The proportion of invasive infection was the same in MSSA of JUMC's Infection Prevention and Control (IPC) team and are more likely to perform vs untrained (p=0.41). 68% of interview participants stated they were unaware the score was 61.4%, with no significant difference between participants that identified as prior HH training and 69.9% reported routine HH compliance. The average knowledge to the other four HH moments (1.77 - 9.57%). Of 251 survey participants, 13.6% had with compliance highest after contact with patient surroundings (27.92%) compared with the other four HH moments (1.77 - 9.57%). Of 351 survey participants, 13.6% had prior HH training and 69.9% reported route HH compliance. The average knowledge score was 61.4%, with no significant difference between participants that identified as trained vs untrained (p=0.41). 68% of interview participants stated they were unaware of JUMC’s Infection Prevention and Control (IPC) team and are more likely to perform HH if a patient appears infectious. Interview participants cited multiple barriers to HH (table 1).

855. Significance of Invasive Infections due to Methicillin Sensitive Staphylococcus aureus in the neonatal population
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Session: P-37. HAI: Gram-positive (MRSA, MSSA, VRE)

Background. Staphylococcus aureus is a well-known cause of hospital acquired infections. Methicillin resistant staphylococcus aureus (MRSA) colonization is a recognized risk factor for invasive infections. The neonatal population in the intensive care unit (NICU) is particularly vulnerable to these types of infections, resulting in high mortality and morbidity. However, only scant data is available to establish the risk for invasive disease in patients with Methicillin sensitive staphylococcus aureus (MSSA). As a result, surveillance and prevention strategies are only address for MRSA colonization. Here, we describe the clinical characteristics of S. aureus colonized patients identified in late 2018 during transmission event in a single center NICU. As a result of the targeted surveillance investigation for MRSA infection control measures, S. aureus colonization was stratified, and we were able to compare the differences in invasive disease between MRSA and MSSA.

Methods. This is a retrospective chart review of the 47 colonized patients identified during October 2018- January 2019 SA transmission events in single center NICU. Risk factors, clinical characteristics, and the hospital course of these cases, including the proportion of invasive illness were reviewed.

Results. We found that most clinical characteristic, risk factors, and hospital course were the same between MRSA and MSSA colonized infants (p values > 0.05). Additionally, there was no difference in the proportion of invasive infection between MRSA and MSSA colonized patients (p value > 0.05). The type of invasive infections identified were SSTI, bacteremia, and osteomyelitis.

Conclusions. The proportion of invasive infection was the same in MSSA and MRSA colonized patients. This data provides us with supportive material for future recommendations of infection control measures for MSSA colonized patients.

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856. Assessment of Hand Hygiene amongst Health Care Professionals at Jimma University Medical Center
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Session: P-38. HAI: Hand Hygiene/Transmission-Based Precautions

Background. Lack of hand hygiene (HH) amongst healthcare workers (HCWs) contributes to healthcare associated infections and the spread of multidrug-resistant organisms. We assessed HCW HH knowledge, attitudes, and compliance using WHO tools and applied the Systems Engineering Initiative for Patient Safety (SEIPS) model in interviews to help guide and increase sustainability of HH interventions.

Methods. We conducted a cross-sectional study at Jimma University Medical Center (JUMC) in Jimma, Ethiopia. We assessed HCW’s HH knowledge and attitudes using questionnaires adapted from WHO resources via systematic sampling. Observations of HH practices at WHO’s 5 Moments of HH were conducted by non-identified, trained observers via systematic sampling. 22 semi-structured interview were conducted via convenience sampling with HCW’s using an interview guide based on the SEIPS model.

Results. We observed 1,386 HH moments and found a compliance rate of 9.38%, with compliance highest after contact with patient surroundings (27.92%) compared to the other four HH moments (1.77 - 9.57%). Of 351 survey participants, 13.6% had prior HH training and 69.9% reported route HH compliance. The average knowledge score was 61.4%, with no significant difference between participants that identified as trained vs untrained (p=0.41). 68% of interview participants stated they were unaware of JUMC’s Infection Prevention and Control (IPC) team and are more likely to perform HH if a patient appears infectious. Interview participants cited multiple barriers to HH (table 1).

857. Contact Precautions as a Barrier to Hand Hygiene: PDSA to Improve Compliance with Gloved Hand Hygiene
Pamela Bailey, DO, MPH1; Jo Dee Armstrong-Novak, BA1; Kaila Cooper, RN1; Michael Stevens, MD, MPH1; Gonzalo Bearman, MD, MPH1; Michelle Doll, MD, MPH1; Virginia Commonwealth University Health System, Richmond, Virginia

Session: P-38. HAI: Hand Hygiene/Transmission-Based Precautions

Background. Full compliance with personal protective equipment (PPE) is challenging, with multiple barriers noted: adherence to appropriate PPE, lack of knowledge of appropriate PPE, added time to workflow, and appropriate donning/doffing techniques of PPE to avoid self-contamination. Recent studies note that nurses tend to batch care to achieve more while in the room. A hand hygiene technology system alerted MRICU nurses to difficulties performing WHO’s Five Moments of hand hygiene (HH) when in contact precaution PPE.

