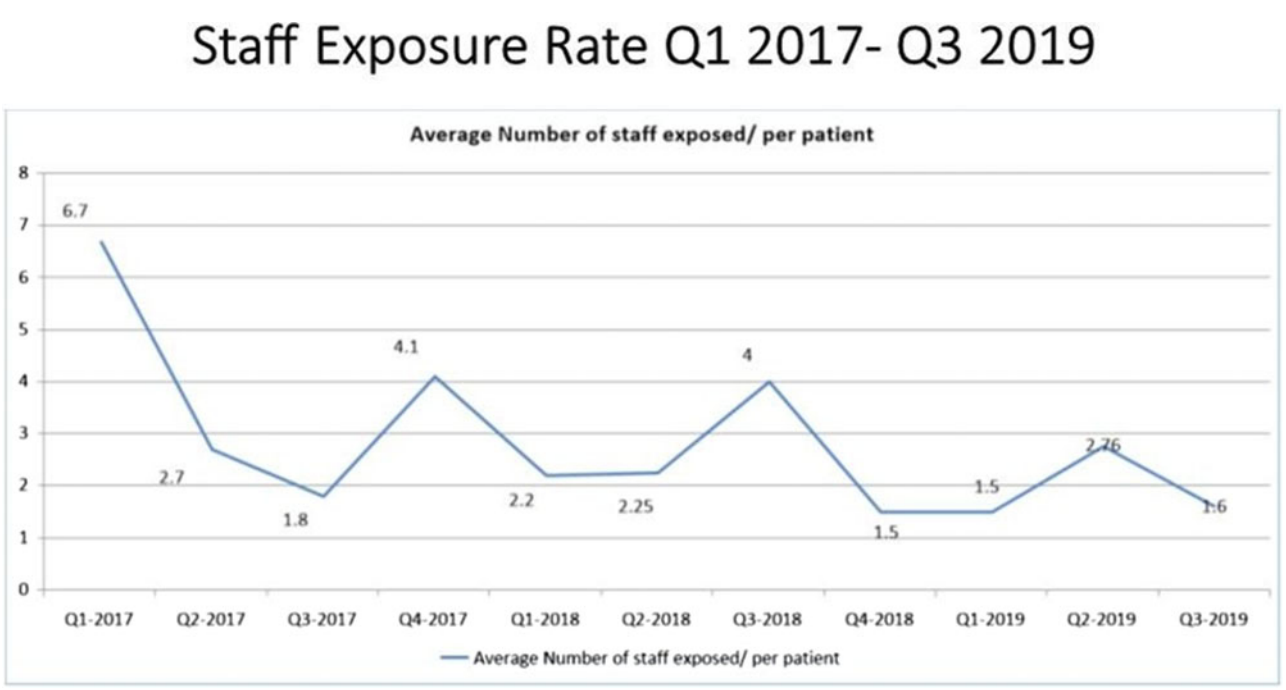

Fig. 2.

Background: My tertiary-care hospital is a 750-bed hospital with only 17 airborne infection isolation room (AIIR) and negative-pressure rooms to isolate patients who have been diagnosed or are suspected with prevalent diseases like tuberculosis, measles, and chickenpox. On the other hand, only 14 single-patient isolation rooms are available to isolate patients with multidrug-resistant organisms (MDROs) such as CRE (carbapenum-resistant *Enterobacter*) or colistin-resistant MDROs. Due to the limited number of isolation rooms, the average number of hours to isolate infected patients was ~20 hours, which ultimately directly placed healthcare workers (HCWs) at risk of exposure to infected patients. **Methods:** Plan-Do-Study-Act (PDSA) quality improvement methodology was utilized to decrease the average number of hours to isolate infected patients and to reduce the exposure of HCWs to communicable diseases. A detailed analysis were performed to identify root causes and their effects at multiple levels. A multidisciplinary team implemented several strategies: coordination with information and technology team to place isolation alerts in the charting system; screening flyers and questions at emergency department triage; close coordination with admission and bed management office; daily morning and evening rounds by infection preventionists in the emergency department; daily morning meeting with microbiology and bed management office to intervene immediately to isolate patients in a timely way; infection preventionist on-call system (24 hours per day, 7 days per week) to provide recommendations for patient placement and cohorting of infected patients wherever possible. **Results:** In 1 year, a significant reduction was achieved in the number of hours to isolate infected patients, from 20 hours to 4 hours. As a result, HCW exposures to communicable diseases also decreased from 6.7 to 1.5; HCW exposures to TB decreased from 6.0 to 1.9; exposures measles decreased from 4.75 to 1.5; and exposures chickenpox decreased from 7.3 to 1.0. Significant reductions in cost incurred by the organization for the employees who were exposed to these diseases for postexposure prophylaxis also decreased, from ~Rs. 290,000 (~US$3,000) to ~Rs. 59,520 (~US $600). **Conclusions:** This multidisciplinary approach achieved infection prevention improvements and enhanced patient and HCW safety in a limited-resource setting.

