

to obtain closed genomes. WGS was performed on the remaining isolates with the Illumina MiSeq platform.

Results. Twenty isolates from NMH, five from ACL, and two from the CDC underwent WGS to yield 12.6 Mb genomes. Any two NMH isolates differed from each other by a maximum of 36 single nucleotide variants (SNV) (Figure 1). Two patients thought to be part of a transmission cluster (isolates CA06 and CA07), differed by 7 SNVs. No phylogenetic grouping between hospital systems across Chicagoland was observed. Isolates from room surfaces from a *C. auris* patient differed by 1-6 SNVs from each other and from 7-8 SNVs from the patient isolate. Samples taken from different body sites of another patient differed by 4-9 SNVs. Average SNV counts were lower among nosocomially acquired cases when compared to *C. auris* isolates present on admission (Figure 2). All NMH isolates were fluconazole sensitive, but a fluconazole resistant ACL isolate differed from a sensitive NMH isolate by only 4 SNVs.

Figure 1: Phylogenetic tree of all NMH and ACL isolates with fluconazole sensitivities

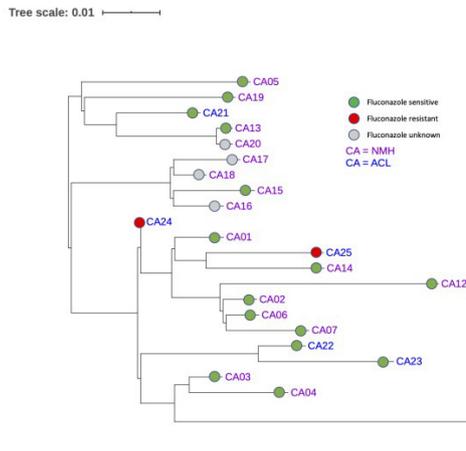
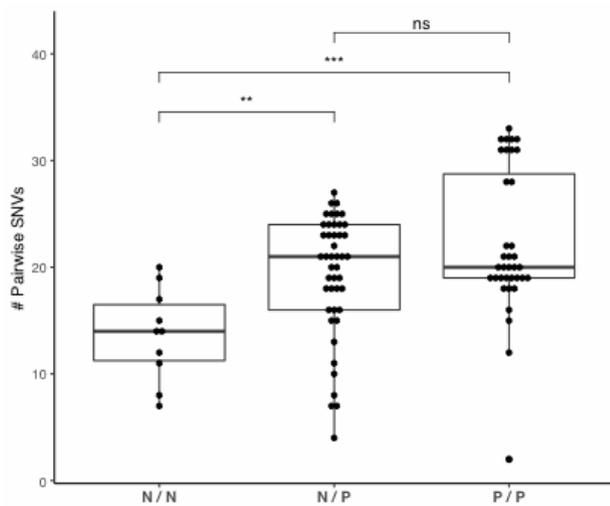


Figure 2: Observed pairwise SNP differences between nosocomial and POA strains



Conclusion. WGS of *C. auris* did not reveal identical isolates in any instance, even from the same patient or the patients and their environment. Generally, lower numbers of SNVs were observed for intra- versus inter-institutional isolates. More work is needed to determine the use, if any, of WGS in outbreak investigations.

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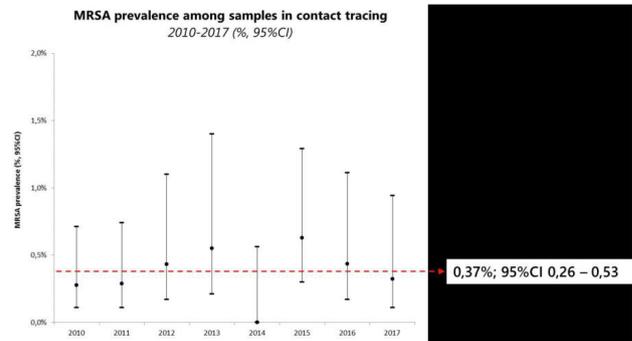
865. Methicillin-resistant *Staphylococcus aureus* (MRSA) prevalence among healthcare workers (HCW) in contact tracings in a Dutch teaching hospital, 2010-2018

