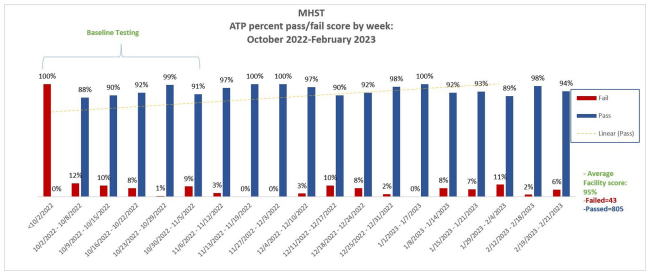

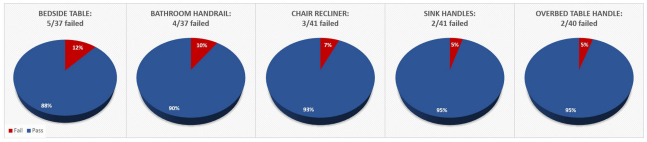

MHST is maintaining a safe and clean environment for patients & staff, MHST implemented a comprehensive cleaning verification program to include adenosine triphosphate (ATP) technology. We aimed to establish the program with baseline readings, and an overall weekly passing score of 95% for all tested inpatient rooms. **Methods:** To achieve sustained improvement, we needed to monitor, educate, and have periodic performance feedback to individuals and stakeholders. Key stakeholders (IP, EVS, Operations Leadership, Nursing Leadership representative) were identified, and a weekly meeting was established to discuss the planning and implementation of the ATP program. Some key actions included: standardization of brand of luminometer- device to measure ATP for microbial contamination; establishment of 16 high surface touch points to be tested; partnership with IT to create a database & dashboard for ATP results & data analysis; training of ATP device to all personnel who will be utilizing ATP device; establishment of a threshold for a "pass" clean (relative light unit [RLU] less than or equal to 45). Summary of **Results:** After baseline testing, the average weekly pass score met goal at 95 percent for all tested rooms. The bedside table located on the 2W floor was the location that failed the most (3 instances). **Conclusions:** Our program implementation project aimed to improve terminal cleaning validation utilizing ATP technology in inpatient rooms, was successfully implemented. Equipped with quantitative results, the MHST team, was able to verify cleaning quickly and efficiently without any confusion, as it may have been with the previous verification method of fluorescent marking. The partnership between Infection Prevention (IP) & Environmental Services (EVS) was crucial in the implementation of this process improvement- from participating in training together to understanding and sharing ATP pass/fail score data.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s95–s96
doi:10.1017/ash.2024.239

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Environmental Cleaning

Environmental Contamination in Relation to cDHP in Candida auris Patient Rooms as Measured by ATPase

Julia Moody, Hospital Corporation of America Healthcare; Ken Sands, Hospital Corporation of America Healthcare; Bonnie Greene, Hospital Corporation of America Healthcare; Rachel Long, Hospital Corporation of America Healthcare and Nychie Dotson, Hospital Corporation of America Healthcare

Background: Candida auris (CA) is an urgent threat per Centers for Disease Control and Prevention with rapidly increasing cases across the US. Patient rooms recontaminate with CA within hours after daily cleaning due to skin shedding, persistence on environmental surfaces and resistance to commonly used disinfectants. Continuous dry hydrogen peroxide (cDHP) is a novel environmental technology augmenting daily room disinfection. cDHP reduces CA organism counts based on environmental cultures. Adenosine triphosphatase (ATPase) testing offers rapid results to monitor surface cleanliness. ATPase Testing Protocol: Upon identification of CA, cDHP was activated in the patient's room. ATPase surface testing was performed in rooms of CA infected inpatients and nearby control rooms of inpatients without CA and thus no cDHP. Group A surfaces near the patient were nurse call handheld devices and/or bed rail. Group B surfaces were horizontal counter and/or computer keyboard, located >3 feet away from the patient. ATPase testing was to occur within one hour of daily room disinfection for CA patient Day0 (day of cDHP activation), Day1, Day7 and Day14 and controls. Daily room disinfection using quaternary disinfectants was replaced with EPA Class P chemicals upon CA identification. Nursing spot disinfects with Class P ready to use disinfectant wipes in all rooms. **Results:** Testing occurred among 13 CA and 22 control patients in 5 hospitals. In Table 1, pass rates are displayed by cumulative (Day0+1+7+14) test days for surfaces and patient room groups. Analysis applied Pearson's Chi-squared test with Yates' continuity correction. **Conclusions:** Surfaces further from the patient in rooms of CA patients exposed to cDHP had higher ATPase pass rates than controls. Surfaces close to the patient have a high ATPase failure rate, regardless of CA or cDHP. Strategies are needed to ensure disinfection occurs on high touch surfaces near patients. cDHP may have value in supplementing room disinfection. Contributing failure factors include surfaces missed for disinfection, delays in timely testing and known limitations with ATPase methods.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s96
doi:10.1017/ash.2024.240