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.746

Presentation Type:
Poster Presentation

Effectiveness of Twenty Germicides Against Five Strains of *C. difficile* spores, With and Without Calf Serum, at Several Exposure Times

William Rutala, University of North Carolina School of Medicine; Maria Gergen, Hyper Light Technologies, Cary, North Carolina; Dale Gerding, Hines VA Hospital; David Jay Weber, University of North Carolina at Chapel Hill

Background: *Clostridioides difficile* is a major cause of antibiotic-associated colitis and the most common healthcare-associated pathogen in the United States. Interrupting the known transmission mechanisms of *C. difficile* in hospitals requires appropriate hand hygiene, disinfection of potentially contaminated surfaces, and patient equipment. However, only limited data are available on the effectiveness of germicides against various strains of *C. difficile,* with and without fetal calf serum, and at multiple exposure times. For this reason, we undertook the following evaluation to determine the effectiveness of germicides. **Methods:** The effectiveness of the sporicidal activity of the germicides against 5 strains of *C. difficile* was evaluated using a quantitative carrier test, a standard of ASTM International developed by Sattar et al. In this protocol, metal carriers (1 cm diameter × 0.7 mm thick) were inoculated with 10 µL spore suspension, containing ~103 or 106 *C. difficile* spores, and we then exposed them to 50 µL germicide for 1, 5, 10, or 20 minutes. The following *C. difficile* strains were used in

Table 1. Inactivation of five different strains of *C. difficile* spores and *B. atrophaeus* spores by 11 germicides at 1, 5, 10, and 20 minutes

