the contamination of OR environmental sites. **Methods:** This investigation was conducted in the ORs of an academic facility during an 8-month period. It involved 10 patients on contact precautions for multidrug-resistant pathogens, including methicillin-resistant *Staphylococcus aureus* (MRSA; n = 7); carbapenem-resistant *Enterobacteriaceae* (CRE) plus MRSA (n = 2); and vancomycin-resistant *Enterococcus* (VRE) plus MRSA (n = 1), who underwent surgery. Environmental sampling was performed at the following time points: (1) immediately before the surgical patient's arrival in the OR, (2) after surgery but before the OR cleaning and disinfection, and (3) after the OR cleaning and disinfection. In total, 1,520 environmental samples collected from 15 OR sites for 10 surgical patients at 3 time points were analyzed. Relatedness among environmental MRSA isolates was determined by pulsed-field gel electrophoresis. **Results:** Overall, the mean CFUs of aerobes per Rodac plate (CFU/25 cm^2) were 10.1 before patient arrival, 14.7 before cleaning and disinfection, and 6.3 after cleaning and disinfection ($P < .0001$, after cleaning and disinfection vs before cleaning and disinfection). Moreover, 7 environmental sites (46.7%) after cleaning and disinfection, including bed, arm rest, pyxis counter, floor (near, door side), floor (far, by door), steel counter (small, near bed), and small computer desk, had significantly lower mean counts of aerobes than before patient arrival or before cleaning and disinfection (Fig. 1). The mean CFUs of MRSA per Rodac plate (CFU/25 cm^2) were 0.04 before patient arrival, 0.66 before cleaning and disinfection, and 0.08 after cleaning and disinfection ($P = .0006$, after cleaning and disinfection vs before cleaning and disinfection). Of environmental sites where MRSA was identified, 87.2% were on floors (41 of 47) and 19.1% were after cleaning and disinfection (9 of 47, 8 from floors and 1 from pyxis touchscreen). The A2/B2 MRSA strain was identified on different environmental sites (eg, floor, computer desk, counter) in various rooms (eg, OR2, OR10, and OR16), even after cleaning and disinfection (Fig. 2). **Conclusions:** Our study has demonstrated that the OR environment was contaminated with aerobic bacteria and MRSA after surgery and that MRSA persisted in the environment even after cleaning and disinfection. Enhanced environmental cleaning in the perioperative environment used for patients on isolation is necessary to prevent transmission of healthcare-associated pathogens in ORs.

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Presentation Type:
Poster Presentation

Peripherally Inserted Central Catheters Present on Admission and the Risk of Central-Line–Associated Bloodstream Infection

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Background: Patients presenting to hospitals often arrive with peripherally inserted central catheters (PICC) in place upon admission. The admitting facility may not be familiar with that device's history and the unknown risk for bloodstream infection associated with it often prompts requests for device replacement. A blanket approach to "change all lines" must be balanced with the potential for patient discomfort and insertion-related complications. To better inform our approach to prevention, we determined the incidence of central-line–associated bloodstream infection (CLABSI) in adult patients presenting to hospitals in our health system with a PICC present on admission (POA), relative to those who have a PICC placed after admission (PAA). **Methods:** This retrospective cohort study included all adult hospital encounters at 11 Cleveland Clinic acute-care hospitals lasting > 2 days in 2018 with electronic medical record nursing care flowsheet documentation of a PICC during the stay. Patients whose admission diagnosis was related to intravascular catheter infection, children aged <18 years, and observation unit encounters were excluded. Patients were categorized as having a PICC POA if a nurse selected that option on a PICC flowsheet, otherwise the patient was categorized has having a PICC PAA. Surveillance for CLABSI was performed in all inpatient locations at all hospitals according to the NHSN protocol. Patients with ≥1 CLABSI were matched to encounters by name and date of admission. Repeat infections occurring to the same patient were excluded. **Results:** Of the 8,827 eligible hospital encounters, 1,799 (20%) involved a PICC POA and 7,028 (80%) had PICCs PAA. Across 11 hospitals, the median proportion of PICC-associated encounters with a device POA was 15% (range, 8%–25%). Moreover, 23 of the 112 CLABSIs (21%) in our cohort occurred in patients with a PICC POA and 89 (79%) occurred in patients with a PICC PAA (Table 1). The overall relative risk of CLABSI, whether the PICC was placed before or after admission, was 1.00 (95% CI, 0.64–1.60). **Conclusions:** Patients with a PICC present on admission to our hospitals were no more likely to experience a CLABSI than patients who had a PICC placed after admission. Replacing vascular catheters that are POA may not reduce the risk of CLABSI. With up to 25% of PICC-associated encounters having the device POA, universal device replacement at admission would involve hundreds of patients per year at our multihospital health system.

