was no difference in 30-day mortality between a standard dose and a high dose (HR, 1.01; 95% CI, 0.51–1.97). However, we detected a trend toward poor survival with a low dose compared with a standard dose (HR, 1.21; 95% CI, 0.73–2.02). **Conclusions:** A standard dose of daptomycin was significantly associated with lower 30-day mortality compared with continued vancomycin treatment. Accurate dosage of daptomycin and avoidance of low-dose daptomycin should be a part of good antibiotic stewardship practice.

Presentation Type:
Poster Presentation
Effects of Irregularities in the Microstructure of Surgical Instruments on Microbial Adherence and Challenges for Processing

Figure 1. Scanning electron microscopy of surfaces of surgical instruments. Belo Horizonte, Minas Gerais, Brazil, 2019.
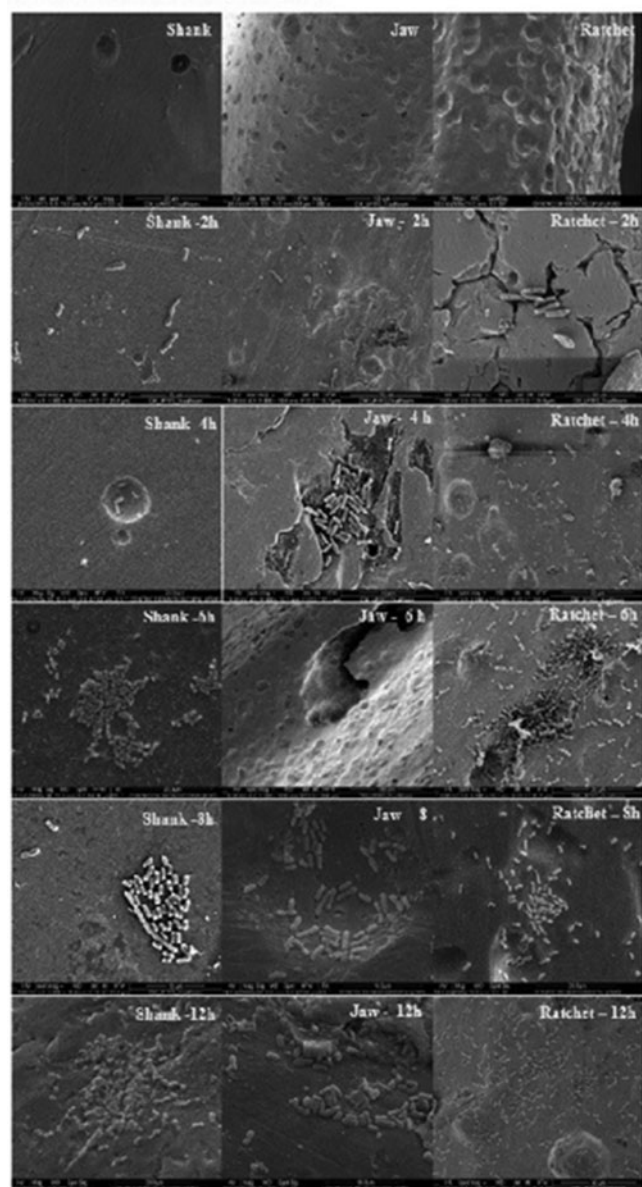
Fig. 1.

Sintia Evangelista, Federal University of Minas Gerais; Adriana Oliveira, Federal University of Minas Gerais

