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FACTORS RELATED TO THE REDUCTION OF MEDICATION DISCREPANCIES AT TRANSITION OF CARE: A SYSTEMATIC REVIEW

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ABSTRACT

Background: *Adverse drug events (ADE) are a leading cause of injury and death within health care systems around the world. Up to 67% of patients' prescription medication histories recorded on admission to hospital have one or more errors and 30 – 80% of patients have a discrepancy between the medicines ordered in hospital and those they were taking at home. This study aims to systematically evaluate the available literature on the medication history records as a quality improvement in reducing medication discrepancies during the transition of care.*
Methods: *This study was used systematic review which performed according to the PRISMA method. The search included articles were obtained through databases: MEDLINE (1946), EMBASE (1966), CINAHL (1937) and PubMed (1946). Some of the key words or Medical Subject Heading (MeSH) terms used in the search were: "transition of care," "medication discrepancies," "medication errors," "patient safety," "medication history," "patient admission," "patient discharge," "patient transfer," and "hospital". Only studies published in English were included. Exploring literature was focused on the articles published from 2009 to 2019.*
Results: *Initially, a total of 162 potentially relevant articles were obtained. After screening tittle and reviewing abstracts, 14 full text were assessed for eligibility. Of the 10 articles met all inclusion criteria, 5 studies were randomized controlled trials, 2 quasi-experimental studies, 1 cohort study, and 2 qualitative studies with quantitative approaches. All studies found that involving best possible medication history in identifying medication discrepancies and communicating this information affected medication discrepancies in the medical record.* ***Conclusions:*** *The available literature such as lack of well-designed studies precluded us from concluding that no effect exists. Medication reconciliation supported by information technology was an important tool for minimizing the percentage of medications with unintentional discrepancies*

Keywords: *Adverse drug events, Medication discrepancies, Patient safety, Transition of care*

BACKGROUND

The potential for patient harm and increased medical liability due to differences in treatment and errors do not end when discharged from the hospital, but the transition to care both while in the hospital and the transition from hospital to primary care or vice versa is a time that is very risky for patients.[1,2,3,4] Transitions of care is an integral part of a patient's journey through a health care system where the transition from one treatment to the next is often accompanied by changes in health status.[1] Patients

transferred between health care sectors may have new diagnoses, new treatments or changes functional status that affects their ability to manage their own conditions outside of health care arrangements. The patient's journey through the health care system can involve a number of interfaces between primary care, community and hospital. The constants in this transition are patients, along with their families and caregivers. Thus, it is very important that patient roles and responsibilities are considered important for each strategy that supports the transition of safe and effective care.[1,2,4]

Adverse drug events (ADE) are a leading cause of injury and death within health care systems around the world.[1,2] Many of these events occur as a result of poor communication between health professionals and between health professionals and patients and/or carers when care is transferred, such as when patients are admitted to hospital, move between wards and are discharged home to the community or a residential care facility home. Around half of the medication errors that occur in hospital are estimated to occur on admission or discharge from a clinical unit or hospital[5] and around 30% of these errors have the potential to cause patient harm.[6,7] Up to 67% of patients' prescription medication histories recorded on admission to hospital have one or more errors and 30 – 80% of patients have a discrepancy between the medicines ordered in hospital and those they were taking at home.[8] These errors can occur when obtaining the patient's medication history (e.g. on admission to hospital), when recording the medicines in the medical record, and when prescribing medicines on admission, on transfer to another ward and at discharge.

The aim of patient safety is to reduce the risk of injury or danger to patients by improving the structure and process of providing care. Therefore, when undesired risks and harm associated with transition and management of care are reduced, patient safety can be optimized. To reduce safety risks for patients, the health system requires sufficient resources to prevent medication errors in hospitals.[1,2,9] Potential patient harm and increased medical liability due to treatment differences, are defined as unexplained differences between documented regimens in various different treatment places, continuing after being discharged from the hospital. The Adverse Drug Event (ADE) has occured frequently in a variety of settings, including hospitals, nursing homes, and ambulatory / outpatient settings.[2,9] Besides preventable clinical outcomes associated with ADE, several studies have highlighted the significant costs of liability claims associated with ADE that occur in inpatient and outpatient settings. Transitions from hospitals to community settings, including transfers for those who receive home care services, are a very risky time, especially for elderly with many chronic morbidity that puts them at certain risk for drug differences and associated ADE. Drug differences often occur during the transition from hospital to home care. More than 40 percent of all drug differences classified have the potential to produce ADE.[10]

Searching the patient's medication history is important to be able to detect the difference in treatment from previously received and which will continue as current treatment.[2] A Best Possible Medication History (BPMH) is a medical history obtained by the doctor that includes a thorough history of all usual drug uses (determined and not prescribed), using a number of different information sources. The aim of this study was to systematically evaluate the available literature on the medication history records as a quality improvement in reducing medication discrepancies during the transition of care.

