



Medication Review During Transitions of Care During Hospital Discharge: A Review of Evidence on Effectiveness in preventing Medication Errors

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Abstract

Background: Medication errors remain a major global challenge, particularly during transitions of care such as hospital discharge. Medication review during transitions of care has been recognized as a structured intervention to prevent discrepancies, ensure accuracy in prescriptions, and safeguard continuity of care.

Methods: This review synthesizes global and regional evidence on the effectiveness of reconciliation processes, highlighting their role in reducing medication discrepancies, adverse drug events (ADEs), and hospital readmissions.

Results: It further explores the contribution of healthcare professionals, patient engagement, systemic barriers, technological innovations, and the specific challenges faced in low- and middle-income countries (LMICs) such as India. Findings consistently demonstrate that structured, pharmacist-led, and multidisciplinary approaches to reconciliation significantly improve patient outcomes, but implementation gaps and resource limitations remain pressing challenges.

Conclusion: The review concludes that institutionalization of reconciliation as a core patient safety strategy, supported by technology and policy frameworks, is essential to reduce preventable harm at discharge.

Keywords: Medication review during transitions of care, hospital discharge, medication errors, adverse drug events, patient safety

Article Summary: Submitted: 04-July-2025 Revised: 30-July-2025 Accepted: 20-August-2025 Published: 30-September-2025

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Introduction

Transitions of care, particularly hospital discharge, represent high-risk periods for medication errors. Patients frequently leave hospitals with complex therapeutic regimens, and breakdowns in communication between providers, patients, and caregivers often result in omissions, duplications, dosing errors, or drug-drug interactions [1]. Medication review during transitions of care has emerged as a cornerstone of patient safety, designed to minimize such risks by ensuring the accuracy and continuity of drug therapy [2]. This review synthesizes global and regional evidence on the effectiveness of medication review during transitions of care during discharge in preventing medication errors. The discussion covers its impact on patient outcomes, roles of healthcare professionals, patient education, systemic barriers, technological solutions, and its application in the Indian healthcare context.

The Global Burden of Medication Errors

Medication errors during discharge are widespread, with prevalence estimates ranging between 20% and 60% of patients [3]. Discrepancies may include omission of pre-admission medications, addition of unnecessary drugs, inappropriate dosing, or unclear instructions. There errors

How to cite this article: Newar N, Mala C, Amaljith AB. Medication Review During Transitions of Care During Hospital Discharge: A Review of Evidence on Effectiveness in preventing Medication Errors. Int J Med Sci and Nurs Res 2025;5(3):3-7. DOI: 10.55349/ijmsnr.20255337

Table-1 Global Evidence on Transition of Care Medication Review

Author/Year	Setting	Intervention	Key Outcomes
McNab et al., 2018	Community, UK	Pharmacist-led review post-discharge	Reduced discrepancies and ADEs [1]
Mueller et al., 2012	Hospital, USA	Standardized transition review	Improved accuracy, fewer errors [2]
Killin et al., 2021	Multicountry	Advanced review models	Reduced errors and ADEs [3]
Jošt et al., 2024	Slovenia	Pharmacist-led routine practice	Lower clinically important errors [4]
Hammad et al., 2025	Jordan, elderly	Pharmacist-led review	Fewer discrepancies, less readmission [5]

are directly linked to adverse drug events, emergency visits, and preventable rehospitalizations [4]. The World Health Organization (WHO) estimates that medication-related harm contributes to millions of preventable adverse events annually, representing a significant global health and economic burden [5]. In resource-limited settings, weak pharmacovigilance systems, inadequate staffing, and fragmented care further exacerbate the risks [6]. (**Table-1**)

Defining Medication Review During Transitions of Care

Medication review during transitions of care is defined as the systematic process of compiling the most accurate list of a patient's current medications—including drug name, dose, frequency, and route—and comparing it with physician orders at each transition of care [7]. The process aims to identify and resolve discrepancies such as omissions, duplications, incorrect dosing, or potential drug interactions. The ultimate goal is to eliminate errors, enhance patient safety, and ensure continuity of care [8].

