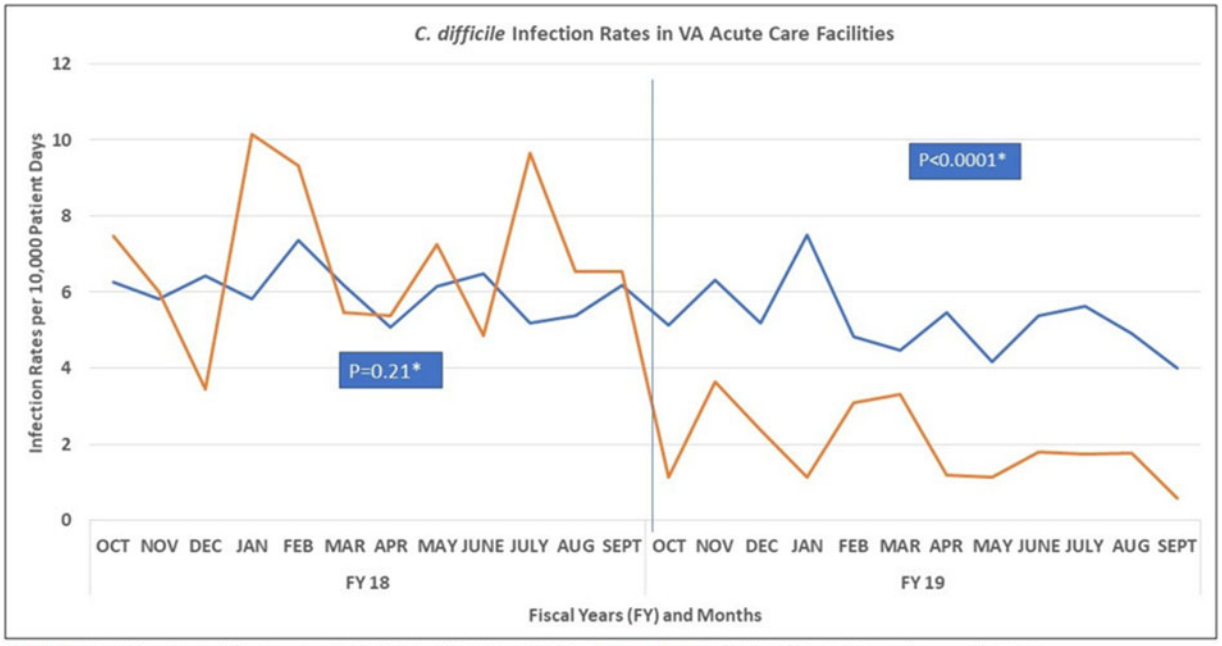

Fig. 1.

New diagnostic testing methods have been developed, but variabilities in the reliability of testing methods for the diagnosis of CDI in patients have been detected, thus not yielding a gold standard test. As a result, some facilities use nucleic acid amplification testing (NAAT) for CDI diagnosis and reporting whereas others use a 2-step process of NAAT followed by a toxin enzyme immunoassay (EIA) test, with the latter determining positivity for reporting (as allowed by the NHSN). We reviewed CDI rates at facilities performing one-step and two-step testing to determine whether the testing protocol may be influencing CDI rate reporting. **Methods:** Data on HO-HCFA CDI rates entered monthly in fiscal year (FY) 2018 (October 2017 through September 2018) and FY2019 (October 2018 through September 2019) by each acute-care facility into the VA Inpatient Evaluation Center (IPEC) database were analyzed. HO-HCFA CDI rates in facilities that used NAAT in FY2018 and switched to in the 2-step NAAT plus EIA in FY2019 were compared to rates in facilities used NAAT alone for both FY2018 and FY2019. Statistical regression analysis was performed. **Results:** From FY 2018 through FY2019, 70 facilities performed NAAT for the entire 2-year period. Overall, 7 facilities performed NAAT for FY 2018 and then switched to NAAT + EIA in FY2019. We detected no significant decrease in HO-HCFA CDI rates in FY 2018 when both groups were using NAAT ($P = 0.21$) (Fig. 1). However, in FY2019, there was a significant decrease in HO-HCFA CDI rates for those facilities that performed the 2-step testing versus those facilities that continued to use strictly NAAT alone ($P < .0001$). **Conclusions:** HO-HCFA CDI rates decreased for those VA acute-care facilities that switched to 2-step testing, and this finding highlights implications for assessing rates over time. Given the variable reliability of the toxin test, individual patient consideration for therapeutic decisions is reasonable.

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Presentation Type:
Poster Presentation

Effect of Water Chlorination on Development and Persistence of Biofilm in Shower Heads

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Background: A cluster of sternal surgical site infections caused by *Pseudomonas aeruginosa* led to sampling of shower heads in patient rooms. Multiple subtypes of *Pseudomonas aeruginosa* were found and were genetically diverse from the patient isolates. Visible biofilm was found in showerheads in the cardiothoracic ward. Ways of minimizing formation and persistence of biofilm in the shower heads were sought. **Methods:** A low-dose chlorination dosing system was introduced in September 2018 to the circulating warm-water system supplying the building block where the cardiac surgery ward is situated. Of the 145 showers in that block, 70 shower heads were sampled and the shower heads were replaced. Of these, 35 were sampled at 3 months and 35 were tested at 6 months (biofilm prevention group). Of the remaining 70 shower heads, 35 were tested at 3 months and 35 at 6 months (biofilm removal group). Heterotrophic colony count (HCC) in CFU/mL was chosen as the outcome measure. Analysis was conducted in accordance with AS 4276.3.2 (2003). The microbial growth data followed a log-normal distribution due to the exponential growth of bacteria. The natural log of the data was therefore calculated, and results from each period were compared using analysis of variance (ANOVA). Free chlorine residual levels were controlled using a combination of feed-forward and oxidation reduction potential (ORP) feedback control, and levels were retested and adjusted during the review period using N,N-diethyl-p-phenylenediamine (DPD) chemistry. **Results:** Mean and median levels of log HCC data are shown in Fig. 1. We detected a statistically significant