METHOD

This systematic review was performed according to the PRISMA statement[11], including a checklist to ensure consistent reporting of a systematic review. The search included articles from inception of the databases up to week 1 of March 2019, which were obtained through an extensive search of the

following electronic databases: MEDLINE (1946), EMBASE (1966), CINAHL (1937) and PubMed (1946). Some of the key words or Medical Subject Heading (MeSH) terms used in the search were: "transition of care," "medication discrepancies," "medication errors," "patient safety," "medication history," "patient admission," "patient discharge," "patient transfer," and "hospital". Only studies published in English were included. Exploring literature was focused on the articles published in 2009 to 2019. The exploring process obtained 10 articles that met the requirements for inclusion and exclusion criteria.

RESULTS

Initially, a total of 162 potentially relevant articles were obtained. After screening tittle and reviewing abstracts, 14 full text were assessed for eligibility. Eventually only 10 articles met all inclusion criteria in this review (Figure 1). Of the 10 articles, 5 studies were randomized controlled trials, 2 quasi-experimental studies, 1 cohort study, and 2 qualitative studies with quantitative approaches. All studies are in the transition of care setting, both when admission, moving between wards in the hospital, or discharge hospital. This transition of care process is the point of research by looking at the outcomes of medication discrepancies, potentially Adverse Drug Events, or the quality of implementation with medication history. (Table 1)

