RECEPTIVITY TO PHARMACIST RECOMMENDATIONS FOR ANTIMICROBIAL STEWARDSHIP

BACKGROUND AND RATIONALE: In an era of emerging antimicrobial resistance, dedication to antimicrobial stewardship is imperative. One-half of hospitalized patients receive an antibiotic during admission; one-third of which is either unnecessary or inappropriate.[1,2] Antimicrobial stewardship programs (ASP) have expanded since 2017 after The Joint Commission required ASPs at all accredited hospitals.[3] Pharmacists are well suited to contribute to an ASP by optimizing effective treatment of infections, while minimizing the unintended consequences and risk of adverse drug events caused by antimicrobials. Specifically, pharmacists are trained to conduct antimicrobial regimen reviews to make interventions on discontinuation, duration, de-escalation, and dose or frequency optimization – all of which improve patient outcomes.[4] utilizes EPIC, an electronic health record (EHR), to document pharmacist interventions (iVents). These interventions are a part of daily pharmacist workflow and can be used to retrospectively assess clinician receptivity to pharmacist recommendations for antimicrobial therapy. This evaluation aims to report information on antimicrobial use to hospital staff, assess the efficacy of the current process for pharmacist recommended antimicrobial actions, educate clinicians on their receptivity to pharmacist recommendations, and justify the continual tracking of antimicrobial prescribing patterns at .

METHODS: A retrospective chart review was conducted via EPIC report for pharmacist iVents from August 1st, 2018 to August 31st, 2018. The report generated 9029 documented interventions during the one-month study period. The entries were sorted by type for 'Antimicrobial Stewardship' and 'Pharmacist Recommendation' and were manually reviewed to remove those not pertinent to antimicrobials. Other exclusion criteria included interventions without linked orders (and were unable to be determined manually), interventions that did not pertain to antimicrobial stewardship, and clerical interventions (i.e. updating patient allergies). Each intervention was reviewed in EPIC by contact serial number (CSN) and the provider to which the antimicrobial recommendation was given was recorded. Methods for collection of provider information included documentation in the iVent, ordering provider or discontinuing provider on the respective orders, reference to associated intervention in the progress notes, documentation on culture results, and the Treatment Team tab by specialty referred to in the iVent documentation. Each intervention was then assessed as 'accepted', 'rejected', or other ('Not Applicable', 'Awaiting Provider Response', 'Informational' or blank).

RESULTS: The initial sorting yielded 1255 interventions for review, however, 300 interventions met all criteria for inclusion. The pharmacist recommended antimicrobial intervention was accepted 239 times (80%), rejected 19 times (6%), and other 42 times (14%). The recommendations most often accepted were 'Antimicrobial Stewardship – Initiation Recommended' (92%; n=24) and 'Pharmacy Recommendation – Dose Change' (91%; n=20). The most frequently rejected interventions were 'Antimicrobial Stewardship – Discontinuation Recommended' (14%; n=5) and 'Antimicrobial Stewardship – De-escalation Recommended' (16%; n=4). The providers receiving recommendations most frequently were ; Other results are described in Tables 1-3.

TABLE 1: Provider Acceptance of Pharmacist Recommendations for Antimicrobial Therapy			
Documented iVent	**Accepted (%)**	**Rejected (%)**	**Other (%)†**
AMS (n=198)	160 (81%)	12 (6%)	26 (13%)
Pharmacy Recommendation (n=102)	79 (77%)	6 (6%)	17 (17%)
Total (n=300)	239 (80%)	19 (6%)	42 (14%)
†Other (%) included: 'Other', Blank, 'Not Applicable', 'Awaiting Provider Response', 'Informational'			

