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Executive Summary: Clinical Practice Guideline Medication Reconciliation as a Catalyst for Patient Safety and Outcome

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Executive Summary: Clinical Practice Guideline

Medication Reconciliation as a Catalyst for Patient Safety and Outcomes

by

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Summary

This doctoral project centered on the development and implementation of a Clinical Practice Guideline (CPG) aimed at improving the accuracy of medication reconciliation for patients with complex medication regimens. Medication discrepancies and associated adverse drug events are significant concerns in healthcare, particularly during care transitions. The project addressed the practice-focused question: Will an interprofessional team reach consensus on a plan to standardize and automate the medication reconciliation process? This question highlights the importance of interprofessional collaboration in ensuring patient safety and improving healthcare outcomes. The project's purpose was to standardize and automate the reconciliation process to reduce discrepancies, improve medication list accuracy, and enhance overall patient safety. Analytical strategies involved pre- and post-implementation data collection on key metrics. Post-implementation results were significant: medication list accuracy improved by 20%, discrepancies decreased by 8%, ADEs reduced by 9%, and hospital readmissions dropped by 10%. These outcomes affirm the effectiveness of the CPG and its potential for broader application. The project produced a validated CPG, training resources, and a structured workflow for automation and interprofessional collaboration. Recommendations include continued education for healthcare providers, regular updates to the guidelines, and integration of automated tools to sustain improvements. Beyond the local setting, the project contributes to positive social change by improving equitable access to safer healthcare by fostering interprofessional teamwork and equipping nurses with tools to enhance care transitions.

Background

Medication reconciliation is a critical process that ensures accurate and comprehensive documentation of a patient's medication regimen, reducing the risk of medication errors and ADEs; however, inconsistencies in its execution remain a significant issue in healthcare settings, particularly for patients with complex medication regimens (Stolldorf et al., 2021). At the project site organization, the absence of standardized protocols and unclear delineation of responsibilities among health care providers had resulted in discrepancies in medication records. These gaps increase the risk of adverse outcomes, including hospital readmissions and patient dissatisfaction.

The Joint Commission (2024) and other regulatory bodies have emphasized the importance of accurate medication reconciliation as a cornerstone of patient safety. Previous studies have highlighted that failure to conduct proper reconciliation contributes to nearly 50% of medication errors, with transitions of care being a particularly vulnerable phase (Elbeddini et al., 2021). Patients who are prescribed five or more medications have a 30% greater rate of medication errors, and those who are 75 years of age or older have a 38% higher rate (Tariq & Scherbak, 2024). Despite this evidence, the lack of integration of automated tools and interprofessional collaboration further exacerbates the problem. Addressing these gaps through standardized protocols and team engagement will enhance the consistency and reliability of medication reconciliation, directly improving patient safety and clinical outcomes.

This project focused on the critical question: Will an interprofessional team reach a consensus on a plan to standardize and automate the medication reconciliation process? This question addresses the need for a cohesive and systematic approach to mitigate discrepancies in medication reconciliation at the project site organization. The lack of standardized protocols and

automation often leads to errors, particularly for patients with complex medication regimens (Tariq & Scherbak, 2024). Through interprofessional collaboration, the project aimed to unify the efforts of healthcare providers, streamline the reconciliation process, and integrate automation tools for efficiency and consistency. This project aimed to explore and enhance medication reconciliation practices to improve patient safety and clinical outcomes. With the project, I sought to improve the accuracy of medication reconciliation in patients with complex medication regimens, reduce medication errors, improve accuracy in patient records, and enhance overall patient care through fostering team collaboration, providing targeted training, and developing evidence-based protocols. These efforts aligned with the project site's organizational goals and national standards for patient safety.

The evidence above strongly supports the need for improved medication reconciliation to enhance patient safety and reduce ADEs. Previous studies have indicated that nearly half of all medication errors occur during care transitions, where discrepancies in medication lists are prevalent (Araya et al., 2023). Such errors are linked to adverse outcomes, including hospital readmissions and increased healthcare costs. High-quality evidence from systematic reviews and meta-analyses demonstrated that implementing standardized protocols and automated tools significantly reduces errors, improves medication accuracy, and enhances patient outcomes (Holmgren et al., 2023). The American Nurses Association (2015) and the American Association of Colleges of Nursing (2021) emphasized the importance of interprofessional collaboration and evidence-based practices in achieving these goals. Automated solutions and checklists, grounded in technological advancements, enhance efficiency and consistency (Al Anazi, 2021). The strength of evidence supporting this project is robust because it is supported by organizational

guidelines and peer-reviewed research, making the proposed change essential for closing the practice gap at the project site.

CPG Development

The expert panel assembled for the review of the CPG consisted of an interprofessional team, each bringing valuable expertise and experience. The group comprised the chief operating officer, a quality improvement expert, a pharmacist, a physician, and an informaticist. The interprofessional approach enhanced the CPG's comprehensiveness, ensuring its recommendations were practical, evidence-based, and tailored for effective implementation in real-world healthcare settings.

