

This method allows IPs to be introduced to concepts covered in the board certification exam upon hire and support certification with improved outcome

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#### Presentation Type:

Poster Presentation - Poster Presentation

**Subject Category:** Leadership

#### System infection prevention in hospital networks – a SHEA research network survey

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**Background:** Hospitals are increasingly consolidating into networks and integrating infection prevention (IP) into system infection prevention programs (SIPP). Very little has been published about these programs. This survey sheds light on the current state of SIPPs. **Methods:** We used the survey generator Alchemer.com for setting up the questionnaire, and tested a beta version among peers. The final version was sent out to SHEA Research Network participants in August 2023. Raw data was compiled and analyzed. **Results:** Forty institutions responded (40/104, 38%), of which 25 (63%) had SIPPs. These SIPPs reported health systems with a median of 4.5 acute care hospitals (range, 1-33); 16 SIPPs reported a median of 2 critical access hospitals (range, 1-8); 4 SIPPs reported 1-3 LTACHs, and 6 SIPPs reported a median of 1.5 nursing homes. All except 3 (88%) contained an academic center; 48% (11/23) of the U.S. based programs operate in multiple states. Four programs have been in place >20 years, four < 2 years, and the remainder a median of 8 years (range, 2-18). Physician directors also have clinical (20/25, 80%), teaching (19/25, 76%), research (15/25, 60%), antimicrobial stewardship (8/25, 32%), quality (8/25, 32%), and/or patient safety (5/25, 20%) roles. Seventeen (68%) report having a written job description. Nineteen (76%) report having an infection preventionist in a system IP director role; only 7/25 (28%) have a dedicated system IP team that operates independent of individual hospitals. Sixteen (64%) report administrative support, 10/25 (40%) have a data manager/analyst, and 4/25 (16%) include IT expert or programmer support. 15/25 (60%) report having done a formal system-wide IP needs assessment. While 16/25 (64%) have some automation in HAI surveillance (predominantly using Buggy [Epic] or Theradoc [Premier]), while only 5/25 (20%) run fully automated surveillance. 10/25 (40%) have implemented centralized surveillance. 12/25 (48%) have “system IP policies” that are hierarchically above individual site policies. The biggest challenges appear to be gaps in 1) clear governing structure, 2) communication, 3) consistent staffing, 4) data management support, and 5) dedicated, empowered IP expert FTEs. **Conclusions:** To our knowledge, this is the first U.S. survey to explore present-day system infection prevention. In this sample of hospital networks, we found heterogeneity in the structure, staffing and resources for system IP with significant opportunities for improvement. In this era of healthcare consolidation, our findings highlight the urgent need to more clearly delineate and support system IP needs in order to enhance their functionality.

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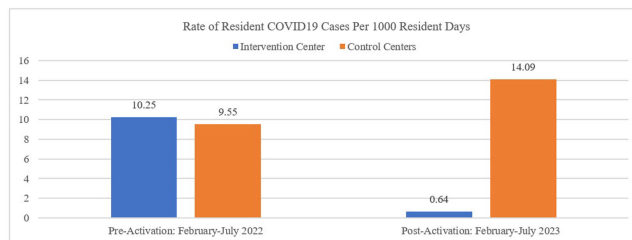
Poster Presentation - Poster Presentation

**Subject Category:** Long Term Care

#### Sustained Microbial Burden Reduction and Impact on Covid19 Cases in Long-Term Care Facility through Advanced Photocatalysis

