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Prevalence of Methicillin Resistant Staph Aureus Over Time in Resident Physicians

Lexus Dickson
USC

Morgan Smith MD
HCA Healthcare, Morgan.Smith@hcahealthcare.com

Scott Gutovitz
HCA Healthcare, scott.gutovitz@hcahealthcare.com

Danielle Kocsis
HCA Healthcare, danielle.kocsis@hcahealthcare.com

Jean B. Wiggins
HCA Healthcare, jean.wiggins@hcahealthcare.com

See next page for additional authors

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Authors

Lexus Dickson, Morgan Smith MD, Scott Gutovitz, Danielle Kocsis, Jean B. Wiggins, Steve Warrington MD, Stephen Thacker MD, and Nayda Parisio Poldiak



Prevalence of Methicillin Resistant *Staph Aureus* Over Time in Resident Physicians

*Lexus Dickson*¹, Morgan Smith², Danielle Kocsis³, Jean Wiggins⁴, Steven Warrington⁵, Stephen Thacker⁶, Nayda Parisio Poldiak⁷, **Scott Gutovitz**².

¹BS, SOAR Program, University of South Carolina School of Medicine – Columbia

²MD, Emergency Medicine Department, Grand Strand Medical Center

³Graduate Medical Education, Orange Park Medical Center

⁴Continuing Medical Education, Memorial Health Medical Center

⁵MD, Emergency Medicine Department, Orange Park Medical Center

⁶MD, Children's Care Infectious Disease, Memorial Health Medical Center

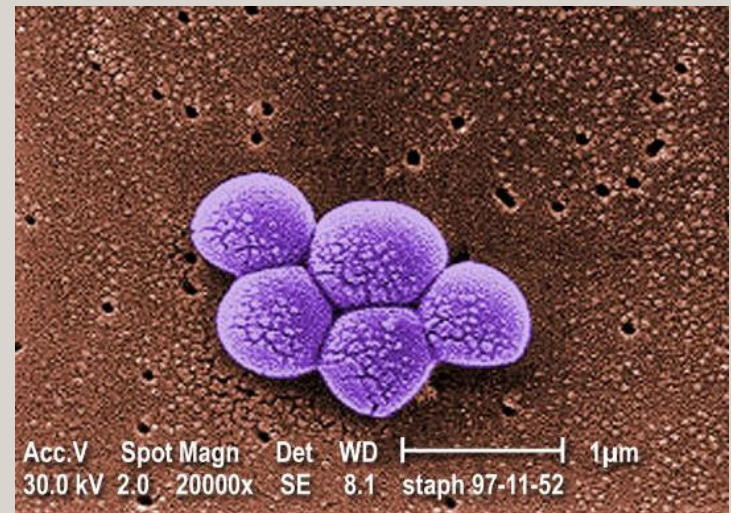
⁷PhD, Graduate Medical Education, Grand Strand Medical Center

Overview

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- Questions

Background – Introduction to MRSA

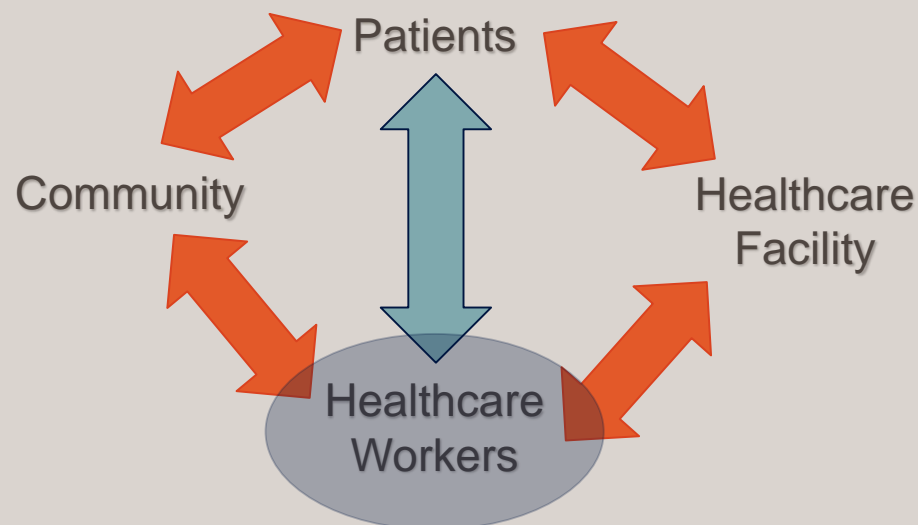
- Methicillin-resistant *Staphylococcus aureus* (MRSA)^{1, 2}
 - Opportunistic bacteria found on skin
 - Antibiotic resistant – CDC “serious threat”³
- MRSA → staph infections^{1, 2}
 - Skin infections
 - Pneumonia
 - Bacteremia
 - Surgical site infections
 - Sepsis
 - Endocarditis
 - Death



