Presentation Type:
Poster Presentation

Quantifying the Risk of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Transmission From Patient to Healthcare Personnel in the Critical Care Setting

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Background: Healthcare personnel (HCP) acquire MRSA on their gown and gloves during routine care activities for patients who are colonized or infected with MRSA at a rate of ~15%. Certain care activities (eg, physical exam, care of endotracheal tube, wound care and bathing/hygiene) have been associated with a higher frequency of transmission from the patient to HCP gown and gloves than other activities (ie, administration of oral medicines, glucose monitoring, and manipulation of IV tubing/medication delivery). However, quantification of MRSA contamination and risk to subsequent patients is poorly defined. **Objective:** We sought to determine the mean MRSA colony-forming units (CFU) found on the gloves and gowns of HCP who acquire MRSA after various care activities involving patients with MRSA. **Methods:** We conducted a prospective cohort study at the University of Maryland Medical Center from December 2018 to October 2019. We identified patients colonized or infected with MRSA based on culture data from the prior 7 days. HCP performing prespecified care activities on eligible patients were observed. To isolate the risk of each care activity, HCP donned new gloves and gown prior to a specific care activity. Once that care activity was performed, HCP gloves and gown were swabbed prior to the any further care activities. HCP gloves were cultured with an E-swab by swabbing each digit up and down 3 times followed by 2 circles on the palm of their hands. HCP gowns were sampled by swabbing a 15 × 30-cm area along the beltline of the gown and along each inner forearm twice. E-swab liquid was then serially diluted and plated in triplicate on CHROMagar MRSA II (BD, Sparks, MD) to obtain CFU. We calculated the median CFUs and the interquartile range (IQR) for each specific care activity stratified by gown and gloves. **Results:** In total, 604 HCP–patient care interactions were observed. Table 1 displays the mean MRSA CFUs stratified by gown and gloves for each patient care activity of interest. **Conclusions:** The quantity of MRSA found on gowns and gloves varies depending on patient care activities. Recognition of differential transmission rates between various activities may allow different approaches to infection prevention, such as the use of personal protective equipment in high- versus low-risk activities and/or the use of more aggressive interventions for high-risk activities.

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Quantitative Characterization of High-Touch Surfaces in Emergency Departments and Hemodialysis Facilities

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Background: The healthcare environment can serve as a reservoir for many microorganisms and, in the absence of appropriate cleaning and disinfection, can contribute to pathogen transmission. Identification of high-touch surfaces (HTS) in hospital patient rooms has allowed the recognition of surfaces that represent the greatest transmission risk and prioritization of cleaning and disinfection resources for infection prevention. HTS in other healthcare settings, including high-volume and high-risk settings such as emergency departments (EDs) and hemodialysis facilities (HDFs), have not been well studied or defined. **Methods:** Observations were conducted in 2 EDs and 3 HDFs using

TABLE 1. MEDIAN MRSA CFUS STRATIFIED BY GOWN AND GLOVES PER PATIENT CARE ACTIVITY N=604

	Patient Care Activities	Number of Activities observed	Proportion of gloves with MRSA, N (%) **	Median (IQR) Quantity of MRSA for gloves*	Number of Activities observed	Proportion of gowns with MRSA, N (%) **	Median (IQR) Quantity of MRSA for gowns*
HIGH RISK	Care of endotracheal tube	38	18 (47.4)	58.5 (20.0-200)	38	5 (13.2)	151.5 (11.5-1433.5)
	Physical Examination	55	6 (10.9)	10.0 (3.0-17.0)	55	2 (3.6)	200. 0 (200.0-200.0)
	Wound Care	12	3 (25.0)	155.0 (7.0-303.0)	12	1 (8.3)	
	Bathing/Hygiene	42	5 (11.9)	252.0 (15.0-632.5)	42		
LOW RISK	Administration of Oral Medications	54	5 (9.3)	17.0 (13.0-267.0)	54	4 (7.4)	8116.5 (33.0-16200.0)
	Glucose Monitoring	47	2 (4.3)	13.0 (13.0-13.0)	47	1 (2.1)	
	Manipulation of IV tubing	54	5 (5.6)	13.0 (13.0-13.0)	54		

*Median and IQR does not contain gown or gloves that were not quantifiable
**proportion of gloves and gowns were calculated using the qualitatve measurement of mrsa growth. gown or gloves that were unable to quanitfy but had detection of mrsa were included in the calculation

Table 1.