Veronica Weterings, weteriv¹; Heidi Kievits, ICP²; Miranda van Rijen, Dr²; Jan Kluytmans, Prof.²; ¹Department of Infection Control, Amphia Hospital, The Netherlands, Breda, Noord-Brabant, Netherlands; ²Department of Infection Control, Amphia Hospital, Breda, The Netherlands; ², Breda, Noord-Brabant, Netherlands

Session: P-40. HAI: Occupational Infection Prevention

Background. In The Netherlands, the national guidelines on MRSA prevention and control advocate screening of HCW after unprotected exposure to MRSA carriers. Although this strategy at large is successful, contact tracing of staff is a time-consuming and costly component. We evaluated our contact tracing policy for HCW over the years 2010 – 2018.

MRSA prevalence among samples in contact tracing



Methods. A retrospective, observational study was performed in a Dutch teaching hospital. All HCW who had unprotected contact with an MRSA carrier were included in contact tracing. When there had been a long period of unprotected admission prior to an MRSA finding, or when the index case was a HCW, than the entire (nursing) team was tested. All samples of HCWs who were tested for MRSA carriage as part of contact tracing from 2010 until 2018 were included. A pooled nose, throat and perineum swab was collected using the eSwab medium (Copan) and inoculated on chromID MRSA agar plates (bioMérieux) after enrichment in a broth.

Results. In total, we included 8,849 samples (range: 677 – 1,448 samples per year) from a total of 287 contact tracings (range: 26 – 55 contact tracings per year). Thirty two HCWs were colonized with MRSA (0.36%; 95%CI 0.26 – 0.51). None of them developed a clinical infection.

Eight HCWs (0.10%; 95%CI 0.05% – 0.19%) were colonized with the same MLVA type as the index case, and were detected in 6/287 contact tracings (2%). In 4/8 of these cases, a positive HCW was the index for undertaking contact tracing. In 3/8 cases it was clear that the HCW who was identified in the contact tracing was the source of the outbreak and was the cause of invasive MRSA infections in patients.

Notably, a different MLVA type as the index case was found in 24 HCWs (0.27%; 95%CI 0.18 – 0.40), of which 7/24 HCW (29.2%) were intermittent carriers.

Conclusion. This study revealed a sustained low MRSA prevalence among samples in contact tracing of healthcare workers, over nine years. Furthermore, it shows that when MRSA contact tracing is performed according to the national guideline only 1 out of 1000 samples results in a secondary case. This is similar to the population carriage rate of MRSA in The Netherlands. More frequently, an unrelated strain is found. These findings raise question marks regarding the efficacy of the current strategy to perform contact tracing after unprotected exposure.

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866. Assessment of Infection Control Training among Healthcare Workers in Three Tertiary Care Public Hospitals, Bangladesh, 2015-17

Md Shariful Amin Sumon, MSc, MPH¹; Shahana Parveen, MSSc¹; Md. Zakiul Hassan, MBBS¹; Md. Reaj Khan Babar, MSS, MPH¹; Kanij Fatima Chanda, MSS¹; Mahmudur Rahman, PhD¹; ¹icddr,b, Dhaka, Dhaka, Bangladesh

Shahana Parveen, Md. Zakiul Hassan, Md. Reaj Khan Babar, Kanij Fatima Chanda, Mahmudur Rahman

Session: P-40. HAI: Occupational Infection Prevention

Background. Hospital-acquired infections (HAI) are a rising global public health concern that disproportionately affects low and middle-income countries. Healthcare workers (HCWs) are the frontline work-stream against HAIs in healthcare settings. As part of a pilot infection prevention and control (IPC) program, we assessed the acceptability of infection control training in practice among HCWs in three public hospitals in Bangladesh to better mitigate HAI risks and occupational exposures.

Methods. We piloted an IPC intervention, as a part of the emergency preparedness, from 2015 to 2017 and IPC training was one of the key components. Trained IPC staff conducted a half-day training session for each three different level HCW groups, doctors, nurses and support staff. The training comprised of instructive method on standard and transmission-based precautions with infection control techniques. A practical demonstration was held followed by hands-on training on hand hygiene steps and mask, gloves use. The participants' attitudes and practices on infection control measures were obtained through structured observation and qualitative interviews.