Carr JH. MRSA Bacteria Photo 1. In: CDC Public Health Image Library [database]. 1998. This image is in the public domain and free of copyright restrictions.

Background – Epidemiology of MRSA

- ~5% of patients in U.S. hospitals carry MRSA in their nose or on their skin¹
 - 2% prevalence outside of care settings²
 - 70,000 severe infections and 9,000 deaths per year⁵
 - No significant decline in bloodstream infections from 2013-2016²
 - Severe infections mostly during or after inpatient care³



Background – Prevention of Healthcare Associated MRSA Infections



Smith K. Fifth of eleven steps of handwashing. In: CDC *Public Health Image Library* [database]. 2004. This image is in the public domain and free of copyright restrictions.

- In health care settings, MRSA is primarily spread by direct contact with colonized providers²
 - Asymptomatic colonized people
 - Infected wounds
 - Contaminated hands
- CDC recommendation: contact precautions^{4, 5}
 - Handwashing & disinfecting
 - Procedure-specific precautions
- No recommended protocol for testing & treating providers
 - Residents as model of health care workers

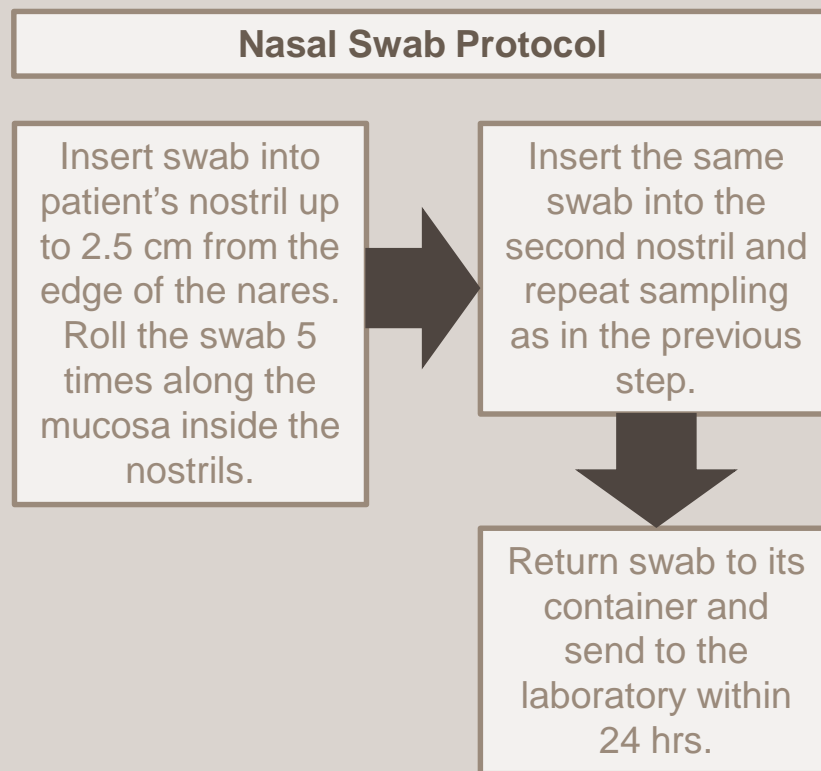
Study Questions

- **Primary:** Will the occurrence of MRSA colonization in residents increase as they progress through their first post-graduate year of training?
 - Increased hospital exposure
- **Secondary:** Will the current standard for MRSA care, mupirocin 2% ointment twice a day for 5 days, eliminate MRSA colonization in resident physicians?
 - Potential use as hospital protocol
- Conducted across three HCA Healthcare hospital sites

