

conducted semistructured interviews with key stakeholders (ie, environmental staff, nursing, and infection preventionists) at 3 VA facilities across acute-care and long-term care settings. Interviews were conducted among 18 healthcare workers, audio recorded, and transcribed verbatim. Transcripts were analyzed for thematic content within the SEIPS constructs (ie, person, environment, organization, tasks, and tools). **Results:** Within the SEIPS domain 'person,' we found that many environment service (EVS) staff were veterans and were highly motivated to serve fellow veterans, especially to prevent them from acquiring infections. However, the hiring of service members as EVS staff comes with significant hurdles that affect staffing. Within the domain of 'environment,' EVS staff reported rooms that were either occupied by the patient or were multibed, were more difficult to clean. Conversely, they reported that it was easier to clean in settings where the patient was more likely to be out of bed (eg, long-term care residents). Patient flow and/or movement greatly influenced workload within the 'organizational' domain. Workload also changed by patient population and setting (eg, the longer the stay or more critical the patient), increased their workload. EVS staff felt that staffing consistency and experience improved cleaning practices. Within the 'task' domain, EVS staff were motivated for cleaning high-touch surfaces; however, knowledge of these surfaces varied. Finally, within the 'tool' domain, most EVS staff described having effective cleaning products; however, sometimes in limited supply. Most sites reported some form of monitoring of their cleaning process; however, there was variation in type and frequency. **Conclusions:** Human-factors analysis identified barriers to and facilitators of cleaning compliance. Incorporating environmental cleaning practices that address barriers and facilitators identified may facilitate standardized cleaning of environmental surfaces. Standardized procedures for cleaning multibed rooms and environmental surfaces surrounding occupied beds may improve cleaning compliance. Future research should evaluate standardized cleaning procedures or bundles that incorporate these best practices and steps to overcoming barriers and pilot feasibility.

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Poster Presentation

Subject Category: Environmental Cleaning

Damaged Hospital Mattresses and Bed Frames Are Common in Acute-Care Hospitals

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Background: Hospital beds are now high-tech, reprocessable, medical devices. The surface of the mattress (cover) is manufactured using polyurethane-coated fabric to ensure moisture-vapor transmission to prevent pressure ulcers. In recent years, due to multidrug-resistant organisms, healthcare organizations have used increasingly harsh chemicals to clean these mattresses. None of these chemicals are approved for use on polyurethane-coated fabric. Previous research has shown that many mattresses in hospitals are damaged. The US Food and Drug Administration, Centers for Disease Control and Prevention, ECRI, and manufacturers recommend routine mattress inspection and replacement of mattresses with any visible signs of stains, wear, or damage. Damaged mattresses have been linked to fluid leakage, resulting in patient exposure and outbreaks of healthcare-acquired infections. **Methods:** Four hospitals of a midwestern hospital system had all of their mattresses inspected for damage and staining to the mattress. After external examination, each mattress was opened, and the mattress core was evaluated for damage. The cover of each mattress was examined using the naked eye and then using an LED light to demonstrate smaller holes. Each bed frame was examined for evidence of rust, and the amount of rust was recorded. If available, the age of the mattress was determined based on a label on the mattress. **Results:** In total, 727 beds and mattresses were inspected. Of these mattresses, 523 (72%) were damaged. Also, 340 (47%) required replacement of the mattress cover, and 183 (25%) required replacement of the entire mattress (cover and core). For the 209 damaged mattresses (40%) with the date of manufacture label, 156 (75%) were <4 years old. Damage to the mattress included 428 (59%) with

holes in the cover: 113 (16%) were visible to the naked eye and 315 (43%) small holes only detected by using an LED light. Also 173 mattresses (24%) had stains on the exterior cover, 215 (30%) had stains on the interior of the top cover, and 192 (26%) had stains on the interior of the bottom cover. Bed-frame rust was identified on 175 (24%) beds, of which 65 (9%) had widespread rust. **Conclusions:** These findings confirm previous reports that damaged mattresses are common in hospitals and potentially place patients at risk. Most of these failed mattresses are <4 years old, which is much less than the expected life of a mattress and bed deck.

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Using Ultraviolet C (UVC) in Operating Rooms: A Hygiene Improvement

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Background: Disinfection procedures are an essential aspect of preventing cross contamination, especially in situations where the risk of infection is higher, such as in operating rooms (ORs). Disinfection procedures in ORs at the end of each surgery session are not the same as final cleaning procedures. We assessed the difference in microbial contamination between different levels of disinfection, before T(0) and after T(1) the use of an ultraviolet C device (UVC-D). **Methods:** A cross-sectional study was conducted between December 2019 and August 2020 in a private clinic. Three sanitation levels (SL1–SL3) were compared for the reduction in colony-forming units (CFU) between T(0) and T(1): (1) no disinfection after surgery (SL1); (2) after in-between cleaning (SL2), and (3) after terminal cleaning (SL3). UVC-D was used for 6 minutes, 3 minutes per bed side. Overall, 260 Petri dishes were used in 3 ORs, incubated at 36°C, and CFU were counted after 48 hours. Descriptive statistics, Wilcoxon test, and MANOVA for repeated measures were performed to verify the 95% statistical difference between T(0) and T(1), both on the whole sample and combined with the different SLs. **Results:** The unstratified analysis showed statistically significant differences (Wilcoxon test, $p < 0.05$) between T(0) and T(1), with means and standard deviations of $11.42 \pm SD 41.19$ CFU/PD and $5.91 \pm SD 30.89$, respectively. The Manova test for repeated measures, applied to 54 pairs of measurements, showed no significant difference between SLs in T(0)-T(1) CFU reduction. Overall, the mean percent reduction in CFU was 93.48% (CI95% = 86.97–99.99%). **Conclusions:** The results showed significant improvements in disinfection under any condition tested with UVC-D. Using the device immediately after surgery (SL1), before standard cleaning procedures, reduced CFUs by 97.3%. In some situations, UVC light was sufficient to reduce CFU to zero, even without chemical and mechanical cleaning. However, we do not recommend this approach; UVC light disinfection should be applied only after sanitization procedures because it does not remove dirt.

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Building on the Foundation of a Sustainable Hand Hygiene Program During the COVID-19 Pandemic

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Background: Hand hygiene is essential to preventing the spread of disease in hospitals. Renewed emphasis has been placed on hand hygiene during the COVID-19 pandemic. We investigated whether UNC Medical Center's

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