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Session: O-27. Innovation in Antimicrobial Stewardship

Background: Concomitant vancomycin and piperacillin-tazobactam use (CVPTU) for >2 days is associated with increased nephrotoxicity. At Vanderbilt University Medical Center, a sustained decline in CVPTU was achieved. A retrospective review of CVPTU and antimicrobial stewardship (AS) interventions was performed to develop a model for future AS quality improvement (QI) initiatives.

Methods: Data for adults receiving CVPTU January 2015 - August 2019 were extracted. No patients were excluded. Change in monthly incidence of CVPTU >2 days in relation to AS interventions was the primary outcome. CVPTU was analyzed with statistical process control (SPC) charts (QI Macros 2019). AS interventions were amassed from AS emails, meeting minutes, presentations and patient-specific interventions. We created a new intervention evaluation tool using the Hierarchy of Effectiveness (1-Education, 2-Policy, 3-Reminders, 4-Simplification, 5-Automation, 6-Forced Function) and a self-designed scale of impact (1-divisional subgroup, 2-division, 3-department, 4-center-wide). Scores were summed for each 6-month period and rated as low, moderate or high intervention strength. Periods were mapped against their corresponding CVPTU rate (Figure 1).

Results: *CVPTU Data*: During periods 1–5 (January 2015 - February 2018), an average 4% of admitted patients received >2 days CVPTU, decreasing to < 1% from period 5 (March 2018) onward (Figure 1). From period 1–5, an average 52.8% of patients with CVPTU received >2 days and dropped to 41.3% from period 5 onward (Figure 2).

Intervention Data: There was 1 low, 3 moderate and 4 high intensity periods. Intensity decreased as initiatives transitioned from behavior change to sustained behavior (Figure 1). The main interventions were education and patient-specific feedback. Division-specific antibiotic algorithms and computerized order sets re-enforced behavior. Infectious diseases consults and team pharmacists embedded the concept in daily practice.

Figure 1: Proportion of All Admissions with Concomitant Vancomycin and Piperacillin-Tazobactam Use (CVPTU) for >2 Days Mapped Against Simultaneous Quality Improvement Interventions.

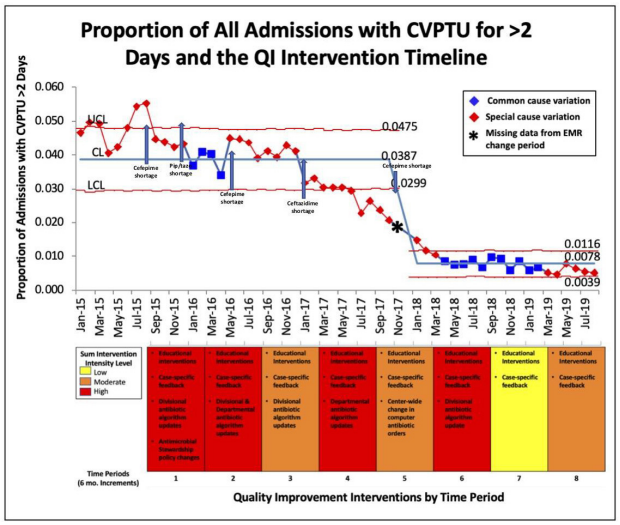
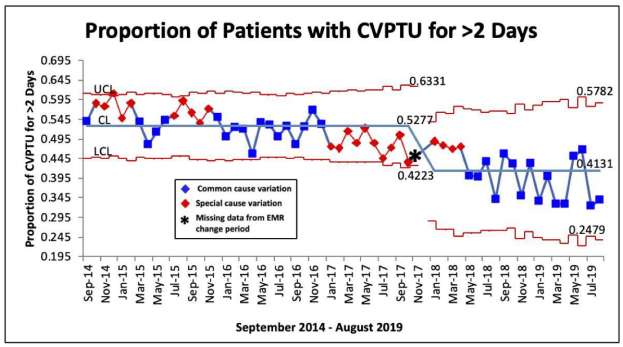


Figure 2: Proportion of Patients with Concomitant Vancomycin and Piperacillin-Tazobactam Use (CVPTU) for >2 Days.



Conclusion: Persistent, repetitive center-wide intervention is key to driving and sustaining change. More analysis of specific intervention types and impact of external factors would enhance understanding and future use of this AS change implementation model.

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142. Frequency of Short-course Empiric Antibiotic Use as an Antimicrobial Stewardship Metric

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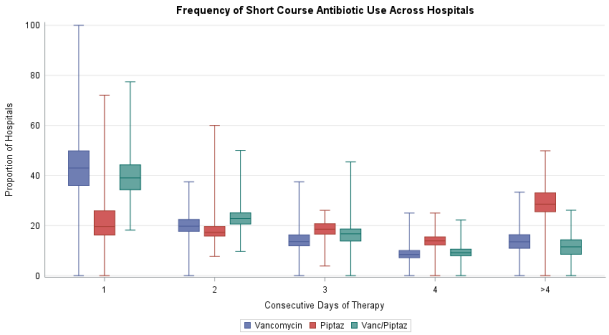
Background: Antimicrobial stewardship metrics that provide actionable guidance are needed to support efforts to improve hospital use of antibiotics. Antibiotics such as vancomycin and piperacillin/tazobactam are common empiric agents used frequently when the infectious process remains unknown. Thus short, incomplete courses of therapy are used more frequently for such agents. We aimed to evaluate the variability in short courses of vancomycin and piperacillin/tazobactam use across U.S. hospitals.



Methods: We performed a cross-sectional study among U.S. hospitals that contributed inpatient pharmacy data to the Vizient clinical database in 2016. We identified vancomycin and piperacillin-tazobactam courses initiated within the 48 hours of admission, measured as days of therapy received. We calculated the percent of patients that received 1, 2, 3, 4 or >4 days of therapy at each facility to describe short course empiric therapy use. To describe the variability across facilities, we then assessed the median, interquartile range (IQR), and total range of that percentage.

Results: We identified 145 hospitals representing approximately 3.7 million patient encounters for inclusion in this study. Within 48 hours of admission, 13.9% of encounters received vancomycin, 7.7% piperacillin/tazobactam, and 4.6% received both. The figure demonstrates the variability in the frequency of short course antibiotic use across hospitals; boxes indicate the IQR with the transecting line representing the median and whiskers representing the full range. The proportion of patients that received one day of therapy varied most across hospitals, with vancomycin ranging from 0–100%. In contrast, the frequency of patients that received greater than four days of therapy varied considerably less across hospitals; 0–33% for vancomycin.

Conclusion: The variability in use of short course empiric therapies suggests that use for non-infectious processes or infections not appropriately treated by these agents varies greatly across facilities. Measuring short course use for common empiric agents may serve as an important antimicrobial stewardship metric. Such a metric could inform antimicrobial stewardship efforts to reduce unnecessary initiation of empiric antimicrobial therapy.

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143. Modification of Linezolid Restriction Criteria Reduces ICU Gram-positive Antibiotic Consumption

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Session: O-27. Innovation in Antimicrobial Stewardship

Background: Antibiotic time out (ATO) policies have been proposed by the Centers for Disease Control and Prevention to limit unnecessary use of antibiotics. Critically ill patients are often treated empirically with MRSA-active agents for a prolonged duration. The objective of this study was to assess the impact of an ATO policy by targeting empiric gram-positive coverage.

Methods: Before this intervention, linezolid required pre-approval by the antimicrobial stewardship program or infectious diseases (ID) consult service before dispensing, and no automatic ATO policy was in place for any agent. In 2018, restriction of linezolid was modified to allow 72 hours of empiric use in the intensive care unit