Training on Infection Control And Prevention with Healthcare workers (Nurses)



Training on Infection Control And Prevention with Healthcare workers (Doctors)



Results. A total of 1562 HCW's participated in the training: 804 doctors, 445 nurses and 313 support staff in 26 training sessions. Majority of the participants (85%) did not receive any formal training earlier on infection control and often provided incorrect responses on basic IPC during interactive session. None of the hospitals had an IPC committee. After the training, we found a significant increase from 0% at baseline to 24% ($p < 0.001$) in hand hygiene including 43% ($p < 0.001$) and 45% ($p < 0.001$) in mask and gloves use respectively. All respondents ($n=84$) from the qualitative assessment, reported the training as highly effective which reinforce their learning in action in the hospitals. Participants from all three groups urged to arrange refresher training more frequently and in small groups to uphold the practices.

Conclusion. This pilot program demonstrated HCWs lack basic IPC principals and tailored IPC training sessions can significantly improve HCWs IPC practice. Formation of active IPC committee could enable arranging periodic refresher and in-service training updates for HCWs with the reallocation of resources to adopt regular IPC practices.

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867. The Scope of a Weekly Infection Control Team Rounding in an Acute-care Teaching Hospital

Se Yoon Park, MD, MSc¹; Hyo-Ju Son, MD²; Seungjae Lee, MD²; Eunjung Lee, MD PhD³; Tae Hyong Kim, MD, PhD⁴; ¹Division of Infectious Diseases, Department of Internal Medicine, Soonchunhyang University Seoul Hospital, Soonchunhyang University College of Medicine, Seoul, Korea, Seoul-t'ukpyolsi, Republic of Korea ²Soonchunhyang University College of Medicine, Seoul, Alabama, Republic of Korea ³Soonchunhyang University Seoul Hospital, Seoul, Korea, Seoul-t'ukpyolsi, Republic of Korea

Session: P-40. HAI: Occupational Infection Prevention

Background. Activities of infection control and prevention are diverse and complicated. Regular and well-organized inspection of infection control is essential element of infection control program. The aim of study was to identify strong points and limitations of weekly infection control rounding (ICTR) in an acute care hospital.

Methods. We conducted weekly ICTR to improve the compliance of infection control in the real field at a 734-bed academic hospital in Republic of Korea. The monitoring team consists of five infection prevention practitioners and four infectious diseases physicians. Total 85 practices of infection control and prevention belonging to the respective category among 9 categories were observed. The result of the rounding are categorized well maintained, improvement is needed, long-term support such as space or manpower is needed, not applicable and could not be observed. We investigated retrospectively the functional coverage of a weekly ICTR from January to December 2018.

Results. During the study period, weekly ICTR were performed total 47 times in 37 departments. ICTR visited median 7 times [interquartile range (IQR) 6-7 times] per department. When visiting a department, ICTR observed median 16 practices (IQR 12-22). During the monitoring period, we could observe 7511 practices in total.

Of those results, Most of the practices (74.8%) were able to be monitored properly by ICTR, while some of the practices were not applicable (21.3%) or difficult to observe through ICTR (3.9%)(Table 1). The most common practices among the difficult-to-observe group belong to strategies to prevent catheter-related or surgical site infection and pneumonia (13%, 68/538), safety injection practices (8%, 65/758), linen and laundry management (7%, 33/496), followed by strategies to prevent occupationally-acquired infection (6%, 37/578).

Table 1.

