The indicators required only a few seconds to place and were easy to read (Figure 2). A visible color change from baseline at 10,000 µJ/cm² and a definite final color change at 46,000 µJ/cm² were required to achieve 3 log reductions in MRSA and C. difficile spores, respectively. The colorimetric indicators provide an easy means to monitor UV-C dosing.

Conclusion. PX-UV is effective in further reducing the microbial burden even after thorough 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.

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

Sean P. Elliott, MD; Katherine Ellingson, PhD; Kristen Pogebr-Brown, PhD; Charles P. Gerba, PhD; University of Arizona; College of Medicine, Tucson, Arizona; University of Arizona College of Public Health, Tucson, Arizona; University of Arizona, Tucson, Arizona

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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 handheld 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/in² were analyzed for their XRF profile using a handheld spectrometer. Additionally, the relationship between the XRF spectra and antimicrobial activity was evaluated using a modified version of an existing sanitation 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 handheld XRF spectrometer can be a rapid and cost-effective method for assessing the presence and efficacy of polymer coatings.