484. An Equally Effective but Better Tolerated Formulation of Bleach
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Background. Bleach (sodium hypochlorite) is an effective sporidical disinfectant, but it is corrosive to many materials, irritating to some healthcare personnel and patients, and dries leaving a visible residue. We evaluated a new spray formulation of bleach that is purported to be as effective as regular bleach, but with less potential for adverse effects.

Methods. We examined the efficacy of the spray application of the new formulation of bleach (sodium hypochlorite 0.32%) in comparison to a spray application of a standard bleach product (sodium hypochlorite 0.63%) for killing Clostridium difficile spores, methicillin-resistant Staphylococcus aureus (MRSA), and carbapenem-resistant Escherichia coli in 5% fetal calf serum on steel disk carriers. We assessed real-world materials compatibility of the products by repeated spray applications on a hospital mattress, formica bedside table, and textiles. Personnel trialing the products were interviewed to obtain information on tolerance and residue.

Results. Both bleach formulations reduced each of the pathogens by 26.0 log CFU with a 2 minute contact time. With repeated applications, the standard bleach product caused rapid visible discoloration of the hospital mattress and textiles, and gradual fading of the formica bedside table surface, whereas the new spray formulation caused minimal to no adverse effects with up to 60 applications. Personnel using the products reported that the new product left much less residue after use and was more tolerable than the standard bleach product.

Conclusion. A new spray formulation of bleach was as effective as a standard bleach product, but was less damaging to surfaces, more tolerable for users, and left less residue on surfaces. The new formulation of bleach may provide an alternative sporidical disinfectant for facilities concerned about the adverse effects of standard bleach products.

Disclosures. All authors: No reported disclosures.

485. Environmental Cleaning and Disinfection in Long-Term Care Facilities: Opportunities for Improvement
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The Nebraska (NE) Infection Control Assessment and Promotion Center (IPCP) in 30 LTCF from 11/2015 to 3/2017. The CDC Infection Control Assessment Program (ICAP) in collaboration with NE Department of Health and Human Services, Division of Epidemiology, Nebraska Department of Public Health, Lincoln, Nebraska; Epidemiology, University of Nebraska Medical Center, Omaha, Nebraska; Internal Medicine, Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, Nebraska; Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, Nebraska; and Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, Nebraska.

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Background. There is a paucity of data on infection control (IC) gaps related to environmental cleaning and disinfection (ECD) in long-term care facilities (LTCF). Hence, we studied the gap frequencies (GF) related to ECD in LTCF.

Methods. The Nebraska (NE) Infection Control Assessment and Promotion Program, in collaboration with NE Department of Health and Human Services, conducted on-site inspections to assess infection prevention and control programs (IPC) in 30 LTCF from 11/2015 to 3/2017. The CDC Infection Control Assessment tool for LTCF was used for on-site interviews. When possible, observations of ECD practices of service providers (EVSS) were made using the Centers for Medicare and Medicaid (CMS) Hospital IC Worksheet. GF were calculated for each question (10 on CDC tool and 18 on CMS worksheet) representing best practice recommendations (BPR). The Fisher’s exact and Mann Whitney tests were used for statistical analyses examining associations of gaps with bed size, hospital affiliation (HA), having trained infection preventionists (IP), and IP weekly hours (WH)/100 beds for IPC.

Results. GF identified during interviews are displayed in Figure 1. LTCF with at least 6 out of 10 BPR in place (n = 12), as compared with those with <6, had higher median IP WH/100 beds but the difference did not reach statistical significance (P = 0.054). Among analyzing gaps individually, it was found that LTICF with policies on cleaning and disinfection (C&D) of high-touch surfaces in common areas had higher median IP WH/100 beds than others (8.5 vs. 2.5, P < 0.05). A similar association was noted when examining The presence of job specific training and competency validation on C&D procedures at time of hire (8.4 vs. 2.4, P < 0.05). HA and having trained IP were also associated with a lower likelihood of the presence of one gap each.

Upon analyzing actual practices of EVSS we found that most (n = 16) of the 18 BPR on the CMS worksheet were being followed in over 80% of LTCF.

Conclusion. EVSS in LTCF in NE appears to be performing well in ECD. However, gaps related to BPR dealing with ECD policies and procedures still exist, which can be a threat to continuity of a good ECD program. Providing training and more dedicated time to IP towards IPCP may help mitigate some of the gaps.

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486. Application of Dilute Hydrogen Peroxide Gas Technology for Continuous Room Decontamination of Multidrug-Resistant Organisms: Negative Results from A Preliminary Experimental Study
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Background. Healthcare room environmental surfaces can be frequently and continuously contaminated with multidrug-resistant organisms (MDROs) that can persist in the environment for a prolonged time. Here, we used a dilute hydrogen peroxide (DHP) gas system for continuous room decontamination and experimentally examined the germicidal efficacy of the new technology against MDROs.

