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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

Background. Acute respiratory illnesses are the leading cause of death from infectious diseases around the world, and occasional outbreaks of particularly virulent strains are can be public health disasters. Recently, a large outbreak of fatal Middle East respiratory syndrome-coronavirus (MERS-CoV) occurred following a single patient exposure in the emergency department (ED) of the Samsung Medical Center, a tertiary-care hospital in South Korea, which resulted in significant public health and economic burden.

After this outbreak, a febrile respiratory infectious disease unit (FRIDU) with a negative pressure ventilation system was constructed outside the emergency department (ED) in 2015, to screen for patients with contagious diseases requiring isolation.

Methods. This is a retrospective cohort study of patients who visited the ED with febrile illness between August 2015 and July 2016. Ultimately, 1562 patients who were hospitalized after FRIDU screening were analyzed. The level of isolation recommended during their screening at the FRIDU was compared with the level deemed appropriate given their final diagnosis.

Results. Of the 1562 patients screened at the FRIDU, 198 (13%) were isolated, 194 (12%) were reverse isolated, and 1170 (75%) were not isolated. While hospitalized, 97 patients (6%) were confirmed to have a contagious disease requiring isolation, such as tuberculosis; 207 patients (13%) were confirmed to be immunocompromised and to require reverse isolation, mainly due to neutropenia; and the remaining 1258 patients (81%) did not require isolation.

The correlation coefficient for isolation consistency was 0.565 ($P < 0.001$). No serious nosocomial outbreaks of contagious diseases occurred. During FRIDU screening, 114 patients were admitted to the resuscitation zone due to clinical instability, and three of these patients died.

Conclusion. The initial isolation levels resulting from FRIDU screening were moderately well correlated with the isolation levels required by the final diagnosis, demonstrating the utility of pre-hospitalization screening units. However, the risks of deterioration during the screening process remain challenges.

Disclosures. **All authors:** No reported disclosures.

493. Quantitative Assessment of the Bioburden of High-Touch Environmental Surfaces in Pediatric Operating Rooms

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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

Background. Previous studies have linked healthcare-associated infections to bacterial pathogens in the operating room (OR) environment. The purpose of this study was to determine the bioburden on OR surfaces to guide future quality improvement efforts and optimize OR cleanliness.

Methods. This study was performed in the pediatric ORs of a 200-bed, academically affiliated, children's hospital with ~6000 general and subspecialty surgical procedures annually. Immediately after cases were finished, but prior to cleaning, the 3M Clean-Trace Clinical Hygiene Monitoring System was used to quantify bioburden (in surface ATP concentration) on 24 surfaces in each of 8 ORs. These 24 surfaces were previously identified by the Association of periOperative Registered Nurses as high-touch surfaces and various disciplines are responsible for their cleaning. Each OR was sampled 1–4 times. A surface passed the test of cleanliness if the result was <250 relative light units (RLUs).

Results. In all, 364 surfaces were tested. The median RLUs were <250, 250–850, and >850 RLUs for 7, 11, and 6 surfaces, respectively. Of the 24 surfaces tested, all demonstrated bioburden ≥250 at least once. Median RLUs for each surface ranged from 39-2282 and median RLUs for each OR ranged from 196 to 1534. The highest bioburden occurred following cardiac surgery (median 1534, range 24-13275 RLU) and the lowest bioburden occurred after neurosurgery (median 196, range 23-2475 RLU). The surfaces with the highest bioburden were the anesthesia keyboards (median 2282, range 347-38376 RLU) and core door handles (median 1471, range 140–6788 RLU) and those with the lowest bioburden were the Mayo stand (median 39, range 19-765 RLU) and back table (median 39, range 17-406 RLU).

Conclusion. ATP testing demonstrated that most OR surfaces were contaminated with organic material. While OR surfaces prior to cleaning are expected to be contaminated, these data highlight the importance of cleaning/disinfection. These findings are being used to develop educational tools and interventions for the interdisciplinary OR team, which will focus on delineation of cleaning responsibilities, the use of appropriate cleaning products, and audits of end-of-case cleaning and terminal cleaning.

Disclosures. **All authors:** No reported disclosures.

494. Shedding of Methicillin-Resistant *Staphylococcus aureus* (MRSA) by Hospitalized Patients during Procedures

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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

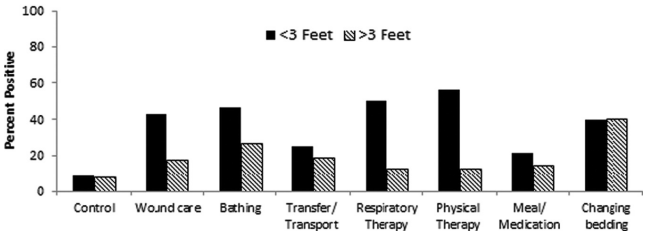
Background. Contaminated environmental surfaces contribute to transmission of healthcare-associated pathogens such as methicillin-resistant *Staphylococcus aureus* (MRSA). We hypothesized that medical and non-medical procedures facilitate environmental dissemination of MRSA in hospitalized patients.