Materials & Methods (PGY-1)

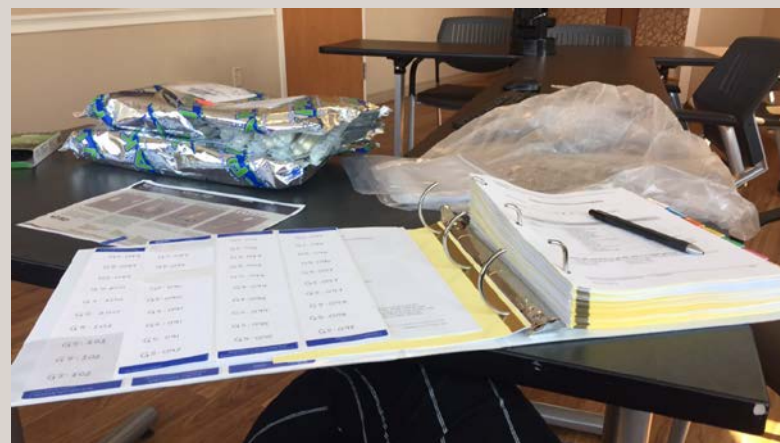
- **PGY-1 Protocol**

- Enrollment & 1st test: Orientation
 - Informed consent
 - Demographics: antibiotics, hospitalizations/surgeries, allergies
 - Nasal swab
- Week of treatment & re-test (+)
 - Treatment diary
- 3 follow-up visits (all)



Materials & Methods (PGY-2-5)

- **PGY-2-5 Protocol**
 - Enrollment & swab at didactics
 - No repeat visits except for treatment
- Nasal swab to lab w/in 48 hrs for PCR
 - Alternate sites → GSMC
- Results to head of research w/in 24 hrs
 - Recorded in VDI & site binders



Results: PGY-1 Visit 1 PCR Results

PGY-1 Visit 1 PCR Results				
Site	# Tested	# Positive	# Negative	Colonization Prevalence (%)
1	44	1	43	2.27
2	17	0	17	0.00
3	20	1	19	5.00
Total	81	2	79	2.47

Results: PCR Results after 1st Treatment

PGY-1 PCR Results

- 1 PGY-1 (+) subject at Site 1 was negative after one round of treatment (7/10/19)
- 1 PGY-1 (+) subject at Site 3 was positive after one round of treatment (7/13/19)
 - Other not yet tested

PGY-2-5 PCR Results

- Still in collection process as of 7/23/19

Results: PGY-2-5 Visit 1 PCR Results

PGY-2-5 Visit 1 PCR Results (as of 7/18/19)

Site	# Tested	# Positive	# Negative	Colonization Prevalence (%)
1	24	1	23	4.17%
2	3	0	3	0.00%
3	24	1	23	4.17%
Total	51	2	49	3.92%

Discussion

- PGY-1: Similar to prevalence in general population (2.47% vs. 2%)
 - Potential influence of previous clinical experiences
- PGY-2-5: Have a higher prevalence as of 7/23/19
 - Not yet approaching hospital patient prevalence (3.92% vs. 5%)
 - Yet to determine if due to lower number of participants (n = 81 vs. n = 51)
 - Continuing to collect data for PGY-2-5s, particularly from Sites 2 & 3
- After mupirocin treatment, one person tested negative and one positive
 - Need to review treatment diary (self-report)
 - Potential influence of continued patient interaction
- If funding permits, would like to extend study to medical students

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Questions?

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