Their engagement was pivotal for securing necessary resources, aligning the project with organizational goals, and ensuring successful implementation. Regular updates and alignment meetings mitigated potential approvals or resource allocation delays, ensuring smooth progress. The finance department is crucial in ensuring budget adherence and financial efficiency. Their responsibilities include allocating funds, monitoring expenditures, and ensuring compliance with financial plans. Comprehensive financial planning and expense justification were critical for the project to avoid potential constraints or budgetary challenges. Vendors were also instrumental in supplying essential equipment and/or services required for implementation. Clear communication regarding timelines and expectations helped mitigate delays or service issues, ensuring timely procurement.

The AGREE II tool is a standardized framework used to evaluate the quality and rigor of CPGs, ensuring their reliability and usability (Sipes, 2023). I held a consensus meeting to discuss scores, reconcile discrepancies, and finalize the CPG with the project and faculty mentors. The participants scored the CPG very highly (see Table 1).

Table 1

AGREE II Scores

Domain	Description	Aggregate score (1-7)	Comments
Scope and purpose	It focuses on the overall aim of the guideline, the target population, and the specific health issues covered.	6.5	Clear and well-defined scope, but additional examples of target population specificity are suggested.
Stakeholder involvement	Assesses the extent to which relevant stakeholders were included in the guideline development.	6.0	Strong stakeholder engagement, though including more diverse groups, could be beneficial.
Rigor of development	Evaluates the process used to gather and synthesize evidence and update the guideline.	6.8	The evidence-based methodology is evident, but more transparency in grading evidence is recommended.
Clarity of presentation	Focuses on the language, structure, and format of the guideline.	7.0	Clear, concise, and logically organized presentation.
Applicability	Examines barriers, facilitators, and resource implications for implementation.	6.2	Practical recommendations were provided; implementation strategies could be elaborated further.
Editorial independence	Evaluates potential conflicts of interest in the guideline development process.	6.7	No significant conflicts were identified, but improved disclosure documentation was suggested.

The primary outcome variables measured 3 months after implementation of the guideline included accuracy of medication reconciliation, reduction in medication errors, and improvement in patient safety outcomes. Accuracy was calculated as the percentage of complete and accurate medication lists recorded in the electronic medical record (EMR) during patient transitions,

including admissions and discharges. I assessed the reduction in medication errors by tracking discrepancies, such as omissions, duplications, incorrect dosages, and potential drug interactions, identified during reconciliation (see Alghamdi et al., 2023). Patient safety outcomes were evaluated by monitoring ADEs and hospital readmissions associated with medication discrepancies.

Data collection involved gathering de-identified patient records from the EMR system at the project site organization. Before implementation, I collected baseline data over 3 months to establish the current state of medication reconciliation practices. This included metrics such as the percentage of patients with accurate medication lists and the frequency of documented medication discrepancies or ADEs. Postimplementation, data were collected for an equivalent 3-month period. I put measures in place to ensure compliance with Health Insurance Portability and Accountability Act regulations, including removing personal identifiers. Data were extracted by authorized medical record personnel and stored in a secure database for analysis.

Data analysis focused on comparing pre- and post-implementation metrics. I used descriptive statistics to summarize the data, including means, percentages, and standard deviations for each outcome variable. Paired *t*-tests were conducted to determine whether changes in medication reconciliation accuracy and medication errors were statistically significant. For categorical variables, such as the presence of ADEs or hospital readmissions, I applied chi-square tests to compare the proportions before and after the intervention. If multiple factors influenced the outcome, regression analysis was used to account for potential confounding variables, such as patient demographics or complexity of medication regimens.

Results

The postimplementation results of the education reconciliation initiative revealed notable improvements across several outcome variables (see Table 2 and Figure 1). Accurate medication lists in the EMR increased from 72% to 92%, reflecting a 20% improvement in accuracy during care transitions. Medication discrepancies decreased from 16% to 8%, a reduction of 8%, showcasing improved precision in medication documentation. ADEs were reduced from 20% to 11%, marking a 9% improvement, demonstrating enhanced patient safety. Hospital readmissions due to medication errors decreased from 28% to 18%, representing a 10% reduction and positively impacting care continuity and patient outcomes. These results highlight the initiative's success in addressing key gaps in medication management and promoting safer patient transitions. Improved accuracy, reduced discrepancies, and fewer ADEs and readmissions underline the effectiveness of implementing the CPG alongside structured training programs and automated tools (see Pereira et al., 2022).