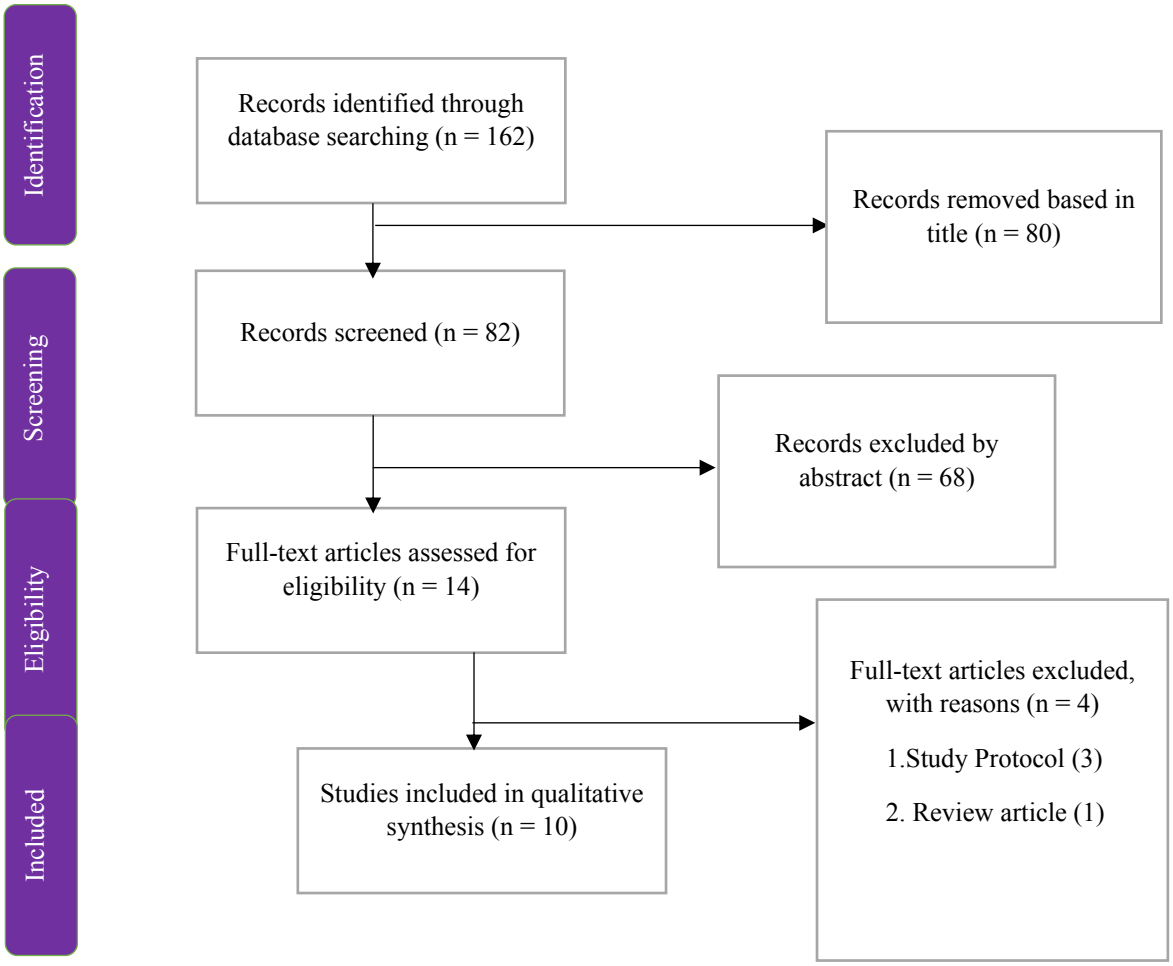

Figure 1. Flow diagram showing sample selection process

Table 1. Characteristic of included studies

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
1	Applying quality improvement methods to address gaps in medicines reconciliation at transfers of care from an acute UK hospital (2015)	Vanessa Marvin, Shirley Kuo, Alan J Poots, Tom Woodcock, Louella Vaughan, Derek Bell	An acute 400-bedded teaching hospital in London, UK. The main study was conducted of 10 adult patients a week on the acute hospital over 18 months, from September 2011 to March 2013	All contributed to the mapping and development of the interventions. Interventions were agreed to lead to measurable improvements, assigned into one of three work streams: education, documentation, and communication out of hospital.	The completion of pharmacist-led process of reliable reconciliation at admission is also documented appropriately on the ePR. Discharge prescribing is supported by pharmacists who check (or transcribe) take-home medicines (TTO).	Statistical process control analysis showed reliable documentation (complete, verified and intentional changes clarified) of current medication on 49.2% of patients' discharge summaries. This appears to have improved (to 85.2%) according to a poststudy audit the year after the project end. Pharmacist involvement in discharge reconciliation increased significantly, and improvements in the numbers of medicines prescribed in error, or omitted from the discharge prescription, are demonstrated. Variation in weekly measures is seen throughout but particularly at periods of changeover of new doctors and introduction of new systems.	simple random sampling experiments

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
2	Implementation of an IT-guided checklist to improve the quality of medication history records at hospital admission (2017)	Tanja Huber, Franziska Brinkmann, Silke Lim, Christoph Schröder, Daniel Johannes Stekhoven, Walter Richard Marti, Richard Robert Egger	Surgery ward focused on vascular and visceral surgery at a Swiss Cantonal Hospital, 113 before and 115 patients after intervention for sample	Implementation of an IT-guided checklist	For both phases a pharmacist collected and compared the medication history (defined as gold standard) with that of the admitting physician , all identified medicines were documented according to the ATC code system.	medication discrepancy in the medication history before and after intervention was assessed. After intervention, medication discrepancies declined from 69.9 to 29.6% ($p < 0.0001$) of patients, the mean medication discrepancy per patient was reduced from 2.3 to 0.6 ($p < 0.0001$), and the most common error, omission of a regularly used medication, was reduced from 76.4 to 44.1% ($p < 0.001$)	Before after (quasi experiments)
3	The effect on potential adverse drug events of a pharmacist-acquired medication history in an emergency department: a multicentre, double-blind, randomised, controlled, parallel-group study (2015)	Jesus Becerra-Camargo, Fernando Martínez-Martínez, and Emilio García-Jiménez	Two hundred and seventy patients who had been admitted to an ED were enrolled	Comprehensive Medication History interview, focusing on a patient's current home medication regimen prior to being seen by a doctor.	Data recorded on the admission medication order form was available to be used by a doctor during consultation in the Emergency Department (ED)	The main outcome dealt with comparing the intervention and control groups regarding the percentage of patients having at least 1 potential adverse drug event. 811 Potential Adverse Drug Events (PADEs) (3.35 per patient), 528 (65 %) on the standard care arm and 283 (35 %) on an intervention arm. Most PADEs were judged to have had the potential to cause moderate discomfort (42.6 %), 33.4 % were deemed unlikely to have caused harm and 23.9 % were judged to have had the potential to cause clinical deterioration.	A multicentre, double-blind, randomised, controlled parallel-group study

