

54. Effectiveness of a Venous Catheter Stewardship Intervention Targeting Parenteral Antimicrobial Therapy at Hospital Discharge

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Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Peripherally inserted central catheters (PICCs) and midlines are often used in hospitalized patients who require outpatient parenteral antimicrobial therapy (OPAT) upon discharge. PICCs/midlines offer ease of insertion but still carry the risks of venous thrombosis, phlebitis, and catheter-associated infection. We report the results of a prospective audit and feedback (PAF) intervention targeting the placement of PICCs/midlines for OPAT at our institution.

Methods: We prospectively identified a cohort of patients identified by a real-time PAF/alert from 5/20/2019 through 5/29/2020 at two large academic medical centers. Alerts were generated by a third-party interface with the electronic health record and identified new line orders with an antimicrobial indication selected. Patients without infectious diseases (ID) consult underwent PAF by the antimicrobial stewardship team. Descriptive statistics were used to characterize patients, interventions, and outcomes.

Results: During the study period, 1267 PAF/alerts were identified. Most were excluded due to ID consult (85.4%). After exclusions, 113 alerts underwent full review. Median patient age was 64 years with female predominance (54.2%). Reviewable alerts most commonly originated from Pulmonary (36.5%) and Hospitalist (26.0%) services. The most frequent antimicrobial indications were pneumonia (37.5%) and bloodstream infection (28.1%), and the most frequently ordered antimicrobials were cefepime (27.1%) and piperacillin-tazobactam (17.7%). Median time from line order to insertion was 22 hours and from line insertion to discharge was 48 hours. Of 113 alerts reviewed by the stewardship team, 26 (23.0%) resulted in a recommendation to avoid line placement and 45 (39.8%) resulted in at least one specific stewardship recommendation (Table 1). Recommendations were fully or partially accepted in 58.3% of instances.

TABLE 1. Interventions Resulting from Prospective Venous Catheter Stewardship

Event Description, n (%)	N=113 PAF/Midline Alerts
Recommendation to avoid line placement	26 (23.0)
Other antimicrobial stewardship recommendations ¹	45 (39.8)
Oral conversion	20 (17.7)
De-escalation	15 (13.3)
Obtain ID consult	12 (10.6)
Discontinue antimicrobial(s)	6 (5.3)
Escalation	4 (3.5)
Dose adjustment	3 (2.7)
Shorten duration	2 (1.8)
Laboratory monitoring	1 (0.9)

¹A single alert may have resulted in >1 other stewardship recommendation

Conclusion: Prospective audit of PAF/alerts for OPAT identified a line-sparing opportunity in nearly 1 in 4 cases. Where line avoidance was not possible, other opportunities for antimicrobial optimization were common. This high-yield intervention should be considered for institutions that do not mandate infectious diseases consult for all OPAT discharges.

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55. Ertapenem for surgical prophylaxis: the impact of antimicrobial stewardship interventions on inappropriate carbapenem utilization at a community teaching hospital

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Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Internal analysis of ertapenem utilization revealed overuse for surgical prophylaxis in intra-abdominal (IA) procedures. Our Antimicrobial Management Team (AMT) initiated a multimodal intervention to promote the appropriate use of ertapenem. The primary objective of this study is to describe and evaluate the impact of our interventions targeting ertapenem utilization for IA surgical prophylaxis.

Methods: From March to October 2019, a pre-post study was performed to evaluate ertapenem utilization for surgical prophylaxis. Our AMT interventions which were formally implemented in June 2019 included the following: targeted provider feedback, review and update of our surgical prophylactic antibiotic protocol (SPAP), policy, and order set addition of Cefoxitin to formulary, extensive provider education, and monitoring of SPAP compliance. Data was abstracted from the electronic medical record for IA cases and included antibiotics prescribed, procedure type, and prescriber information. In addition, surgical site infection (SSI) rates and Clostridium difficile infection rates were monitored throughout the study period.

