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Utilizing Multiple Antimicrobial Stewardship Metrics to Trend Vancomycin Use in an Implementation Study



Introduction: Inpatient vancomycin use is often inappropriately prolonged. Methicillin resistant *Staphylococcus aureus* (MRSA) polymerase chain reaction (PCR) nares swabs have high negative predictive value for many infections and can guide vancomycin de-escalation. Antibiotic stewardship programs (ASPs) often monitor vancomycin use in days of therapy (DoT) per 1000 patient days present (PDP). This measure can be affected, especially for smaller facilities, by changes in bed capacity and prolonged stays and may not accurately reflect inappropriately prolonged vancomycin use. We evaluated whether other metrics of vancomycin use would show different impacts during a multi-step ASP intervention to reduce inappropriate vancomycin use at Tennessee Valley Healthcare System.

Methods: In 9/2021, the ASP initiated use of MRSA nasal swabs to inform vancomycin de-escalation. From 7/2022 to 4/2023, iterative Plan-Do-Study-Act cycles were performed including educating medicine and surgical divisions on MRSA swab result interpretation, educating nurses on timely swab collection, replacing MRSA culture swabs with PCR swabs, and adding MRSA swab orders to vancomycin order sets. In 4/2022, in addition to DoT/1000 PDP, we began measuring mean, median, and mode DoT per vancomycin course by start week.

Results: Despite multiple interventions beginning 7/2022, vancomycin use in DoT/1000 PDP increased to a peak of 106 DoT/1000 PDP in 9/2022. In that same period, median and mode DoT per vancomycin initiation remained steady at 2 days and 1 day, respectively.

Conclusions: DoT/1000 PDP may not be the best metric to evaluate efforts to reduce inappropriate vancomycin use. By tracking mean, median and mode of DoT per individual vancomycin course, it was determined that most providers already practiced rapid de-escalation, minimizing patient vancomycin exposure. The stewardship team could quickly detect changes in prescribing and determine whether interventions were warranted. More evaluation of antibiotic use metric appropriateness based on desired outcome is needed in ASPs.