Purpose: It is estimated that 1 in 25 hospital stays are impacted by hospital associated infections (HAIs) in the United States (Magill et. al., 2014), with 1.7 million new cases occurring annually (CDC, 2014). The costs associated with infections due to dangerous pathogens such as MRSA and VRE can range anywhere between $28 and 45 billion according to CDC economists (Scott, 2009). Ultimately, it is estimated that 99,000 of patients die each year from HAIs (Klevens et. al., 2007). More than half of all HAIs occur outside intensive care units and over 40 percent are attributed to healthcare worker contamination (AHRQ, 2015). Increasing numbers of studies are identifying healthcare workers’ uniforms as sources of bacterial/pathogenic contamination, though not enough is currently understood to inform infection control policies or regulations. The purpose of this study is to describe the differences in the number of common bacteria found on nurses who provide direct inpatient care in hospital provided surgical scrubs compared to employee-owned uniforms.

Methods: This is a cross-over design study involving 126 participants who have consented to sampling in both their home-laundered uniform and hospital provided scrubs. Participants are sampled in six locations on arrival to work, four hours into their shift, and eight hours into their shift. The order of uniform sampling (scrubs or uniform) is randomized based on hospital unit. Utilizing microbiology standards, total bacteria counts are conducted and quantitative comparisons are made for each participant over time and in both of the uniforms. The eight hour sample taken from the cuff of the sleeve of the participants’ dominant arm is subsequently tested for the presence of MRSA and VRE.

Results: Participants show significantly higher bacterial growth on home-laundered uniforms compared to hospital uniforms. The highest regions of bacterial growth on the employee uniform come from the sleeve cuff of the dominant arm and the waist pocket. Results also show significant correlation between the time of sample collection and amount of bacterial growth. Bacterial colonies increase predictably over time on hospital scrubs but do not increase on home-laundered uniforms.

Conclusion: The results of this study suggest that healthcare workers’ uniforms play a role in the transmission of bacteria in a hospital setting, with hospital scrubs demonstrating significantly lower contamination. Even at baseline, home-laundered uniforms show significantly higher total bacteria than hospital-sanitized attire, indicating that at least a fraction of uniform contamination may occur outside the hospital setting. These results suggest a need to more closely examine the myriad of exposure and sanitation variables that may contribute to the role of hospital uniforms in bacterial/pathogenic contamination and ultimately, HAIs.
hospital acquired infection, infection control and inpatient nursing

References:


Abstract Summary:

This study describes the bacterial content on inpatient nurses providing direct patient care from arrival to eight hours into their shift. These efforts highlight the differences in bacterial content between staff uniforms and hospital provided scrubs.

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Professional Experience: Gordon West is a PhD prepared nurse with over 20 years of experience. He has worked in numerous settings focusing on public health. He earned his BSN in 1998 and has been serving in the U.S. Army for the last 20 years working in numerous settings while earning his masters in healthcare administration and PhD in nursing.

Author Summary: Dr. West is a nurse scientist with over 20 years of nursing experience. He currently serves in the U.S. Army working at Tripler Army Medical Center in Hawaii. He has numerous publication and funded studies primarily focused on health promotion and infection control.

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**Professional Experience:** Marisol Resendiz has her PhD in neuroscience. She is currently serving as the research coordinator for this research study. She has been key in data collection and analysis.

**Author Summary:** Marisol is a PhD prepared neuroscientist. She is serving as the research coordinator for this study. She has been key in data collection and assisting in analysis.