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

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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 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 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.

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 reductions in CFU (>99%; P < 0.05). After 4 hours the laminated surface showed further significant reductions (>99%; P < 0.05). However, on the copper surface treated with standard disinfectant did not change (P < 0.05).

Conclusion. Copper-infused surfaces significantly reduce the bacterial burden if reactivated by light buffing with sandpaper in a lab test. Not following manufacturer recommendations 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.

Disclosures. All authors: No reported disclosures.

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

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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 (BBI, 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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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
model showed that post-clean + PX-UV ABC counts for Soap and water were 8.6 times higher than post-clean ABC counts for sodium hypochlorite 10% solution, holding all other factors constant, P = 0.001. Post-clean ABC counts for QAC + UV were 6 times higher than post-clean ABC counts for sodium hypochlorite 10% solution, holding all other factors constant, P = 0.004. A Kruskal–Wallis test indicated there was no statistically significant difference in MRSA counts between cleaning chemicals at post-clean (P = 0.1563) or post-clean + UV (P = 0.337), indicating that the cleaning chemicals performed equally well at each stage. UV further statistically significantly lowered MRSA counts beyond the post-clean level only for the quaternary ammonium compound group (P = 0.0073).

Conclusion. The addition of PX-UV significantly improves disinfection for soap and water, hydrogen peroxide, and quaternary ammonium compound, but not for sodium hypochlorite 10%. This improvement does not bring microbial levels to those seen when using sodium hypochlorite 10% alone.

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499. National Survey of Environmental Cleaning Among Thai Hospitals Anucha Apsitvanhanak, MD1; David Ratiz, MS2; Sanjay Sainit, MD, MPH3; Thana Khawcharoenporn, MD, MS4; David J. Weber, MPH, FIDSA, FSHEA5 and M. Todd Greene, PhD, MPH6; Department of Medicine, Faculty of Medicine, Thammasat University, Pathumthani, Thailand, 7Center for Clinical Management Research, Veterans Affairs Ann Arbor Healthcare System, Ann Arbor, Michigan, 8Rush University Medical Center, Chicago, Illinois, 9Medicine, Pediatrics, Epidemiology, University of North Carolina, School of Public Health, Chapel Hill, North Carolina, 10Department of Internal Medicine, Division of General Medicine, University of Michigan Medical School, Ann Arbor, Michigan

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Background. We evaluated the practices used by Thai hospitals to clean/disinfect the hospital environment and identified factors associated with adherence to environmental cleaning/disinfection (ECD) practices.

Methods. From 1 January 2014 to 30 November 2014, we surveyed all Thai hospitals with >250 beds and an intensive care unit. We assessed whether hospitals had implemented protocols and checklists for ECD within patient care areas, the use of ECD audits, and the adherence of ECD checklists and protocols (high adherence defined as ≥75%). Multivariable regression was used to examine associations between hospital characteristics and existence of ECD protocols and checklists together with adherence levels.

Results. A total of 212 (86.5%) of 245 eligible hospitals responded. Overall, 90.6% (192/212 hospitals) implemented an ECD protocol, 55.2% (117/212) implemented an ECD checklist, and 43.4% (92/212) audited ECD adherence. Where implemented, high adherence to ECD protocols and checklists was documented in 57.1% (192/212 hospitals) implemented an ECD protocol, 55.2% (117/212) implemented an ECD checklist, and 57.3% (67/117), respectively. The presence of a hospital epidemiologist was associated with implementing an ECD checklist (OR = 2.4; P = 0.01) and conducting ECD audits (OR = 3.2; P = 0.001). Strong hospital administration support for the infection control program was associated with high adherence to implemented ECD protocols (OR = 5.4; P < 0.001) and checklists (OR = 3.7; P = 0.005).

Conclusion. While most Thai hospitals have implemented ECD protocols and checklists, adherence to ECD protocols and checklists, and conducting ECD audits remain suboptimal. Our study supports the role of a hospital epidemiologist and administrative support to enhance the ECD practices in this middle income country.

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501. Infection Prevention and Control Education for Environmental Services Workers (ESW); "Cleaner is Safer – ESW on the Front-line of Infection Prevention" Elena Martin, BS1; Elizabeth Salgiver, MPH1; Matthew S. Simon, MD, MSc2; William Greendyke, MD3; James Gramstad, MBA4; Angel Tejeda, BA5; Roy Weeks, BA6; Timothy Woodward, BS6; Lisa Saitman, MD, MPH1; E. Yoko Furuya, MD, MSc7 and David Callie, MD, MS8; Weill Cornell Medicine, New York, New York, "NewYork-Presbyterian Hospital, New York, New York, "Columbia University Medical Center, New York, New York, "Columbia Presbyterian Medical Center, New York, New York

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Background. Studies suggest that improving environmental cleaning and disinfection reduces pathogen transmission and prevents healthcare-associated infections (HAIs). We designed and administered an educational program for hospital ESW based on findings from a 2015 knowledge, attitudes, and practices survey.

Methods. An interactive 5-part educational program was given to front-line ESW at 5 acute care hospitals from 7/16 to 3/17 using principles of adult learning theory. Audience response system (ARS), videos, demonstrations, role-playing, and graphic was used to illustrate concepts and emphasize the rationale for HAI prevention strategies. Topics included HAIs, hand hygiene, isolation precautions, personal protective equipment, daily and discharge cleaning, and strategies to overcome common cleaning barriers. Evaluation included ARS questions, written examination, and assessment of daily cleaning before and after education using the 3M™ Clean-Trace™ Hygiene Management System. Clean surfaces were those with <250 relative light units detected. Chi-square tests were performed, where appropriate.

Results. On average, 357 (range: 303-391) ESW attended each of the 5 program components. Most participants rated the presentations as ‘excellent’ or ‘very good’ (93%) and agreed they were useful (95%). After the program, participants indicated they were more comfortable donning/dofting PPE (91%), performing hand hygiene (96%), and better understood the importance of disinfecting high-touch surfaces