



Background

- Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogen often covered empirically with vancomycin in patients hospitalized for respiratory tract infections (RTIs).
- The advent of rapid-diagnostic testing with polymerase chain reaction (PCR) assays allows for a reliable early rule-out of MRSA and subsequent de-escalation of unnecessary antibiotics.
- Studies have shown that MRSA PCR assays result more rapidly than respiratory cultures while maintaining reliable specificity.^{1,2}

Objectives

- Assess whether the implementation of a protocol allowing pharmacists to order MRSA PCR tests in patients with a suspected RTI resulted in lower vancomycin use at a large, academic medical center
- Affirm the specificity of MRSA PCRs widely reported in the literature
- Identify potential factors affecting the accuracy of MRSA PCRs

Methods

- Retrospective, IRB-exempt chart search
- Study Period:**
 - Pre-implementation Group: March 1st, 2019 to July 31st, 2019
 - Post-implementation Group: March 1st, 2021 to June 30th, 2021
- Inclusion Criteria:** Hospitalized and received vancomycin within two days of a respiratory culture collection
- Exclusion Criteria:** Received vancomycin for greater than 14 days
- Primary Endpoint:** Overall vancomycin use pre-implementation vs post-implementation of MRSA PCR protocol
- Secondary Endpoints:**
 - Vancomycin use in patients with a negative MRSA culture (No MRSA) pre-implementation vs post-implementation
 - The rate of MRSA PCR assay results that were discordant from respiratory culture results

Results

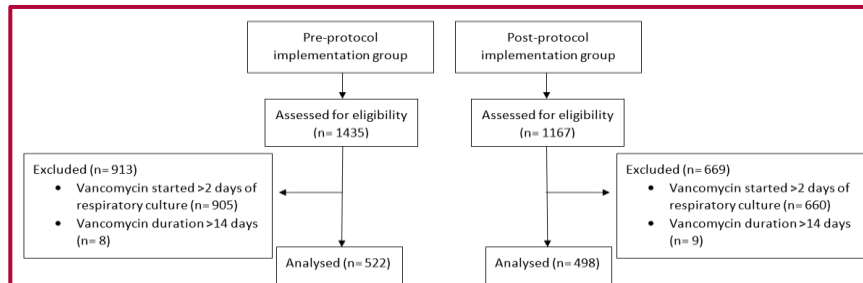


Figure 1: Enrollment and Eligibility

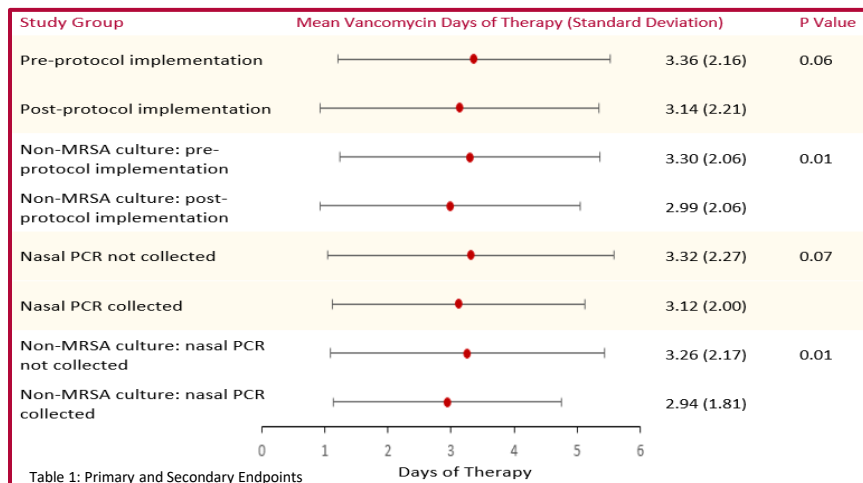


Table 1: Primary and Secondary Endpoints

	Pre-protocol implementation (n= 522)	Post-protocol implementation (n= 498)
MRSA nasal PCR rate (%)	55 (10.5)	301 (60.4)
MRSA nasal PCR major* errors (%)	5 (9.1)	19 (6.3)

*Major error defined as a nasal PCR that showed a false negative result when compared to the subsequent respiratory culture
Table 2: PCR Collection and Error Rate

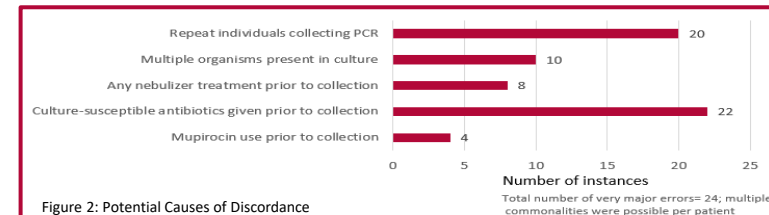


Figure 2: Potential Causes of Discordance

Conclusions

- The implementation of our protocol allowing pharmacists to order MRSA PCRs resulted in nominally lower vancomycin use overall and a statistically significant reduction in non-MRSA vancomycin.
- Analysis of specificity of MRSA PCR results aligned with rates commonly reported in the literature.
- Our intervention was effective in lowering overall and inappropriate vancomycin use while showing accurate results.

References

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- Mergenhagen KA, Starr KE, Wattengel BA, et al. Determining the Utility of Methicillin-Resistant *Staphylococcus aureus* Nares Screening in Antimicrobial Stewardship. *Clin Infect Dis*. 2020;71(5):1142-1148. doi: 10.1093/cid/ciz974.

Disclosure

The study authors have no potential or actual conflicts of interests.