Germicide	*B. atrophaeus*	*C. difficile* J9	*C. difficile* BI-9	*C. difficile* 630	*C. difficile* CF-4	*C. difficile* ATCC
1:10 Bleach (LLD)	20 min - 7.15 10 min - 6.85 5 min - ≤5.62 1 min - ≤5.25	20 min - 4.42 10 min - 4.79 5 min – 2.53 1 min – 2.72	20 min – 4.98 10 min – 3.89 5 min - ≤2.20 1 min - ≤2.81	20 min – 4.62 10 min – 3.79 5 min – 2.25 1 min - NT	20 min – 3.89 10 min – 4.21 5 min - ≤0.60 1 min - NT	20 min – 3.24 10 min – 3.09 5 min - ≤2.71 1 min - NT
1:50 Bleach (LLD)	NT	20 min - 3.99 10 min - ≤2.92 5 min - NT 1 min - NT	NT	NT	NT	NT
Clorox clean-up (LLD)	20 min – 6.99 10 min – 7.05 5 min – 6.31 1 min -≤5.25	20 min – 4.93 10 min – 5.43 5 min – 5.03 1 min – 4.43	20 min – 5.13 10 min – 5.35 5 min – 4.79 1 min - NT	20 min – 4.62 10 min – 5.03 5 min – 3.67 1 min -NT	20 min – 3.74 10 min – 4.36 5 min – 3.52 1 min - NT	20 min – 4.16 10 min – 3.89 5 min - NT 1 min - NT
Tilex (LLD)	20 min – 6.94 10 min – 6.98 5 min – 6.44 1 min - ≤5.25	20 min – 4.67 10 min – 5.43 5 min – 5.03 1 min - 5.04	20 min - 10 min - 5 min - 1 min -	20 min – 4.47 10 min – 5.03 5 min – 3.67 1 min - NT	20 min – 3.44 10 min – 4.36 5 min – 3.52 1 min - NT	20 min – 4.16 10 min – 3.89 5 min – 3.33 1 min - NT
Steris (HLD/sterilant)	20 min – 7.15 10 min – 6.95 5 min – 7.53 1 min - ≤5.24	20 min – 4.50 10 min – 4.79 5 min – 4.20 1 min -<2.72	20 min – 5.13 10 min – 5.35 5 min – 4.32 1 min - ≤2.81	20 min – 4.62 10 min – 5.03 5 min – 3.67 1 min - NT	20 min – 2.94 10 min – 4.36 5 min – 2.64 1 min - NT	20 min – 3.81 10 min – 3.89 5 min – 4.80 1 min - NT
Cidex (HLD)	20 min – 6.02 10 min – 5.96 5 min - ≤5.60 1 min - ≤5.47	20 min – 4.80 10 min – 5.55 5 min – 4.71 1 min - 5.28	20 min – 5.22 10 min – 5.95 5 min – 5.19 1 min – 4.42	20 min – 4.97 10 min – 4.94 5 min – 2.88 1 min - NT	20 min – 3.77 10 min – 3.72 5 min – 3.56 1 min - NT	20 min – 4.21 10 min – 3.66 5 min - NT 1 min - NT
Cidex OPA (HLD)	NT	20 min – 4.62 10 min – 4.98 5 min – 4.71 1 min - ≤2.75	20 min – 5.42 10 min – 5.50 5 min – 5.04 1 min - ≤2.92	20 min – 4.97 10 min – 4.94 5 min – 2.88 1 min - NT	20 min – 3.77 10 min – 3.72 5 min – 3.56 1 min - NT	20 min – 3.37 10 min – 3.12 5 min - ≤2.42 1 min - NT
Wavicide-01 (HLD)	20 min – 6.26 10 min - <5.05 5 min - <5.60 1 min - <5.47	20 min – 5.06 10 min – 5.55 5 min – 4.71 1 min – 3.69	20 min – 6.08 10 min – 5.95 5 min – 5.19 1 min – 3.68	20 min – 4.97 10 min – 4.49 5 min – 2.88 1 min - NT	20 min – 3.77 10 min – 3.72 5 min – 3.56 1 min - NT	20 min – 4.13 10 min – 3.66 5 min – 4.05 1 min - NT
Accelerated CS 20 (sterilant/HLD)	20 min – 6.77 10 min - ≤5.05 5 min - ≤5.60 1 min - NT	20 min – 3.54 10 min - ≤2.72 5 min - ≤1.75 1 min - NT	20 min – 5.00 10 min - NT 5 min - <2.25 1 min - NT	20 min – 4.97 10 min – 3.25 5 min - ≤1.27 1 min - NT	NT	20 min – 2.81 10 min - NT 5 min - ≤2.42 1 min - NT
Aldahol (HLD)	20 min – 6.67 10 min – 6.14 5 min – 6.02 1 min - ≤5.47	20 min – 5.79 10 min – 4.83 5 min – 4.71 1 min – 4.31	20 min – 5.56 10 min – 5.08 5 min – 5.19 1 min – 4.03	20 min – 4.97 10 min – 4.79 5 min – 2.88 1 min - NT	20 min – 3.77 10 min – 3.72 5 min – 3.56 1 min - NT	20 min – 4.21 10 min – 3.66 5 min – 4.03 1 min - NT
Spor-Klenz (sterilant/HLD)	20 min – 6.65 10 min – 6.55 5 min - ≤5.62 1 min - NT	20 min – 3.61 10 min - NT 5 min - ≤2.14 1 min - NT	20 min – 4.79 10 min – 2.81 5 min - ≤2.20 1 min - NT	20 min – 3.59 10 min – 2.94 5 min – 2.21 1 min - NT	20 min – 3.01 10 min - ≤1.25 5 min - <0.060 1 min - NT	20 min – 3.86 10 min – 2.26 5 min - ≤2.71 1 min - NT

