Quality Improvement in Reducing Medication Administration Errors

Ngoc Trinh

Lakeview College of Nursing

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Professor Travis Whisman

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Reducing Medication Administration Errors

Nursing is an ever-changing field that shifts to meet patients' healthcare and safety needs. Healthcare teams can also act as change agents in healthcare by using Quality Improvement. Quality Improvement (QI) is an "explicit, ongoing, systematic approach to the development and implementation of activities that will improve services and health care for patients" (Backhouse & Ogunlayi, 2020). Nurses are at the forefront of the process as they directly care for patients every day and can quickly notice when systems are breaking. Quality improvement in healthcare is vital and can assist nurses to reduce errors and improve patient outcomes by assessing current processes and collecting and analyzing data to make evidence-based solutions. Houser (2022) states that the QI process can also help nurses identify problems and collaborate to come up with solutions and measure results based on available evidence. The strategy can help to inculcate a quality improvement mindset in nursing practice.

The Quality and Safety Education for Nurses (QSEN) initiative identifies QI as one of the six essential competencies for nurses. QSEN emphasizes that nurses must be able to use QI tools, work collaboratively, and use evidence to improve care delivery. Through QSEN, nursing students and practicing nurses learn how to evaluate patient outcomes, recognize gaps in care, and contribute to safer systems (Backhouse & Ogunlayi, 2020). The framework encourages nurses to actively participate in change and apply QI principles to everyday nursing tasks (Backhouse & Ogunlayi, 2020). One key area where this is especially important is medication administration.

This work will be centered on the decrease in medication administration mistakes. This concern is important due to its severity in the field of nursing and patient safety. Medication

errors can have various causes, such as distraction, improper dosages, or lack of the “Five Rights” of medication administration (Ciapponi et al., 2021). Because the nurse will be the one administering the medications, they are in the best position to reduce these errors and enhance the medication process. The topic supports QSEN’s aim to provide quality and safety in nursing care and is also significantly applicable to the daily work of a nurse (Ciapponi et al., 2021).

Article Summary

In the article Reducing Healthcare Medication Administration Errors Using a Mixed Intervention Strategy: An Overview, Umoren et al. (2024) studied the combined effect of an intervention, observing the reduction in the incidence of medication administration errors in hospitals. The article authors performed a systematic review of the healthcare systems. The results suggested that the mixed or simultaneous use of several strategies instead of a single strategy to reduce medication administration error would have a greater cumulative impact. Such an approach included fishbone cause-and-effect analysis, Plan-Do-Study-Act (PDSA) cycles, well-structured education and training of staff, barcode medication scanning technology, and a standard checklist implementation. The study identified how strategies interact in a real-world clinical setting to increase medication safety, system efficiency, and reporting medication errors and a “culture of accountability and learning” (Umoren et al., 2024).

The article notes that these measures have the best chance of success with the backing of strong leaders and interprofessional cooperation. Nurses, pharmacists, and administrators all had key roles in quality improvement efforts. In their article, Umoren et al. (2024) also underlined the importance of having non-punitive reporting systems. If the system punishes, staff would be afraid to report and try to learn from their mistakes in medication administration. They

demonstrated that healthcare systems that used this set of techniques showed reduced medication administration errors and increased staff confidence when handling pharmaceuticals (Umoren et al., 2024). The purpose of the article is to demonstrate how a systematic, team-based approach can lead to a significant and sustainable reduction in medication safety incidents.

Overview

Umoren et al.'s (2024) article is significant because it demonstrates that a comprehensive, proactive quality improvement plan can have a positive effect on the safe administration of medications. The researchers explained that fishbone diagrams and the structured "why" questioning allowed a multidisciplinary team to get to the root cause of error events (Umoren et al., 2024). At the same time, PDSA cycles provided an opportunity to test minor changes and interventions and then track and document outcomes before moving on to adapt the process as required (Umoren et al., 2024). Checklists offer nurses a step-by-step framework that they can follow to ensure that they are adhering to the correct procedures, while barcode scanning allows them to cross-check that the correct drug is being delivered with a much higher degree of accuracy (Umoren et al., 2024). Finally, the education of staff members in the form of annual training and refreshers ensures that they are provided with the correct knowledge and skills to be able to administer medications safely and recognize errors and potential risks before they can harm patients (Umoren et al., 2024).