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Figure 1



**Background:** COVID19 remains deadly to Americans over 75 years old despite vaccination and additional infection control practices in long term care (LTC). The evolution of more transmissible COVID19 variants and continued viral aerosols result in persistent COVID19 outbreaks in LTC during high community levels of COVID19. Despite the end of pandemic Federal support and the continued vulnerability of elderly to the virus, LTC facilities remain dedicated to protecting this vulnerable population. The study hypothesized that utilization of continuous, facility-wide, advanced photocatalysis (AP) disinfection technology will reduce microbial burden in air and on surfaces, demonstrating a decrease in infectious aerosols and subsequent COVID19 cases among residents and workers. **Methods:** A prospective facility controlled experimental study was performed in skilled nursing facilities in Pennsylvania and New Jersey from January 2023 to April 2023 to surveil aerobic bacterial and fungal colony forming units (CFUs) in air, and Methicillin-resistant Staphylococcus aureus (MRSA) and fungal CFUs on surfaces and floors prior to and post AP technology installation. Impacts on resident COVID19 cases were recorded and compared to the same extended observation period (February-July 2023) one year prior (2022) with similar year over year community COVID19 rates. In addition, two matched control centers in regional proximity to the intervention facility were also prospectively studied. A one-way analysis of variance (ANOVA) was used to analyze mean microbial burdens after each post activation period (significance  $p < .05$ ). **Results:** From baseline to final testing, the intervention facility surface testing showed a 93% reduction in mean aerobic bacterial CFUs ( $p=.002$ ); 96% reduction in mean fungal CFUs ( $p<.001$ ); 97% reduction in mean MRSA CFUs ( $p<.001$ ). Floor testing also showed reductions in mean CFUs for aerobic bacteria by 92% ( $p<.001$ ); 96% for fungi ( $p<.001$ ); 99% for MRSA ( $p<.001$ ). Air testing showed reductions in mean CFUs for aerobic bacteria by 87% ( $p=.005$ ); 36% for fungal ( $p=.005$ ). The intervention facility observed a 94% reduction in resident COVID19 cases compared to the matched control facilities that increased 46% during the 2023 time period (Figure 1). **Conclusion:** This study is on the pioneering edge of demonstrating that continuous and persistent disinfection technology reduces contaminant reservoirs on surfaces, floors, and air and clearly decreases infectious aerosols and improves resident outcomes by dramatically reducing COVID19 transmission in LTC facilities.

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**Subject Category:** Long Term Care

#### Healthcare Personnel Interactions with Floors and Pathogen Transmission in Long-Term Care: A Qualitative Exploration

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**Background:** We know relatively little about how healthcare personnel (HCP) in long-term care facilities (LTCFs) integrate hand hygiene (HH) and personal protective equipment (PPE; e.g., gloves) use into their care

processes. To address this gap, we are examining HH and PPE adherence at critical and contaminating moments in LTCFs. **Methods:** We conducted ethnographic observations of HCP's processes of care in 2 LTCFs in Iowa to examine HH and PPE adherence during contaminating tasks in resident care sequences. We captured care observations and additional data on topics related to our study focus (e.g., unit/room layouts, PPE storage, facility policies/procedures) in field notes. We transcribed and imported fieldnotes into MAXQDA qualitative data management software and analyzed the data using a combined deductive-inductive coding approach. **Results:** Between 1/2023-7/2023, we observed 60 (30 per facility) care episodes. Most observations included toileting activities and perineal care during which HCP would be expected to use gloves and/or do HH. Most HCP appropriately donned/doffed gloves and practiced HH at key moments (e.g., before clean/aseptic procedures, after perineal care), but were less compliant before/after touching residents' clothing or bare skin during these activities. In addition, some held soiled items next to their scrubs between tasks, which could contaminate their clothing and arms and could facilitate transmission of pathogens to other residents. Moreover, HCP's interactions with floors emerged inductively as a topic of interest during our observations and preliminary analyses. We observed HCP interact with the floor during these activities in ways that could increase risk of pathogen transmission. HCP frequently dropped soiled towels or wipes used in perineal care onto the floor during tasks for later pick up. HCP also moved or placed trash bags containing soiled or contaminated items on the floor. HCP routinely knelt on, sat on, or touched their hands on the same floor when talking with residents, helping residents change clothes or diapers, changing bedding, or adjusting wheelchair footpads. In one case, the HCP picked up clean towels that fell to the floor near soiled towels and then used the "clean towels" in resident perineal care. **Conclusion:** Despite practicing HH and appropriate PPE use, HCP in LTCFs may increase the risk of pathogen transmission unintentionally through their interactions with soiled items and the environment, including floors. Given the nature of resident care in LTCFs, HCP in LTCF may be more likely than HCP in acute care settings to interact with contaminated floors.