	A	B	C	D	E	F
Shower age 3 months			x		x	
Shower age 6 months		x		x		x
Shower Age Unknown	x					
System Treated with Chlorine			x	x	x	x
Mean/Average:	*9.2*	*6.9*	*4.6*	*3.0*	*5.5*	*3.3*
Median	**9.8**	**7.6**	**4.8**	**0.0**	**6.3**	**0.0**

All data is as the natural log of the HCC count.

Where:

A Showers where the Installation Date is Unknown - Untreated
B Showers Installed July 2017: 6 Months Old Untreated
C Showers Installed September 2018: 3 Months Old - Treated - Biofilm Prevention
D Showers Installed September 2018: 6 Months Old - Treated - Biofilm Prevention
E Showers Installed September 2018: 3 Months Old - Treated - Biofilm Removal
F Showers Installed September 2018: 6 Months Old - Treated - Biofilm Removal

Fig. 1.

difference in HCC between the 6-month-old untreated shower heads (group B) and treated shower heads (Group D) ($P < .001$). Hypochlorite was generally dosed at a concentration of 0.5 mg/L free chlorine for the first 3 months, and 1.5 mg/L for the second 3 months. Approximately 65% of the chlorine was lost as it travelled around the system. **Discussion:** Waterborne pathogens, especially multiresistant Gram-negative bacilli, have been increasingly recognized as hospital-acquired pathogens. Many instances of the transmission of these pathogens have been reported, from premise plumbing to patients, and have been confirmed using molecular typing techniques. **Conclusions:** A low-dose chlorination system of the circulating warm-water supply seemed effective in preventing biofilm formation and reducing existing biofilm in shower heads using HCCs as a measure of biofilm. This information adds to the potential armamentarium for controlling the spread of these waterborne pathogens.

Funding: None
Disclosures: None

HCC levels (CFU/mL) in chlorine treated and untreated showerheads of varying ages.

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Presentation Type:
Poster Presentation

Effective Utilization of Limited Isolation Rooms to Provide Safe Patient Care and Staff Safety in a Low- and Middle-Income Country

Rozina Roshanali, Aga Khan University Hospital

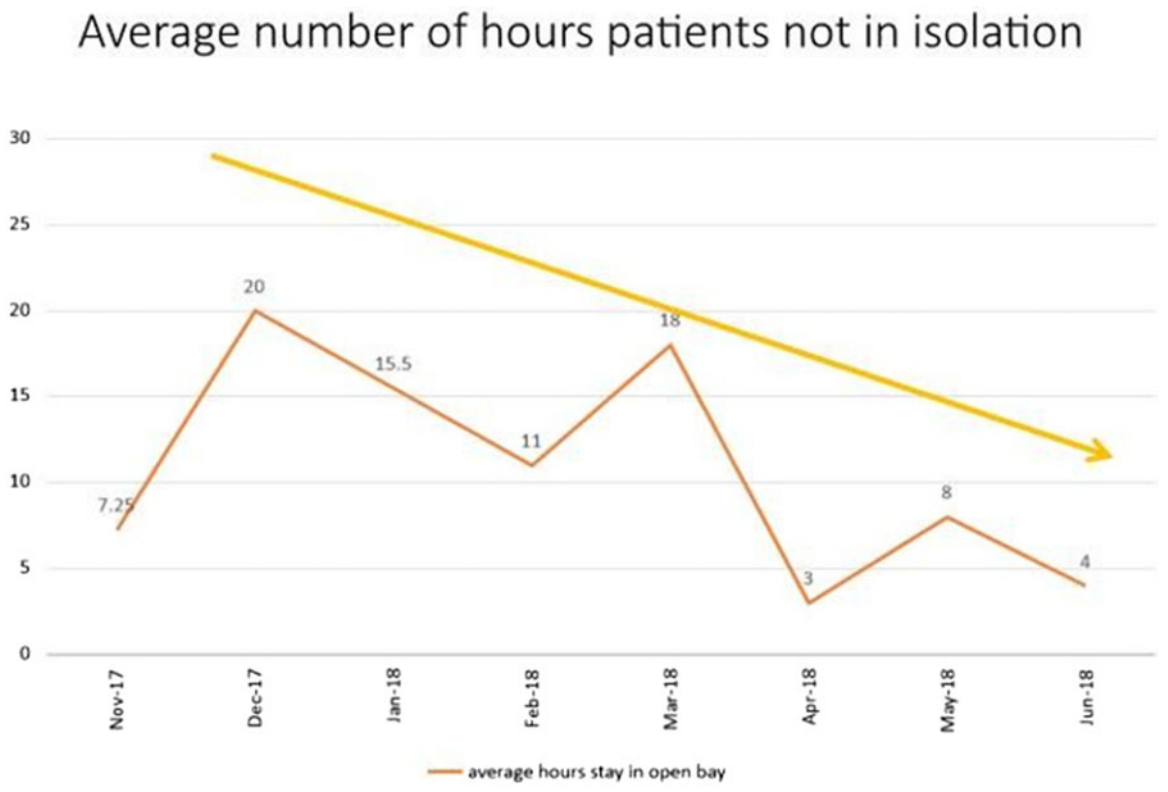

Fig. 1.

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