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Environmental Cleaning

Mitigating SSIs: focus on physical operation rooms environmental factors

Lakshmi Medepalli, Pitt Public Health; Mohamed Yassin, University of Pittsburgh; Heather Dixon, UPMC and Mathea Schafer, UPMC

Background: Surgical site infections (SSIs) are associated with increased morbidity, monetary loss and mortality. The physical aspects of the operation room (OR) including airflow, humidity, pressure, and particulate counts are essential part of SSI prevention. Humidity control is vital to avoid static electricity buildup.Temperature control helps prevent hypothermia. Limiting OR traffic and door opening are essential to prevent airflow disturbance and minimze particles in OR environment. We have recently studied electronic monitoring of OR traffic and the traffic was higher than what was expected. Our aim was to evaluate our real-life measurement of these OR parameters as part of SSI prevention bundle. **Methods:** This is a prospective study focused on the OR physical environmental factors as part of operative SSI prevention bundle. The study was conducted for 4 weeks at an academic medical center. The study was conducted in two different generations of OR for neurosurgical and ophthalmologic procedures. We performed direct observation of OR traffic as well as environmental parameters (temperature, humidity, pressure, and particulate count) for the entire length of the procedure. We used both directly measured data as well as automated data generated by facilities. **Results:** The study showed that temperature, humidity, and pressure wer tightly controlled in the OR. This observation was consistent between manual data and automatically generated data. The OR traffic was not easily monitored by the current automatic data and was measured by direct observation. The correlations between particulate count and OR traffic was strongest for 0.3μm (0.7370, and weakest for 1.0μm (0.087). The 5.0μm particulate size had a moderate positive correlation of 0.344, Additionally, shorter procedures had less particulate matter in the OR environment. Automated data were only available in the new ORs but could not predict traffic without automated door monitors. But the automated data could easily portray

the temperature, humidity and pressure minute by minute. **Conclusion:** OR traffic increases the particle count particularly the small size. Other physical aspects of the OR environment were tightly controlled. The ability to automatically monitor OR parameters could be extremely helpful for assuring patient safety as well as reviewing OR factors in SSI cases.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s96–s97
doi:10.1017/ash.2024.241

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Environmental Cleaning

Filtered handheld far-ultraviolet disinfection device in reducing environmental pathogens from high-touch clinical surfaces

Layale Yaghi, The University of Texas MD Anderson Cancer Center; Rita Wilson-Dib, MD Anderson Cancer Center; Sherry Cantu, MD Anderson Cancer Center; Piyali Chatterjee, Central Texas Veterans Health Care System; Chetan Jinadatha, Central Texas Veterans Health Care System; Roy Chemaly, The University of Texas MD Anderson Cancer Center and Amy Spallone, The University of Texas MD Anderson Cancer Center

Background: Healthcare-acquired infections (HAIs) continue to be a major challenge. In fact, an increased risk of HAIs has been linked to high-touch surfaces contaminated with multidrug-resistant organisms (MDROs), and enhanced environmental disinfection is linked to reduced HAI rates. Recently, more focus has been placed on emerging disinfection technologies, such as UV light-producing portable device that emits light at a wavelength of 222 nm, which has previously demonstrated germicidal capabilities at short contact times. In this study, we aim i) to evaluate the efficacy of a filtered far-UV-C handheld device (FFUHH) to reduce bacterial loads on high-touch surfaces in clinical workrooms in a cancer center, and ii) to isolate, identify and establish a genetic relationship between these environmental clinically significant pathogens and the ones recovered from patients. **Methods:** Samples were collected weekly on a rotating schedule over a 24-week period from five high-touch items (dictation device, mouse, armchair, desk, and keyboard) in multiple clinical work rooms on hematologic malignancy and stem cell transplant units. Contact plates for colony count and swabs were collected pre- and post-intervention with the FFUHH on standardized adjacent areas respectively for each surface. The swabs were enriched and cultured on selective media to isolate clinically significant pathogens. Whole genome sequencing (WGS) was then performed on environmental pathogens validated by MALDI-TOF as well as clinical samples collected from patients in the same unit around the time of environmental sample collection. **Results:** A total of 440 plates, 220 pre- and 220 post-interventions, were collected and analyzed. The highest mean colony count pre-treatment was detected from the armchairs and the lowest for the keyboards. The mean reduction of colony forming units (CFUs) ranged between 53% for the keyboard and 83% for the mouse. The reduction was statistically significant across all surfaces with P values < 0.05, except for the keyboard (Figure 1). We isolated many pathogens of the human microbiota identified by MALDI-TOF such as Micrococcus luteus, S. capitis as well as methicillin-resistant S. epidermidis, S. haemolyticus and S. hominis. We also identified several Candida parapsilosis, Pseudomonas stutzeri, one Listeria grayi and one Acinetobacter baumanni. Finally, WSG allowed us to further characterize an environmental multi-drug resistant S. epidermidis ST5 strain associated with patient bacteremia, and ST16 strains detected on surfaces both pre- and post-FFUHH treatment. **Conclusion:** The FFUHH effectively reduced the microbial burden on high-touch surfaces in clinical workrooms on hematologic malignancy and stem cell units.