Table 1. Results of infection control team rounding

Categories of practices	A (%)	B (%)	C (%)	D (%)	E (%)	Total
Hand hygiene	936 (95.6)	46 (4.6)	0	0	18 (1.8)	1000
Safety injection practice	664 (75.0)	28 (3.2)	1 (0.1)	127 (14.4)	65 (7.3)	885
Isolation	391 (57.5)	12 (1.8)	0 (0)	262 (38.5)	15 (2.2)	680
Strategies to prevent occupationally acquired infection	506 (80.6)	35 (5.6)	0	0	37 (5.9)	628
Practice to prevent catheter-related (central, urine catheter) or surgical site infections and pneumonia	451 (48.6)	19 (2.0)	0 (0)	390 (42.0)	68 (7.3)	928
Decontamination, disinfection, and sterilization	1349 (69.6)	128 (6.6)	12 (0.6)	388 (20.0)	61 (3.1)	1938
Linen and laundry	451 (78.7)	33 (5.8)	6 (1.0)	77 (13.4)	6 (1.0)	573
Environmental prevention of infection	403 (68.1)	24 (4.1)	0	142 (24.0)	23 (3.9)	592
Maintain negative/positive pressure	57 (25.0)	6 (2.6)	0	165 (72.4)	0	228
Total	5208 (69.9)	331 (4.4)	19 (0.3)	1601 (21.5)	293 (3.9)	7452

A: "well maintained", B: "improvement is needed", C: "long-term support such as space or manpower is needed", D: "not applicable" and E: "could not be observed."

Conclusion. ICTR has strength in regular visits to each department. However, additional observation is necessary, especially for prevention of catheter-related infection and surgical site infection.

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868. Investigations of Healthcare-Associated *Elizabethkingia* Infections – United States, 2013-2019

Matthew B. Crist, MD, MPH¹; John R. McQuiston, B.S, MS, PhD¹; Maroya Spalding Walters, PhD, ScM²; Elizabeth Soda, MD³; Heather Moulton-Meissner, PhD¹; Ainsley Nicholson, PhD⁴; Kiran Perkins, MD, MPH¹; ¹Centers for Disease Control and Prevention, Atlanta, Georgia; ²U.S. Centers for Disease Control and Prevention, Atlanta, Georgia; ³Centers for Disease Control and Prevention, Atlanta, Georgia; ⁴NCEZID/DHCPP/BSPB/SBRL, Atlanta, Georgia

Session: P-41. HAI: Outbreaks

Background. *Elizabethkingia* (EK) are non-motile gram-negative rods found in soil and water and are an emerging cause of healthcare-associated infections (HAIs). We describe Centers for Disease Control and Prevention (CDC) consultations for healthcare-associated EK infections and outbreaks.

Methods. CDC maintains records of consultations with state or local health departments related to HAI outbreaks and infection control breaches. We reviewed consultations involving EK species as the primary pathogen of concern January 1, 2013 to December 31, 2019 and summarized data on healthcare settings, infection types, laboratory analysis, and control measures.

Results. We identified 9 consultations among 8 states involving 73 patient infections. Long-term acute-care hospitals (LTACHs) accounted for 4 consultations and 32 (43%) infections, and skilled nursing facilities with ventilated patients (VSNFs) accounted for 2 consultations and 31 (42%) infections. Other settings included an acute care hospital, an assisted living facility, and an outpatient ear, nose, and throat clinic.

Culture sites included the respiratory tract ($n=7$ consultations), blood ($n=4$), and sinus tract ($n=1$), and *E. anophelis* was the most commonly identified species. Six consultations utilized whole genome sequencing (WGS); 4 identified closely related isolates from different patients and 2 also identified closely related environmental and patient isolates.

Mitigation measures included efforts to reduce EK in facility water systems, such as the development of water management plans, consulting water management specialists, flushing water outlets, and monitoring water quality, as well as efforts to minimize patient exposure such as cleaning of shower facilities and equipment, storage of respiratory therapy supplies away from water sources, and use of splash guards on sinks.

Conclusion. EK is an important emerging pathogen that causes HAI outbreaks, particularly among chronically ventilated patients. LTACHs and VSNFs accounted for the majority of EK consultations and patient infections. Robust water management plans and infection control practices to minimize patient exposure to contaminated water in these settings are important measures to reduce infection risk among vulnerable patients.

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869. Outbreak of Vancomycin Resistant *Enterococcus faecium* (VREfm) in a Hematology Unit Identified Through Whole Genome Sequencing

Gayathri Krishnan, MD¹; Zulema Udaondo, PhD²; Se-Ran Jun, PhD¹; Atul Kothari, MD¹; ¹University of Arkansas for Medical Sciences, Little Rock, Arkansas; ²UAMS, Little Rock, Arkansas