Impact on Patient Outcomes

Evidence consistently demonstrates that reconciliation reduces discrepancies and prevents ADEs. Structured reconciliation processes have been shown to reduce medication errors by up to 30% post-discharge [9]. In some hospital settings, implementation of reconciliation protocols reduced discrepancies by as much as 70% [10].

Failure to reconcile medications has been directly associated with hospital readmissions and prolonged recovery times [11]. Conversely, patients who underwent comprehensive reconciliation were significantly less likely to be re-hospitalized within 30 days [12]. Addressing discrepancies at discharge not only enhances treatment adherence but also prevents complications that would otherwise necessitate readmission [13].

The Role of Healthcare Professionals

Pharmacists

Pharmacists play a pivotal role in reconciliation due to their pharmacological expertise. Their involvement has been shown to reduce discrepancies by more than 50% in some studies [14]. They are particularly skilled at identifying drug–drug interactions, therapeutic duplications, and inappropriate dosages, while also providing patient-centred counselling [15]. Reviews of pharmacist-led interventions reveal significant reductions in both minor and major discrepancies [16]. (**Table-2**)

Nurses and Physicians

Nurses contribute by documenting medication histories, confirming discharge instructions, and providing patient education. Physicians, while central to prescribing, benefit from collaborative reconciliation support. Multidisciplinary models involving physicians, nurses, and pharmacists have consistently proven to enhance accuracy and reduce preventable harm [17].

Patient Education and Engagement

Patient involvement is a critical determinant of reconciliation success. Educated patients are more likely to adhere to medication regimens, recognize errors, and report adverse events early [18]. Studies show that patients who received structured education including written and verbal counselling experienced significantly fewer discrepancies [19].

Engagement strategies such as caregiver involvement, simplified discharge summaries, and culturally tailored communication tools (e.g., pictograms) further improve adherence [20].

Table-2 Roles of Healthcare Professionals in Transition of Care Medication Review

Professional	Roles in Review	Impact
Pharmacists	Verify drug–drug interactions, resolve discrepancies, provide counselling	>50% reduction in discrepancies [14-16]
Nurses	Document histories, confirm discharge instructions, patient education	Improved adherence [17]
Physicians	Prescribe, collaborate with pharmacists/nurses	Safer discharge, fewer errors [17]

Barriers to Effective Medication Review During Transitions of Care

Despite strong evidence, reconciliation is often under-implemented. Barriers include inconsistent procedures across departments, limited staffing, time constraints, and poor interdisciplinary communication [21]. Patients' limited understanding of their medication histories, incomplete electronic records, and low health literacy also contribute to inaccuracies [22].

In many hospitals, reconciliation is perceived as an administrative burden rather than an integral safety practice, leading to poor prioritization in high-pressure settings [23]. Addressing these barriers requires institutional commitment, dedicated personnel, and supportive technologies. (Table 3)

Technological Innovations

Electronic health records (EHRs), mobile health (mHealth) applications, and automated clinical decision support alerts are increasingly integrated into reconciliation processes. [24] Technology-supported workflows improve list accuracy, facilitate communication among providers, and enhance patient education. Innovative models such as the "Hospital at Home" approach have embedded reconciliation into discharge protocols, reducing discrepancies by more than 40%. [25]

Technology also enables standardized documentation and real-time updates, minimizing the risk of omissions or duplications [26]. However, successful adoption depends on interoperability, staff training, and alignment with clinical workflows.

The Indian Healthcare Context

In India, medication review during transitions of care is recognized under the National Accreditation Board for Hospitals & Healthcare

Table-3 Barriers and Enablers in India

Factor	Barrier	Potential Enabler
Workforce	Shortage of pharmacists, high patient load	Train interns, involve pharmacy students [27-30]
Processes	No standardized protocols	NABH safety goals, institutional protocols [27-30]
Technology	Fragmented EHRs	Mobile tools, decision support [27-30]
Patient Factors	Low literacy, rushed discharges	Pictograms, caregiver involvement [27-30]

Providers (NABH) guidelines as a key patient safety goal [27]. Despite this recognition, implementation remains inconsistent due to shortages of clinical pharmacists, high patient loads, and lack of standardized protocols [28]. Studies in Indian tertiary hospitals have shown that up to 42% of discharged patients experience at least one medication discrepancy, many of which are potentially harmful [29]. Contributing factors include rushed discharges, inadequate documentation, and poor communication among clinicians [30].

