



The Value Proposition: Collaborative Research

Methicillin Resistant *Staphylococcus aureus* Study

BACKGROUND

Methicillin resistant *Staphylococcus aureus* has traditionally been associated with exposure in health care settings, but very little information is currently available in the research literature to define its prevalence of colonization or infection in healthcare workers (HCW). In recent years, a steady rise in MRSA incident rates has occurred across the country, which was consistent with what was happening in Atlanta between 2002 and 2006.

As a result, Lilly Immergluck, M.D., F.A.A.P., a specialist in pediatric infectious diseases with Morehouse School of Medicine and a member of the medical staff at Children's Healthcare of Atlanta, designed a research study to assess the rising incident rates. As skin and soft tissue infections (SSTI)* are the most common forms of CA-MRSA and are primarily treated in the hospital setting, understanding the risks to exposure for HCW was important.

Dr. Immergluck, Principal Investigator, designed the study to assess and compare MRSA incident rates in both the pediatric inpatient and outpatient settings. In 2009, Dr. Immergluck approached Kids Health First to assist in this research from an outpatient perspective. As responsible healthcare providers, the member practices of KHF were pleased to participate in this timely and relevant research.

**SSTI occur at a rate almost six times higher than other infections.*

The entities involved in the research included Children's Healthcare of Atlanta, Emory University, Kids Health First and Morehouse School of Medicine.

PURPOSE

The purpose of the study was to determine the prevalence of colonization for community associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) among HCW in the pediatric inpatient and ambulatory settings. The primary question: *Are HCW at greater risk for MRSA-Carriage or Infection?*

Specific objectives included:

- Establish colonization rates of CA-MRSA among hospital employees who are at higher and lower risk of exposure to SSTI
- Compare colonization rates between employees in low and high-risk exposure settings over time
- Determine self-reported incidence of skin or soft tissue infections among HCW

The information obtained from this study would advance the understanding of the risk for colonization among HCW and determine which strains of CA-MRSA dominate the landscape.

Limitations of the study: This was a pilot study and therefore, there was limited data reported in the medical literature on MRSA colonization among HCW. Due to the limits of funding, this study could not follow the MRSA colonization status over a frequency interval, which might have otherwise given insight as to whether the MRSA found to be colonized in these HCW represent a transient, intermittent, or resident carrier status.

STUDY DESIGN

This was a prospective observational point prevalence study, which included convenience sampling of HCW in two settings. The first was a high exposure setting (the emergency department at a local hospital) and the second setting included several general pediatric and adolescent clinics, which are low exposure settings for SSTI.

The emergency departments of two facilities participated in this study. Each year nearly 100,00 visits are recorded for those two departments, with one receiving approximately 5,000 more visits per year. According to the most recent statistical data available when this study was completed, there was a higher rate of SSTI at one of the facilities. There were approximately 150 HCW providing care to children who accessed the emergency departments at that time.

OUR ROLE

For the outpatient setting, KHF participated through their pediatric private practice locations. The HCW participants providing direct care in those locations (physicians, nurse practitioners, nurses and medical assistants), volunteered to take part in this study. At the time, KHF represented 36 practices in 57 office locations throughout the metropolitan Atlanta service area (MSA), representing approximately one and half million patient visits per year.

ENROLLMENT

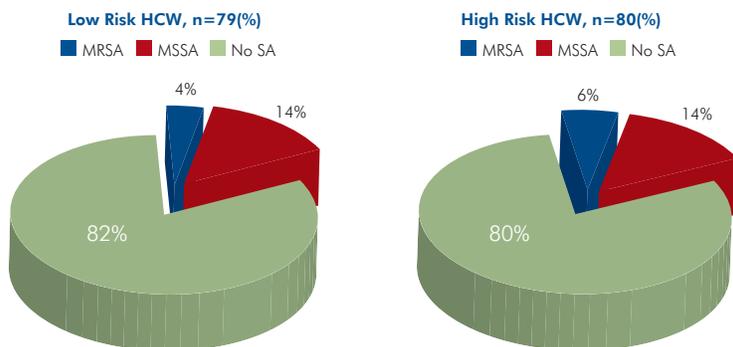
Any clinical employee working at least 20 hours per week at one of the two emergency departments, at the pediatric ambulatory clinic, or at another ambulatory clinic setting within the KHF locations could enroll in the study, provided the employee met the inclusion criteria and signed an informed consent. Each enrollee was also required to undergo a nasal swab and complete a questionnaire as part of the study.

APPROVAL

Children's Healthcare of Atlanta Institutional Review Board and the Quality Research Committee for KHF approved the study. Morehouse School of Medicine Institutional Review Board accepted Children's IRB review.

RESULTS

Overall, *Staphylococcus aureus* was found in 20% of the HCW – consistent with rates reported for the general population. The MRSA colonization rate was 6% among the high risk HCWs, compared to 4% among the low risk group, which was not statistically significant.



In looking at the rates for exposure based on treating a child with a SSTI, the high risk group revealed a 63% exposure rate, while within the low risk group; only 33% reported treating a child with a SSTI.

Overall, the carriage rates for MRSA in this cohort were low; there was no significant difference based on SSTI exposure levels. Of the MRSA tested, the majority of them contained antibiograms consistent with USA 300, which is the predominant cause of SSTI.

CONCLUSIONS

Based on this study, the MRSA colonization rates for HCW do not appear to be higher than in the general population and the exposure to SSTI does not significantly affect, nor correlate, with increased risk for CA-MRSA carriage for the HCW.

ACKNOWLEDGEMENT

Dr. Immergluck, who is an Associate Professor of Pediatrics, Assistant Professor of Microbiology/Biochemistry/Immunology, and Pediatric Infectious Disease Specialist at Morehouse School of Medicine presented the results of this study to the Kids Health First Research Alliance Meeting on May 20, 2010. She also presented this information to the annual Pediatric Academic Society meeting in early May, 2010 in Vancouver, Canada. We would like to thank Dr. Immergluck for including KHF in this research project.

Robert Jerris, Ph.D., Co-Principal Investigator and Director of Clinical Microbiology, Children's Healthcare of Atlanta, Department of Clinical Microbiology directed the microbiology analysis for this study.

Other professionals involved in the study included Edward Gotlieb, M.D., Shabnam Jain, M.D., Susan Ray, M.D., Co-Investigator and Associate Professor of Medicine, Division of Infectious Diseases at Emory University School of Medicine and Sarah Satola, PhD, Senior Associate in the Department of Medicine, Division of Infectious Diseases at Emory University School of Medicine and Emerging Infectious Program Laboratory Director.

If you would like more information about this study, please call 770.333.0033.

The physicians and other healthcare providers affiliated with Kids Health First are independent providers and are not employed by Kids Health First.

