1153. UV-C Technology Is an Effective Adjunct to Terminal Cleaning in Environmental Pathogen Reduction in a Tertiary Pediatric Hospital

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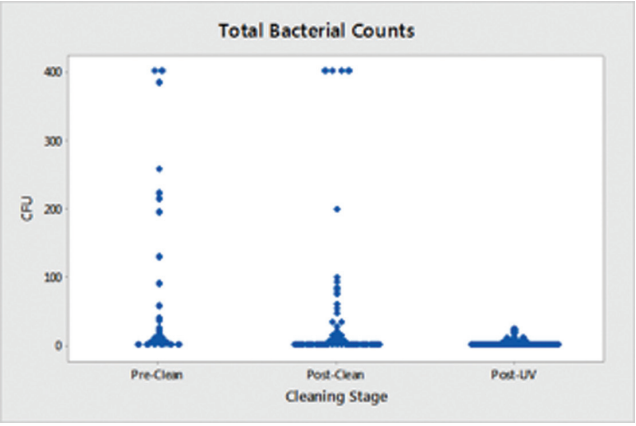
Background. Effective environmental surface cleaning plays a vital role in reducing transmission of hospital-acquired infections. There remains a paucity of data in the pediatric literature regarding environmental pathogen reduction utilizing UV-C light. The objective of this study was to evaluate the reduction of environmental pathogens using UV-C light (Clorox Optimum-UV) as an adjunct to terminal cleaning in a free-standing tertiary pediatric hospital.

Methods. Upon patient discharge, a subset of patient rooms were tested for pathogens. Surface swabs were collected from high touch surfaces (call button, telemetry monitor, door handle, flush handle of toilet, faucet, bed rail, phone, keyboard pad, mouse, side table, dresser, and light switch). After terminal cleaning of the room, per hospital protocol the Clorox Optimum-UV completed one or two cycles of 5 minutes each depending on the dimensions of the room. Post-UV-C surface swabs were obtained from the same high touch areas in the room. Total colony count was reported from each of the surfaces swabbed. Swabs were streaked onto non-selective agar and incubated at 30-35°C for 72–96 hours. Mean plate colony count was determined manually and reported as CFU/swab. Data analysis was performed in Minitab 18.1. Fisher least significant difference (LSD) test was used to describe the difference between total bacterial counts at each time point (Pre-clean: dirty room, Post-clean: pre-UV-C/post-terminal clean, Post-UV: post UV-C light cycle).

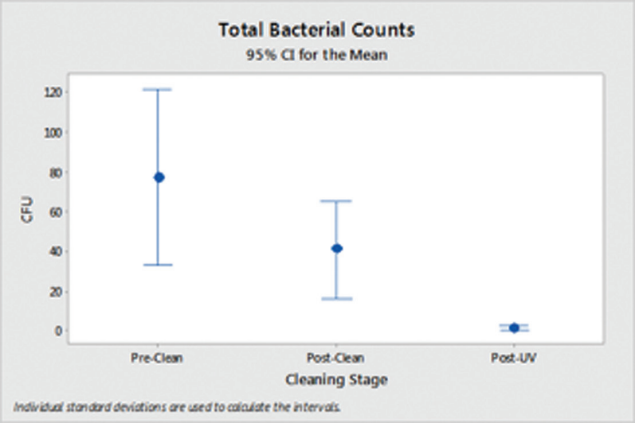
Results. Mean total colony counts prior to cleaning the room was 92.3 CFU (33 surfaces), Pre-UV-C light 45.6 CFU and post-UV-C light 5.8 CFU (64 surfaces). Total bacterial counts are represented in Graphs 1 and 2. Upon multivariate analysis, the time the sample was taken (preclean, postclean, or post-UV) was the single explanatory variable for the differences seen in the means of total bacterial counts ($P = 0$).

Conclusion. Our study demonstrates that UV-C disinfection is a highly effective adjunctive cleaning method with standard terminal cleaning to reduce bacterial burden from environmental surfaces.

Graph 1: Total Bacterial Counts (CFU) at each timepoint of surface sampling.



