

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 semi-critical 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.

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Presentation Type:

Poster Presentation

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

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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.

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

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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

criteria between the groups. The χ^2 test was used, and the magnitude of the association was calculated as a rate ratio with a 95% confidence interval, adjusted using a Poisson regression model. **Results:** Overall, 1,132 patients were included in the study: 595 in units with water tap filters and 537 in units without water tap filters. HAI incidence among patients in units with water tap filters was 5.3 per 1,000 person days stay; without water tap filters, HAI incidence was 4.7 per 1,000 person days stay (HR, 0.94; 95% CI, 0.47–1.90). **Conclusions:** The preliminary results of this study indicate a lower incidence of *P. aeruginosa* HAIs in units with filters placed in water taps than in units without filters.

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Effectiveness of Standard Daptomycin Dose in Treatment of Methicillin-Resistant *Staphylococcus aureus* Bacteremia

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Background: Daptomycin is considered an effective alternative to vancomycin in patients with methicillin-resistant *Staphylococcus aureus* bloodstream infection (MRSA BSI). **Objective:** We investigated the real-world effectiveness of recommended daptomycin doses

compared with vancomycin. **Methods:** This nationwide retrospective cohort study included patients from 124 Veterans' Affairs hospitals who had a MRSA BSI and were initially treated with vancomycin during 2007–2014. Patients were categorized into 3 groups by daptomycin dose calculated using adjusted body weight: low (<6 mg/kg/day), standard (6–8 mg/kg/day), and high (\geq 8 mg/kg/day). *International Classification of Diseases, Ninth Revision (ICD-9)* diagnosis codes were used to identify other prior or concurrent infections and comorbidities. Multivariate cox regression was used to compare 30-day all-cause mortality as the primary outcome comparing patients on either low-dose, standard-dose, or high-dose daptomycin with vancomycin. Hazard ratio (HR) and 95% confidence intervals (CIs) were reported. **Results:** Of the 7,518 patients in the cohort, 683 (9.1%) were switched to daptomycin after initial treatment with vancomycin for their MRSA BSI episode. A low dose of daptomycin was administered to 181 patients (26.5%), a standard dose was given to 377 patients (55.2%), and a high dose was administered to 125 patients (18.3%). Dose groups differed significantly in body mass index (BMI), presence of an osteomyelitis diagnosis, and diagnosis of diabetes. Thirty-day mortality was significantly lower in daptomycin patients than in those given vancomycin (11.3% vs 17.6%; $P < .0001$). Treatment with daptomycin was associated with improved 30-day survival compared with vancomycin (HR, 0.66; 95% CI, 0.53–0.84), after adjusting for age, BMI, diagnosis of endovascular infection, skin and soft-tissue infection and osteomyelitis, hospitalization in the prior year, immunosuppression, diagnosis of diabetes, and vancomycin minimum inhibitory concentration (MIC). Treatment with a standard dose of daptomycin was associated with lower mortality compared with vancomycin (HR, 0.63; 95% CI, 0.46–0.86). High and low daptomycin dose groups had a trend toward improved 30-day survival compared with vancomycin (Fig. 1). In 2 separate sensitivity analyses excluding vancomycin patients, there

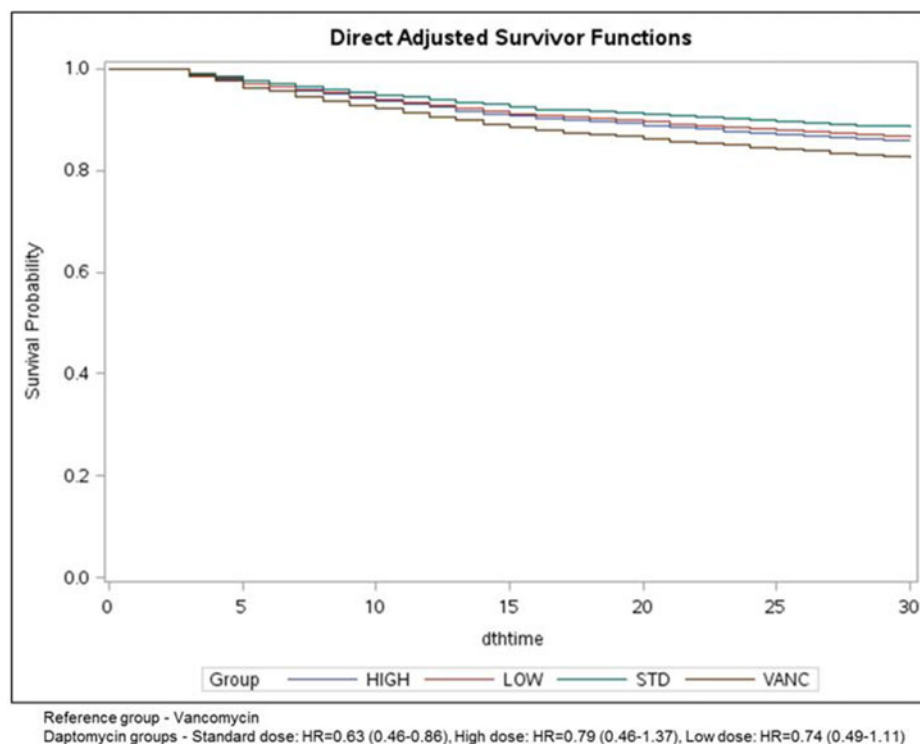


Figure. Risk-adjusted Kaplan-Meier Survival Curve for comparison of Daptomycin dose groups with Vancomycin. The top line is standard dose, followed by low and high dose of daptomycin. The bottom line is vancomycin.

Fig. 1.