Table – Frequency and attack rates (AR) per 100 admissions of central line-associated bloodstream infection (CLABSI) during patient encounters with peripherally inserted central catheters (PICC) in place on admission (POA) and placed after admission (PAA), eleven hospitals, 2018

	PICC POA			PICC PAA		
Hospital	n CLABSI	n encounters	AR	n CLABSI	n encounters	AR
A	18	1 047	1.72	59	3 129	1.89
B	3	161	1.86	13	715	1.82
C	1	40	2.50	2	267	0.75
D	1	113	0.88	3	716	0.42
E	0	223	-	8	894	0.89
F	0	83	-	2	454	0.44
G	0	23	-	1	144	0.69
H	0	41	-	1	209	0.48
I	0	35	-	0	226	-
J	0	18	-	0	102	-
K	0	15	-	0	171	-
TOTAL	23	1 799	1.28	89	7 028	1.27

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Poster Presentation

Phylogenetic Analysis of *Candida auris* Isolates From Clinical Samples of Surgical Intensive Care Units

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Background: Between January and September of 2019, 15 patients acquired *Candida auris* infection in our surgical intensive care unit (SICU). Although the outbreak was controlled by enhancing

horizontal measures and a change of the environmental disinfectant from a quaternary ammonium compound to a peroxide-based product; we wanted to understand whether patient-to-patient spread was occurring or the environment was the major contributor. **Methods:** We submitted all the 15 isolates from clinical samples for WGS and phylogenetic analysis; along with operation theater (OT) and ICU environment random swabs for metagenomic analysis. DNA sample QC DNA extraction was done using a Qiagen QiAmp DNA mini kit (cat. no. 51306). The DNA samples were subjected to QIAXPERT and Qubit for quantifying the amount of DNA in the extracted sample. Also, the 260/280-nm ratio was examined for the purity of the same. They were also subjected for agarose gel electrophoresis. For the DNA library prep protocol, whole-genome libraries were prepared from 21 samples using NEBNext Ultra IITM DNA Library Prep Kit (Cat. No: E7645L). The adapter sequences were added to the ends of DNA fragments to generate paired-end libraries. The resulting adaptor-ligated libraries were purified and index tags were added by amplification, followed by purification. Libraries were assessed to check the quality and quantity using Agilent 2200 Tape station (cat. no. 3-PM 863NA). For the sequencing protocol, prepared libraries were quantified using Qubit High Sensitivity reagent. The obtained libraries were diluted to final concentration of 2 nm in 10 µL and were subjected to cluster amplification. Once the cluster generation was completed, the flow cells were loaded on to the sequencer. Sequencing was carried out in Hi Seq X10 to generate 2X150-bp sequence reads at >100X sequencing depth (~1.5 Gb). A minimum of 75% of the sequenced bases were of Q30 value. Sequenced data were processed to generate FASTQ files and were uploaded on the FTP server for download and secondary data analysis. **Results:** Overall, 2% of the DNA from the OT and SICU environment showed *Candida auris*. The phylogenetic analysis confirmed 2 different clusters. Furthermore, 13 of the clinical isolates belonged to the same cluster, confirming that patient-to-patient transmission had occurred, which was subsequently confirmed by line listing the patients. **Conclusions:** *Candida auris* can efficiently spread from patient to patient, resulting in outbreaks. It can also persist in the healthcare environment causing ongoing propagation of these outbreaks.

