

Presentation Type:

Poster Presentation - Poster Presentation

Subject Category: Disinfection/Sterilization**Reduction in IUSS (Immediate Use Steam Sterilization) Associated with Reduction in Surgical Site Infections**

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Background: Immediate use steam sterilization (IUSS) is a potential risk factor for surgical site infection (SSI). During a regulatory survey, it was discovered that IUSS rates for a 767-bed hospital exceeded what had been reported to Infection Prevention (IP) and surgery leaders (estimated at an average of 60 instances per month, with approximately 40 of those in orthopedic cases). A Quality Improvement (QI) project to reduce IUSS was implemented. **Methods:** The QI project started with the requirement of three signatures for every cycle of IUSS (surgery management, sterilization management, and IP). Additional trays were ordered to provide an ample supply for cases. Surgery personnel were no longer allowed to perform IUSS, and the number of sterilizers available for IUSS was reduced from 8 to 1. The project was fully implemented as of December 2019. To evaluate the impact, SSI rates for hip and knee prosthesis were compared using chi square analysis (Epi Info, CDC); before QI project rates were measured from 2017-2019 and after QI project rates were measured for 2020-2022. No other changes were made that were anticipated to impact orthopedic SSI rates. **Results:** There were no instruments or implants processed by IUSS after December 2019. Prior to the project, there were 9 hip SSI (rate = 0.54 per 100 procedures) and 14 knee SSI (rate = 0.49 per 100 procedures). After the project, hip SSI decreased by 76% (2 SSI, rate = 0.13 per 100 procedures, $p < 0.05$) and knee SSI decreased by 18% (7 SSI, rate = 0.41 per 100 procedures, $p=0.67$). **Conclusion:** A multidisciplinary QI project was successful at drastically reducing the use of IUSS, and a correlating statistically significant decrease in hip SSI and clinically significant decrease in knee SSI was seen for 3 years after the project was completed.

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Subject Category: Disinfection/Sterilization**Navigating the Challenges: Construction Lessons in Establishing an Orthopedic Institute in a Sterile Environment**

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Background: In order to become a new, state-of-the-art orthopedic institute with additional operating rooms, and a brand new sterile processing department (SPD), construction needed to be done within a sterile environment. Expansion of the operating room (OR) included adding a whole new wing, with smaller construction work within the open and active OR. While construction for a new SPD occurred in the midst of an active and open SPD; unlike the addition of the OR, new SPD construction included heavy demolition and multiple dust generating projects. There were many lessons learned from the built of this brand new institute, which took place in the middle of a pandemic era. **Method:** Each project involved in the making of the new orthopedic institute required an Infection Control Risk Assessment (ICRA), as well as walkthroughs and team meetings prior to the start of work. Team meetings involved the hospital Infection Preventionist (IP), the construction project manager, and the departments [involved] managers. Requirements, to mitigate dust dispersal into the neighboring sterile environment, were listed in the ICRA. In addition, weekly rounding was conducted by the team to ensure air flow requirements were followed, and there were no accumulation of dust dispersing to the sterile side. Reprocessing was also conducted at sister facilities when existing reprocessing items (sterilizers, instrument washers, cart washers,

etc) were shut down; the hospital also went on bypass a few times in order to accommodate patients who emergently needed operating services. **Result:** By April 2022, after two years of construction, the new orthopedic institute with 12 new operating rooms, new ambulatory surgery units (ASU), new post anesthesia care units (PACU), and a brand new SPD went live. There were more than 100 shutdown notices, over 50 alternative practices in place to continue daily operations while also allowing construction work to continue. Noncompliance to any of the requirements was immediately followed up with an urgent notice to the project manager. **Conclusion:** Hindsight, heavy construction in a sterile environment is not preferred and it would have been easier to add on a new SPD, similar to how the OR additions were added; instead of building within an actively open sterile environment. Multidisciplinary team meetings conducted at the very beginning of the project would have prevented many shut downs and alternate practices; . It is pertinent that IPs and clinical department managers are involved at the most earliest phases of the construction.