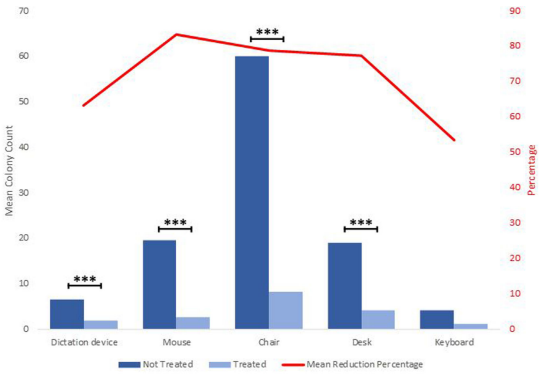

Figure 1: Efficacy of the UV treatment. Columns indicate mean CFUs before and after treatment with the FFUV handheld device for each tested surface. Mean reduction percentages were calculated by comparing not treated and treated values for each surface respectively. Statistical analysis was performed, and P values calculated using Wilcoxon matched pairs signed rank test. (***) indicate statistically significant results with a P value <0.000.

Antimicrobial Stewardship & Healthcare Epidemiology 2024;4(Suppl. S1):s97
doi:10.1017/ash.2024.242

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Environmental Contamination

Environmental Fungal Contamination Characterization of Three Inpatient Units Utilizing Optimized Detection Methods

Bobby Warren, Duke Center for Antimicrobial Stewardship and Infection Prevention; Guerbine Fils-aime, Duke University Hospital; Amanda Graves, Duke Center for Antimicrobial Stewardship and Infection Prevention; Aaron Barrett, Duke Center for Antimicrobial Stewardship and Infection Prevention; Matthew Steigel, Duke University Medical Center; Becky Smith, Duke University Medical Center; Ilan Schwartz, Duke Center for Antimicrobial Stewardship and Infection Prevention and Deverick Anderson, Duke Center for Antimicrobial Stewardship and Infection Prevention

Background: Environmental sampling and detection methods for fungi in healthcare settings are not well-established. We previously refined methods for fungal sampling and detection in a controlled laboratory environment and aimed to validate them in a real-world healthcare setting. **Methods:** We performed a microbiological analysis of air and surfaces in three inpatient units at a tertiary care center. Surface samples were obtained with foam sponges from 3 locations in patient rooms (Patient bedrails, bathroom floor, HVAC export) and 5 locations in units (HVAC exports 3x, clean linen storage, soiled linen storage). Air samples were taken with an active air sampler directly below HVAC exports. Sponges were processed using the stomacher technique. Samples underwent DNA extraction followed by qPCR with FungiQuant primers targeting the 18S rRNA gene. Amplicons from positive samples were sequenced (NextSeq 1000, 300bp PE) and SmartGene databases were used to interpret sequence data. For comparison to culture methods, samples were also plated onto Sabouraud and HardyCHROM Candida + auris medias. Fungal growth underwent DNA extraction, 18S PCR and Sanger sequencing for genus and species identification. **Results:** A total of 85 samples were obtained, from 15 patient rooms and three units resulting in 61 surface and 24 air samples. Patients in study rooms had a median age of 53, 9 (60%) were male, and no patients had an invasive fungal infection during their hospital encounter. 44 (53%) and 39 (46%) samples were positive for fungi via qPCR and culture, respectively. Of the 44 positive qPCR samples, microbiome analyses identified at least one fungi to the species, genus and family levels in 43 (98%), 28 (64%), 18 (41%) samples, respectively (Table 1). 114 total isolates were identified of which the most common were Mallassezia restricta (30 [26%]), Malassezia globose (29 [25%]), and Pennicillium paradoxum (4 [4%]). 39 genera were identified of which the most common were Mucor (19 [49%]) and Candida (8 [21%]). Of the 39 culture positive samples, 90 total isolates were recovered. The most common species were Paradendryphiella arenariae (19 [21%]), Aspergillus niger (12 [13%]) and Penicillium commune (12 [13%]). **Conclusion:** These results demonstrate the presence of diverse fungal