Introduction

Healthcare systems need evidence-based technologies to deliver medication in a safe and effective manner. Medication delivery systems are not only complex components of healthcare systems, they work to reduce errors in medication administration that can lead to disabilities as well as death. Adult intensive care units (ICUs) are at particular risk for errors that cause harm. Due to the complexities of medication delivery, it is imperative to look at medication administration from a human factors perspective. Addressing the positive face of organizational safety will address resiliency rather than focusing on adverse events and near misses.

Conceptual Framework

The study of medication safety and error prevention will be guided by the Systems Engineering Initiative for Patient Safety (SEIPS) Model, which combines human factors engineering with the Structure-Process-Outcome Model by Donabedian. The SEIPS Model describes a work system with persons, tasks, technology and tools, in a particular physical environment under organizational conditions. These parts interact in care processes to produce different outcomes for patients, employees, and the organization.

Review of Literature

Literature was found using CINHAL and Pubmed databases using the keywords nursing workflow, information system, medication administration systems, and human factors. Exclusion criteria included outpatient, geriatric, pediatric and long-term care and articles published before 2007. Research shows:

- Healthcare workers using multiple information systems lead to an increased number of transcription errors (Yeung, Lapinsky, Granton, Doran, and Cafazzo, 2011).
- Integrating stand-alone technologies improves medication administration by simplifying workflow and reducing medication errors (Prusch, Suess, Paolletti, Olin, and Watts, 2011).
- Implementing BCMA-eMAR technology is associated with significantly increasing safe medication administration and ensuring high accuracy rates or the medication process (Seibert, Maddox, Flynn, and Williams, 2014).
- Workarounds in medication technology compromise patient safety (Wulff, Cummings, Marck, and Yurtseven, 2011).

Results

Workflow was observed using a mixed-method qualitative and quantitative design to gather data in a cardiovascular intensive care unit (CVICU) in a large non-profit hospital located in the southeast. Samples were randomly selected medication orders followed through prescribing, transcribing, dispensing, and administering phases.

Conclusion

It is evident that ICUs are complex environments using technology systems to deliver fast and efficient patient care. Workarounds and variances in workflow are areas where medication errors may occur. In addition, patients are often sedated with anesthesia, blood pressure and narcotic pain medications and are not able to be advocates for themselves. This is a unique system where healthcare members must function efficiently together to deliver safe and effective care.

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