Methods. We conducted an observational cohort study of hospitalized MRSA-colonized patients to determine the frequency of and risk factors for environmental shedding during procedures. Prior to each procedure, surfaces in the room and portable equipment used for procedures were disinfected. After procedures, high-touch surfaces and portable equipment were cultured; negative control cultures were collected after 1 hour in the absence of a procedure. Bivariate analyses were performed to identify factors associated with environmental shedding.

Results. Of 55 MRSA colonized patients, 22 (40%) had wounds and 25 (46%) had positive skin cultures. Environmental cultures were collected after 138 total procedures (range, 2 to 12 per patient). As shown in the figure, contamination of surfaces occurred frequently during procedures, but was uncommon in the absence of a procedure. Contamination occurred frequently on surfaces touched by personnel during procedures (12 of 38, 32% positive) and on portable equipment used for procedures (25 of 101, 25%). The presence of a wound was the only factor significantly associated with shedding (59% vs. 26%; $P = 0.04$).

Conclusion. Environmental shedding of MRSA occurs frequently during medical and non-medical procedures in hospitalized patients. Our results suggest that there is a need for effective strategies to disinfect surfaces and equipment after procedures.

Figure. Shedding of MRSA to high-touch surfaces during procedures



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495. Successful Environmental Disinfection to Prevention Transmission of Candida Auris

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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

Background. *Candida auris* is a globally-emerging, multidrug-resistant yeast causing invasive infections and can persist on environmental surfaces if not adequately disinfected. Last summer, two patients with *C. Auris* infections were admitted at University of Chicago Medicine (UCM). Environmental samples were collected to assess environmental contamination before and after cleaning.

Methods. Environmental samples were collected using 3M Sponge Sticks with neutralizing Buffer during one patientÕs stay, weeks after another patientÕs stay, and after enhanced terminal cleaning. Samples were cultured directly and yeast was identified using MALDI. The following surfaces were sampled: Bathroom sink drain, bedside table, bedrail, mattress, chair and window ledge. Routine terminal cleaning includes 10% sodium hypochlorite solution applied high touch surfaces of both room and bathroom. The enhanced terminal cleaning process used for these rooms included: (1) 10% sodium hypochlorite solution applied to all high touch surfaces and walls; (2) privacy curtains removed and replaced; (3) supervision by environmental services manager; and (4) single UV disinfection cycle in room and bathroom.

Results. Because of delay in identification of *C auris* for the first patient, pre-clean samples were taken >2 weeks after the patient had been discharged. During the intervening weeks, multiple patients had occupied the room and there had been >3 routine terminal cleanings. None of these samples were positive for *C auris*. Pre-clean, in-residence samples indicated *C auris* contamination of multiple surfaces for the second patient. Because of transfers within the institution, there are three sets of post-cleaning

cultures for the second patient. All post-clean environmental cultures were negative for both patients. Results are shown in Figure 1.

Conclusion. *Candida auris* can contaminate environmental surfaces. While routine terminal cleaning may have been effective in removing *C auris* from surfaces in one patientÕs room, the enhanced terminal cleaning strategy used here was effective in our facility.

Environmental Samples

Source	Direct culture growth (Y/N)	Species ID
Bathroom sink drain pre-clean	N	n/a
Bedside table pre-clean	N, broth	C. auris by MALDI
Bed rail pre-clean	N, broth	C. auris by MALDI
Mattress pre-clean	Y	C. auris by MALDI
Chair pre-clean	N, broth	C. auris by MALDI
Window ledge pre-clean	Y	C. auris by MALDI
Bathroom sink drain post-clean	N	n/a
Bedside table post-clean	N	n/a
Bed rail post-clean	N	n/a
Mattress post-clean	N	n/a
Chair post-clean	N	n/a
Window ledge post-clean	N	n/a
Bathroom sink drain post-clean	N	n/a
Bedside table post-clean	N	n/a
Bed rail post-clean	N	n/a
Mattress post-clean	N	n/a
Chair post-clean	N	n/a
Window ledge post-clean	N	n/a
Bathroom sink drain pre-clean	N	n/a
Bedside table pre-clean	N	n/a
Bed rail pre-clean	N	n/a
Mattress pre-clean	N	n/a
Chair pre-clean	N	n/a
Window ledge pre-clean	N	n/a
Bathroom sink drain post-clean	N	n/a
Bedside table post-clean	N	n/a
Bed rail post-clean	N	n/a
Mattress post-clean	N	n/a
Chair post-clean	N	n/a
Window ledge post-clean	N	n/a
Bathroom sink drain post-clean	N	n/a
Bedside table post-clean	N	n/a
Bed rail post-clean	N	n/a
Mattress post-clean	N	n/a
Chair post-clean	N	n/a
Window ledge post-clean	N	n/a

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496. Impact of a Copper-Infused Countertop Material on the Bacterial Surface Burden: Results of a Field and Laboratory Study

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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

Background. Antimicrobial surfaces have become a promising technology of integrating additional safeguards into hospitals' fight against Healthcare Associated Infections (HAIs). This study assesses the potential benefits of copper-infused countertops compared with standard, laminated surfaces.

