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Assessing the Effectiveness of Medication Reconciliation Programs in Reducing Medication Errors

Yogendra Sahu[1], Neetish Kumar[2]

[1] *Assistant Professor, Department of Pharmacy, Kalinga University, Raipur, India.*

[2] *Assistant Professor, Department of Pharmacy, Kalinga University, Raipur, India.*

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Abstract

Medication reconciliation is a methodical process that comprises comparing the medications listed in the patient record or prescription orders with the most accurate and comprehensive list of the patient's current prescriptions. According to the Institute of Medicine's Preventing Medication Errors report, the average hospitalised patient makes at least one medication error every day. This validates the findings of previous research that the most common patient safety error is a medication error. Over 40% of prescription errors are thought to be caused by inadequate reconciliation in handoffs during patient admission, transfer, and discharge. It is estimated that 20% of these errors are harmful. Many of these errors may be prevented if drug reconciliation protocols were in place. Medication reconciliation is the process of comparing a patient's prescription orders with all of the medications the patient has been taking. This reconciliation is done to avoid prescription errors such as omissions, duplications, wrong dosages, or drug interactions. This should be carried each whenever there is a change in the patient's care, including adding new prescriptions or updating an existing order. Transitions in care could include adjustments to the environment, level of care, practitioner, or service.

Keywords: Medication Reconciliation, Medication Errors, Transition of Care.

1 INTRODUCTION

A patient's hospitalisation is a stressful experience that increases their risk of unfavourable health outcomes both while they are in the hospital and after they are discharged (Schimmel, 2003). Unintentional medication disparities, which are frequently the result of pharmaceutical errors during transitions of care, significantly increase this risk (Johnson et al., 2015). About half of hospitalised patients experience unintentional differences at the time of admission, and these inconsistencies continue to some degree beyond release. Above all, medication mistakes made during care transitions can cause harm to patients. One of the most important and fundamental healthcare services is medication reconciliation, which is also recognised by national and international quality organisations as a medication management technique. Programs for medication reconciliation are essential for reducing drug mistakes. drug reconciliation is a crucial procedure in the medical field that guarantees patients' safe and accurate drug administration during changes in their care. Medication reconciliation's main objectives include:

- Protect patients from potential injury and unpleasant responses by ensuring patient safety.

- Avoid pharmaceutical errors by looking for and fixing inconsistencies, repetitions, or omissions in prescription orders.
- Boost drug adherence — Assure patients that their regimens are understood, encouraging correct and regular administration.
- Improved communication: To guarantee correct drug information, encourage cooperation between patients, carers, and healthcare professionals.
- Decrease medication: Lower the chance of adverse drug responses, interactions, and side effects.

Steps of medication reconciliation are:

- Confirm: Obtain thorough drug information from clients, carers, or prior medical professionals.
- Compare: Check the medicine list with the most recent orders.
- Recognise and address inconsistencies, repetitions, or omissions.
- Update the patient's medication schedule and notify the appropriate healthcare providers of any changes (Zimmerman et al., 2017).

Medication reconciliation is crucial for preventing adverse drug reactions and therapeutic duplications, as well as for improving patient safety. It guarantees that healthcare professionals are fully informed about all medications a patient is taking, including prescription drugs, over-the-counter medications, vitamins, and herbal supplements. Medication reconciliation is especially important in settings where patients are more likely to make medication errors, such as elderly patients, patients with chronic conditions, or patients taking multiple medications. By identifying any problems early on, this procedure, when followed regularly, lowers healthcare expenses and hospital readmissions. Additionally, it promotes improved communication between medical professionals in a variety of settings, including inpatient hospitals, speciality clinics, and general care offices, guaranteeing that patients' medication schedules are correct and up to date during their entire course of care. Medication reconciliation also fosters patient empowerment by involving patients and their carers in the process. Patients who are aware of their prescription regimens are more likely to follow them, which improves health outcomes and raises patient satisfaction. Overview of Medication Reconciliation shown in Figure 1.