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**Subject Category:** MDR GNR

#### Risk Factors for Multi-Drug Resistant Gram-negative Infections across a Pediatric Hospital System

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**Background:** Infections due to antibiotic resistant bacteria are increasing worldwide and while, the epidemiology of these pathogens is well described in adults, pediatric specific data are lacking. We sought to gain an understanding of the risk factors for multi-drug resistant Gram-negative (MDRGN) infections in our pediatric population. **Methods:** We performed a retrospective review of pediatric patients seen at a pediatric hospital system in 2022 who had a culture-positive MDRGN, which was defined as a gram-negative bacteria resistant or intermediate to at least 1 antibiotic in  $\geq 3$  antibiotic groups. Repeat positive cultures for the same MDRGN were considered a single infection episode if occurring within a 14-day period. Demographic, clinical, and microbiologic data was obtained from the electronic medical record. Fisher's exact was used for analysis.

**Results:** One hundred and seventy-nine children had 237 infection episodes during the study period. Eighty-one patients (45%) were male and the median age was 5.3 years. The most prevalent MDRGNs included: *Escherichia coli* (154, 65%), *Klebsiella* spp (52, 22%), and *Enterobacter* spp (16, 7%). *Escherichia coli* was significantly more likely than other pathogens to be isolated from the urine ( $P = 0.008$ ). Compared to

Table 1. Comparison of risk factors for multi-drug resistant Gram-negative infections by pathogen type

Characteristic	MDR <i>Escherichia coli</i> infections N=154 (%)	All other MDRGN infections N=83 (%)	P
Underlying medical condition	110 (71)	83 (100)	<b>&lt;0.001</b>
Prematurity (<37 weeks gestational age)	21 (14)	20 (24)	<b>0.049</b>
Immunocompromised*	19 (12)	12 (14)	0.69
Presence of a central line, tracheostomy, or gastrostomy tube	76 (49)	73 (88)	<b>&lt;0.001</b>
Previous**: Hospitalization	84 (55)	72 (87)	<b>&lt;0.001</b>
Outpatient visit	123 (80)	63 (76)	0.51
Antibiotic use	100 (65)	77 (94)	<b>&lt;0.001</b>
Carbapenem use	28 (18)	21 (26)	0.18

Significant P-values are bolded

\*Includes oncology, bone marrow and solid organ transplant patients

\*\*Within the preceding 6 months

multi-drug resistant *E. coli*, patients with a non-*E. coli* MDRGN were significantly more likely to have an underlying medical condition, recent hospitalization and antibiotic use ( $P \leq 0.001$  for each, Table 1). A carbapenem was administered in 32% (75/237) of infection episodes. There were only 6 carbapenem resistant organisms. **Conclusions:** In our study, *E. coli* was the most frequent MDRGN. Most patients with a non-*E. coli* MDRGN infection episode had an underlying medical condition, recent hospitalization and antibiotic use. Carbapenem resistance was infrequent, though surveillance studies are needed to identify changing antibiotic resistance patterns and to direct prevention measures.

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**Subject Category:** MDR GNR

#### A Retrospective Case Series of *Stenotrophomonas maltophilia* at an Acute Care Hospital in Alabama, July-November 2023

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**Background:** In August 2023, an infection preventionist at an acute care hospital in Alabama recognized an increase in cases of *Stenotrophomonas maltophilia*, which is an emerging pathogen in clinical settings worldwide. It was not until the facility identified the pathogen in their water system in October that it was reported to ADPH as an outbreak. The outbreak investigation was brief due to the hospital's rapid containment response and adherence to its established water management program (WMP). As a result of inappropriate antibiotic use in hospitals, pan-resistant strains have been increasing at an alarming rate. The pathogen can employ water used in hospital settings to cause a variety of nosocomial infections, including those found in the blood, respiratory tract, urinary tract, and on the skin. Hospitalized patients, especially those with immunocompromising conditions or implanted medical devices, are at increased risk of significant morbidity and mortality. The aim of this study was to better understand the clinical and demographic characteristics of the 13 case-patients identified during this investigation. **Methods:** A retrospective case series was conducted by reviewing medical records for case-patients with culture-confirmed *S. maltophilia* admitted between July and November. The CDC Healthcare-Associated Infection Outbreak Investigation Abstraction Form was used to systematically collect details about each case-patient's hospitalization and course of illness. A Gantt chart was developed in Microsoft Excel to illustrate key events during their hospitalization.