or Support)**Department of Veterans Affairs** (Other Financial or Material Support, Owner: Department of Veterans Affairs. Licensed to: Xenex Disinfection System, San Antonio, TX)**Inventor** (Other Financial or Material Support, Methods for organizing the disinfection of one or more items contaminated with biological agents)**NiH/NINR** (Research Grant or Support)**NSF** (Research Grant or Support)**Xenex Healthcare Services** (Research Grant or Support)

821. Portable Medical Equipment Disinfection: How often does it occur?

Chetan Jinadatha, MD, MPH[1]; JulieAnn Martel, BS[2]; Patrick Crowley, DO[3]; Hector E. Ramirez, MD[3]; John David. Coppin, MPH[2]; Mark Stibich, PhD MHS[4]; Sarah Simmons, DrPH[5]; Piyali Chatterjee, PhD[6]; Hosoon Choi, PhD[7]; Deborah G. Passey, PhD[8]; Marjory D. Williams, PhD, RN, NEA-BC[9]; [1]Central Texas Veterans Health Care System, Temple, TX, Temple, Texas; [2]Central Texas Veterans Health Care System, Temple, Texas; [3]Baylor Scott & White Hospital, Temple, Texas; [4]Xenex, Santa Fe, New Mexico; [5]Xenex Disinfection Services, San Antonio, Texas; [6]Central Texas Veterans Healthcare System, Temple, Texas; [7]Central Texas Veterans Research Foundation, Temple, Texas; [8]University of Utah, Salt Lake City, Utah [9]CTVHCS, Temple, Texas

Session: P-34. HAI: Disinfection/Sterilization & Environmental Infection Prevention

Background. Portable Medical Equipment (PME) are routinely used by healthcare workers (HCWs). Transmission of healthcare-acquired infections has been attributed to PME. Our institution policy requires at least once daily PME disinfection. Automated tracking of disinfection events by ***D***isinfection ***T***racking ***S***ystem (DTS) makes routine monitoring possible. We tested the device to see if it could provide accurate information about disinfection practices and patterns, as well as be used to accurately monitor compliance with policy.

Methods. Data obtained from DTS devices on PME from 2 acute care wards over a 25-day period was obtained. DTS devices record disinfection events and are automatically stored for monitoring. DTS was placed on 10 computer-on-wheels (COWs) and 5 vitals machine (VMs) on both the wards. One ward received DTS with "Screen-on" feedback displaying the time since last disinfection event, and one unit had no display on the screen (screen-off). The number of recorded events was summed over the 25-day period and sorted by time of day to determine the pattern of events over a typical 24-hour period. Minute "0" indicates start of each monitoring period in a 24-hour cycle and corresponds to 12 midnight (Figure 1).

Results. A total of 421 moisture events were recorded for the screen-on and 345 for the screen-off, during the 25-day implementation period. The highest number of events occurred between 6am and 7am, with 69 moisture events recorded in the screen-on group and 75 events were recorded for the screen-off group. Further, 37 events were recorded in the screen-on group and 43 events in the screen-off group between 2pm and 3pm. Between 6pm and 7pm the screen-on group showed 52 moisture events and 32 events for the screen-off group. Figures 1 shows the three peaks corresponding with a spike in disinfection events.

Conclusion. The pattern of disinfection events over 24 hours demonstrate that most events occurred regularly at certain times in the day. These time points correspond with higher volumes of disinfection happening at the beginning of shift changes for nursing. It also demonstrated that disinfection rates were higher than the policy recommended once a day PME disinfection. DTS has the potential to continuously record & report data related of disinfection events on PME in healthcare settings.

Disclosures. **Chetan Jinadatha, MD, MPH**, **AHRQ** (Research Grant or Support)**Department of Veterans Affairs** (Other Financial or Material Support, Owner: Department of Veterans Affairs. Licensed to: Xenex Disinfection System, San Antonio, TX)**Inventor** (Other Financial or Material Support, Methods for organizing the disinfection of one or more items contaminated with biological agents)**NiH/NINR** (Research Grant or Support)**NSF** (Research Grant or Support)**Xenex Healthcare Services** (Research Grant or Support) **Mark Stibich, PhD MHS**, **Xenex Disinfection Services, Inc** (Board Member, Employee) **Sarah Simmons, DrPH**, **Xenex Disinfection Services** (Employee, Shareholder)

822. Structural Damage and Biofilm Accumulation on Patient-Ready Orthopaedic Implant (Least Used Cortical Screws), Acquired through Loaner System

Luiz Antônio Pereira, RN[1]; Lillian Kelly O. Lopes, PhD[2]; Dayane M. Costa, PhD[3]; Michelle A. Santos, n/a[1]; Isabella M. Boff, n/a[4]; Lara Stefânia N. Leão-Vasconcelos, PhD[5]; Karen Vickery, BVSc, MVSc, PhD[6]; Anaclara F. Tipple, PhD[4]; [1]Post-graduate Program in Nursing, Federal University of Goiás, Goiânia, Goias, Brazil; [2]Clinics Hospital, Federal University of Goiás, Goiânia, Goias, Brazil; [3]Postgraduate Program in Nursing, Federal University of Goias, GOIANIA, Goias, Brazil; [4]Faculty of Nursing, Federal University of Goiás, Goiânia, Goias, Brazil; [5]Institute of Tropical Pathology and Public Health, Federal University of Goiás, Goiânia, Goias, Brazil; [6]Macquarie University, Sydney, New South Wales, Australia

