Session: P-6. Antimicrobial Stewardship: Program Development and Implementation

Background: Computer-based antibiotic time-outs, in which providers receive automated electronic medical record (EMR) alerts regarding continuation of inpatient antibiotics (Anb), are common stewardship initiatives. We assessed the efficacy of such an intervention in oncology patients (pts), who frequently receive Anb when hospitalized.

Methods: An EMR alert triggered 48 hours after starting vancomycin (vanc), cefepime (cef), piperacillin-tazobactam (pip-tazo), meropenem (mero), and fluoroquinolones (flq) was initiated in a tertiary care hospital in November 2018. To assess the efficacy of the intervention in adults with solid tumor malignancies, demographic, vital sign, laboratory, and treatment data were extracted retrospectively from the EMR. Pts with neutropenic fever, organ transplant, trauma, and cardiopulmonary arrest were excluded. We compared length of therapy [LOT; days of therapy per 1000 patient-days (DOT/1000 pd)] via t-test and incidence rate ratio (IRR) for 3- and 12-month periods preceding and following the intervention. November 2018 was excluded as a washout period.

Results: The groups did not differ by age, sex, length of stay, or rate of bacteremia (Table 1). Comparing the 3 months before and after the intervention, neither mean LOT (2.9 ± 0.20 vs 2.6 ± 0.14 DOT/1000 pd, p=0.31) nor rate of Anb use changed (IRR 0.97, p=0.32). However, when considering only the Anb targeted by the intervention, cef usage was 1.4 times higher post- intervention (p=0.002), while use of other Anb was similar (Table 2). Comparing 12 months before to 12 months after the intervention, mean LOT was longer after (0.74 ± 0.018) than before (0.68 ± 0.020 DOT/1000 pd; p=0.03), and Anb use increased (IRR 1.3, p< 0.0001). Specifically, mero (IRR 1.8, p< 0.0001) and cef (1.6, p< 0.0001) were used more frequently after the intervention while none were used less (table 2).

Table 1: Study Group Characteristics

	Three Months from Intervention			One Year from Intervention		
	Pre	Post	P-value	Pre	Post	P-value
Female	43%	42%	0.85	47%	48%	0.50
Age (years)	67 ± 0.7	67 ± 0.7	0.64	65 ± 0.4	66 ± 0.4	0.23
Length of Stay (days)	9 ± 0.5	8 ± 0.4	0.18	8 ± 0.2	8 ± 0.2	0.12
Bacteremia	16%	18%	0.50	14%	15%	0.6

Table 2: Antibiotic Use Three Months Before and After, and Twelve Months Before and After, the Intervention

	Three Months from Intervention		One Year from Intervention	
	IRR	P-value	IRR	P-value
Vancomycin	1.1	0.27	1.0	0.20
Cefepime	**1.4**	**0.002**	**1.6**	**<0.0001**
Meropenem	1.3	0.16	**1.8**	**<0.0001**
Piperacillin-Tazobactam	0.9	0.16	0.9	0.16
Fluoroquinolones	0.9	0.28	1.0	0.22
Combined	1.1	0.36	**1.4**	**<0.0001**

Conclusion: Despite wide adoption and efficacy in other populations, an EMR-based Anb time-out did not mitigate the continuation of Anb among inpatients with solid tumors. The intervention may require additional measures, such as an active role for pharmacy, to be effective. However, qualitative studies may also be required to understand why providers are hesitant to limit Anb use in this population.

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182. Missed Opportunities to Discontinue Unnecessary Vancomycin During Pharmacist Therapeutic Monitoring

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Background: Unnecessary and prolonged IV vancomycin exposure increases risk of adverse drug events, notably nephrotoxicity, which may result in prolonged hospital length of stay. The purpose of this study is to identify areas of improvement in antimicrobial stewardship for vancomycin appropriateness by clinical pharmacists at the time of therapeutic drug monitoring (TDM).

