CRO; therefore, 17 patients were tested for CP-CRO, and 18 patients were tested for *C. auris*. Neither CP-CRO nor *C. auris* were recovered from any patient.

Conclusion. A patient co-infected with *C. auris* and multiple CP-CRO was identified by clinical and routine surveillance cultures at Johns Hopkins Hospital. Travel screening allowed proactive isolation upon presentation. Enhanced infection control measures were implemented and a point prevalence surveillance study was conducted on the general acute care medicine inpatient unit. No transmission of either *C. auris* or CP-CRO was detected, likely due in part to rapid identification and strict infection control measures.

Table 1: Diversity of CP-CRO colonization isolated from various body sites in a single patient.

Specimen Type	Bacterial Species	Gene
Abscess	*Klebsiella pneumoniae*	NDM, OXA-48
	Pseudomonas aeruginosa	KPC
Blood (Peripheral)	*Escherichia coli*	NDM
Endotracheal/nasotracheal Aspirate	*K. pneumoniae*	NDM, OXA-48
Rectal Swab	*E. coli*	NDM, OXA-48
	K. pneumoniae	NDM, OXA-48
Urine (catheterized)	*Acinetobacter baumannii*	N/A
	Providencia rettgeri	NDM, OXA-48

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511. MDRO Carriage in Patients in Two ICUs and Prevalence of Environmental Surface and Healthcare Worker Hand Contamination

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Background. Determining MDRO (multidrug-resistant organism) transmission routes in intensive care units (ICUs) can be complex and require the evaluation of multiple potential MDRO sources, including patients, the environment, and healthcare worker (HCW) hands. The objective of this study was to determine MDRO carriage in patients in two separate ICUs, and simultaneous environmental and HCW hand contamination from associated rooms.

Methods. Patient (P), environmental (E), and HCW hand (H) samples were collected from hospital A (1183 H, 1253 E, 729 P) and hospital B (699 H, 1372 E, 437 P) over approximately 5 weeks in each unit. Environmental and HCW hand samples were collected using a cellulose sponge. HCW hand samples were collected prior to any hand hygiene. Patient samples were collected from the axilla, groin, and perianal areas with a flocked swab with patient consent. All samples were tested semi-quantitatively for Clostridium difficile (Cdiff), vancomycin-resistant enterococci (VRE), and cefotaxime-resistant Enterobacteriaceae (Cef-R-Ent) by selective culture. Cdiff isolates representative of each P/E/H cluster were tested for Cdiff toxin testing by PCR.

Results. Cdiff, VRE, and Cef-R-Ent were detected in patients, patient rooms, and on HCW hands in both facilities (Table 1). Cdiff was more prevalent in Facility A, while Cef-R-Ent was more prevalent in Facility B. The prevalence of VRE was minimal in both facilities. Cdiff toxin gene testing revealed that 17% of the Cdiff isolate clusters tested positive for toxin genes. In Facility A, the prevalence of a given MDRO was similar regardless of sample type, but was more widely varied between sample types in Facility B. Prevalence of MDROs on HCW hands and in the environment was typically higher in Facility A compared with Facility B. Individual patient positives were frequently linked to positive HCW hand and environmental cultures.

Conclusion. We discovered a low prevalence of all MDROs in both facilities, with most positive cultures associated with patients who were not on MDRO precautions. HCW hand and environmental MDRO prevalence was generally similar for each MDRO, regardless of patient prevalence, supporting previously reported links on HCW hand contamination and hospital room surfaces.

	Facility A ICU			Facility B ICU		
	Cdiff*	VRE	Cef-R-Ent	Cdiff	VRE	Cef-R-Ent
HCW hands	3.50%	0.30%	2.80%	0.40%	0.40%	0.40%
Environment	4.30%	0.30%	3.70%	0.90%	0.50%	4.40%
Patients	4.10%	0.30%	2.10%	2.70%	1.80%	4.60%

Table 1. Prevalence of various MDROs of each sample type by facility; *Culture-positive

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512. Healthcare-Acquired (HA) Carbapenemase-Producing Enterobacteriales (CPE) in Southern Ontario, Canada: To Whom Are We Transmitting CPE?

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Background. Though CPE in Canada are mainly acquired abroad, outbreaks/transmission in Canadian hospitals have been reported. We determined the incidence of HA CPE in southern Ontario, Canada, to inform prevention and control programs.

Methods. Toronto Invasive Bacterial Diseases Network (TIBDN) has performed population-based surveillance for CPE in the Toronto area/Peel region of southern Ontario, Canada, since CPE were first identified in October 2007. Clinical microbiology laboratories report all CPE isolates to TIBDN; annual lab audits are performed. Incidence calculations used first isolates as numerator; denominator (patient-days/fiscal year for Toronto/Peel hospitals) was from the Ontario Ministry of Health and Long-Term Care.

Results. The incidence of HA CPE has risen from 0 in 2007/2008 to 0.45 and 0.28 per 100,000 patient-days for all and clinical cases, respectively, in 2017/2018 (Figure, $P < 0.0001$). 190/790 (24%) incident cases of CPE colonization/infection in southern Ontario from October 2007 to December 2018 were likely HA (hospitalized in Ontario with no history of hospitalization abroad/high-risk travel). Eighty (25%) were female and the median age was 73 years (IQR 57–83 years). 157 (83%) had no prior travel abroad and 33 (17%) had prior low-risk travel. 122 (64%) had their CPE identified >72 hours post-admission (of which 83 also had ≥1 other prior Ontario hospitalization); 68 (36%) had their CPE identified at admission but had recent prior Ontario hospitalization. HA cases vs. foreign acquisitions were significantly more likely *K. pneumoniae* (48% vs. 38%, $P = 0.02$) and *Enterobacter spp.* (20% vs. 7%, $P < 0.0001$) and less likely *E. coli* (20% vs. 48%, $P < 0.0001$). Genes of HA vs. foreign acquisitions were significantly more likely bla_{KPC} (34% vs. 12%, $P < 0.0001$) and bla_{VIM} (12% vs. 2%, $P < 0.0001$) and less likely $bla_{NDM\pm OXA}$ (38% vs. 56%, $P < 0.0001$) and bla_{OXA} (13% vs. 27%, $P = 0.0001$). 36 (19%) HA cases had a negative CPE screen before their first positive CPE