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A Review on Medical Reconciliation: A Novel Pharmacy Perspective for Identifying Medication Errors

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Abstract: Medication reconciliation is a practice for identifying discrepancies in drug managements prescribed in care settings to inform prescribing decisions and prevent medication errors. Recognition and management of medication discrepancies to reduce Adverse Drug Effects are a major focus of patient safety efforts. As a fragment of the National Patient Safety Goals program, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) allotted a mandate requiring hospitals to perform medication reconciliation at each transition of care. At basic level, most organizations agree that a medication reconciliation includes a best possible medication history that is reconciled with the medications prescribed. Canadian health care providers have invested billions of dollars in hospital-based Emergency Medication Reconciliation with the intention of improving hospital efficiency and patient outcomes. Integrated medication reconciliation led by a hospital clinical pharmacist in collaboration with all health professionals involved in the patient's pharmacotherapy and treatment, significantly reduced unintended discrepancies in the transfer of care. The implementation of pharmacist-led medication reconciliation service had a positive clinical and economic impact in hospital.

Keywords: Medication reconciliation, Medication discrepancies, pharmacotherapy, Adverse Drug effects, Pharmacist.

Introduction:

Medication reconciliation is a practice for identifying discrepancies in drug managements prescribed in care settings to inform prescribing decisions and prevent medication errors[1]and also it refers to the process of identifying the most accurate list of all medications a patient is taking and using this list to provide correct medications for patients everyplace within the health system[2]

Patients who are hospitalized are at higher risk of experiencing abrupt medication changes and errors which are termed as Medication discrepancies. Medication discrepancies are unintended differences between medication regimens that range in severity and may include omission of medications, wrong medication name, and incorrect dosing. Medication discrepancies occur in up to 80% of hospitalized patients during transitions of care, either at admission or discharge[3]

Medication error is the most common type of error affecting patient care and the principal cause of medication error at such times is the incorrect transfer of medication information[4]. Older patients with chronic conditions, visit more physicians, and take a greater number of medications which is the risk factor for ADEs related to medication discrepancies.[3]

The Institute of Medicine reported that a conservative annual estimate ADEs of 400,000 in-hospital preventable ADEs would cost $3.5 billion in 2006 dollars. Increase in length of stay or pharmacy and laboratory costs are the reasons for Increased costs. Recognition and management of medication discrepancies to reduce ADEs are a major focus of patient safety efforts. As a fragment of the National Patient Safety Goals program, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) allotted a mandate in 2005 requiring hospitals to perform medication reconciliation at each transition of care[3].

According to the JCAHO, a process should be in place for comparing the patient's present medications with those ordered, and a complete list of the patient's medications must be communicated to the next provider of care. Furthermore, a complete list of medications should be provided to the patient at discharge. However, in recognition of the difficulties that many organizations are having in meeting these requirements, the JCAHO decided in February 2009 not to consider medication reconciliation in accreditation decisions until the policy was reviewed further, although it continues to monitor progress in this area[3].

At basic level, most organizations agree that a medication reconciliation includes a best possible medication history that is reconciled with the medications prescribed. A best possible medication history is different from a routine medication history as it usually requires at least two independent sources be obtained and verified like patient and community pharmacy record, which decreases the chance of medication errors[5].

Patient's medication history not integrated throughout settings, there is no uniform location where such information is stored. Physicians may find herself obliged to retrieve it from the hospital admission database, the hospital medication administration record, the physician's patient history and progress notes, and the pharmacy notes or database. Without input from all those sources, information concerning a patient's medication allergies and the medications that he took previously may be incomplete or inaccurate.

All these shows that Accurate medication data are necessary to monitor patient adherence and therapeutic response and to prevent drug–drug interactions and adverse effects[3]. This task focuses on admission reconciliation and also reconciliation needs to occur at all care

transitions, including admission, when transferring from different levels of care within a hospital, and at discharge, particularly when paper medication records are used or electronic systems are not well integrated[5].

Numerous studies have recognized medication reconciliation by clinical pharmacists as a practical tool to reduce the risk of medication errors and costs suffered during hospitalization.5–15 Interventions by pharmacists include detecting medication discrepancies and identifying possible drug-drug interactions, drug-disease interactions, errors in the route of administration, or duplication of medications. In the absence of medication reconciliation by pharmacists, the incidence of medication errors is 60%.Internationally, medication reconciliation at admission has thus become a high-Priority[6].

