Methods. This study was conducted in the intensive care unit (ICU) of Yamagata University Hospital, a 637-bed tertiary referral hospital. The ICU has six rooms and beds. In the baseline period (August 2016 to January 2018), all rooms were manually cleaned after every patient transfer/discharge. In the intervention period (February 2018 to February 2019), PX-UV disinfection was added after the manual cleaning. In both periods, all patients were screened for MRSA and two drug-resistant *Acinetobacter baumannii* (2DRA) to detect acquisition of those pathogens in the ICU. For microbiological evaluation, surfaces were selected for sampling by contact plates before/after manual cleaning and after PX-UV. After overnight incubation, colonies on the plates were counted.

Results. The incidence of newly acquired MRSA declined over time (1.40 per 1,000 patient-days in the baseline period to 0.95 in the intervention period, relative risk (RR): 0.68, 95% confidence interval (CI): 0.12–3.70). The incidence of newly acquired 2DRA further declined (4.91 to 1.90, RR: 0.39, 95% CI: 0.13–1.18). Notably, no new acquisition of 2DRA was observed since August 2018 for more than 7 months, not only in the ICU but also throughout the hospital. The total count of colonies in the sampling of 140 sites after 17 patient discharges were 3,540 (before manual cleaning), 669 (after manual cleaning, before PX-UV) and 261 (after PX-UV). The percent reduction of microbiological burden by manual cleaning was 81%, but a further 61% reduction was achieved by PX-UV.

Conclusion. PX-UV is effective in further reducing the microbial burden even after through manual cleaning, which presumably led to termination of transmission of 2DRA in our hospital. The effectiveness of PX-UV in controlling MDROs in the non-US healthcare settings is suggested.

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

1215. Ultraviolet-C (UV-C) Monitoring Made Ridiculously Simple: UV-C Dose Indicators for Convenient Measurement of UV-C Dosing

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Session: 146. HAI: Environment
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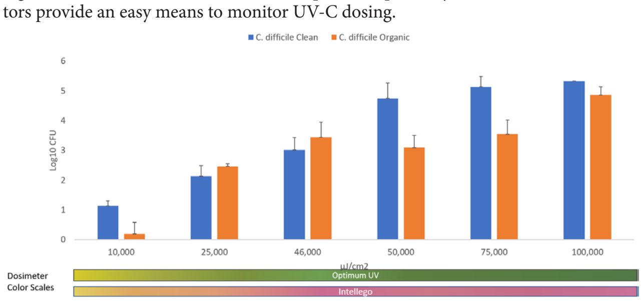
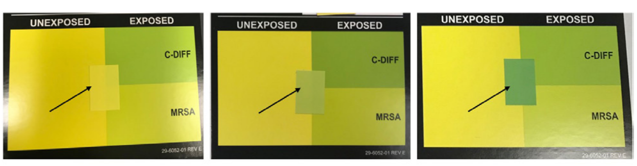
Background. Ultraviolet-C (UV-C) light is increasingly used as an adjunct to standard cleaning in healthcare facilities. However, most facilities do not have a means to measure UV-C to determine whether effective doses are being delivered. We tested the efficacy of 2 easy-to-use colorimetric indicators for monitoring UV-C dosing in comparison to log reductions in pathogens.

Methods. In a laboratory setting, we exposed methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* spores on steel disk carriers with or without an organic load (5% fetal calf serum) to UV-C for varying times resulting in fluence exposures ranging from 10,000 to 100,000 µJ/cm². The UV-C indicators were placed adjacent to the carriers. Log reductions were calculated in comparison to untreated controls and the change in color of the indicators was correlated with dose and log reductions.

Results. The UV-C doses required to achieve a 3-log reduction in MRSA and *C. difficile* were 10,000 and 46,000 µJ/cm², respectively. For both indicators, there was a visible color change from baseline at 10,000 µJ/cm² and a definite final color change by 46,000 µJ/cm² (Figure 1). Organic load had only a modest impact on UV-C efficacy. The indicators required only a few seconds to place and were easy to read (Figure 2).

Conclusion. UV-C doses of 10,000 and 46,000 µJ/cm² were required to achieve 3 log reductions of MRSA and C. difficile spores, respectively. The colorimetric indicators provide an easy means to monitor UV-C dosing.