These research findings can have a direct effect on patient care because the minimization of medication errors can help to avoid or limit the occurrence of adverse drug events, shortening patient hospital stays and decreasing the overall risk of patient harm (Umoren et al., 2024). The evidence from the study also points to a culture that promotes learning from near misses rather

than punitive measures (Umoren et al., 2024). In this sense, the article has direct implications for the work life of nurses because they feel more supported and confident when they have clear-cut procedures in place and the necessary tools to follow them. The study findings are closely related to the QSEN Quality Improvement competency, which calls for the nurse to understand and use data, work with a team, and engage in ongoing outcome evaluation (Umoren et al., 2024). The article provides an excellent example of the successful use of QI concepts in nursing practice to develop a safer healthcare system and improve patient outcomes (Umoren et al., 2024).

Quality Improvement

Evidence from a stepped-wedge, cluster randomized control trial by Umoren et al. (2024) demonstrates the applicability of the mixed-intervention QI bundle in acute care wards, medical–surgical units, intensive care units, emergency departments, and long-term care facilities. Prior to the implementation of the intervention, the organizations participating in the trial were required to collect baseline medication error data, set up barcode scanners and checklist software, and secure protected time for staff training. Resources needed during the implementation of the bundle included IT support for device integration, nurse champions for leading daily checklist reviews, and fishbone-analysis tools for rapid Plan-Do-Study-Act (PDSA) cycle adjustments. The post-implementation stage required real-time audit dashboards, brief refresher workshops, and structured feedback forums to sustain improvements.

Ciapponi et al. (2021) discovered that using QI bundles to prevent medication errors is not only effective, but it also has a high return on investment through cost savings of adverse drug events. Patient satisfaction also appears to increase as they experience more accuracy and safety in their medication administration. Nurses have reported greater satisfaction and less

moral distress as clearly defined processes, and error reporting systems allow them to more efficiently complete their tasks. Safety measures, both for patients and nursing staff, have also shown significant improvement, including a large reduction in error and near-miss rates.

Application to Nursing

Nurses could reduce mistakes when handling drug distribution by standardizing their use of barcode medication administration (BCMA) devices and checklists. The research has found that the practice of both BCMA and structured checklists reduced wrong-patient and wrong-dose errors by over 40% in acute care settings (Umoren et al., 2024). To combine these two technologies into routine practice, nursing staff can accurately verify the "Five Rights" of drug administration at the bedside, rather than relying solely on memory. This evidence-based solution aligns with QSEN's Quality Improvement competency, as it describes the use of data to inform an intervention that significantly and measurably decreases error rates while improving patient safety.

Nursing staff should learn medication safety through hands-on multimodal interactive simulation using BCMA scanners and systematic PDSA debriefs. Combining simulation with fishbone analysis and non-punitive error reporting improves nurses’ error-spotting skills by 60% versus lectures alone (Tu et al.,2023). Practice in real life helps nurses verify the "Five Rights" at the bedside accurately. Discussing mistakes in a blame-free discussion

among nursing staff promotes future learning and continual growth. Making these simulations part of regular annual mandated training ensures that workers remain competent, promotes continuous improvement, and corresponds with QSEN's Quality Improvement competency.

Standardizing long-term studies on combined QI methods and looking at how a blame-free culture affects medication safety is a top research priority. Ciapponi et al. (2021) highlight the need to study how non-punitive error reporting changes error rates over time, and Umoren et al. (2024) recommend cost-effectiveness comparisons of mixed QI bundles in different units. Studying these areas will show which tools work best, help decide where to spend resources, and allow strategies to fit each clinical setting. This evidence will strengthen QSEN-aligned QI plans and guide nursing leaders in keeping safety improvements going.

Quality Improvement (QI) and Patient Safety are concepts that QSEN (Quality and Safety Education for Nurses) introduced. QI's goal is to help nurses gain knowledge of improvement science, provide skills for solving problems and change techniques, and enhance patient safety by growing the mindset and culture for improvement. Nurses who embrace QI demonstrate key qualities, such as improving accuracy and accountability at the bedside, adopting a patient safety-centric mindset, learning by doing, and team-oriented problem-solving. The focus of this paper is on error reduction in medication administration that involves multimodal strategies, including

barcode scanning, standard checklists, simulation-based training, and non-punitive reporting. This intervention is important for patient safety because the utilization of multimodal strategies has been shown to effectively reduce the error rate and increase patient outcomes and safety by cultivating a culture of openness and lifelong learning in nursing practice.

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