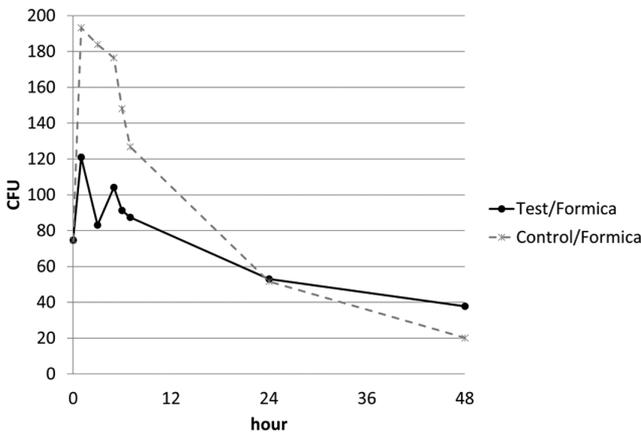
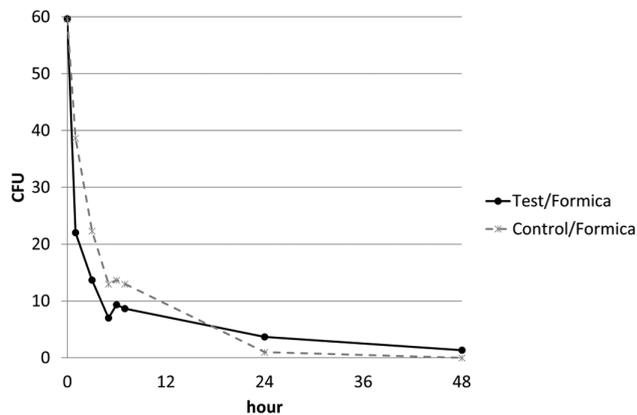


**Figure 1. Survival of MRSA with dilute hydrogen peroxide technology.**  
Statistical significance: P=0.0063 (48hr, Wilcoxon)



**Figure 2. Survival of VRE with dilute hydrogen peroxide technology.**  
Statistical significance: P=0.0163 (1hr, Wilcoxon); P=0.0163 (3hr, Wilcoxon)



**Figure 3. Survival of MDR-Acinetobacter with dilute hydrogen peroxide technology.**  
Statistical significance: P=0.0369 (24hr, Wilcoxon)

**Disclosures.** D. Sexton, Centers for Disease Control and Prevention: Grant Investigator, Grant recipient. Centers for Disease Control and Prevention Foundation: Grant Investigator, Grant recipient. UpToDate: Collaborator, Royalty Recipient. D. J. Weber, PDI: Consultant, Consulting fee.

**487. Germicidal Activity against Carbapenem/Colistin-resistant Enterobacteriaceae Using a Quantitative Carrier Test Method**  
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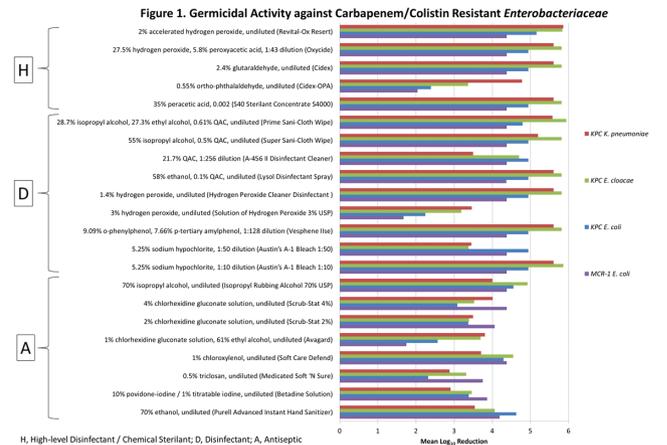
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**Background.** Carbapenem-resistant *Enterobacteriaceae* (CRE), conferring broad resistance to most  $\beta$ -lactam antibiotics, are involved in healthcare-associated outbreaks via medical equipment and environmental surfaces. Colistin-resistant *Enterobacteriaceae* carrying the *mcr-1* are currently a global health concern since colistin is often a last-line antibiotics used to treat multidrug-resistant organisms, including CRE. However, susceptibility to germicides (e.g., disinfectants, antiseptics) for these pathogens is poorly understood. We assessed efficacy of various germicides against carbapenem/colistin-resistant *Enterobacteriaceae*.