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Poster Presentation

Pilot Point-Prevalence Survey for Healthcare-Associated Infections in Long-Term Care Hospitals, South Korea, 2018

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Background: Recently, healthcare-associated infections (HAIs) in long-term care hospitals (LTCHs) have markedly increased, but no infection control policy has been established in South Korea. We investigated the current HAI surveillance system and executed a point-prevalence pilot study in LTCHs. **Methods:** HAIs were defined by newly established surveillance manual based on McGeer criteria revised in 2012. Three LTCHs in Seoul and Gyeonggi province were voluntarily recruited, and data were collected from up to 50 patients who were hospitalized on August 1. The medical records from September to November 2018 were retrospectively reviewed by a charge nurse for infection control per each hospitals after 1 day of training specific for LTCH surveillance. All data were reviewed by a senior researcher visiting onsite. **Results:** The participating hospitals had 272.33 ± 111.01 beds. Only 1 hospital had an onsite microbiological laboratory. In total, 156 patients were enrolled and 5 HAIs were detected, for a prevalence rate of 3.2%. The average patient age was 79.04 ± 9.92 years. The HAIs included 2 urinary tract infections, skin and soft-tissue infection, low respiratory infection, and conjunctivitis. **Conclusions:** This is the first survey of HAI in LTCHs in South Korea. The 3.2% prevalence rate is lower than those from previous reports from the European Union or the United States. This study supports the development of a national HAI surveillance and infection control system in LTCHs, although implementation may be limited due to the lack of laboratory support and infection control infrastructure in Korea.

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Poster Presentation

Pilot Survey for National Point Prevalence Study of Healthcare-Associated Infections in Acute-Care Hospitals in South Korea

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Background: The Korean National Healthcare-Associated Infections Surveillance System (KONIS) was established to conduct nationwide surveillance of device-associated healthcare-associated infections (HAIs) and surgical site infections annually in 2006. However, no surveillance on overall HAIs has been conducted. **Objective:** We conducted a point-prevalence survey of total HAIs to estimate the incidence rate of HAIs in acute-care hospitals in South Korea. **Methods:** We defined HAIs according to KONIS and NHSN criteria. In total, 29 acute-care hospitals including 9 tertiary-care hospitals (TCHs) and 20 secondary-care hospitals (SCHs) were recruited as representing the population of every metropolitan city and province in South Korea. Patients who stayed at the hospitals on August 1, 2018, were randomly selected: 100 for SCHs and 200 for TCHs. Their medical records were retrospectively reviewed for HAIs according to the NHSN criteria by the infection control nurses (ICNs) from each hospital. A web-based data collection and analysis program was developed, and participating ICNs were educated in a 1-day training course with pre- and postevaluations. They received continuous feedback of input data and questions through the web-based system during the study. To generate estimates of the incidence rate of HAIs, we converted prevalence to incidence using the formula of Rhame and Sudderth. **Results:** Of 4,296 patients, 133 had ≥1 HAI (3.1%). In total, 141 HAIs were identified: gastrointestinal infections (n = 30, 21.3%), bloodstream infections (n = 30, 21.3%), pneumonia (n = 29, 20.6%), urinary tract infection (n =26, 18.4%). Among the gastrointestinal infections, *C. difficile* infections were the most common (17.7%). Device-associated infections accounted for 34.8% of all HAIs. The overall incidence of HAIs in TCHs was 4.39%, which was a higher incidence than SCHs (3.76%). Intensive care units had 12.6% of HAIs, whereas general wards had 3.4%. HAI incidences were 5.7%, 2.8%, and 2.3%, respectively, for each of the medical wards, surgical wards, and pediatric wards. The 3 most common pathogens were *Escherichia coli*, *Acinetobacter baumannii*, and *Enterococcus faecium*.