DISCUSSION: Pharmacists play an integral role in antimicrobial stewardship and their daily workflow strategically assesses antimicrobial utilization. Based on the results of this evaluation, recommendations from pharmacists regarding antimicrobial therapy are well received and are frequently accepted by most providers. Conversely, the study also demonstrated the opportunity for improvement for specific providers. While presumptuous, it can be inferred that these recommendations improved patient outcomes and minimized unnecessary consequences of antibiotic use based on previous studies of pharmacist impact. It should be noted, however, that the suggested rates of recommendation acceptance are likely inflated. First, as with any voluntary documentation or reporting system, this evaluation was subject to reporting bias. Recommendations that were accepted were more likely to be documented than those that weren't. This is evident by the overwhelming rates of recommendation acceptance, as well as by verbal confirmation from various sources that such practice is occurring. It is also possible that recommendations were made and accepted, but for any number of reasons, not documented. Additionally, many of the documented interventions lacked the outcome of the recommendation. Lastly, while reviewing patient charts, it was noticed that pharmacists may have documented iVents prior to resolution of the recommendation. In some cases, this led to a closed iVent documented as 'accepted', when ultimately, the recommendation was not accepted. As such, the true acceptance rates of pharmacist recommendations may not be described in this evaluation.

TABLE 2: Recommendations by iVent Type				
Antimicrobial Stewardship	**Number**	**Accepted (%)**	**Rejected (%)**	**Other (%)†**
Initiation Recommended	24	22 (92%)	0 (0%)	2 (8%)
Discontinuation Recommended	36	26 (72%)	5 (14%)	5 (14%)
Therapy Change Recommended	39	29 (74%)	2 (5%)	8 (21%)
De-escalation Recommended	25	21 (84%)	4 (16%)	0 (0%)
Other*	74	62 (84%)	1 (1%)	11 (15%)
Pharmacy Recommendation	**Number**	**Accepted (%)**	**Rejected (%)**	**Other (%)†**
Drug Initiation	22	15 (68%)	3 (14%)	4 (18%)
Drug Change	12	10 (83%)	0 (0%)	2 (17%)
Dose Change	22	20 (91%)	0 (0%)	2 (9%)
Frequency Change	3	2 (67%)	1 (33%)	0 (0%)
Order Labs	10	6 (60%)	1 (10%)	3 (30%)
Drug Discontinue	12	10 (83%)	0 (0%)	2 (17%)
Other	21	16 (76%)	1 (5%)	4 (19%)

†Other (%) included: 'Other', Blank, 'Not Applicable', 'Awaiting Provider Response', 'Informational'
*Rapid PCR Therapy Change

TABLE 3: Provider Specific Acceptance Rates

Provider	Proposed	Accepted (%)	Rejected (%)	Other (%)†
	28	22 (78%)	3 (11%)	3 (11%)
	22	20 (92%)	1 (4%)	1 (4%)
	17	13 (76%)	2 (12%)	2 (12%)
	16	16 (100%)	0 (0%)	0 (0%)
	14	12 (86%)	0 (0%)	2 (14%)
	13	13 (100%)	0 (0%)	0 (0%)
	12	11 (92%)	1 (8 %)	0 (0%)
	11	7 (64%)	2 (18%)	2 (18%)
	10	9 (90%)	0 (0%)	1 (10%)
	9	9 (100%)	0 (0%)	0 (0%)
	9	4 (44%)	3 (33%)	2 (22%)
	8	8 (100%)	0 (0%)	0 (0%)
	6	4 (67%)	0 (0%)	2 (33%)

†Other (%) included: 'Other', Blank, 'Not Applicable', 'Awaiting Provider Response', 'Informational'

CONCLUSIONS: Based on the results of this analysis, providers at e are receptive to pharmacist input and recommendations in regard to antimicrobial stewardship, with some opportunities for growth for some specific providers. Pharmacists should be encouraged to continue to make recommendations that reduce inappropriate use of antimicrobials and improve patient care. A greater emphasis should be placed on proper documentation of both accepted and rejected recommendations, as well as providing additional pertinent information necessary to track and report antimicrobial stewardship metrics. Finally, it is imperative to continue to develop hospital wide policies, interventions, and processes that promulgate antimicrobial stewardship and provide better care, less toxicity, and lower overall costs for our patients.

PRIMARY AUTHOR INFORMATION:

Jordan Potter, PharmD Candidate 2019
University of Kentucky College of Pharmacy

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