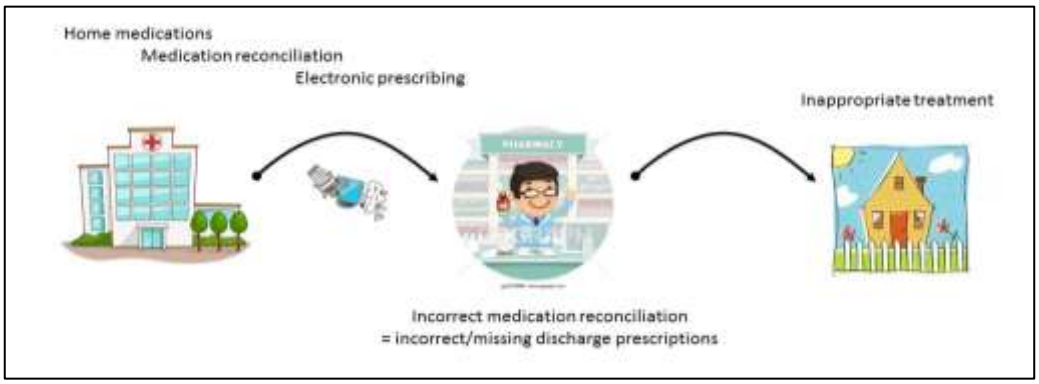


Figure 1: Overview of Medication Reconciliation

A medication reconciliation service's implementation is a challenge for the entire hospital, and there is currently no clinical evidence regarding which healthcare professional or which tactics are more effective at performing medication reconciliation (Nassaralla et al., 2007) Several medication reconciliation tactics, including the use of electronic technologies, standardised forms, collaborative models, patient involvement, and pharmacist-led initiatives, have been used to ensure safe patient transitions.

To protect children when they move from one kind of care setting to another within the health care system—including transfers of care from one health care professional to another in primary, secondary, and tertiary settings—preventing errors in pharmacological therapy is a top concern. Improvements in patient safety during care transitions are made possible by the medication management process, which includes pharmacological reconciliation and medication review. Pharmacological reconciliation, in particular, is a useful strategy for safeguarding patients from unfavourable medication events that could arise during these transfers. The health care system faces a major problem with the high frequency of therapeutic errors and incorrect prescriptions, which makes it necessary to put procedures in place to minimise adverse occurrences related to drugs. Pharmacological reconciliation and a thorough medication review are two of the finest ways to guarantee the quality of care by avoiding therapeutic errors brought on by a lack of understanding of continuing therapies.

2 LITERATURE REVIEW

Studies suggest that medication reconciliation dramatically reduces adverse drug events (ADEs). For instance, systematic medication reconciliation at hospital discharge decreased medication inconsistencies, according to a research (Mueller et al., 2012). Implementing pharmacist-led medication reconciliation during hospital-to-care facility transitions was shown to reduce medication errors, according to a different study (Boockvar et al., 2011).

The Herledan et al., systematic review. It was discovered that certain practices did not provide the sources of information required to create medication lists, others did not interview patients at all to collect medication histories, and some only performed medication reconciliations at discharge rather than admission (Herledan et al., 2020).

It has been determined by two recently released systematic reviews that there is unclear benefit as a patient safety measure. The results of the two studies on the use of healthcare resources are contradictory. In contrast to (Kwan et al., 2013) found no evidence of a significant correlation between medication inconsistencies found through pharmaceutical reconciliation treatments and post-hospital healthcare use. Both assessments provided a general evaluation of the impact of medication reconciliation resulting from different approaches, such as the application of collaborative models.

It was challenging to evaluate the impact of medication reconciliation because to the large diversity of the literature and the majority of studies' inconsistent methodologies and outcome measures, as demonstrated (Lehnbom et al., 2014).

According to a review by Bayoumi et al., comparable results were not reached because of the inaccurate measurement of the impact of interventions, despite similarities in demographics, interventions, and outcomes between trials. We need a sensitive, standardised, and transparent metric to assess the efficacy and impact of drug reconciliation initiatives (Bayoumi et al., 2009).

Even though medication inconsistencies are believed to be a delicate consequence of continuity of treatment, Kostas argue that a standard nomenclature for medication discrepancies and medication reconciliation best practices is necessary (Almanasreh et al., 2016).