Background: A surgical instrument can have areas that pose different challenges to cleaning, hindering the removal of dirt. This can directly impact the effectiveness of its processing while potentially promoting cross contamination. Moreover, structural changes (ie, cracks or fissures) on the instrument surface, although rarely addressed, can act as reservoirs for microorganisms, contributing to organic matter retention, microbial growth, and biofilm formation. Our aim was to determine the effect of irregularities in the microstructure of surgical instruments on microbial adherence. **Methods:** We analyzed 18 fragments of 3 distinct areas of new crile forceps: the ratchet, shank, and jaw. Of these fragments, 15 were artificially contaminated by immersion in tryptic soy broth containing 10×6 CFU/mL of *Escherichia coli* (ATCC 25922), for 4, 6, 8, and 12 hours of incubation at 37°C with agitation at 100 rpm. The other 3 fragments were used as controls. All fragments were subjected to scanning electron microscopy to evaluate the adhesion of the microorganism. **Results:** An irregular surface was found in 3 of 6 shank fragments (50%) (Fig. 1) and in all the jaw and ratchet fragments, grooves, and cracks. Initially, there was less adherence of *E. coli* to the smooth shank surface after contamination, but the concentration of the microorganism increased progressively over time in relation to that in the jaw or ratchet at the same time, and a higher concentration occurred in the cracks and grooves. **Conclusions:** Structural damage was observed in all fragments, especially in the ratchet and jaw areas, favoring microbial accumulation. Microorganisms housed in the cracks and grooves were better protected from removal by scrubbing with a brush (being unlikely to reach them), making these areas a microbial reservoir and source of contamination. Prolonged contact of the instrument with the contaminating microorganism allowed for greater adherence, even on the smooth areas. The results support the relevance of the early onset of cleaning, considering that even microscopic changes on the surface of the instrument may represent an additional challenge to its effective processing.

Presentation Type:
Poster Presentation
Efficacy of a Sink Tailpiece Heating Device to Decrease Microbial Colonization of Sink Drains

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Background: Many institutions have reported transmission of multidrug-resistant organisms to patients from colonized sinks. Prior data have shown that bacterial colonization of the sink drain, which can occur via biofilm from a colonized p-trap or via seeding from above, results in dispersion of bacteria in the area of the sink when water from the faucet comes in contact with the drain. Heat disruption of biofilm formation between the p-trap and sink drain is a potential strategy in preventing colonization of sink drains. **Methods:** In an academic
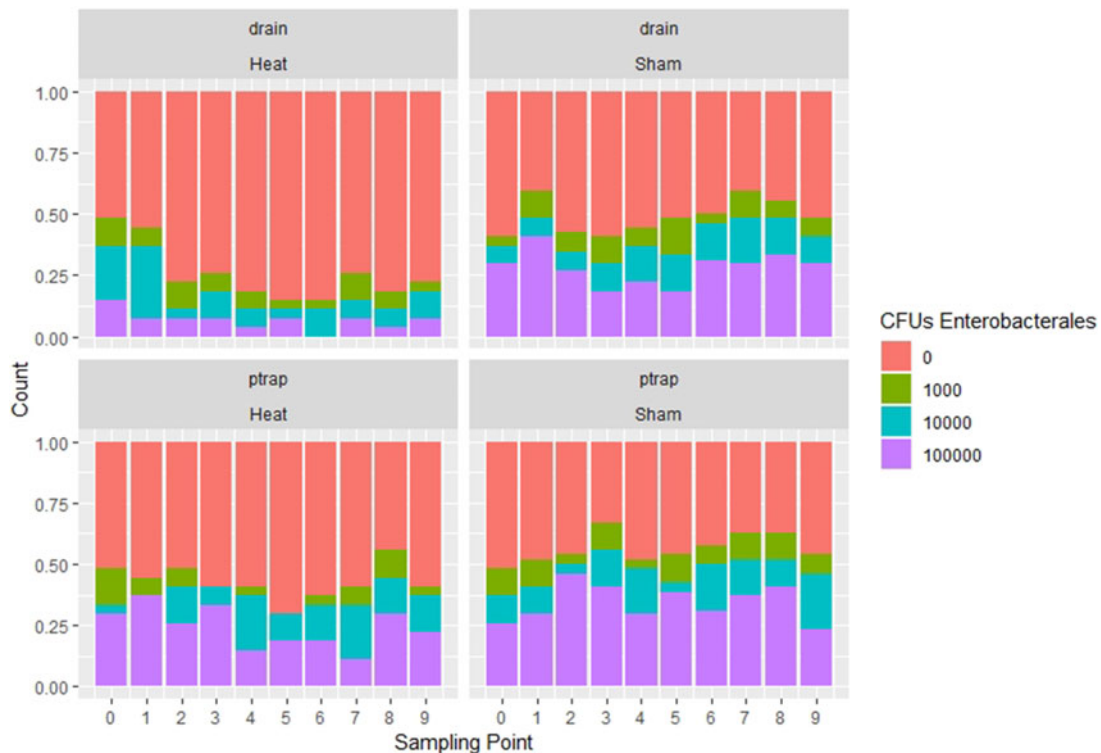
Fig. 1.

