IMPLEMENTATION OF PHARMACIST ANTIMICROBIAL STEWARDSHIP INTERVENTION AT DISCHARGE MEDICATION RECONCILIATION REVIEW

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BACKGROUND
Antimicrobial stewardship is an essential part of pharmacist practice to ensure that patients on antibiotics have appropriate selection, dosing, and duration based on indication and other patient-specific factors.1
✓ Most hospital stewardship programs focus on inpatient antibiotic prescribing; however, most patients complete their antibiotic course in the outpatient setting.
✓ This points out a practice deficit, in that there is limited pharmacist interventions made for outpatient prescribing compared to inpatient. Previous studies have indicated that more than half of all patients discharged on antibiotics have.2
✓ Inappropriate spectrum of activity
✓ Incorrect dosing
✓ Extended durations
✓ No clinical indication

Current Literature
Connor et al.1
✓ Multicenter, retrospective review
✓ Adult patients discharged on continuation of antimicrobial therapy for the following indications: SSTI, UTI, COPD
✓ Primary outcome was to evaluate durations of therapy:
  - SSTI 5-7 days
  - Uncomplicated UTI 3-5 days
  - CAP 5 days
  - COPD 3-5 days
✓ Most used antibiotics: beta-lactams
✓ Finding: For uncomplicated UTI and SSTI, median durations extended beyond recommended durations.

Pharmacists can help play an essential role in discharge medication reconciliation to help ensure:
✓ Appropriateness of antimicrobials utilized for pathogen/indication as well as dosing based on patient-specific factors and appropriate IV to PO stepdown
✓ Prevention of antibiotic-related adverse events
✓ Optimization of stewardship practices

STUDY OBJECTIVES
The main objective of this study is to evaluate 30-day readmission rates, appropriateness of antimicrobial prescriptions, and treatment failure/adverse events within the discharge medication reconciliation review process.

METHODS

Study Design
✓ Single-center IRB-approved, observational, quality improvement review

Control
Intervention
Timeframe: July 2021 – October 2021
Timeframe: December 2021 – March 2022
Practice:
✓ No standardized practice for pharmacist to evaluate medication reconciliation at discharge for appropriateness of outpatient antimicrobials.
✓ Data Source: AAH electronic medical health records
✓ Site-specific PGY2 Infectious Disease Resident evaluated medication reconciliation at discharge for appropriateness of outpatient antimicrobials
✓ Data Source: Discharge order notifications in Epic “In-Basket” messages
✓ Data collection: prospective, real-time

✓ Data collection: retrospective

Patient Population
✓ Adult patients > 18 years of age were included if they were discharged on enteral antimicrobials during study timeframe with documented non-life-threatening infections including but not limited to: soft-tissue and tissues infection, pneumonia/respiratory infections, intra-abdominal infections.

Study Endpoints
✓ Primary
  - 30-day readmission rates for persistent or worsening of infectious symptoms OR for antibiotic-related adverse effect (excluding hospital readmissions or ER visits unrelated to infectious disease)
✓ Secondary
  - Assessment of antimicrobial regimen: antimicrobial selection, dose, and duration in relation to infectious indication and required spectrum of activity
  - Treatment failure AND/OR treatment-associated adverse events

Statistical Analysis
✓ Unpaired T-test: continuous data
✓ Fisher’s exact test: categorical data

RESULTS

Baseline Characteristics
✓ Mean age (years): 44 years in control group vs 40 years in intervention group
✓ Mean baseline serum creatinine: 0.79 ug/ml in control group vs 0.81 ug/ml in intervention group
✓ Most common antibiotic indications:
  - UTI/gerontourinary
  - SSTI
  - Pulmonary
  - Most common antibiotic class prescribed on discharge:
  - Beta-lactams

Primary Outcome:
30-day ID-related admission rate – no (%)
Control, n=50 Intervention, n=50 P-Value
3 (6) 2 (4) 0.646

Secondary Outcomes
✓ Inappropriate orders: 22% in control vs 14% in intervention group.
✓ Majority of inappropriate orders were related to duration of therapy, antimicrobial selection, or dose.
✓ In the intervention group, 6% of total interventions made were accepted.

ID-related inpatient readmissions
Control, n=3 Intervention, n=2
SSI – worsening appearance, purulence, erythema (2)
HAP – symptomatic worsening (1)
CDI Relapse (1)
UTI symptom worsening (1)

REFERENCES
2. Morgan Conner, William H Harris, John P Bomkamp, ADD II Up: An Evaluation of Antibiotic Duration at Hospital Discharge at a Community Hospital, Open Forum Infectious Diseases, Volume 8, Issue 8, August 2021, ulas399, https://doi.org/10.1093/ofid/ofab399.

CONCLUSIONS
The impact of one single pharmacist (not dedicated to floor/unit-specific care) was unable to show a clinical or statistical significance compared to no pharmacist intervention. This may be misrepresented due to the low sample size that was surveyed in this study. Creating a standardized model where ALL inpatient pharmacists perform discharge medication reconciliation duties may make the minuscule results of this study seem much more significant.

Additional Findings:
✓ Inappropriate antibiotic orders at discharge: 14% intervention vs 22% control.
✓ Compared to AAH system recommendations, the antimicrobial durations of therapy exceeded by 1-3 days in the control group and 1-4 days in the intervention group.

Future Directions
✓ New model to be implemented at Advocate Christ Medical Center, with hopes that a team of pharmacists working together for this initiative will yield better patient outcomes than one single pharmacist. This is inspired from current practice at a sister-hospital which has shown successful results.