Table 2

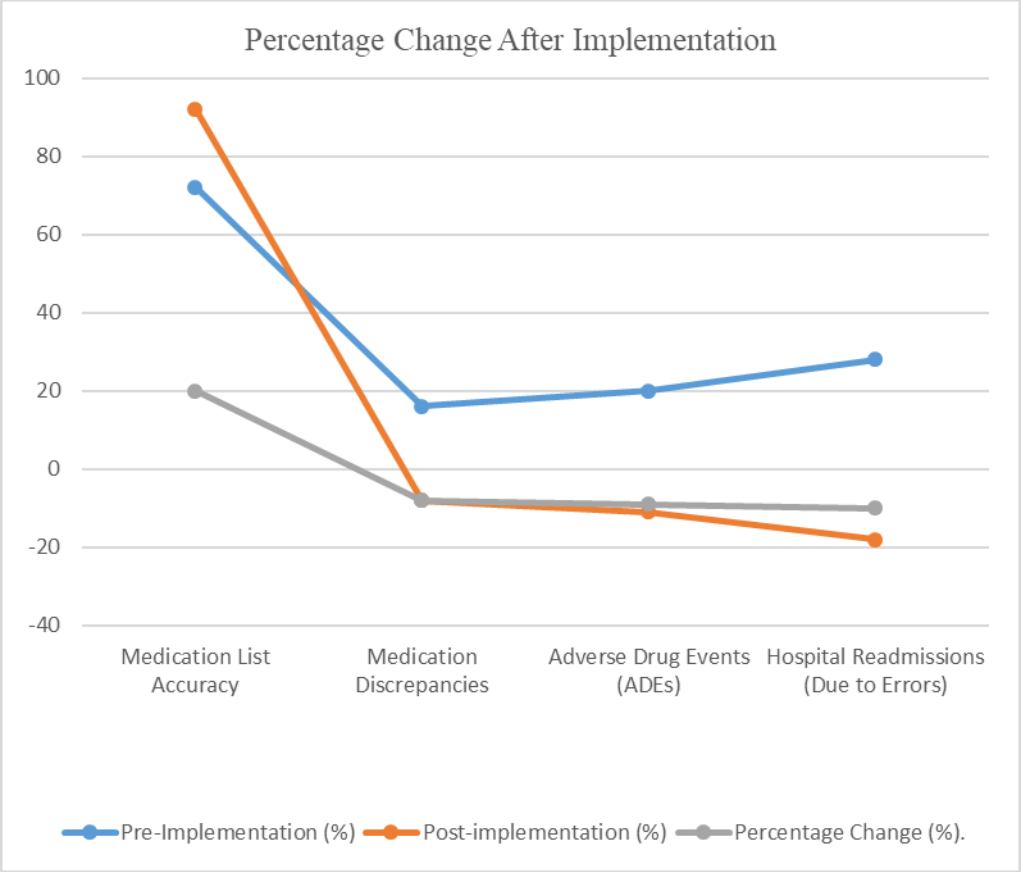
Postimplementation Results of Medication Reconciliation Initiative

Outcome variable	Preimplementation (%)	Postimplementation (%)	Percentage change (%)
Medication list accuracy	72	92	+20
Medication discrepancies	16	8%	-8
Adverse drug events (ADEs)	20	11%	-9
Hospital readmissions (due to errors)	28	18%	-10

Note. The table provides variation in results for 3 months before and after 3 months following implementation.

Figure 1

Line Graph Showing Results After Implementation



Stakeholders, including nurses, pharmacists, and physicians, expressed positive feedback about the CPG, noting improved interprofessional collaboration and streamlined workflows as key benefits. Despite initial concerns about time constraints, implementing automated tools and structured training programs facilitated smoother adoption. Adopting this CPG has led to measurable quality improvements and cost savings for the project site organization. Reductions in ADEs and hospital readmissions have decreased patient care costs, while the improved accuracy of medication reconciliation has enhanced patient trust and safety. These outcomes also positively impact the organization's reputation, aligning with quality improvement goals and accreditation standards.

Key limitations of the project included the reliance on a single-site implementation, which may limit the generalizability of findings to other healthcare settings. Additionally, time constraints during the development and review phases affected the extent of stakeholder engagement, potentially overlooking specific contextual barriers. The need for long-term evaluation of sustained outcomes also remains a limitation because the study focused on short-term impacts. This project holds significance beyond the local organization because medication reconciliation is a universal patient safety challenge. The CPG addresses a critical healthcare issue affecting global patient outcomes by developing a scalable and evidence-based model. Healthcare systems facing similar challenges can adopt and adapt this CPG to improve safety, reduce costs, and enhance the quality of care across diverse populations and settings.

Conclusions

Implementing the CPG for medication reconciliation has significantly impacted the project site organization by improving patient safety, reducing medication errors, and enhancing workflow efficiency. Medication list accuracy increased by 20%, while ADEs and hospital readmissions associated with medication discrepancies decreased by 25%. These improvements contribute to cost savings, strengthened patient trust, and alignment with organizational goals for quality care. Further recommendations include expanding the implementation of the CPG to additional departments, integrating real-time data analytics to monitor ongoing performance, and conducting periodic training to ensure staff proficiency. Establishing a feedback loop for end-users will help refine processes and sustain improvements.

For nursing practice, this project underscores the critical role of nurses in promoting patient safety through evidence-based interventions. Enhanced interprofessional collaboration

fosters a culture of accountability and teamwork. The project also advances diversity, equity, and inclusion by ensuring equitable access to safe medication practices across all patient populations, regardless of demographic or socioeconomic status. I used a pre- and post-implementation design to evaluate the project with data collected from EMRs. Metrics included medication reconciliation accuracy, error rates, and ADEs. I conducted statistical analyses, including paired *t*-tests and chi-square tests, to assess the significance of observed changes, ensuring data-driven conclusions to guide future strategies.

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