Organism of interest	Group (n)	Positive at baseline, n (%)	Positive at end n (%)	P value (mixed model)	OR (95% CI)
Carbapenemase-producing Enterobacterales	Heat (27)	6 (22.2)	2 (7.4)	0.564	0.64 (0.127 - 3.128)
	Sham (27)	5 (18.5)	4 (14.8)		
Gram-negative growth (MacConkey)	Heat (27)	18 (66.7)	14 (51.9)	0.005	0.16 (0.037 - 0.546)
	Sham (27)	23 (85.2)	19 (70.4)		
Enterobacterales	Heat (27)	13 (48.1)	6 (22.2)	0.012	0.17 (0.368 - 0.668)
	Sham (27)	11 (40.7)	13 (48.1)		
Pseudomonas aeruginosa	Heat (27)	3 (11.1)	4 (14.8)	0.877	0.86 (0.085 - 6.732)
	Sham (27)	10 (37.0)	4 (14.8)		
Stenotrophomonas maltophilia	Heat (27)	13 (48.1)	4 (14.8)	0.136	0.43 (0.132 - 1.334)
	Sham (27)	10 (37.0)	6 (22.2)		

Fig. 2.

center hospital, 54 tail-piece heaters were installed in 3 intensive care units and 2 acute-care units in an associated regional hospital. Half of the installed devices were sham (no heat). The devices were programmed to heat the tail piece to 72°C for 1 hour every fourth hour. Rooms were randomized to heating or sham devices on a 1:1 basis within each unit. Sink drains and p-traps were sampled biweekly. Samples were assessed for semiquantitative growth of gram-negative bacteria on MacConkey agar, looking especially for *Pseudomonas aeruginosa* and *Stenotrophomonas maltophilia.* Carbapenemase-producing Enterobacterales (CPE) was detected by broth enrichment followed by growth on Colorex KPC agar. Frontline personnel were blinded to device assignment.

Results: Linear mixed modeling revealed reduced risk of detectable gram-negative bacteria (OR, 0.16; 95% CI, 0.037–0.536) and Enterobacterales (OR, 0.17; 95% CI, 0.368–0.668) in sink drains with a heating device (Fig. 1), but no difference in risk of detectable *P. aeruginosa* or *S. maltophilia* (Table 1). We detected a trend toward reduction in CPE that did not reach statistical significance, and there was no difference in risk for detection of any bacteria in the p-trap between heating and sham devices. Audits of devices demonstrated that few reached the target heating temperature of 72°C (median, 65.9°C; range, 50.1–73.7°C). **Conclusions:** Disruption of biofilm between the p-trap and the sink drain is a promising strategy for the prevention of sink-drain colonization with clinically important

bacteria. The presence of a heating device was associated with reduced risk of detectable gram-negative organisms, specifically Enterobacterales, in sink drains. The limitations of this study included low overall rates of positivity for certain pathogens, including CPE, and suboptimal, inconsistent performance across heating devices. Further work with a larger sample size and more consistent heating devices is warranted, as are data regarding patient outcomes as a result of such interventions.

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Presentation Type:

Poster Presentation

Efficacy of UV-C Disinfection in Hyperbaric Chambers

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Background: UV-C light reduces contamination of high-touch clinical surfaces. Few studies have tested the relative efficacy of UV-C devices in real-world clinical environments. **Methods:** We assessed the efficacy of the Tru-D (SmartUVC) and Moonbeam-3 UV-C (Diversey) devices at eradicating important clinical pathogens in 2 hyperbaric chambers at a tertiary-care hospital. Formica sheets were inoculated with 106–107 CFU of MRSA (USA300) or 104–105 CFU of *C. difficile* (NAP1). Sheets were placed in 6 predetermined locations throughout the chambers. Two Moonbeam-3 UV-C devices were positioned in the center of each chamber and were run for 3-minute (per manufacturer's instructions) and 5-minute cycles. One Tru-D was positioned in the center of the chamber and was run on the vegetative cycle for MRSA and the spore cycle for *C. difficile*. UV-C dosage was measured for both machines. Quantitative cultures were collected using Rodac plates with DE neutralizing agar and were incubated at 37°C for 48 hours. *C. difficile* was likewise plated onto sheep's blood agar. **Results:** We ran each combination of chamber, microbe, and UV-C device in triplicate for In total, 108 samples per species.