Results: In total, 1,080 IA surgical cases were reviewed. The set quality measure of less than 5 percent ertapenem utilization was achieved each month after AMT interventions in June 2019, as demonstrated by monthly ertapenem use for surgical prophylaxis: 13.7 percent in March, 13.4 percent in April, 4.9 percent in May, 8.9 percent in June, 3.1 percent in July, 2.2 percent in August, 4.5 percent in September, and 3.4 percent in October. Overall, the number of ertapenem cases was 58 pre-study (March to June) versus 16 post-study (July to October), accounting for a 72.4 percent reduction in ertapenem utilization for IA surgical prophylaxis. The rate of SSI among IA surgeries and Clostridium difficile infection did not increase as a consequence of our interventions.

Conclusion: Carbapenem use for surgical prophylaxis was consistently within threshold limits following the stewardship interventions. Incidence of surgical site infections and Clostridium difficile infection did not increase during the interventions suggesting that alternate antimicrobial agents in the SPAP are safe and effective for IA surgeries in our patient population.

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56. Ertapenem Utilization: “CRE”ating Solutions for Improving Hospital Stay and Stewardship

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Session: P-3. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background: Ertapenem, a carbapenem offers advantages over other carbapenems. It is administered daily and can therefore facilitate home infusion discharges, it has a narrower spectrum of activity which could reduce resistance, and is more cost effective than meropenem. Our objectives were to determine whether ertapenem utilization decreased hospital length of stay and whether use had an impact on future meropenem resistance.

Methods: This was a retrospective chart review of ertapenem over 2 years for the following infections: urinary tract, skin and soft tissue (SSTI), and osteomyelitis. Evaluated pathogens, duration of inpatient therapy, discharged antimicrobials, length of discharged therapy, and positive cultures up to 90 days post treatment. Analyzed length of stay, and calculated the hospital days that were saved by discharging patients on ertapenem.

Results: 70 patients were analyzed, with indications and pathogens listed in Figure 1. Patients were initially placed on empiric therapies pending culture results. On average, patients received 2.9 days of empiric meropenem. Once cultures finalized, patients were switched to ertapenem. On average, patients received 6 days of inpatient ertapenem prior to discharge. 37 patients were discharged with ertapenem, totaling 937 days of discharged therapy. Of the 36 patients readmitted within 90 days, 20 had pathogens identified, of which 4 were meropenem-resistant (Figure 2).

Infections, Pathogens, and Treatment Duration

Indication	Number of Patients (number of patients, %)	Patients Discharged on Ertapenem (number of patients, %)	Days of Discharged Ertapenem (total, range)	Pathogens Identified (number of cultures, %)
SSTI	23 (33%)	15 (65%)	410 (0-42)	ESBL: 6 (26%) Polymicrobial: 14 (61%) Other: 2 (9%) Negative: 1 (4%)
Cystitis	19 (27%)	3 (16%)	8 (0-5)	ESBL: 18 (95%) Other: 1 (5%)
Osteomyelitis	15 (21%)	13 (87%)	421 (0-41)	ESBL: 5 (33%) Polymicrobial: 9 (60%) Other: 1 (7%) ESBL: 6 (100%)
Pylonephritis	6 (9%)	4 (67%)	50 (0-24)	ESBL: 3 (43%) Polymicrobial: 2 (29%) Other: 1 (14%) Negative: 1 (14%)
Other	7 (10%)	2 (29%)	48 (0-35)	
Totals	70	37 (53%)	937 (0-42)	70

Readmission Data	Number of Patients (%)
Readmit in 90 Days	36 (51%)
Pathogen Identified	20 (56%)
Meropenem Sensitive	4 (20%)

Conclusion: In this pilot stewardship initiative, switching to and discharging patients on ertapenem saved 937 hospital days over the 2 years evaluated, with the greatest days of therapy saved in osteomyelitis and SSTIs. There were a total of 422 days of inpatient ertapenem, mostly in the SSTI and cystitis indications. Of the 20 pathogens identified on readmission, 4 (20%) were meropenem-resistant. All were Acinetobacter baumannii-often carbapenem-resistant; none of the cultures were the same pathogen as the originally identified, but this warrants further investigation. The indication associated with least days of therapy saved and the highest days of inpatient ertapenem was cystitis. 53% of the patients were discharged with ertapenem; future direction involved identifying barriers for speedy discharge across all indications.

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57. Evaluating the Utility of a Penicillin Allergy Reconciliation Program within an Infectious Diseases Consult Population in a Community Health System

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