

Title:

Implementation of a nurse-driven on-demand ordering system for compounded intravenous medications in a community hospital

Resident

Research in Progress

Learning Objective:

- Identify additional cost savings through an on-demand ordering system for titratable intravenous medications
- Recognize an opportunity to empower nursing staff through an improved medication request system

Abstract:**Background:**

Sterile compounding is an essential process of pharmacy practice as intravenous (IV) medications are provided in multiple concentrations and diluents. Every six hours pharmacy staff are notified using a batch system to prospectively compound these medications. Titratable IV medications are compounded based on the last updated rate of the inpatient order but these may not always be updated to the current rate potentially leading to waste. As medications are discontinued, changed or patients are discharged, medications must be returned to the pharmacy where they can be reused if within their beyond use dating (BUD) or ultimately wasted.

Literature regarding on-demand compounding is limited. One similar study conducted by Mazur et al.¹ predicted a reduction in waste cost ranging from \$10,775 to \$33,399, or 3 to 9% of the pharmacy's operational budget, after improving IV room procedures including confirmation of "high risk" or expensive medications prior to compounding.

Research Statement:

The primary objective is to decrease waste and workflow costs at Olathe Medical Center. The secondary objective is to increase nursing satisfaction scores.

Methods:

This pre and post implementation study will assess an on-demand ordering system for titratable, compounded, IV medications in the Critical Care Unit at Olathe Medical Center. Pre-implementation (Pre-I) will take place in September and October with post-implementation (Post-I) occurring in December and January. Implementation of an updated nursing communication tool located within the medication administration record of Cerner was utilized in the post implementation phase. The primary outcome will be the number of wasted medications, associated cost differences, as well as workflow costs. Workflow cost will be calculated based on the following formula: [(# of medications) x (10 min) x (\$17/hr)] = workflow cost. Average compounding time was estimated at 10 minutes and average technician salary was calculated at \$17/hr. Data collection includes daily documentation of wasted medications, doses and locations from which it was returned. The secondary outcome will assess

nursing satisfaction utilizing a survey for pre-I and post-I periods. The paper survey will consist of six likert style questions. Comparison between survey periods will measure central tendencies and use graphical representation.

Results:

After PPM implementation, wasted medications decreased from 78 to 29 doses equating to \$850.00 in overall cost savings between each two month study period. Nursing surveys in Pre-I were collected from 17 nurses and 9 in Post-I. The average satisfaction score in Pre-I was 2.65 and Post-I was 3.1 (p=0.32).

Conclusions:

The implementation of the PPM demonstrated a \$850 overall cost savings between Pre-I and Post-I which equates to a \$5,100 annualized savings demonstrating a positive financial impact. Nursing satisfaction scores did increase after PPM implementation but it was not significantly significant.

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Reference:

1. Mazur L, Chen S. Understanding and reducing the medication delivery waste via systems mapping and analysis. *Health Care Manage Sci.* 2008;11(1):55-65.