No exposure 10,000 µJ/cm² 46,000 µJ/cm²

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

1216. A Novel Antimicrobial Surface Coating Demonstrates Persistent Reduction of both Microbial Burden and Healthcare-Associated Infections at Two High-acuity Hospitals

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Session: 146. HAI: Environment
Friday, October 4, 2019: 12:15 PM

Background. Healthcare-Associated Infections (HAIs) pose substantial risks to patients and hospitals. Surface disinfection practices in hospitals have limited efficacy because surfaces are frequently and easily re-contaminated. A need for innovative technologies to address these challenges exists. One such innovation is a novel antimicrobial surface coating with potential to persistently reduce environmental bacterial load. Here, we use a multicenter, nonrandomized, controlled, pre-post study design to assess the impact of an antimicrobial surface coating on environmental bioburden and HAIs at two high acuity hospitals.

Methods. An antimicrobial surface coating was applied via electrostatic spray to patient rooms and common areas in three selected units at each hospital. Quantitative surface cultures were sent to an independent microbiology laboratory pre- and 11-weeks post-application to identify total bacterial colony-forming units (CFU). HAI outcomes from treatment and contemporaneous control units were assessed using National Healthcare Safety Network protocols for multidrug-resistant organism bloodstream infections (MDRO-BSI) and *Clostridium difficile* infections (CDI). We used Poisson regression models to compare HAI rates for treated and untreated units for 12-months before and after application of surface coating.

Results. Both hospitals showed statistically significant decreases in total bacterial CFU following application of the antimicrobial surface coating (64% and 75% decreases in Hospitals A and B, respectively, $P < 0.0001$). Across both hospitals, there was a 36% decline in pooled HAIs (hospital-onset MDRO-BSI + CDI) following application of surface coating in treated units (IRR = 0.64, 95% CI = 0.44–0.91), and no decline in HAIs over the same period in nontreated units (IRR = 1.20, 95% CI = 0.92–1.55).

Conclusion. Significant and persistent reductions in both microbial burden and associated HAIs occurred in units where surfaces were treated with antimicrobial surface coating, suggesting the potential for improved patient outcomes and reduced healthcare costs. Optimal implementation methods and long-term impact should be assessed with further study of this novel environmental control intervention.

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

1217. Predicting the Efficacy of an Antimicrobial Surface Coating Utilizing X-Ray Fluorescence Spectroscopy (XRF)

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Session: 146. HAI: Environment
Friday, October 4, 2019: 12:15 PM

Background. Contaminated surfaces are a critical risk factor for transmitting infectious disease. Current disinfection products provide short-term antimicrobial action; however, these surfaces can be re-contaminated within hours after cleaning. To address this limitation, long-lasting antimicrobial polymer coatings have been developed as an adjunct to traditional disinfecting and cleaning protocols. Due to the micro-scale thickness and transparency of the coating, confirmation of its presence on surfaces is difficult with conventional methods; therefore, this study explores a novel approach to measuring durable polymer coatings on stainless steel coupons to validate their presence and relative antimicrobial activity.

Methods. In this study, we utilized a hand-held X-ray fluorescence spectroscopy (XRF) analyzer to quantitatively evaluate the amount of antimicrobial polymer coating deposited on stainless steel test surfaces. Stainless steel surfaces with amounts of coating ranging from 0.12 to 3.60 mg/in.² were analyzed for their XRF profile using a hand-held spectrometer. Additionally, the relationship between the XRF spectra and antimicrobial activity was evaluated using a modified version of an existing sanitization protocol for hard surfaces using *Staphylococcus epidermidis* as the test organism.

Results. Comparison of the amount of antimicrobial polymer coating (in mg) and the XRF values (photon count) revealed a calibration curve with a high degree of linearity ($R^2 = 0.993$) especially for surfaces that had lower mass (Figure 1). In addition, the relationship between XRF values and antimicrobial efficacy also were found to be well-correlated with a logarithmic trend ($R^2 = 0.9308$) (Figure 2).

Conclusion. The observed trends between coating mass, XRF value and antimicrobial efficacy suggests that these analytical techniques are viable options for determining the presence of invisible antimicrobial polymer coatings. Additionally, laboratory-based calibration curves based on XRF values can be used to predict the level of antimicrobial activity of surfaces that have been treated with polymer coatings. These findings suggest that the use of a hand-held XRF spectrometer can be a rapid and cost-effective method for assessing the presence and efficacy of polymer coatings.