Abbreviations: NT, not tested; min-minute; A, antiseptic; LLD, low-level disinfectant; HLD, high-level disinfectants; D, disinfectant

Table 2. **Effectiveness (log_{10} reduction) of 13 germicides against *C. difficile* spores (BI-9 Strain) without fetal calf serum**

Germicide	Contact Time									
	20 min.		10 min.		5 min.		2 min.		1 min.	
	10^3	10^6	10^3	10^6	10^3	10^6	10^3	10^6	10^3	10^6
1:10 Bleach (LLD)	NT	NT	NT	5.11	NT	3.84	≤0.65	≤2.97	≤0.65	≤2.97
Clorox Clean-Up (LLD)	2.97	NT	2.97	5.29	2.97	4.96	3.13	5.40	NT	NT
Clorox Germicidal Spray (LLD)	NT	NT	NT	5.43	NT	4.96	NT	6.12	NT	NT
Rescue (sporicide)	NT	NT	2.77	≤2.58	2.75	NT	2.21	NT	≤1.19	NT
Resert (HLD)	≤0.68	≤3.58	≤0.29	≤2.58	NT	NT	NT	NT	NT	NT
Accel CS 20 (sterilant/D)	NT	NT	1.44	≤2.58	0.82	NT	≤1.18	NT	NT	NT
Oxivir® (LLD)	NT	NT	1.77	≤3.53	2.75	NT	≤1.18	NT	NT	NT
Virasept (sterilant/D)	NT	6.15	NT	6.30	3.13	≤2.97	≤0.65	NT	≤0.65	≤3.89
Cidex OPA (HLD)	2.37	4.79	NT	≤3.82	NT	NT	NT	NT	NT	NT
70% Isopropanol (A/D)	≤0.13	≤2.97	NT	≤3.82	NT	NT	NT	NT	NT	NT
Dispatch (D)	3.01	4.42	3.01	5.1	2.45	NT	1.77	NT	≤0.65	NT
Aseptix (LLD)	2.97	NT	1.03	NT	NT	NT	NT	NT	NT	NT
HASTe-SSD (D)	NT	4.57	NT	NT	NT	NT	NT	NT	NT	NT

https://doi.org/10.1017/ice.2020.747 Published online by Cambridge University Press

these studies: ATCC strains 9689; J9; BI-9; 630; and CF-4. To determine whether *C. difficile* spore susceptibility was similar to other spores, we also tested *Bacillus atrophaeus* spores, ATCC strain 19659. Fetal calf serum (FCS) was used to simulate organic matter. **Results:** In general, high-level disinfectants (eg, OPA, glutaraldehyde), chemical sterilants (eg, peracetic acid), and high concentrations of chlorine (>5,000 ppm) were generally sporicidal (>3 log10 reduction) in 5–10 minutes (and sometimes 1 minute). This level of sporicidal activity was demonstrated for the various strains of *C. difficile* spores and *B. atrophaeus* spores (Table 1). There did not appear to be any significant differences in inactivation of *C. difficile* spores (BI-9 strain) in the presence or absence of FCS (Table 2). **Discussion:** The sporicidal activity of disinfectants is critical because such formulations are routinely used to eliminate the risk associated with noncritical and semicritical instruments and environmental surfaces. Our data suggest that immersion in most (but not all) high-level disinfectants for 10 minutes is likely to be successful in eradicating *C. difficile* spores (>4 log10 reduction) from semicritical equipment (eg, endoscopes). Additionally, high concentrations of chlorine and some high-level disinfectants will kill *C. difficile* spores in 1 or 2 minutes.