**Methods.** We tested 21 different germicides with 2 dilutions of sodium hypochlorite against 3 species of *Klebsiella pneumoniae* carbapenemase (KPC)-producing *Enterobacteriaceae* and *Escherichia coli* carrying *mcr-1*. The disc-based quantitative carrier test method was used to assess the bactericidal activity of chemical germicides since it is believed to produce results similar to those actually encountered in healthcare settings compared with suspension testing. An inoculum containing approximately  $10^8$  test organisms with 5% fetal calf serum (FCS) was placed on each disk. The dried inoculum was exposed to the test germicide for 1 minute exposure time at room temperature then neutralized. Compared with mean carrier control counts, the  $\log_{10}$  reduction of the test organism for each germicide was calculated.

**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 *K. pneumoniae*, 0/22 for *E. cloacae*, 18/22 [82%] for KPC *E. coli*, 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 Jinadatha, MD, MPH<sup>1,2</sup>; John Coppin, MPH<sup>3</sup>; Frank Villamaría, MPH<sup>3</sup>; Marjory Williams, PhD<sup>4</sup>; Laurel Copeland, PhD<sup>5</sup> and John Zeber, PhD<sup>5</sup>; <sup>1</sup>Infectious Disease Division, Central Texas Veterans Health Care System, Temple, Texas, <sup>2</sup>Department of Medicine, Texas A&M University Health Science Center, College of Medicine, Bryan, Texas, <sup>3</sup>Research, Central Texas Veterans Healthcare System, Temple, Texas, <sup>4</sup>Central Texas Veterans Healthcare System, Temple, Texas, <sup>5</sup>Center for Applied Health Research, Temple, Texas

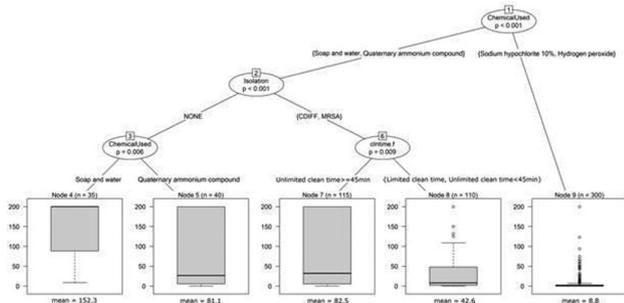
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**Background.** Although the national target for the amount of time dedicated to cleaning a hospital room following patient discharge is 45 minutes, there is no conclusive evidence that cleaning duration is related to the quality of clean in terms 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  $\geq 45$  minutes. The relationship between cleaning time category and post-manual clean ABC count 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.

**Results.** There was no difference in ABC count for hydrogen peroxide and sodium hypochlorite 10% between the different categories of cleaning time. For quaternary ammonium compound and soap and water, the limited cleaning time category showed lower ABC counts than the unlimited time categories for samples taken from isolation rooms,  $P = 0.009$ . For 150 soap and water samples, 61 showed an increase in ABC count from the pre-clean sample to post-clean sample.

**Conclusion.** Cleaning time was not related to post-clean ABC count for sodium hypochlorite 10% or Hydrogen Peroxide. Limited cleaning time was more effective in lowering ABC counts for quaternary ammonium compound and for soap and water. For soap and water, post-clean ABC counts were actually higher than pre-clean ABC counts for numerous samples. This may be due to the spreading organisms across the surface while cleaning, without adequate disinfection.



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#### 489. Contaminated Re-usable Thermometers Are a Potential Vector for Dissemination of Pathogens

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**Background.** Portable medical equipment that is shared among patients may become contaminated with healthcare-associated pathogens, and cleaning of these devices is often suboptimal. Limited data are available on the potential for contaminated equipment to serve as a vector for pathogen dissemination. However, previous studies have suggested that the handles of re-usable thermometers may transmit pathogens.

**Methods.** We used a DNA marker generated from cauliflower mosaic virus to study the potential for dissemination of pathogens by re-usable thermometers which are attached to the portable vital signs equipment used on a long-term care facility (LTCF) ward. The DNA marker was inoculated onto 6 thermometer handles. During a 24-hour period, radio-frequency identification (RFID) technology was used to monitor movement of the equipment and fluorescent markers were used to assess whether the equipment was cleaned. Polymerase chain reaction was used to determine whether the DNA marker contaminated high-touch surfaces in patient rooms, other portable equipment on the ward, and common areas.

**Results.** Portable vital signs equipment entered 14 LTCF resident rooms during a 24-hour period. The DNA marker was detected on high touch surfaces in 3 of the 14 (21%) rooms and on 4 other items of shared portable equipment, but not in common areas. There was no evidence that the portable equipment was cleaned based on absence of removal of the fluorescent marker.