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Subject Category: Emerging Pathogens**Resistance to Antifungals in Non-albicans Candida Species Isolates in the Southeast Region**

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Background: Antimicrobial resistance is a growing problem in *Candida* spp., leading to treatment challenges and increased morbidity and mortality. The World Health Organization (WHO) fungal priority pathogens list classifies *C. glabrata*, *C. tropicalis*, and *C. parapsilosis* as high priority and leading causes of candidemia with high fluconazole resistance. In the US, these organisms are the most frequently isolated non-albicans *Candida* species. In 2016, the Antibiotic Resistance Laboratory Network (ARLN) was created to monitor resistance threats, including in *Candida* spp. This study describes the proportion of resistance in *C. glabrata*, *C. parapsilosis*, and *C. tropicalis* isolates sent to the Southeast ARLN from 2017 to 2023. **Methods:** This study evaluated *C. glabrata*, *C. parapsilosis*, and *C. tropicalis* submitted to the Southeast ARLN from Alabama, Florida, Georgia, Louisiana, Mississippi, and Tennessee from February 2017-September 2023. Species identification was confirmed by Bruker Biotyper matrix assisted laser desorption-ionization time of flight (MALDI-TOF). Antifungal susceptibility testing (AFST) was performed using TREK frozen broth microdilution panels. Minimum inhibitory concentration values from the clinical instrument were used to determine susceptibility based on Clinical and Laboratory Standards Institute (CLSI) standard interpretations from the 2020 CLSI M60 guidelines. Data were extracted from the laboratory information management system. Analyses were conducted using SAS v9.4. **Results:** AFST testing was performed on 660 *C. glabrata*, 500 *C. parapsilosis*, and 233 *C. tropicalis* isolates from within the Southeast region. The predominant specimen sources by species were blood 25.30% *C. glabrata*; other/not specified 27.80% *C. parapsilosis*; and lower respiratory 36.91% *C. tropicalis*. Resistance to fluconazole is as follows: *C. glabrata*, 12.88%; *C. parapsilosis*, 3.41%; *C. tropicalis*, 36.64%. Resistance to voriconazole is as follows: *C. parapsilosis*, 1.00%; *C. tropicalis* 30.04%. Resistance to at least one echinocandin (Anidulafungin, Caspofungin, Micafungin) is as follows: *C. glabrata*, 1.67%; *C. parapsilosis*, 0.60%; *C. tropicalis*, 0.43%. Overall, there was a decreasing trend in resistance to fluconazole, and voriconazole in all three species between 2017

and 2023. **Conclusions:** Antifungal resistance in non-albicans *Candida* species represents an emerging public health threat, however, within the Southeast region, ARLN data has shown a decreasing trend of azole resistance. This may be due in part to changes in reporting requirements and submission criteria from within the region. Nevertheless, *C. tropicalis* showed high resistance to azoles within the Southeast region. These *Candida* species should be monitored to inform clinical decision making and identify resistance patterns in other US regions due to their increase in resistance worldwide.

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Subject Category: Emerging Pathogens

Candida auris in the Healthcare Environment: Prevalence, Anti-Fungal Resistance, and Survival on Porous & Non-Porous Surfaces