Methods: Retrospective, observational cohort study at an academic medical center and a community hospital. Inclusion: patient over 18 years, received at least three days of IV vancomycin where the clinical pharmacy TDM service assessed for appropriate continuation for hospital admission between June 19, 2019 and June 30, 2019. Exclusion: vancomycin prophylaxis or administered by routes other than IV. Primary outcome was to determine the frequency and clinical components of inappropriate vancomycin continuation at the time of TDM. Inappropriate vancomycin continuation was defined as cultures positive for methicillin-susceptible Staphylococcus aureus (MRSA), vancomycin-resistant bacteria, and non-purulent skin and soft tissue infection (SSTI) in the absence of vasopressors. Data was reported using descriptive statistics and measures of central tendency.

Results: 167 patients met inclusion criteria with 38.3% from the ICU. SSTIs were most common indication 39 (23.4%) cases, followed by pneumonia and blood with 34 (20.4%) cases each. At time of vancomycin TDM assessment, vancomycin continuation was appropriate 59.3% of the time. Mean of 4.22 ± 2.69 days of appropriate vancomycin use, 2.18 ± 2.47 days of inappropriate use, and total duration 5.42 ± 2.94. 16.4% patients developed an AKI. Majority of missed opportunities were attributed to non-purulent SSTI (28.2%) and missed MRSA nares swabs in 21% pneumonia cases (table 1).

Conclusion: Vancomycin is used extensively for empiric treatment of presumed infections. Appropriate de-escalation of vancomycin therapy is important to decrease the incidence of adverse effects, decreasing hospital length of stay, and reduce development of resistance. According to the mean duration of inappropriate therapy, there are opportunities for pharmacy and antibiotic stewardship involvement at the time of TDM to optimize patient care (table 1).

Missed opportunities for vancomycin de-escalation

Table 1: Missed opportunities for vancomycin de-escalation

Missed Opportunities to De-escalate vancomycin			
	Academic Medical Center n= 117 (%)	Community Hospital n= 50 (%)	Combined n= 167 (%)
History of MRSA growth in previous 12 Months	14 (12%)	2 (4%)	16 (9.6%)
MRSA Nares	9 (10.8%)	8 (18%)	18 (13.5%)
Missed MRSA Nares	22 (29.7%)	4 (8%)	26 (21%)
SSTI (non-purulent), n=39 (%)	6 (15.4%)	5 (12.8%)	11 (28.2%)

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183. Optimization of an Outpatient Antimicrobial Stewardship Process for Patients Discharged from the Emergency Department at an Academic Medical Center.

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Background: Suboptimal antimicrobial therapy has resulted in the emergence of multi-drug resistant organisms. The objective of this study was to optimize the time to antimicrobial therapy modification for patients discharged from the emergency department (ED) of an academic medical center through implementation of a pharmacist-driven outpatient antimicrobial stewardship initiative (ASI).

Methods: This was a pre-post, quasi-experimental study that evaluated the impact of a pharmacist-driven outpatient antimicrobial stewardship initiative at a single academic medical center. The pre-cohort was evaluated through manual electronic medical record (EMR) review, while the post-cohort involved a real-time notification alert system through an electronic clinical surveillance application. The difference in time from positive culture result to antimicrobial therapy optimization before and after implementation of the pharmacist-driven ASI was collected and analyzed.

Results: A total of 166 cultures were included in the analysis. Of these, 12/72 (16%) in the pre-cohort and 11/94 (12%) in the post-cohort required antimicrobial therapy modification, with a 21.9-hour reduction in median time from positive culture result to antimicrobial optimization in the post-cohort (43 h vs. 21.1 h; p < 0.01). Similarly, the median time from positive culture result to review was reduced by 20 hours with pharmacist-driven intervention (21.1 h vs. 1.4 h; p < 0.01).

Conclusion: The implementation of a pharmacist-driven outpatient antimicrobial stewardship initiative resulted in a significant reduction in time to positive culture review and therapy optimization for patients discharged from the ED of an academic medical center set in Philadelphia, PA.

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184. Pharmacist role in antimicrobial stewardship research: a 30-year experience

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Session: P-6. Antimicrobial Stewardship: Program Development and Implementation

Background: Antimicrobial stewardship program (ASP) guidance from the Centers for Disease Control and Prevention recommends co-leadership of both an infectious-diseases (ID) physician and ID-trained pharmacist. Pharmacists play a key