

Economic Impact of Pharmacist Participation in the Neurocritical Care Unit.

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Economic Impact of Pharmacist Participation in the Neuro-Critical Care Unit

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INTRODUCTION

Clinical pharmacists have become an integral part of multidisciplinary medical teams. Expanding the role of pharmacists in the neuro-critical care units has the potential to positively impact the quality of patient care, knowledge of medications and provide costs savings. This study examines these potential benefits at one neuro-critical care unit^{1,2}.

METHODS

We reviewed patient medication profiles and had formal rounds with a pharmacist four times weekly. For the purposes of this study, the focus was on minimization of a select number of high expense drugs. Nine months of baseline data was compared to three months of post intervention data. Interventions were performed at the time of rounding, which involved timely conversion to enteral formulas, changes to alternative medications or discontinuation of medications. Three medications were selected including Nicardipine, Levetiracetam and Dexmedetomidine. We then performed a cost-benefit analysis to assess the net amount of money saved by reducing inappropriate pharmacy drug use following the interventions.

RESULTS

Average cost of Nicardipine was \$34,122 pre-intervention, compared to \$23,871 post-intervention (p-value 0.0229). The cost of IV Levetiracetam usage on average was \$4,719 pre-intervention and \$3,612 post-intervention (p-value 0.102), while the cost of IV Dexmedetomidine was \$2355 pre-intervention compared to \$1800 post-intervention (p-value 0.5226). Average expense per month was reduced by approximately \$11,900 per month compared to the average expense per month from the previous 9 months (p-value 0.0128). Appropriate use of stress ulcer prophylaxis was also positively impacted; patient days/month on famotidine was reduced by approximately 30% from baseline, 222 patient days (pre-intervention) vs 150 days post-intervention.

Table 1. NSIC Select High Expense Drug Utilization (Pre and Post Intervention)

Drug	Avg/month (Jan 16 - Sep 16)	Nov-16	Dec-16	Jan-17	Avg/month (Nov 16 - Jan 17)
Nicardipine	\$34,122	\$25,606	\$25,814	\$20,193	\$23,871
Levetiracetam	\$4,719	\$2,945	\$3,525	\$4,365	\$3,612
Dexmedetomidine	\$2,355	\$1,485	\$945	\$2,970	\$1,800
TOTAL	\$41,196	\$30,036	\$30,284	\$27,528	\$29,283

Figure 1: Select High Expense Drug Utilization (Pre and Post Intervention)

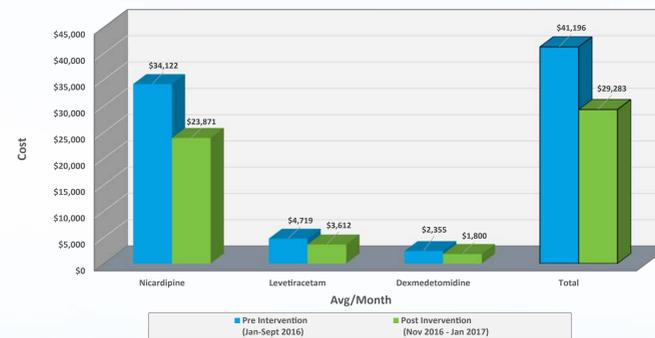
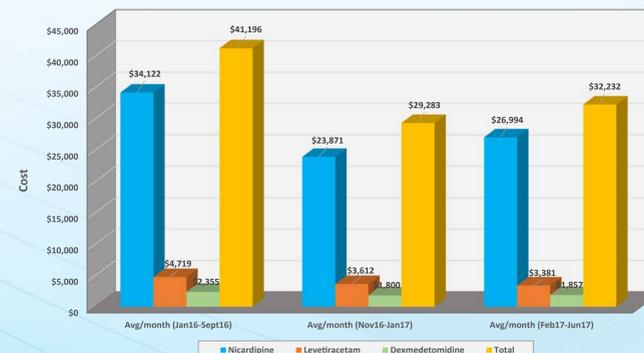


Figure 1: Select High Expense Drug Utilization (Pre and Post Intervention and Follow up)



DISCUSSION

- While multiple factors could be at play, expense was reduced ~ \$11,900/month compared to the average expense/month from the previous 9 months
- If this would be sustained, annual savings would be \$142,800.00
- Follow up was additionally conducted post interventional arm from Feb 2017 to Jun 2017, to identify if changes could be sustained, though the trend was not statistically significant, there was an identifiable upward trend
- Appropriate use of stress ulcer prophylaxis was also positively impacted
 - Patient days/month on famotidine was reduced ~30% from baseline (222 patients days pre vs. 150 days post) with review of prior data

CONCLUSION

Pharmacist interventions within a neuro-critical care unit are known to be beneficial clinically for patients, however this study also shows that their interventions offer substantial cost benefits and should justify creating collaborations between pharmacists and neurointensivists. In the model used, the outcome was more static due to the consistency of APCs in the unit throughout the interventional period as well as during follow up. It would be important to identify if the sustained changes could be consistent in a more dynamic and fluctuating model with a consistent flow of incoming and outgoing residents/learners. Furthermore, more studies would be needed to identify if other overly used medications could have additional impacts on costs and outcome of patients³. This study can help identify the necessity of pharmacists in critical care units as a method of reduction in expenses and excess. More studies in different unit models with different medications are required to verify these findings.

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