Methods. We implemented the ‘Plan-Do-Study-Act’ (PDSA) framework to address the MRICU team concerns. Six nurses were directly observed while providing bedside care to understand nursing workflow and barriers to HH while in contact precautions.

Results. All 6 nurses performed hand hygiene prior to entering the room and at the time of exiting the room. Once donning contact precautions, they had variable but low compliance with any additional HH opportunities. The average missed opportunities per encounter was 5.2 (range: 2-11). Moments that would require hand washing or sanitizer if nurse were not gloved were not met with changing gloves. An average of 9.8 tasks were achieved in each room (range: 3-18). On average, each visit was 16 (range: 4-30 minutes) minutes long.

Conclusion. There is significant opportunity for improved HH while in PPE. Nurses may be more aware of the ‘five moments’ when not wearing gloves in contact precaution rooms, but the trigger once the gloves are on in the contact precaution is critical to improve hand sanitizer usage with gloves is the next step in this PDSA. More prominent placement of glove boxes in the rooms will also serve as a trigger to remind nurses to change gloves after certain tasks. Limitations of this PDSA cycle include Hawthorne effect of the nurses knowing they were observed and potentially changing their workflow. We also only observed morning workflow; nurses on different shifts may have different workflow.

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Table 1

| SEIPS Category | Barriers |
|----------------|----------|
| Person         | Inadequate HH training, lack of awareness |
| Organization   | Lack of HH monitoring |
| Task           | High workload |
| Environment    | Location of HH materials, too few HH posters |

858. Inter-rater Reliability of Hand Hygiene Observers with an Electronic Monitoring System
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Session: P-38. HAI: Hand Hygiene/Transmission-Based Precautions

Background. Hand hygiene (HH) is the bedrock of infection prevention. Knowing the limitations of hand hygiene observers, Virginia Commonwealth University Health System invested in technology to remotely monitor hand care workers’ (HCW) HH. Each hand sanitizer and soap dispenser in the patient care areas has a sensor, as well as each patient’s bed and each HCCW. As the HCCW moves around the environment, the sensors detect whether or not HH was performed for each opportunity.

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860. A Proposed Standard for Hospital Bioaerosol Monitoring in Avoiding Nosocomial Mould Infections.

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Session: P-39: HAI: Non-Bacterial (Fungal, Viral)

Background. Recent nosocomial outbreaks of mould infections have been linked to bioaerosols. Active and passive environmental sampling is a primary method of quantifying airborne contamination in the hospital, but currently there are no standardized Occupational Exposure Limits (OELs) for the avoidance of nosocomial infections.

Methods. Between March 2016 and December 2019, 186 post-construction/post-cleaning air samples were collected to measure particle counts based on defined size criteria. Lighthouse handheld Particle Counter and viable air fungal cultures (Anderson single stage N6 Viable Particulate Sampler) across wards of a 1,082 bed hospital in Houston, Texas, and compared with outdoor controls. Areas were cleared for occupancy if the ≤ 0.3micron particle counts were reduced by the expected efficacy of the HVAC unit and if indoor fungal airborne concentrations in CFU/m³ were also reduced or did not exceed the outdoor ambient reference levels for each separate day of site assessment.

Results. The mean counts of particles ≤ 0.3microns were as follows: floors 37,427.0 (92.3% reduction), operating rooms 8,163.88 (95% reduction), OR sterile core 15,001.31 (89% reduction), ICU 7,640.15 (93% reduction), radiology suites 1,046.25 (97% reduction), and outpatient areas 17,891.58 (82% reduction). The table indicates the reported mean density (CFU/m³) data and species of fungi isolated from viable bioaerosol samples, 13 of which matched outdoor reference isolates.

The mean density of outdoor cultures was 292.37 compared to all indoor units 24.53 (91.61% reduction), floors 25.44 (91.9% reduction), ICUs 28.19 (95.6% reduction), and ORs 12.79 (95.7% reduction). During this time, no nosocomial fungal infections or outbreaks were documented for the institution.

Table 1: Mean Density (cfu/m3) of Fungal Species per Location

Conclusion. An indoor air quality standard comprised of particle count data results in the expected efficacy of the operating HVAC unit and existing indoor viable fungal units in CFU/m³ that did not exceed the outdoor reference could potentially be correlated with avoidance of nosocomial mould infections.

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