According to research (Classen et al., 2011), healthcare expenditures are increased by billions of dollars a year due to avoidable adverse drug events (ADEs). Medication errors during care transitions are mostly to blame for these expenses (Classen et al., 2011; Zimmerman et al., 2017).

According to a 2012 study by Etchells implementing medication reconciliation hospital-wide can result in significant cost savings by lowering readmissions and ER visits brought on by prescription errors. Reducing 30-day readmission rates has been shown in several trials when medication reconciliation is done at discharge. According to a seminal study (Kwan et al., 2013), chemists who performed medication reconciliation at follow-up visits and at the time of discharge were able to reduce readmissions by 12%. Particularly in the management of chronic diseases, medication reconciliation that incorporates patient education and counselling enhances adherence. Patients who received education and reconciliation had a higher percentage of drug adherence than those who did not, according to a study Schnipper.

Variability in how drug information is documented across different systems remains an issue. Salanitro state that obsolete or inadequate drug lists in electronic health records (EHRs) are a common cause of disparities.

Time restrictions are a common excuse given by healthcare practitioners for not doing complete medication reconciliations. A study discovered that a large percentage of physicians said they didn't have enough time for reconciliation, particularly in hectic hospital environments. Since children are more likely to have dosing errors, medication reconciliation presents special issues in the context of paediatric care. Research like the one (Coffey et al., 2015) highlights the necessity of cautious reconciliation in order to take fast developmental changes and weight-based dosage into consideration. Due to the frequent administration of many drugs, older persons are more susceptible to harmful drug interactions and polypharmacy. McDonald et al., (2018) found that by identifying and deprescribing unneeded drugs, reconciliation in geriatric populations can lower hospitalisation rates (McDonald et al., 2018). Reconciliation addressing psychotropic and somatic drugs is beneficial for psychiatric patients, especially those with comorbidities. Gleason et al., (2013) discovered that reconciliation

decreased the usage of pharmaceutical combinations that weren't recommended for patients in mental facilities (Gleason et al., 2013).

3 IMPORTANCE OF MEDICATION RECONCILIATION

Medication reconciliations offer the chance to detect and stop interactions between drugs and herbs. Finding and deprecating unsuitable medications might also be facilitated by reconciling prescriptions. There is a dearth of information regarding the economic impact of this landscape, despite the apparent clinical impact. The term polypharmacy refers to the usage of five or more drugs. Additionally, there is a higher chance of negative drug responses and drug interactions when there is polypharmacy. Polypharmacy is linked to adverse drug reactions, a higher risk of drug-drug interactions, prescription errors, poor health outcomes, frailty, functional decline, and mortality, even though it may have therapeutic benefits. The likelihood of taking potentially unsuitable drugs (PIMs) is also increased by taking a high number of medications. PIMs are defined as drugs without suitable indications, with hazards greater than therapeutic benefit, or having the potential to interact with other drugs. drug reconciliations offer a current, comprehensive drug list that allows medical professionals to identify PIMs and maybe reduce their prescriptions in order to maximise medication safety. Compliance to Medication Reconciliation shown in Figure 2.