Graph 2: Total Bacterial Counts (CFU) with 95% Confidence Intervals at each timepoint of surface sampling.



Disclosures. **A. Lucas**, Clorox: Research Contractor, Grant recipient. **M. Nayakwadi Singer**, Clorox: Grant Investigator, Grant recipient.

1154. Comparison of Five Testing Modalities for the Assessment of Patient Environment Cleanliness

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Background. Microbial contamination of the patient environment has been associated with healthcare-associated infections. Objective assessment of environmental cleanliness is recommended by the CDC to identify improvement opportunities. Methods currently used to assess cleanliness and microbial dynamics differ in their sensitivity, specificity, cost, ease of use, and turnaround time. We compared five assessment methods to examine these characteristics.

Methods. The bedrail, overbed table, remote control, and toilet seat in occupied patient rooms were sampled and assessed with: adenosine triphosphate (ATP) luminescence technology (LT), Replicate Organism Detection And Counting (RODAC) plates, C diff Banana Broth™ (CDBB), conventional aerobic culture (CC) and antimicrobial susceptibility testing, and shotgun next-generation sequencing (NGS) and analysis using metagenomic software.

Results. One hundred forty surfaces from 35 rooms were sampled. Of 70 surfaces sampled by both ATP LT and RODAC, 42 (60%) had concordant "pass" or "fail" results. Of 28 discordant samples, 26 (93%) passed by RODAC but failed by ATP LT. CDBB testing identified *Clostridioides difficile* on two surfaces in one room; *C. difficile* was also identified by NGS in this room. NGS had 100% concordance with organisms identified by CC, and identified approximately 20 additional organisms not identified by CC per surface. 38% of organisms identified by NGS were potential pathogens, compared with 13% through CC. No correlations were found between the primary quantitative assessments (RODAC bacterial concentrations and ATP LT ATP concentrations) and quantitative components of CC (presence/absence of organisms) and NGS (read numbers).

Conclusion. ATP LT and RODAC plates both provide useful quantitative cleanliness data, although high ATP values did not always indicate the The presence of viable aerobic bacteria. CDBB may be a useful method for identifying *C. difficile* in the environment, but larger studies of the performance characteristics of CDBB are needed. CC and NGS provided useful organism identification information, but NGS had higher sensitivity for detecting potentially pathogenic organisms. The clinical implications of NGS results must be further studied and cost and technical expertise are important considerations.

Disclosures. **N. B. O'Hara**, Biotia: Board Member, Employee and Shareholder, Salary. **L. F. Westblade**, Accelerate Diagnostics: Grant Investigator, Grant recipient. Biomerieux: Grant Investigator, Grant recipient. Allergan: Grant Investigator, Grant recipient. Merck: Grant Investigator, Grant recipient.

1155. Excessive Movement, Unnecessary Contamination: *Clostridium difficile* Patients in the Hospital

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Background. The environmental contamination of *Clostridium difficile* in acute care hospital rooms is associated with increased risk of infection for subsequent patients. Patients that stay in a room following a patient with a *C. difficile* infection (CDI) have an increased risk of CDI compared with patients whose previous resident did not have CDI. The objective of this study was characterize the room movement of CDI patients in a Level 1 Trauma Medical Center.

Methods. A patient with CDI was defined as an inpatient with a positive *C. difficile* test through rapid serology, *C. difficile* polymerase chain reaction (PCR) or multiplex-stool PCR from March 2017 to March 2018. Patients were classified as either community-onset (CO, positive test <4 days after admission) or hospital-onset (HO, positive test ≥4 days after admission). Additionally, the number of rooms each CDI patient resided in during one admission following a positive *C. difficile* test was determined and the proportion of patients who stayed in one to two rooms or at least three rooms per visit was calculated.

Results. There were a total of 244 CDI patients identified (172: CO, 72: HO) between March 2017 and March 2018. The mean time from admission to positive test was 12.4 hours post-admission for CO-CDI patients and 251.1 hours for HO-CDI patients. Almost 40% of HO-CDI patients (36.1%, $n = 72$) stayed in at least three rooms during their hospital admission compared with <30% of CO-CDI patients (28.4%, $n = 172$).