

Medication Reconciliation – A patient safety strategy

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ABSTRACT

Patient safety is an international concern and mandates the attention of healthcare professionals. Recently, it has been recognized that multiple strategies and members of the healthcare team from the treating physician to the dispensing pharmacist have a key role to play in assuring patient safety. One such role is that of the clinical pharmacist and the medication reconciliation conducted by them. It is done to get a thorough understanding of the patient medical history, medication history, drug allergy history and many others that could be a loophole for patient harm. This review summarizes a brief review about what is patient safety, and the patterns of employing medication reconciliation in different clinical scenarios that is the emergency department, in transitions of care and in geriatric care. It is specifically important to address the role of growing technology in the same field and so we have also enlisted the ongoing efforts done in the same domain. This review also addresses the role of clinical pharmacists and their emerging responsibility in maintaining a patient safety culture.

Key words: Medication reconciliation, Patient safety, Emergency department, Geriatric care, Clinical pharmacists

Medication reconciliation has the potential to reduce significant morbidity and mortality. This in turn causes financial strain on the healthcare system and is a source of preventable costs. It is an important piece of the medication puzzle. Medication reconciliation is an inevitable aspect while ensuring patient safety and quality. It is a major intervention that tackles the issue of medication discrepancies and avoids patient harm, particularly during care transitions. Medication reconciliation clarifies, corrects and specifies the medications the patients are consuming at different durations of their hospitalization, followed by the necessary corrections on the medical records. A medication reconciliation program also reduces confusion regarding the medications that the patient is using and has a major contribution in preventing unintentional medication changes, all of which cause a major resource strain on the hospital. This paves the way to maintain a standardized pattern of patient care in a care facility [1,2].

According to the Joint Commission, the steps involved in medication reconciliation are as follows [3]: ‘(1) develop a list of current medications; (2) develop a list of medications to be prescribed; (3) compare the medications on the two lists; (4) make clinical decisions based on the comparison; and (5) communicate the new list to appropriate caregivers and to the patient.’

PATIENT SAFETY CULTURE

Nurturing a culture of safety is the core aspect of promoting quality care among patients. Safety culture within healthcare institutions has proven to reduce errors, and mortality and reduce adverse drug events [4–6]. It influences clinicians, clinical pharmacists, nurses and other healthcare professionals by providing cues about the importance of ensuring patient safety along with other patient outcomes. The promotion of patient safety culture is a constellation of interventions targeted at minimizing patient harm. The various existing patient safety strategies are team training, interdisciplinary rounding or executive walk rounds, and unit-based strategies [7]. One among them is the medication reconciliation process.

Medication reconciliation can be performed by clinical pharmacists or pharmacy technicians, electronic medical record tools, and patient-centered strategies. Studies have implied the emerging role of clinical pharmacists in a hospital setting where there have been instances in which patient medication histories are frequently recorded inaccurately by physicians during admission which results in medication-related errors and compromised patient safety [8]. Contributions from a clinical pharmacist to improvise patient outcomes can have a huge impact in the

healthcare field. Clinical pharmacists have ventured out of the pharmacy to ward round participation and in intensive care units [9]. Therefore, patient safety culture can be developed at the hands of a clinical pharmacists through the medication reconciliation process.

Medication Reconciliation in Transitions of Care

Transitions in care including admission and discharge from a hospital put a patient at risk for various aspects related to treatment from miscommunication to inadvertent information loss. Deficits in information transfer at hospital discharge can adversely affect patient safety. Possible interventions include computer-generated summaries and standardized formats that facilitate the timely and precise transfer of reliable patient information to physicians and make error-free discharge summaries [10]. Most of the transitions are unplanned, and often result from unanticipated or emergency medical problems that occur in during nights, weekends or any time of the day, involving physicians who may not have an ongoing relationship with the patient. Such transitions happen quickly and in a very short time frame which creates a barrier to a timely response from the formal and informal support systems [11].