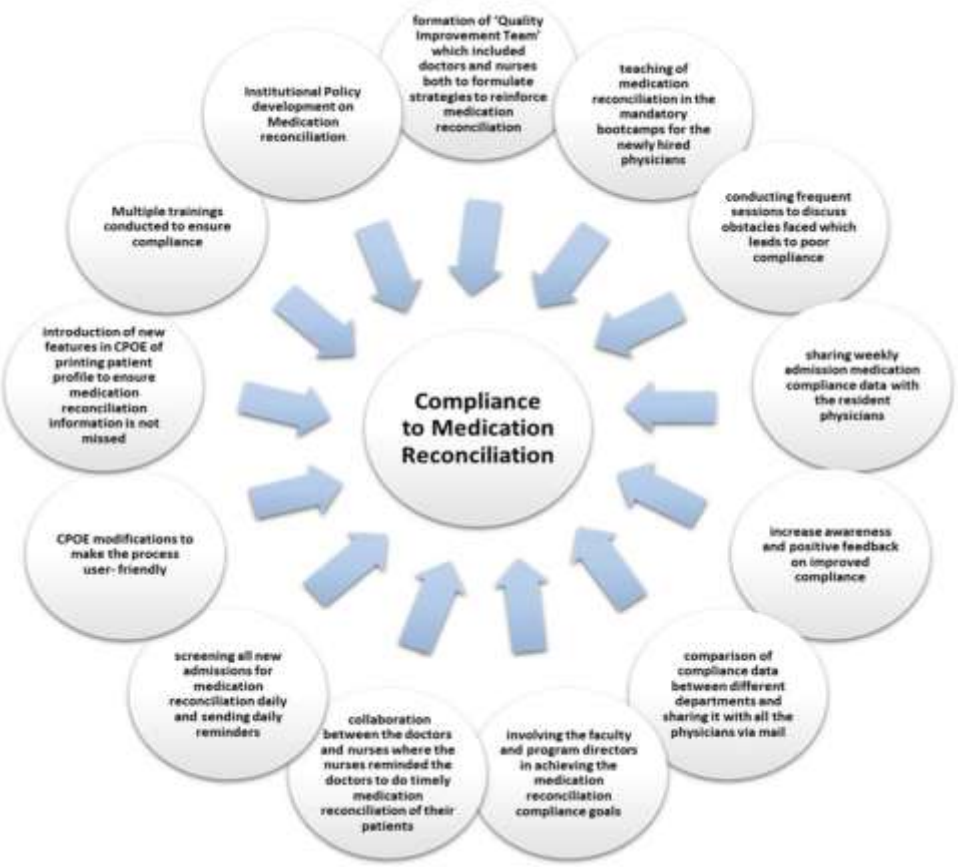


Figure 2: Compliance to Medication Reconciliation

In all healthcare settings, patient-centered treatment is of utmost importance. To guarantee a smooth transition between settings, it is crucial to obtain a comprehensive medical history from all relevant health care providers before making decisions about a patient's care. Finding discrepancies and guaranteeing drug safety are especially important in complex individuals with numerous comorbidities and medications. The goal of the medication reconciliation procedure is to enhance pharmaceutical safety at various points of care. It entails getting a thorough record of every medication a patient takes and comparing it to their current prescription schedule in order to find and fix any inconsistencies. Despite the fact that numerous medical specialists can help with the process, chemists are frequently thought to be the most qualified to carry out the drug reconciliation.

4 RESEARCH OPPORTUNITIES AND RECOMMENDATIONS

As a patient moves between patient care locations or levels of care, medication reconciliation is a crucial component of the care transitions process, which involves collaboration amongst healthcare providers to enhance medication safety. Medication reconciliation gained prominence in the medical community in 2005 after being named a National Patient Safety Goal by the Joint Commission on Accreditation. Global patient safety and better patient outcomes are the main goals of the medication reconciliation process, despite the fact that different health professionals play distinct roles in it.

The body of research on medication reconciliation has been growing, but more work is required to understand how successful medication reconciliation processes are adopted and put into practice, with a particular focus on identifying the best practices that are currently in use. During care transitions, patient safety and care outcomes will be enhanced by the use of the fundamental concepts in the paper and future work on improving the drug reconciliation process shown in Figure 3.



Figure 3: Standardized MedRec Process

5 CONCLUSION

Medication inconsistencies and adverse drug events continue to be major safety concerns for patients, their families, and medical personnel. Numerous studies conducted in recent years have suggested tactics and guidelines to lower the number of drug errors. Medication mistakes among patients were significantly reduced when medication reconciliation was used. As a component of our electronic medical record, the medication reconciliation function is now automated and utilised for all discharges. The results showing that employing this tool is linked to a considerable improvement in patient safety is corroborated by the opinions of nurses and doctors. Pharmacists' reconciliation of disparities between admission medication histories and orders reduced the risk of medication mistakes and patient injury. Inadvertent disparities can arise because different medications are frequently provided during care transitions without commensurate changes in the patient's clinical status. Even with standard pharmacological histories, details regarding additional medications the patient may be on are frequently overlooked and deemed unimportant. However, interactions between over-the-counter goods and drugs can have a substantial impact on drug distribution, metabolism, bioavailability, excretion, and absorption. Examples of these interactions include supplements, herbal remedies, and different foods and beverages. These combinations may make a drug less effective, make it more poisonous, intensify a specific side effect, or have extremely negative effects.