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Candida auris is an emerging multidrug-resistant pathogenic yeast capable of causing severe illness in the healthcare environment. It spreads easily amongst patient populations, is often resistant to anti-fungal treatments and can survive on surfaces for prolonged periods. In the current study, 85 sites within hospital settings were screened for surface-contaminated *Candida* species and *C. auris*. Surface swab samples were transferred to chromogenic agar media designed to isolate and identify *Candida* species and were incubated at 35°C for 48 hr. Samples were confirmed using molecular techniques designed to specifically target *C. auris* from other *Candida* species. Data was compiled to show prevalence of six key *Candida* species (*C. albicans*, *C. auris*, *C. glabrata*, *C. krusei* and *C. tropicalis*). Survivability on surfaces was performed using CDC B11903 *C. auris* strain. Plastic, metal and fabric surfaces used were purchased from a medical supply store. Once inoculated with 500 CFU/ml in sterile distilled water, the surfaces were kept in a Class II hood with minimal airflow and ambient conditions (21°C, 60% RH) and sampled daily. Results showed 25 of the 85 (29.4%) tested sites were positive for *Candida* species, with 3 of those sites positive for *C. auris*. Anti-fungal resistance among the three isolates (tested using concentration gradient test strips) showed notable resistance to fluconazole, but not to amphotericin B nor micafungin. *C. auris* survivability was dependent upon surface type, with the *C. auris* test strain surviving for 39 days on three different types of hospital curtains, and ≥ 10 days on a variety of non-porous plastic or metal surfaces. With demonstrated survivability of *C. auris* for long periods of time on hospital surfaces, it becomes critical for healthcare facilities to consider *C. auris* when developing infection prevention programs.

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Hospital-Associated Transmission of *Candida auris* from Adult to Pediatric Patient

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Background: *Candida auris*, an emerging multidrug-resistant fungus, is often difficult to control in hospital outbreaks. We report the hospital

investigation and findings of a transmission of *C. auris* from patients hospitalized in an adult unit to a pediatric unit, the first in Maryland. **Methods:** Between June and September 2023, *C. auris* was recovered from two patients admitted to an adult Neuroscience Intensive Care Unit (ICU) and a patient admitted to a pediatric ICU. Infection control initiated an investigation involving staff interviews, observations and chart reviews. Cases were defined as any patient with clinical or surveillance cultures growing *C. auris*. Point prevalence surveillance was conducted by collecting nares and composite axilla/groin swabs from patients on the affected units. Environmental cultures collected using moistened E-Swabs (Copan, Murrieta, CA) from shared supplies were plated on CHROMagar *Candida* (BD, Sparks, MD). *C. auris* isolates from patients hospitalized at the facility between February 2022 and October 2023 were analyzed by WGS for relatedness. WGS was performed using Illumina NextSeq 300 bp paired-end sequencing (Illumina, San Diego, CA). Single nucleotide polymorphism (SNP) analysis was performed by comparing raw reads to the reference *C. auris* B8441 genome for subsequent clustering analysis (Ares Genetics, Vienna, Austria). **Results:** WGS demonstrated isolates from two adults and one pediatric patient were less than three SNPs different, suggesting a shared isolate. One additional pediatric case was identified from surveillance cultures collected from 27 patients. Investigation into possible transmission routes revealed healthcare personnel serving both units, specifically clinical teams and continuous electroencephalography (cEEG) technologists. Additionally, cEEG equipment was used on both adult and pediatric patients and twelve equipment surface swabs and three samples each of measuring tape and gel were collected. *C. auris* was not isolated, however sensitivity of environmental sampling is unclear and suspicion for possible fomite/environmental transmission persisted. Other possible transmission routes included gaps in hand hygiene, isolation, disinfection of shared equipment, and reuse of single-use items. Interventions included improving and monitoring infection prevention practices, educating multi-disciplinary personnel and heightened environmental cleaning. **Conclusion:** This case highlights the feasibility of transmission of *C. auris* between patients admitted to a geographically distant unit. Our investigation revealed multiple possible routes of transmission including direct contact (from healthcare personnel or equipment) or indirect environmental sources. Prevention of hospital-associated *C. auris* transmission likely necessitates meticulous adherence to hand hygiene, contact precautions, and careful cleaning and disinfection of patient environments and equipment used by all disciplines.

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Epidemiology of Extrapulmonary Nontuberculous Mycobacterial Disease – 4 Emerging Infection Program Sites, 2021

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