

Background

- Mercy Hospital Springfield's intern program prepares interns for residency through a variety of learning opportunities
- This project evaluates one portion of the program where pharmacy interns act as clinical pharmacist extenders during weekend staffing
- The current weekend staffing model consists of one second, third, and fourth year intern that complete clinical recommendations for pharmacist review.
- Types of clinical recommendations include: intravenous to oral conversion, renal adjustments, anticoagulation monitoring, and parenteral nutrition evaluation. As the intern progresses through their education, he/she completes progressively more advanced clinical recommendations that correlate with their respective training
- Interns identify which patients to evaluate with the assistance of electronic health record rule-based alerts

Primary Objective

- To compare the number of clinical patient care interventions placed by a pharmacist or pharmacy intern each day that an intern is staffing vs days that are not staffed by an intern on weekend shifts during the study period.

Secondary Objectives

- To assess the total number of interventions placed by a pharmacy intern during the study period
- To assess the total number of interventions placed by a pharmacy intern that led to any change in therapy during the study period
- To assess the total number of interventions placed by a pharmacy intern during the study period broken down by intervention type

Methods and Materials

- This study spanned all pharmacy interventions made from March 1, 2019 to December 1, 2019 during weekends.
- This study compared interventions made on days staffed by interns vs days not staffed by interns during the study period.
- Powered via Cohen estimations to detect a 0.5 effect size. For an 80% power this study needed 51 days of data included. Alpha was set at 0.05.
- The primary end point was evaluated for significance using the Independent T-Test
- Secondary end points are evaluated via descriptive statistics
- This study has been approved by the Institutional Review Board.

Figures

Average Number of Interventions Completed by Pharmacy per Shift

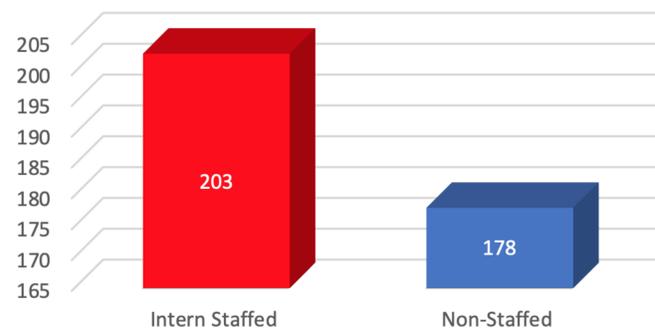


Figure 1. On average, there were 203 interventions placed by pharmacists on weekends when interns were staffing, and 178 interventions placed on weekends when interns were not staffing. Intern staffed weekends show an average increase of 25 pharmacist interventions per weekend.

Acceptance of Intern Recommendations

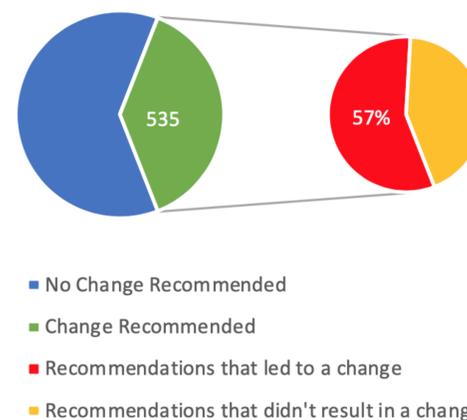


Figure 2. During the study period, 535 out of 1403 interventions created by interns, recommended a change in therapy to pharmacists and 304 recommendations resulted in a change in therapy. The recommendations made by the interns were accepted 57% of the time by the reviewing pharmacist.

Types of Interventions Placed by Interns

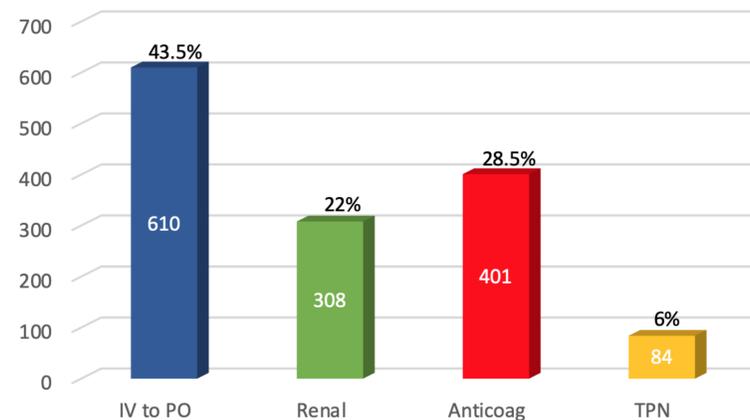


Figure 3. Numerical count of interventions written by interns, separated by type completed between March 1, 2019 and December 1, 2019. IV to PO conversions were the largest category of interventions completed followed by anticoagulation, renal adjustment, and TPN respectively.

Results

- A total of 81 days were evaluated, 55 intern staffed days and 26 days unstaffed by interns
- Days staffed with pharmacy interns resulted in an average of 203 interventions compared to 178 interventions when interns were not present ($p = 0.0046$)
- During this time period, interns made 1403 total interventions
 - Of these, 535 recommendations were to change a portion of patient therapy where interns had a 57% success rate of causing therapy change after the pharmacist's assessment
 - The remaining 868 interventions had recommendations against altering therapy
- Intravenous to oral conversions were the most common intervention placed by interns, followed by anticoagulation monitoring, then renal medication adjustment, and parenteral nutrition management.

Discussion/Conclusion

- The utilization of pharmacy interns as clinical pharmacist extenders showed an increased number of interventions on intern staffed days that amounts to about 2 pharmacists worth of interventions. This drastic increase in interventions is likely due to the increased ability for pharmacists to quickly triage alerts that are already evaluated by an intern.
- Over 800 of the intern interventions were against therapy change when an automated alert fired for a review of therapy. By having interns review these interventions, it could save the pharmacists' time by allowing them to triage more clinically significant results first.
- This study shows that intern recommendations are effective at leading to changes in patient therapy. Of the over 500 interventions that an intern recommended a change, 57% lead to a change in patient therapy. This suggests that interns are properly assessing patients and pharmacists are reviewing their recommendations.

Disclosure Statement

- None of the authors have any financial or professional conflicts to disclose.