

**1836. Genomic Epidemiology of Methicillin-Susceptible *Staphylococcus aureus* Colonization and Infection among US Army Trainees at Fort Benning, Georgia**  
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**Background.** Methicillin-susceptible *Staphylococcus aureus* (MSSA) is a common cause of skin and soft-tissue infection (SSTI). MSSA genomic epidemiology data are limited. We used whole-genome sequencing (WGS) to examine MSSA strain diversity among military trainees, a group known to be at high risk for *S. aureus* infection and carriage.

**Methods.** From July 2012 to December 2014, we conducted a prospective SSTI case-control study among US Army trainees at Fort Benning, GA. Thereafter, we identified MSSA SSTI clusters within select military training classes and performed WGS on clinical and colonizing isolates. We analyzed epidemiologic, clinical, genomic, and phylogenetic data in order to evaluate MSSA strain diversity and patterns of disease transmission.

**Results.** A total of 67 SSTI cases from 15 training classes were identified. The median (range) number of cases per class was 4 (3–10). Cases presented for care after a median of 39 (6–101) days of training. Of the 67 cases, 42 (63%) were colonized with MSSA at  $\geq 1$  anatomic site. A total of 78 MSSA colonizing isolates were identified at the time trainees presented for clinical care; colonizing isolates were found in the nares (37%), throat (31%), inguinal region (21%), and perianal region (12%). Multilocus sequence typing (MLST) assigned 128 (88%) isolates to 20 known types and 17 isolates to novel types. Among clinical isolates, 60 (90%) were assigned to known types. Sequence Type (ST) 8 was the most frequent type, accounting for 45% and 35% of clinical and colonizing isolates, respectively. The phylogenetic tree of isolates revealed seven major clusters, some of which were composed of a diversity of training classes, specimen types, and STs. These major clusters were further segregated into 15 sub-clusters where there was considerable diversity in intrahost variation.

**Conclusion.** Genomic characterization of MSSA infection and colonization isolates among congregate military trainees revealed a broad diversity of strains. There was a clear clonal origin and dissemination of MSSA isolates among close contacts within the ST-8 cluster but this transmission pattern was less apparent for MSSAs from other STs.

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

**1837. Considerations for a Targeted Approach to Contact Precautions for Patients with MRSA in Hospitals: A Multicenter Cohort Study to Identify High-Risk Patient Characteristics and Healthcare Personnel Interactions**

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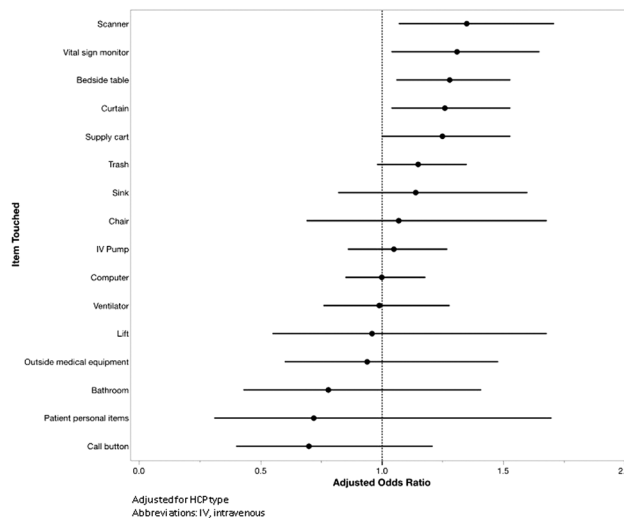
**Background.** Healthcare personnel's (HCP) gloves and gowns are frequently contaminated with antibiotic-resistant bacteria in the intensive care unit (ICU). Guidelines recommend contact precautions for patients with methicillin-resistant *Staphylococcus aureus* (MRSA); however, this approach remains controversial. This study aimed to identify which patients are more likely to transfer MRSA to HCP gloves or gowns and to identify HCP interactions more likely to lead to glove or gown contamination.