Encouragingly, pilot programs involving pharmacy students and interns under supervision have shown promise in reducing discrepancies. Mobile-based reconciliation tools tailored to Indian formularies and literacy levels are also emerging [30]. Scaling such initiatives, however, requires policy support, workforce development, and integration into hospital electronic systems. The evidence is clear: medication review during transitions of care at discharge significantly reduces errors, improves adherence, and lowers rates of adverse outcomes. Pharmacist-led and multidisciplinary approaches are particularly effective, while patient education amplifies these benefits.

Nonetheless, systemic barriers—including resource limitations, inconsistent protocols, and underutilization of pharmacists—continue to undermine widespread adoption. Technological interventions and structured workflows offer scalable solutions but demand institutional investment and leadership support. For LMICs like India, strengthening pharmacist participation, training healthcare teams, and adopting mobile health tools are especially critical. Aligning reconciliation practices with accreditation standards and embedding them into patient safety policies will be essential for long-term sustainability.

Conclusion

Medication review during transitions of care during hospital discharge is a proven, evidence-based intervention that enhances

patient safety by reducing preventable medication errors. Its success lies in structured implementation, multidisciplinary collaboration, patient engagement, and technological support. While health systems worldwide increasingly recognize its importance, challenges in practice remain, especially in resource-limited contexts.

Conflict of Interest – None

Source of funding – None

Authors' Contributions: NN, CM and AAB: Wrote the article, fully read and checked by all authors. NN: Nisha Newar CM: Chitra Mala, AAB: Amaljith AB