Methods. The efficacy of a novel surface material in reducing the bacterial load was tested in a Neuro ICU (copper surface, intervention) and a Surgical ICU (laminated surface, control) during routine care (field test). Surfaces were cleaned following standard hospital protocol. After bleach cleaning of 5 high touch areas, pre-moistened swab samples were taken immediately, at 2 hours, and at 4 hours, for a total of 680 surface samples in 46 patient rooms. After incubation on blood agar plates, colony forming units (CFU) were documented. In a separate laboratory test, copper and laminated surfaces were inoculated with *S. Aureus* and the bacterial load was measured as described. Pre-treatment of the copper counter top followed manufacturer recommendation (light buffing with 365 grit sandpaper every 24 hours) or hospital-approved disinfection policy. Count numbers at the different time points for the surfaces were analyzed.

Results. In the field test, no statistically significant differences in bacterial surface burden were noted between the intervention and control unit at the three time points (RR = 1.6 (0.5–5.0); P = 0.4210). In the lab test, significant reductions in CFU across all surfaces were observed after 2 hours (>50%; $P < 0.05$). Light buffing led to the highest reduction in CFU (>99%; $P < 0.05$). After 4 hours the laminated surface showed further significant reduction (>93%;$P < 0.05$). However, CFU on the copper surface treated with standard disinfectant did not change ($P < 0.05$).

Conclusion. The copper surface significantly reduces the bacterial burden if reactivated by light buffing with sandpaper in a lab test. Not following manufacturer recommendation will lead to similar (field) or even higher bacterial burden (lab) compared with standard laminated surfaces. Before implementation, considerations should be given to the increased workload due to daily surface reactivation, the potential of fine particle exposure, and the higher product costs.

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497. Mold Contamination Due to Construction Dust in Ventilation System Detected During Routine Pre-commissioning Air Sampling

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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

Background. Outbreaks of invasive mold infection associated with active construction sites are well documented in the literature. We routinely perform air sampling for mold prior to opening all new inpatient and high-risk outpatient units. Historically this practice led to early identification of an outbreak linked to a contaminated ventilation system. Based on our experience, we clean areas 3 times, wait at least 8h then sample. We describe the results of air sampling during the commissioning of our new Labor and Delivery unit and the identification of the source of fungal contamination.

Methods. Fungal cultures were obtained throughout the unit using a two stage viable Andersen Cascade Impactor loaded with Sabouraud dextrose with chloramphenicol and gentamicin agar (BBL, BD, Sparks MD). Additional surface cultures were obtained using a 3M Sponge stick with neutralizing buffer (3M Healthcare, St Paul MN) and inoculated onto the same media. Plates were incubated for 10 days and mold colonies were counted and identified by standard methods.

Results. Initial samples in several rooms were positive for mold, suggesting more detailed cleaning was needed. Continued positives, including in previously negative rooms, prompted further investigation. No leaks or moisture were found. Construction dust was found in the supply plenum and ducts. We discovered that during construction the ventilation system was on allowing air from the unit to recirculate. The contractor assumed the filters would remove any dust, but the filters were not gasketed and a failed duct seam was found above the rooms with highest contamination. After replacement of filters and cleaning of all ductwork, one OR remained positive. Swabs of the laminar flow diffuser grew mold. After cleaning, final samples were all negative for mold.

Conclusion. A complete understanding of air flow and filtration capability during construction is critical to maintaining a healthy environment. Routine air sampling before opening new units identifies mold contamination and allows for remediation prior to occupancy by patients.

Disclosures. **All authors:** No reported disclosures.

498. Does Pulsed-Xenon Ultraviolet Disinfection Add Additional Value to Manual Cleaning?

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Session: 58. HAI: The Environment
Thursday, October 5, 2017: 12:30 PM

Background. Novel disinfection tools have been used to supplement standard hospital cleaning protocols. This study was conducted to determine whether the addition of Pulsed Xenon Ultraviolet disinfection (PX-UV) increased the effectiveness of manual cleaning with four different environmental cleaning and disinfecting agents and how their performance compared with the industry standard of sodium hypochlorite 10%.

Methods. Research staff collected 600 pre-clean, post-clean, and post-clean + PX-UV environmental samples of aerobic bacterial colonies (ABC) and MRSA from five high touch surfaces (bedrail, call button, toilet seat, bathroom grab rail, tray table). The PX-UV device was used three times - one 5 minute cycle on each side of the patient bed and one 5 minute cycle in the restroom.

Results. Wilcoxon signed-rank tests showed post-clean ABC counts were significantly different from post-clean + PX-UV clean counts for soap and water ($P < 0.001$), quaternary ammonium compound ($P < 0.001$), and hydrogen peroxide ($P < 0.001$), but not for sodium hypochlorite 10% ($P = 0.78$). A negative binomial mixed regression