Methods. DHP units were installed in ceilings of a model room and the hallway in front of the room. We tested three test organisms; methicillin-resistant staphylococcus aureus (MRSA), vancomycin-resistant Enterococcus (VRE), and MDR-Acinetobacter baumannii. An estimated 100–500 CFU for each test organism was inoculated and spread separately on each Formica sheet then exposed to DHP gas released into the room air. Triplicate samples were collected at times 0, 1, 3, 5, 6, 7, 24, and 48 hours. Following incubation, the colony forming units (CFU) of the test organisms on each Rodac plate were counted. Two separate experimental trials were performed for all time points. Statistical significance between intervention and control groups at each time point was determined by the Wilcoxon test, and P < 0.05 was considered significant.

Results. There were no statistical differences in survival between DHP intervention and control groups except data at very few time points for each organism (i.e., for MRSA in Figure 1, P = 0.0063 at 24 hours; for VRE in Figure 2, P = 0.0163 at 1 hour, P = 0.0163 at 3 hours; for MDR-Acinetobacter in in Figure 3, P = 0.0369 at 24 hours). The survival curves between both groups for each organism intersected at around 24 hours. The DHP units maintained a germicidal concentration (<0.3ppm for all runs) that was adequate, despite attempts to control factors that could interfere with the hydrogen peroxide gas concentration.

Conclusion. Our preliminary study using DHP demonstrated inactivity against MDROs on room surfaces, likely because we were unable to generate a sufficient germicidal level under the conditions with the particular DHP units. Additional technologic modifications would be required to maintain stable and effective DHP level for continuous room decontamination in patient rooms.

Disclosures. All authors: No reported disclosures.
Methods. We tested 21 different germicides with 2 dilutions of sodium hypochlorite against 3 species of Escherichia coli, Klebsiella pneumoniae, and Pseudomonas aeruginosa. Each species was tested against four different high-touch surfaces (bedrail, tray table, call button, toilet seat, and bathroom sink). Using a Quantitative Carrier Test Method and a disc-based quantitative carrier test method, we examined the relationship between cleaning time category and microbial burden as assessed by aerobic bacterial colony (ABC) count on high-touch surfaces.

Results. Figure 1 shows efficacy of germicides with active ingredient, product name, and classification against test organisms. Overall, most germicides reached at least 3-log_{10} reduction (20/22 [91%] for KPC E. coli, 18/22 [82%] for KPC K. pneumoniae, and 19/22 [86%] for MCR-1 E. coli). Furthermore, all germicides, except for two products (1% chlorhexidine gluconate plus 61% ethyl alcohol, 3% hydrogen peroxide) against MCR-1 E. coli, demonstrated at least 2-log_{10} reduction for these pathogens even in challenging test conditions (5% FCS and 1 minute exposure time).

Conclusion. Our study suggests that germicides commonly used in healthcare facilities may be effective against carbapenem/colistin-resistant Enterobacteriaceae when used appropriately.

Disclosures. D. J. Weber, PDI: Consultant, Consulting fee.

488. Does Cleaning Time Matter? A Study to Determine the Effect of Unlimited vs. Limited Time for Terminal Disinfection

Chetan Maduha, MD, MPH1; John Coppin, MPH1; Frank Villamarina, MPH1; Marjory Williams, PhD2; Laurel Copeland, PhD3; and John Zeber, PhD1. Infectious Disease Division, Central Texas Veterans Health Care System, Temple, Texas, 1Department of Medicine, Texas A&M University Health Science Center, College of Medicine, Bryan, Texas, 2Research, Central Texas Veterans Healthcare System, Temple, Texas, 3Center for Applied Health Research, Temple, Texas

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Background. Although the national target for the amount of time dedicated to cleaning a hospital room following patient discharge is 45 minutes, there is no conclusive evidence that cleaning duration is related to the quality of clean in terms of microbial load. Using data from a larger study on hospital room disinfection we examined the relationship between manual cleaning time and microbial burden as assessed by aerobic bacterial colony (ABC) count on high-touch surfaces.

Methods. Six hundred pre-clean and post-clean samples were taken from 5 different high-touch surfaces (bedrail, tray table, call button, toilet seat, and bathroom handrail) in 44 different patient rooms. Three cleaning time categories were studied: Time limited to 25 minutes; unlimited cleaning time where the housekeeper took <45 minutes; and unlimited cleaning time where the housekeeper took ≥45 minutes. The relationship between cleaning time category and microbial burden was assessed using a conditional inference regression tree that was modeled for the outcome variable ABC count and the predictors cleaning time category and other potential confounders.

Conclusion. Our study suggests that cleaning duration is related to the quality of clean in terms of microbial burden. Using data from a larger study on hospital room disinfection we examined the relationship between manual cleaning time and microbial burden as assessed by aerobic bacterial colony (ABC) count on high-touch surfaces.

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