**Conclusion.** Our findings demonstrate the potential for contaminated shared portable equipment such as re-usable thermometers to serve as a vector for dissemination of pathogens in the LTCF setting. There is a need for effective strategies to disinfect shared portable equipment between patients.

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

#### 490. Frequent Contamination of Healthcare Worker Scrubs

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**Background.** Pathogens responsible for healthcare-associated infections (HAI) can be spread from patient-to-patient via healthcare worker (HCW) hand, clothing and other fomites.

**Methods.** We performed a cohort study of HCWs in critical care areas to assess factors associated with bacterial contamination of scrubs. Participants were given one set of four new, study-issued scrubs along with a randomized schedule of wear at the start of the study. During an 8-month study period, each scrub set was sampled eight times, on random days and at least 4 hours into a shift. Sampling of scrubs was with a pre-moistened cotton swab in a W-shape over the front of the scrub top and along both thighs, as well as RODAC agar plate stamped over the top near the belly button. A brief survey tool was used to identify risk factors for contamination at the time of sampling. Total colony count and the presence of pre-specified, pathogenic bacteria (*Staphylococcus aureus*, Enterococci or Gram-negative bacteria) were assessed. Generalized estimating equation (GEE) was used to identify factors associated with bacterial contamination.

**Results.** A total of 720 scrub samples were obtained from 90 HCW; 30% (217/720) of scrubs were contaminated with pathogenic bacteria. The mean (standard deviation) log colony count of the sampled scrubs was 3.9 (1.1). On sampling days, HCWs reported on average, primary care of 2.4 patients and interaction with 5.4 patients. Multivariate analysis showed that providing care for patients with wounds was associated with scrub contamination of pathogenic bacteria (OR 1.75, 95% CI: 1.17–2.62). The average log colony count was higher among HCWs who gave a patient a bath (log CFU difference = 0.21,  $P = 0.05$ ). Bacterial contamination was lower among HCWs assigned to care for at least one patient on Contact Precautions (CP) (log CFU difference = 0.28,  $P < 0.01$ ).

**Conclusion.** HCW attire is frequently contaminated with pathogenic bacteria. Contamination is associated with providing care for patients with wounds and giving a bath; while contamination is lower when caring for patients on CP. The later finding supports the use of CP to decrease potential risk of transmission.

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

#### 491. Likelihood of Environmental Contamination of Patient Rooms in Six Acute Care Facilities based on Facility, Unit-Type, and Precautions Status

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**Background.** Environmental contamination may play a critical role in ARO (antibiotic-resistant organism) transmission. The objective of this study was to estimate facility-unit contamination in 6 healthcare facilities and determine if differences existed among facilities, unit types, and room contact precautions status.

**Methods.** In each facility, two units with patients with a recent positive test of a target ARO (MRSA, VRE, or carbapenem-resistant Gram-negatives in the previous 6 months or *C. difficile* in the previous 30 days) were randomly selected every 2 weeks for 8 cycles. Within units, surfaces were sampled in all contact precautions rooms of patients with a target ARO, 1–2 randomly selected non-contact precautions rooms per contact precautions room, and the nursing station. Multilevel logistic regression was used to model the association of facility, unit type and room type with risk of contamination. The inverse of sampling probability was used as weights in the regression.

**Results.** A total of 196 ARO contact precautions rooms and 221 non-precautions rooms were sampled from 24 units (9 ICUs; 13 acute care medicine/surgical units; 2 transplant units) totaling 1,448 specimens. Of 417 rooms sampled, 23% were positive for one or more of the target AROs. Fourteen percent of non-precautions rooms were positive for target AROs, and 17% of ARO precautions rooms were positive for AROs other than the known target ARO. In general, prevalence of environmental ARO contamination did not differ between facilities sampled. Compared with ICUs, odds of contamination on transplant and acute care units were 5.86 and 3.85 times higher, respectively. Non-precautions rooms and nursing stations were significantly less likely to be contaminated with AROs compared with contact precautions rooms (OR = 0.24,  $P < 0.001$ ) and (OR = 0.34,  $P = 0.009$ ), respectively.

**Conclusion.** Detection of target AROs in non-precautions rooms and at nursing stations suggests colonized patients may be going undetected, cleaning is not sufficiently removing contamination from prior ARO patients, or AROs are being transferred from infected patients to other locations within the unit. Additional intensive sampling may further illuminate priority areas for interventions within acute care facilities.

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

#### 492. The Utility of Preliminary Patient Evaluation in a Febrile Respiratory Infectious Disease Unit Outside the Emergency Department

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