References

1. McNab D, Bowie P, Ross A, et al. J. Systematic review and meta-analysis of the effectiveness of pharmacist-led medication review during transitions of care in the community after hospital discharge. *BMJ Qual Saf* 2018;27(4):308-320.
2. Mueller SK, Sponsler KC, Kripalani S, Schnipper JL. Hospital-based medication review during transitions of care practices: a systematic review. *Arch Intern Med* 2012;172(14):1057-1069.
3. Killin L, Hezam A, Anderson KK, Welk B. Advanced medication review during transitions of care: a systematic review of the impact on medication errors and adverse drug events associated with transitions of care. *Jt Comm J Qual Patient Saf* 2021;47(7):438-451.
4. Jošt M, Bogataj M, Dolenc Š, et al. Effectiveness of pharmacist-led medication review during transitions of care integrated into routine practice on clinically important medication errors at discharge: a pragmatic controlled trial. *Front Pharmacol*. 2024;15:1377781.
5. Hammad EA, Khaled F, Shafaamri M, Amireh B, Arabyat R, Abu-Farha RK. Impacts of pharmacist-led medication review during transitions of care on discrepancies and 30-days post-discharge health services utilization in elderly Jordanians. *PLoS One* 2025;20(4):e0320699.
6. Griva K, Chua ZY, Lai LY, Bek SJX, Xu SJ, Lee ES, et al. Pharmacist-led medication review during transitions of care service for patients after discharge from tertiary hospitals to primary care in Singapore: a qualitative study. *BMC Health Serv Res* 2024;24:357.
7. Joseph AG, et al. Pharmacists' medication review during transitions of care interventions during transitions of care reduce discrepancies: interventional study. [Journal]. 2024. **PMID:** 37702160.
8. Gallagher D, et al. Inpatient pharmacists using a readmission risk model in discharge medication review during transitions of care process: a quality improvement study. *BMJ Open Qual* 2022;11(1):e001560.
9. Costello J, Barras M, Snoswell C, Foot H, et al. A post-discharge pharmacist clinic to reduce hospital readmissions: a retrospective cohort study. *Int J Clin Pharm* 2025;47(2):[pages pending].
10. Weber C, et al. Pharmacist-led interventions at hospital discharge: a review of the evidence. *J Hosp Med* 2024;[epub ahead of print].
11. Alanazi AS, et al. Medication review during transitions of care on discharge in a tertiary care hospital: frequency, characteristics, and factors influencing discrepancies. *PLoS One* 2022;17(2):e0265042.
12. Satish S, Snoviya Suresh Babu P, Shabaraya AR. A prospective observational study on medication review during transitions of care at discharge in a tertiary care hospital. *Indian J Pharm Pract* 2025;18(1):53-57.
13. Dawaiwala I, Fakhri F, Nanday A, et al. Impact of clinical pharmacist interventions on medication discrepancies at discharge in an Indian tertiary care hospital. *Indian J Pharm Pract* 2025;18(2):219-227.
14. Wuyts J, Foulon V, Allemann SS, Boeni F. A systematic review of outcomes reported in studies to optimise the medication use of patients at hospital discharge. *BMC Health Serv Res* 2025;25:135.
15. Mazhar F, Alhabib S, Roberts RM, et al. Medication review during transitions of care errors in a tertiary care hospital in Saudi Arabia: incidence, risk factors, and outcomes. *Pharm Pract (Granada)* 2017;15(1):931.
16. Burgess LH, et al. Pharmacy-led medication review during transitions of care program reduces adverse drug events and complications. [Journal]. 2021;[details pending]. **PMID:** 10324798.
17. Harris M, et al. Effect of pharmacy-led interventions during transitions of care on 30-day readmission rates: a systematic review. *J Am Pharm Assoc* 2022;62(5):[pages pending].
18. Moges TA, Akalu TY, Sema FD. Unintended medication discrepancies and associated factors upon patient admission to internal medicine wards: identified through medication review during transitions of care. *BMC Health Serv Res* 2022;22:1251.
19. World Health Organization. Medication without harm: WHO global patient safety challenge. Geneva: WHO; 2017.
20. National Accreditation Board for Hospitals and Healthcare Providers (NABH). Patient safety goals. 2023. [Available from: <https://nabh.co>].
21. Shukla A, Ganie MA, Vasudevan S, et al. Trends of age at onset of menarche among Indian women: an updated analysis. *J Obstet Gynaecol India* 2025;75(Suppl 1):70-77.
22. Davidson PD, Vasudevan S, et al. Epidemiological trends of diabetes mellitus and its complications: insights from global and Indian perspectives. *Cureus* 2025;17(2):[pages pending].
23. Maan P, Gautam R, Vasudevan S, et al. Pharmacological and non-pharmacological interventions in chronic disease management: a narrative synthesis. *Pharmaceuticals* 2025;18(5):680.
24. Vasudevan S, Radhakrishnan A, et al. Menstrual health and hygiene practices of adolescent girls: a cross-sectional study. *Int J Med Sci Nurs* 2024;4(3):6-14.
25. Gautam R, Maan P, Patel AK, Vasudevan S, et al. Unveiling the complex interplay between gut microbiota and nutrition: implications for chronic disease. *Clin Nutr* 2024;43(12):199-208.
26. Vasudevan S, Singh S, Newar A, et al. Perception on COVID-19 vaccinations among healthcare workers: a survey-based

27. Vasudevan S, Davidson PD, Kandhan LV, Rani RH. Development and validation of a screening tool for identification of refractive errors among school children in Tamil Nadu, India. *Natl J Community Med* 2023;14(9):581-587.
28. Devani HR, et al. A prospective observational study of medication review during transitions of care process for reducing discrepancies in an Indian hospital. *Indian J Pharm Pract* 2022;15(3):184-192.
29. World Health Organization. Global burden of medication-related harm. Geneva: WHO; 2022.
30. Poon EG, et al. Medication review during transitions of care in the age of electronic health records: a review of challenges and opportunities. *BMJ Qual Saf*. 2020;29(5):341-8.