Initially, medication reconciliation was achieved using a pen-and-paper process. However, the introduction of hospital-based electronic medical record (EMR) systems has led to the creation of enhanced electronic medication reconciliation systems that interact directly with the patient's hospital medication records[7].

A high-level medication reconciliation service will also include a medication review for appropriateness, discharge counselling, provision of a reconciled medication schedule to the patient, and communication of medication changes, with rationale, directly to patients' community pharmacy and primary care physician[5].

Table:1 List of Reviewed Studies on Medication Reconciliation Including Key Findings

Author	Type of Study	Sample size	outcome
Bogeum Park[6]	Retrospective observational study	2705	Medication reconciliation provision had a positive clinical and economic impact
Blayne Wel[7]	Interrupted time-series analysis	15 932	Reduced potentially inappropriate medication use and associated adverse events were noted with electronic medication reconciliation system
Danielle S Chun[8]	Cross-sectional stud	397	Medication reconciliation can accurately capture and improve medication safety by preventing prescribing and administration errors.
Kathleen Tschantz Unroe[3]	Retrospective cohort study	205	Medication reconciliation have high potential to identify clinically important alterations for all patients.
Anderegg[9]	Observational Study	3316	High-risk patients had readmission rates reduced to 12.3% from 17.8% for

			an estimated cost savings of US$780 000 per year with medical reconciliation
Buck et al[10]	Observational Study	629	A considerable reduction in medication discrepancies in acutely admitted patients by performing medication reconciliation and focused medication reviews.
Gardella et al[11]	Observational Study	1251	Pharmacy personnel can enhance the accuracy of preadmission medication list and may thereby reduce in-hospital ADEs.
Siemianowski[12]	Observational Study	1748	Intervention decreased drug–drug interactions by 48%, Pharmacy technician medication reconciliation program is an effective method to obtain, document, and communicate.
van den Bemt[13]	Observational Study	1543	Medication discrepancies reduced from 18.6% to 5.4% when technicians completed medication reconciliation Allergy discrepancies decreased to 8.6% from 11.3% Antithrombotic errors
Ivana Marinović [14]	Randomized controlled study	353	Medication reconciliation model,significantly reduced unintentional discrepancies in the transfer of care
Sara Daliri[15]	Observational Study	197	Changes in medication regimens were implemented in 86.3% of patients due to longitudinal medication reconciliation at admission, discharge and post-discharge..
Eileen M. Murphy Ajhp[16]	Observational Study	760	A pharmacy based multidisciplinary admission history and medication reconciliation process has condensed medication errors in an academic medical centre
Prathibha varkey[17]	Quality-improvement pilot study	102	Multidisciplinary medication reconciliation decreased mean number of medication discrepancies occurring during admission and discharge.

Kenneth S. Boockvar[18]	preintervention/postintervention study	696	Pharmacist medication reconciliation and communication with the physician reduced discrepancy related ADEs in these patients transferred between the hospital and nursing home
Peter Pronovost[19]	Observational Study	33	Medication reconciliation process resulted in a dramatic drop in medications errors for patients discharged from an ICU

Medication reconciliation helps to ensure that preoperative medication are continued throughout the hospitalization and upon hospital discharge, The medication reconciliation forms for patients include the use of medications associated with improved outcomes and monitored by the Centre for Medicare and Medicaid Services and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO),which include aspirin, beta blockers, cholesterol lowering agents as well as diet and exercise counselling[19]

Canadian health care providers have invested billions of dollars in hospital-based Emergency Medication Reconciliation with the intention of improving hospital efficiency and patient outcomes.[7]Patient safety organizations, such as the World Health Organization (WHO), the Commonwealth Fund, The Joint Commission (TJC), and Institute for Healthcare Improvement, have endorsed medication reconciliation. The combination of two standards, “improve effective communication” and “improve the safety of high-alert medications”encompass critical components of maintaining and communicating an up-to-date medication list with health care personnel[20]. There is also a little evidence has shown that medical reconciliation improves clinically relevant outcomes.[7]

Conclusion: The implementation of pharmacist-led medication reconciliation service had a positive clinical and economic impact in hospital. Various results show that Pharmacy students and technicians are accurate, time efficient, decrease costs, and provide support to other health-care professionals when they are encompassed in the medication reconciliation process. The integrated medication reconciliation led by a hospital clinical pharmacist in collaboration with all health professionals involved in the patient's pharmacotherapy and treatment, significantly reduced unintended discrepancies in the transfer of care.

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