A study conducted by Forster et al reported that among the adverse events that occurred after the hospital half of them were preventable or ameliorable. This study important implications for quality improvement at the time of discharge. There is a need to follow patients more closely after discharge [12]. In alliance with the findings of the above study, a longitudinal multi-centre study conducted in a hospital examining the effectiveness of medication reconciliation at admission, discharge and post-discharge has come to similar conclusions. At admission, discharge and post-discharge, changes in medication regimens were necessary for 66.5%, 62.9% and 52.8% of patients, respectively during the medication reconciliation process [13].

A recent meta-analysis conducted by Alemayehu et al has conclusively shown that pharmacist-led medication reconciliation programs have positive clinical outcomes at hospital transitions. They found a reduction in the rate of all cause readmissions (19%), all-cause emergency visits (28%) and ADE-related hospital visits (67%) [14]. This implies that a pharmacist can effectively target fragments of services across the entire spectrum of care transitions. Therefore, with consistent time and effort patient safety is achievable.

Medication Reconciliation in Emergency Department

Clinical pharmacy services such as medication reconciliation have immense benefits while identifying medication discrepancies and potential adverse drug events in the emergency departments. In a meta-analysis conducted by Chou et al the researchers concluded that a pharmacy-led medication reconciliation reduced the medication discrepancies by 68% in the emergency department. Similarly, patients with poly-pharmacy and comorbidities received marked benefits with a reduction in medical discrepancies at the hands of a pharmacy-led medication reconciliation [15].

In another randomized controlled trial conducted in 2017, the authors analysed the improvement in admission medication reconciliation with pharmacists or pharmacy technicians in the emergency departments. As per the findings of the trial, it was found that pharmacists and pharmacy technician-led medication reconciliation in the emergency department reduced the admission medication history errors and admission medication order errors by over 80% [16]. Accurately documenting a patient's home medications and allergies at the time of admission in an emergency department improves the efficiency and quality of patient care. The multiple benefits of employing a pharmacist-led medication reconciliation in the emergency department are as follows: Reduction in length of hospital stay, decreased future emergency room visits, reduction in drug-related admissions (such as adverse drug reaction, drug-related complication, hypersensitivity), decreased medication errors (especially the preventable ones), reduction in adverse events following drug administration, proper documentation of patient allergies, improved accuracy and completeness of patient profiles and most importantly cost-effectiveness [17].

Medication Reconciliation and Geriatric Care

Medical care of the elderly is challenging work and is an essential part of the daily routine of a general practitioner. The older population is most often accompanied by multiple comorbidities, heavy prescriptions, complex medication regimens and above all polypharmacy. Moreover, decreased organ function and physiological reserves pose an exaggerated challenge in elderly care. While prescribing the clinician has to be extra cautious about the compromised pharmacokinetics due to ageing and the associated drug interactions. Implementation of clinical pharmacy services such as medication reconciliation, medication order review and discharge summary review minimizes the chance of exposing vulnerable population stratum to threats of medication errors [18]. Medication reconciliation involving therapeutic optimization is essential to ensure the safety of geriatric patients. However, its impact post discharge is hampered due to less or no recognition by general practitioners [19].

Similarly, iatrogenic effects contribute largely to emergency admissions among elderly people. Clinical Pharmacists play a key role in reviewing and monitoring a patient's medication chart, this is an inevitable fragment of the medication reconciliation process. In a study conducted among geriatric patients by Beckett et al, there was a 23% improvement in the medication profile appropriateness when a pharmacist-led medication reconciliation was conducted within 24 hours of admission [20]. Therefore, targeting geriatric patients for medication reconciliation is of substantial benefit to both the healthcare system and the individual.