**Methods.** In a multicenter cohort study of MRSA colonized patients, we observed HCP-patient interactions and cultured HCP's gloves and gowns before doffing. We also assessed the association between bacterial burden and contamination by sampling patients' anterior nares, perianal area, chest, and arm.

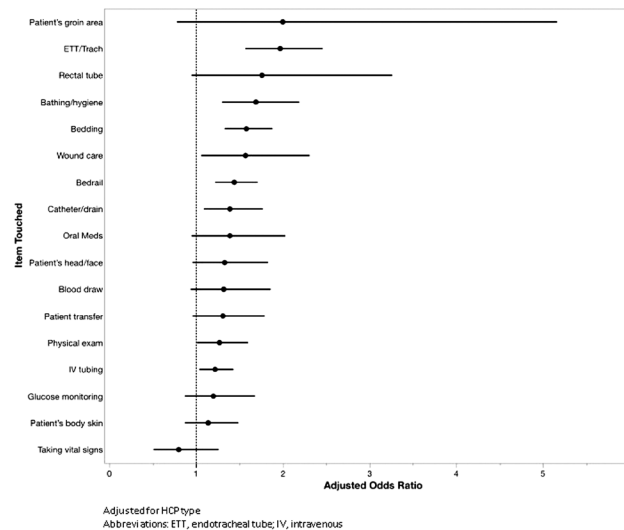
**Results.** We enrolled 402 MRSA-colonized patients and observed 3,982 HCP interactions. MRSA contamination of HCP gloves and gown occurred in 14.3% and 5.9% of interactions, respectively. Contamination of either gloves or gown occurred in 16.2% of interactions. Occupational/physical therapists had the highest rates of contamination (OR: 6.96 [95% CI: 3.51–13.79]), followed by respiratory therapists (OR: 5.34 [95% CI: 3.04–9.39]) when compared with the "Other" category. Touching the patient was associated with higher contamination (OR: 2.59 [95% CI: 1.04–6.51]) when compared with touching nothing in the room. Touching only the environment was not associated with glove or gown contamination (OR: 1.13 [95% CI: 0.43, 3.00]) when compared with touching nothing. Touching the endotracheal tube (OR: 1.75 [95% CI: 1.38–2.19]), bedding (OR: 1.43 [95% CI: 1.20–1.70]) and bathing a patient (OR: 1.32 [95% CI: 1.01–1.75]) increased odds of contamination when compared with not having such contacts (Figures 1 and 2). We found an association between increasing bacterial burden in the patient's nares, perianal area, and chest skin and glove or gown contamination.

**Conclusion.** Contamination of HCP gloves and gowns with MRSA occurs frequently when caring for ICU patients. We identified interactions that are high-risk for transmission. Hospitals may consider optimizing contact precautions by using less precautions for low-risk interactions and more precautions for high-risk interactions.

**Figure 1. Adjusted odds ratios and 95% confidence intervals of healthcare personnel glove or gown contamination for each individual patient care activity in the environmental domain**



**Figure 1. Adjusted odds ratios and 95% confidence intervals of healthcare personnel glove or gown contamination for each individual patient care activity in the patient domain**



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**1838. Bare Below the Elbows vs. Sleeved Attire: A Pilot Study Comparing Microbial Flora of Healthcare Workers**

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**Background.** Bare Below the Elbows (BBE) is an approach to healthcare worker (HCW) attire that limits patient contact with contaminated HCW clothing. While supported by biological plausibility, the practice is controversial. Critics cite limited evidence that bare skin is less contaminated in comparison to sleeved garments such as white coats. This study is a comparison of the flora and bioburden between BBE and sleeved HCW.

**Methods.** HCW on 2 progressive care units were asked to allow swab sampling of their dominant wrist/forearm (Figure 1). Non-clinicians were excluded. Hand hygiene was not performed prior to sampling. HCW agreeing to participate completed informed consent, and a survey regarding bathing and laundering. Swabs were inoculated into TSA broths, and incubated for 24 hours at 37°C. Bioburden was estimated using McFarland standard optical densities by 2 independent blinded evaluators. The broth was streaked on blood agar and MacConkey plates. Colonies consistent with