Funding: None

Disclosures: Drs. Rutala and Weber are consultants to PDI (Professional Disposable International)

Doi:10.1017/ice.2020.747

Presentation Type:
Poster Presentation

Effectiveness of an Alcohol-Based Nasal Antiseptic in Reducing MRSA Bacteremia in an Adult Intensive Care Population

Lauren Reeves, Methodist Le Bonheur Healthcare; Lisa Barton, Methodist Le Bonheur Healthcare; Michelle Nash, Methodist Le Bonheur Healthcare; Jennifer Williams, Methodist Le Bonheur Healthcare; Don Guimera, Le Bonheur Children's Hospital; Bryan Simmons, Methodist Le Bonheur Healthcare; Nicholas Hysmith, University of Tennessee; Jackie Morton, Methodist Le Bonheur Healthcare

Background: Hospitalized patients are at an increased risk of invasive infection with *Staphylococcus aureus* when colonized with the bacteria on admission. Rates of methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia are directly correlated with overall patient acuity, placing patients in intensive care areas at greatest risk. Universal decolonization with nasal antibiotic ointments has been shown to reduce the incidence of invasive MRSA in critically ill patients; however, debate remains regarding the long-term efficacy of this strategy and the possibility of developing antimicrobial resistance. An alcohol-based nasal antimicrobial may be an effective alternative. This study evaluated the effectiveness of a twice daily alcohol-based product in reducing the rate of MRSA bacteremia in an academic tertiary-care adult intensive care setting. **Methods:** Our study was an observational design with retrospective and prospective cohorts each consisting of 61 critical care beds. The baseline incidence of MRSA bacteremia was determined from a 7-month period preceding the implementation of the nasal antimicrobial. At implementation, each admission received an electronic order for an alcohol-based nasal antiseptic that was applied twice daily during the intensive care stay. The primary outcome was the incidence of MRSA bacteremia in each group. MRSA bacteremia was defined by the CDC NHSN criteria after review by an infection prevention nurse. The χ^2 test was used to compare the rates between the 2 groups, and $P < .005$ was considered significant. **Results:** The study periods contained similar patient days, with 12,475 in the retrospective group and 12,733 in the prospective group. The rate of MRSA bacteremia in the retrospective cohort was 0.2404 compared to 0 in the prospective cohort. This rate change was statistically significant, with $P < .0001$. **Conclusions:** The alcohol-based nasal antiseptic was effective in reducing healthcare-onset MRSA bacteremia in this intensive care population. This approach may be a safe and effective alternative to nasal antibiotic ointment that avoids antibiotic resistance risks.

Funding: None

Disclosures: None

Doi:10.1017/ice.2020.748

Presentation Type:
Poster Presentation

Effectiveness of Antimicrobial Filter Placement in ICU Taps to Prevent the Occurrence of HAIs by *Pseudomonas aeruginosa* (12-Months)

Pablo Chico-Sánchez, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante; Sandra Canovas-Javega, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Natali J. Jimenez-Sepulveda, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Edith Leutscher-Vasen, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Cesar O. Villanueva-Ruiz, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Carmen M. Benito-Miralles, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Maria Hernandez-Maldonado, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Ana S. Lameiras-Azevedo, Alicante Institute for Health and Biomedical Research (ISABIAL), Epidemiology Unit, Preventive Medicine Department, General University Hospital of Alicante, Alicante, Spain; Jose Sanchez-Paya, Epidemiology Unit, Preventive Medicine Department, Alicante University General Hospital, Alicante Institute for Health and Biomedical Research (ISABIAL), Alicante, Spain

Background: *Pseudomonas aeruginosa*, is the third etiologic agent of healthcare associated infections, and the most frequent pathogen in ventilator-associated pneumonia (VAP). In critical care units is associated with high mortality, long hospital stay, and high healthcare-associated costs. We evaluated the effectiveness of filter placement in the water taps in critical care units to prevent the occurrence of healthcare-associated infections (HAIa) by *Pseudomonas aeruginosa*. **Methods:** This experimental study was both cross-over and open-label in nature. We included patients admitted for >24 hours in critical care units over 24 months. The study was divided into 4 periods of 6 months each. We divided the study into 2 groups: patients in units with filters and patients in units without filters. We compared the incidence density of *P. aeruginosa* HAIs (number of cases divided by the number of person days) according the ECDC definition of case