REFERENCES

[1] Schimmel, E. M. (2003). The hazards of hospitalization. *BMJ Quality & Safety*, *12*(1), 58-63. https://doi.org/10.1136/qhc.12.1.58

[2] Johnson, A., Guirguis, E., & Grace, Y. (2015). Preventing medication errors in transitions of care: a patient case approach. *Journal of the American Pharmacists Association*, *55*(2), e264-e276. https://doi.org/10.1331/JAPhA.2015.15509

[3] Almanasreh, E., Moles, R., & Chen, T. F. (2016). The medication reconciliation process and classification of discrepancies: a systematic review. *British journal of clinical pharmacology*, *82*(3), 645-658. https://doi.org/10.1111/bcp.13017

[4] Zimmerman, K. M., Salgado, T. M., & Dixon, D. L. (2017). Medication reconciliation vs medication review. *Jama*, *318*(10), 965-966. https://doi.org/10.1001/jama.2017.10552

[5] Nassaralla, C. L., Naessens, J. M., Chaudhry, R., Hansen, M. A., & Scheitel, S. M. (2007). Implementation of a medication reconciliation process in an ambulatory internal medicine clinic. *BMJ Quality & Safety*, *16*(2), 90-94. https://doi.org/10.1136/qshc.2006.021113

[6] Mueller, S. K., Sponsler, K. C., Kripalani, S., & Schnipper, J. L. (2012). Hospital-based medication reconciliation practices: a systematic review. *Archives of internal medicine*, *172*(14), 1057-1069. https://doi.org/10.1001/archinternmed.2012.2246

[7] Boockvar, K. S., Blum, S., Kugler, A., Livote, E., Mergenhagen, K. A., Nebeker, J. R., ... & Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. *Archives of internal medicine*, *171*(9), 860-861. https://doi.org/10.1001/archinternmed.2011.163

[8] Herledan, C., Baudouin, A., Larbre, V., Gahbiche, A., Dufay, E., Alquier, I., ... & Rioufol, C. (2020). Clinical and economic impact of medication reconciliation in cancer patients: a systematic review. *Supportive Care in Cancer*, *28*, 3557-3569. https://doi.org/10.1007/s00520-020-05400-5

[9] Kwan, J. L., Lo, L., Sampson, M., & Shojania, K. G. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. *Annals of internal medicine*, *158*(5_Part_2), 397-403. https://doi.org/10.7326/0003-4819-158-5-201303051-00006

[10] Lehnbom, E. C., Stewart, M. J., Manias, E., & Westbrook, J. I. (2014). Impact of medication reconciliation and review on clinical outcomes. *Annals of Pharmacotherapy*, *48*(10), 1298-1312. https://doi.org/10.1177/1060028014543485

[11] Bayoumi, I., Howard, M., Holbrook, A. M., & Schabort, I. (2009). Interventions to improve medication reconciliation in primary care. *Annals of Pharmacotherapy*, *43*(10), 1667-1675. https://doi.org/10.1345/aph.1M059

[12] Classen, D. C., et al., (2011). Adverse drug events in hospitalized patients: A national profile. *Health Affairs*, *30*(4), 596-603.

[13] Coffey, M., et al., (2015). Improving medication safety in pediatrics: The role of reconciliation. *Pediatrics, 135*(2), 161-168.

[14] McDonald, M. V., et al., (2018). Impact of medication reconciliation on elderly patients in hospital settings: A systematic review. *Journal of Geriatric Medicine, 33*(4), 312-318.

[15] Gleason, K. M., et al. (2013). Reconciliation of medications in psychiatric patients: A multi-faceted approach. *Journal of Psychiatric Practice, 19*(2), 109-114.