Medication Reconciliation and Technology

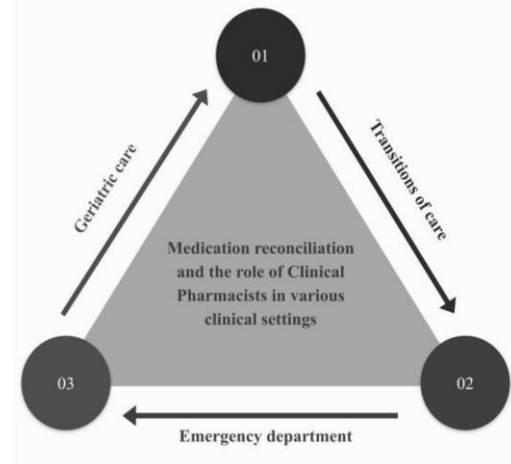
Electronic support can be a useful tool for improving the present scenario of the medication reconciliation process. To implement electronic support in the medication reconciliation process there is a need to have properly designed tools and a proper context for implementation [21]. However, there is a lack of scientific evidence for the impact of technology on identifying medication discrepancies during the medication reconciliation process. In a recent meta-analysis conducted in 2016, it was shown that electronic tools can reduce the incidence of medication discrepancies. As per the findings of this study, there was a reduction of 45% in medication discrepancies after the implementation of electronic tools for medication reconciliation [22]. In another randomized controlled trial, it was found that electronic medication reconciliation reduced adverse drug events, medication discrepancies and other adverse outcomes compared with usual care [23]. Therefore, it can be understood that enhanced electronic medication reconciliation systems within the hospital setting can be a useful strategy for improvising clinical pharmacy services.

Role of Clinical Pharmacists in Medication Reconciliation

Pharmacists are the most ideal candidates to conduct medication history interviews and reconcile medications as they are more aware of the drug names, characteristics, effects, dosage forms, administration, adverse drug profile, side effects and toxicity profile of drugs. An incomplete or inaccurate medication history may lead to compromised patient safety and pharmacists have the expertise and experience to scrutinize such errors and optimize a patient's drug therapy through clinical interventions (Figure 1). The biomedical literature also indicates that pharmacist conducted medication reconciliation is more accurate, saves money, and increases patient safety [24–26].

A study conducted in a tertiary care hospital in China has also revealed that medication reconciliation performed by pharmacist

trainees can minimize unintentional medication discrepancies [27]. In another observational study conducted in Croatia, it was evidenced that clinical pharmacist-led medication reconciliation was an important tool in detecting medication discrepancies and preventing adverse patient outcomes [28]. Similarly, in a study conducted in Saudi Arabia, the researchers have concluded that medication reconciliation is crucial in reducing medication errors and pharmacists are the ideal resources to avoid medication-related errors and the associated risks and complications [8].



In alliance with the above findings, it can be suggested that not only pharmacists/ clinical pharmacists/ pharmacy technicians have a positive role in the medication reconciliation process but also pharmacy students. In a recent study conducted to analyse the benefits of employing pharmacy students in the medication reconciliation process, it was found that pharmacy students are a potential workforce solution. A particular finding from the study was that the fourth pharmacy students completed the best possible medication histories and identified discrepancies with prescribed medications for patients. Also, the pharmacy students were able to identify around 70% of medication discrepancies in the admitted patients during the medication reconciliation [29]. Therefore, pharmacy students can provide a beneficial service to the hospital by extrapolating their skills in clinical pharmacy services.

CONCLUSION

Medication reconciliation is an emerging tool to ensure patient safety in the hospital. It requires tremendous efforts from each healthcare professional to recognize treatment related harm. In such scenarios, a clinical pharmacist can contribute immensely and recognize errors or certain contributions in a way that can help improve patient outcomes. Medication reconciliation is particularly important when a geriatric patient is being admitted, with multiple comorbidities and the complex medication regimen, poly-pharmacy and non-adherence become an alarming threat. A similar situation arises in the emergency department and in the

transitions of care where medications may go omitted or missed. Therefore, it is imperative to introduce timely patient safety tools to maintain the ongoing effort to achieve patient outcomes.

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