For MRSA, the Tru-D vegetative cycle, the 5-minute Moonbeam cycle, and the 3-minute Moonbeam cycle resulted in average CFU log10 reductions of 7.02 (95% CI, 7.02–7.02), 6.99 (95% CI, 6.95–7.02),
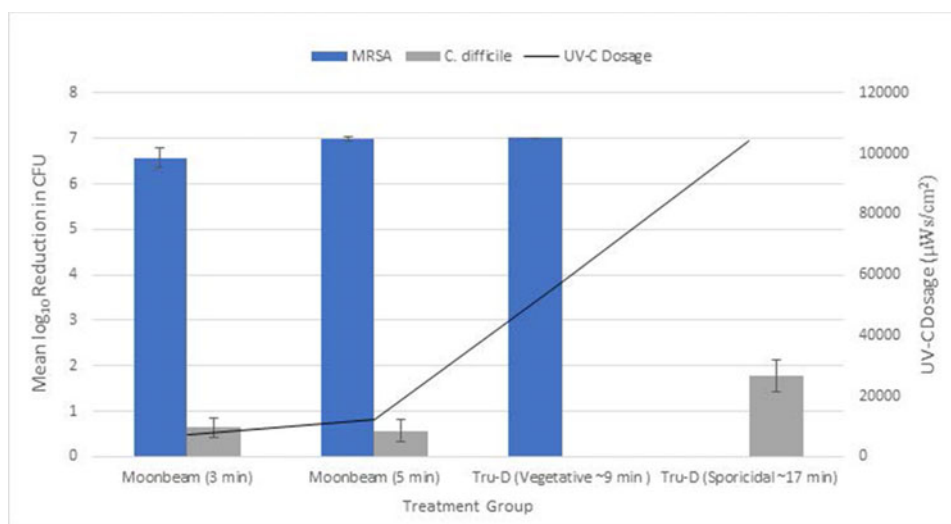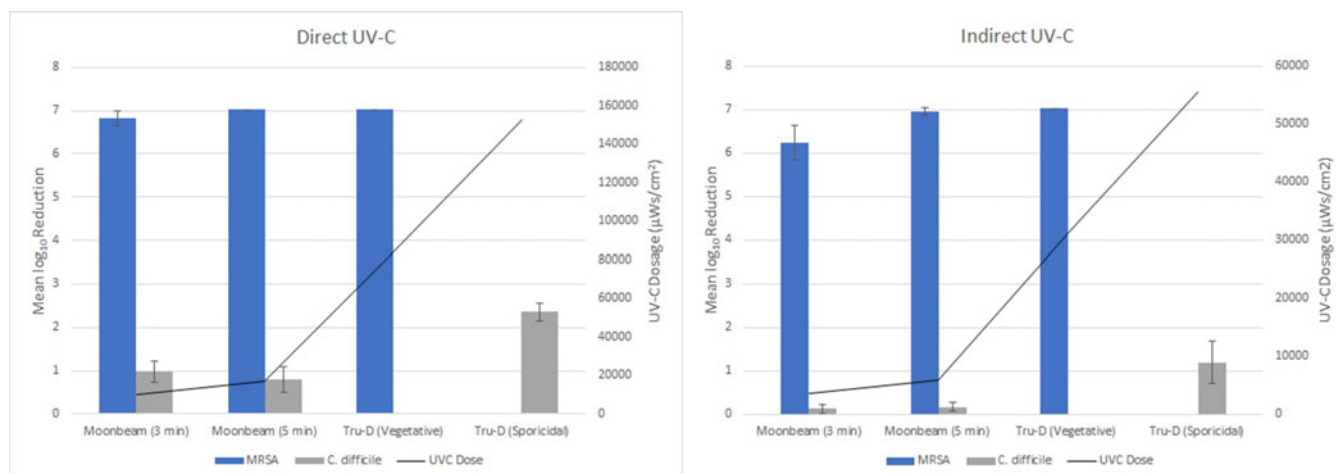

Fig. 1.

Fig. 2.