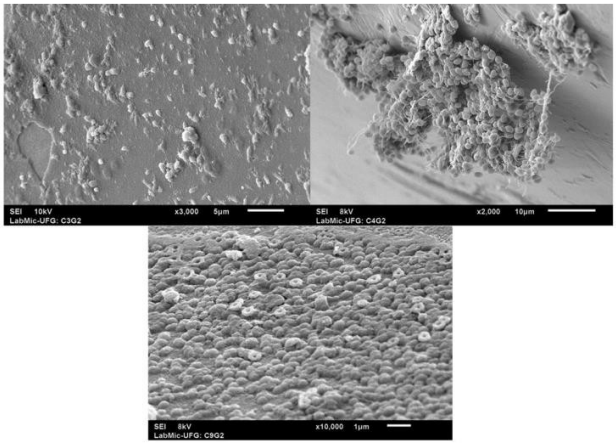
Session: P-34. HAI: Disinfection/Sterilization & Environmental Infection Prevention

Background. The acquisition of reusable medical devices through loaner system is a worldwide phenomenon. Single-use implants, such as orthopaedic screws, that remain in the surgical tray are subjected to multiple handling and reprocessing until they are implanted. Exposure to physical, chemical and biological agents may compromise their quality/safety and favor biofilm formation. The aim of this study was to assess the surface integrity and microbiological conditions of patient-ready orthopaedic surgical implants (least used cortical screws), provided through loaner system.

Methods. After full reprocessing, clinical trays used for small fragment surgery (3,5) provided through loaner system to a large Brazilian teaching hospital were randomly selected between August to November 2019. Trays were opened in a biological safety cabinet and the least frequently used cortical screws (numbers 10 and 38), therefore, the ones most exposed to biological, chemical and physical agents, were randomly removed and subjected to bacterial culture (n = 3 screws/tray, 9 trays) and Scanning Electron Microscopy (SEM) (n= 1 screw/tray, 5 trays). The 27 screws were individually cultured in Tryptic Soy Broth (TSB), sonicated and vortexed, and incubated at 35°C for up to 28 days (screws were left in TSB). Positive cultures were plate out for automated bacteria identification.

Results. Bacterial growth was identified in 2/27 screws. Three bacterial species were isolated, *Staphylococcus hominis* resistant to rifampicin and *Kocuria rhizophila* (screw A), and *Micrococcus luteus* (Screw B). Structural damage and soil were visualized on all screws subjected to SEM (5/5). Extensive biofilms were detected on three screws (3/5) (Figure 1).

Figure 1. Scanning electron micrographs of patient-ready orthopaedic implants (screws), acquired through loaner system showing extensive biofilm, with incorporated bacilli/rods and/or cocci shape bacteria.



Conclusion. Recovery of bacteria, biofilm accumulation and structural damage were detected on patient-ready least frequently used orthopaedic cortical screws. Screws frequently remain in surgical trays for multiple reprocessing, thus, they are repeatedly exposed to contamination and possible damage. These findings point to the need to discuss and review the way these single-use implants are currently made available for surgery.

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

823. How to Compare standardized Healthcare-associated Infection (HAI) Rates? Benchmark 2D and 3D

Braulio Roberto Gonçalves Marinho Couto, n/a[1]; Carlos Ernesto Ferreira Starling, n/a[2]; [1]Centro Universitário de Belo Horizonte, Belo Horizonte, Minas Gerais, Brazil; [2]Lifecenter Hospital, Belo Horizonte, Minas Gerais, Brazil

NOIS Project Group

Session: P-35. HAI: Epidemiologic Methods

Background. External benchmarking involves comparing standardized data on HAI rates in one hospital or healthcare facility in relation to others. Here we present two epidemiological graphical tools, 2D and 3D benchmarks, which summarize the efficiency in preventing main infections in a Medical/Surgical Intensive Care Unit (MSICU).

Methods. The 3D benchmark graph considers the incidence density rate of ventilator-associated pneumonias (VAP cases per 1,000 ventilator-days) as the X-Axis, the incidence density rate of central line-associated primary bloodstream infections (CLABSI cases per 1,000 central line-days) as the Y-Axis, and the incidence density rate of urinary catheter-associated urinary tract infections (CAUTI per 1,000 urinary catheter-days) as the Z-Axis. Efficiency in preventing infection (e) considers the zero rate to be 100% efficient (e=100%) and the highest available benchmark rate to be "zero" efficiency (RMax: e=0%). From this definition, the efficiency of any MSICU ($0\% \leq e \leq 100\%$) is obtained using a linear interpolation function, from the rate observed in the MSICU under evaluation (Rx): $e = 100x(RMax - Rx)/RMax$. If $Rx > RMax$, then $RMax = Rx$. The 3D benchmark is build by calculating the preventing infection (e) for each infection (VAP, CLABSI, and CAUTI) for all benchmarks and for the MSICU under evaluation. In the 3D Benchmark, three control volumes are created: "Infection Control Urgency" volume, "Infection Control Excellence" volume, "Infection Prevention Opportunity" volume. Benchmark 2D considers only the VAP density rate as X-Axis, and the CLABSI density rate as Y-Axis. In this graph, five control regions are created: 1=excellence in the control of VAP+CLABSI; 2=excellence in VAP control and opportunity for CLABSI prevention; 3=excellence in CLABSI control and opportunity to prevent VAP; 4=opportunity to prevent VAP+CLABSI; 5=urgency in infection control.

Results. Graph parameters were based on NHSN data from the device-associated module, NOIS Project, Anahp, CQH, and GVIMS/GGTES/ANVISA (Brazilian benchmarks), and El-Saed et al. benchmarks. We applied the 2D/3D benchmarks to several Brazilian ICUs.