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
4	Magnitude and factors associated with medication discrepancies identified through medication reconciliation at care transitions of a tertiary hospital in eastern Ethiopia (2018)	Addisu Tamiru, Dumessa Edessa, Mekonnen Sisay and Getnet Mengistu	This study was conducted in selected wards of Hiwot Fana Specialized University Hospital (HFSUH). All patients admitted to medical, pediatric, surgical, and obstetrics and gynecology wards of the hospital	Details of each patient's medication profile at transition in care were compared to the details of the patient's medication use pro le before the transition. e process of medication reconciliation for each patient had two steps. In the rst step, medication pro- le of each patient was registered into the data abstrac- tion format. By the second step, medication pro le of the patient was registered for orders at transition in care. As a result, medication pro le for medication orders recorded at	All patients admitted to medical, pediatric, surgical, and obstetrics and gynecology wards of the hospital were identifid and patients who had at least one transition in care during their stay in the care	A total of 1027 medications were reconciled and 298 of them showed discrepancies. From such medication discrepancies, 96 (32.2%) of them were unintended discrepancies. Patients admitted to surgical ward (adjusted odds ratio {AOR} 0.27 [95% concordence interval 0.10–0.74]) and on malnutrition therapy (AOR 0.13 [0.03–0.52]) had reduced likelihoods of medication discrepancies. However, patients on cardiovascular drug therapy (AOR 5.69 [2.4–13.62]) and who were hospitalized for more than 5 days (AOR 5.69 [2.97–10.9] {5–10 days}) had signnificantly increased likelihoods of discrepancies. Accordingly, one-third of the medication discrepancies identified were unintentional and these discrepancies were more likely to occur with cardiovascular drugs, in medical or pediatric wards and patients hospitalized for prolonged time. Therefore, this pharmacist-led medication reconciliation indicates the potential of pharmacists in reducing drug-related adverse health outcomes that arise from medication discrepancy.	Before after (quasi experiments)

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
				transition was reconciled by com- paring with the formerly recorded medication pro le for the same patient			

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
5	Impact of an Outpatient Pharmacist Intervention on Medication Discrepancies and Health Care Resource Utilization in Posthospitalization Care Transitions (2014)	Emily M. Hawes, Whitney D. Maxwell, Sarah F. White, Jesica Mangun, and Feng-Chang Lin	804-bed academic medical center from October 2009 to April 2011.	Subjects in the intervention group were scheduled for a care transitions clinic visit with a clinical pharmacist approximately 72 hours postdischarge, and prior to the posthospitalization Primary Care Providers (PCPs) visit.	Study subjects in the usual care group were scheduled to see their PCP for a posthospitalization visit with no interim pharmacist intervention	Study participants randomized to the intervention had a significant reduction in the primary composite outcome of 30-day rehospitalization and ED visits compared with the usual care arm (0% vs 40.5%, $P < .001$). In addition, there was a significant difference in the 30-day rehospitalization rate (0% vs 32.4%, $P = .002$) and 30-day ED visit rate (0% vs 29.7%, $P = .004$) between the intervention and usual care arm. Of the subjects with medication discrepancies at dis- charge, 50% of the discrepancies were resolved in those in the intervention arm versus 9.5% in the usual care arm by the conclusion of the posthospitalization PCP visit ($P = .015$). In the per-protocol analysis, all discrepancies were resolved in patients attending the pharmacist visit versus 9.5% in the usual care group ($P < .001$).	prospective, randomized, open-label

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
6	Effect of an Electronic Medication Reconciliation Application and Process Redesign on Potential Adverse Drug Events	*Jeffrey L. Schnipper, MD, MPH; Claus Hamann, MD, MS; Chima D. Ndumele, MPH; Catherine L. Liang, MPH; Marcy G. Carty, MD, MPH; Andrew S. Karson, MD, MPH; Ishir Bhan, MD; Christopher M. Coley, MD; Eric Poon, MD, MPH; Alexander Turchin, MD, MS; Stephanie A. Labonville, PharmD, BCPS; Ellen*	general medical inpatient units at 2 academic hospitals from May to June 2006 , 322 patients admitted to 14 medical teams, for whom a medication history could be obtained before discharge	he intervention was a computerized medication reconciliation tool and process redesign involving physicians, nurses, and pharmacists.	Patients were enrolled if study phar- macists (generally 1 pharmacist per weekday per hospital) had time to obtain a medication history prior to discharge	The main study outcome was the number of unintentional medication discrepancies with potential for causing harm (PADEs) per patient. Among 160 control patients, there were 230 PADEs (1.44 per patient), while among 162 intervention patients there were 170 PADEs (1.05 per patient) (adjusted relative risk [ARR], 0.72; 95% confidence interval [CI], 0.52-0.99). A significant benefit was found at hospital 1 (ARR, 0.60; 95% CI, 0.38-0.97) but not at hospital 2 (ARR, 0.87; 95% CI, 0.57-1.32) (P = .32 for test of effect modification). Hospitals differed in the extent of integration of the medication reconciliation tool into computerized provider order entry applications at discharge.	Cluster-randomized controlled trial

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
		K. Diedrichsen, PharmD; Stuart Lipsitz, ScD; Carol A. Broverman, PhD; Patricia McCarthy, PA, MHA; Tejal K. Gandhi, MD, MPH					
7	Effect of Clinical Pharmacist Intervention on Medication Discrepancies Following Hospital Discharge (2014)	*T. Michael Farley, Pharm.D., B.C.P.S., Constance Shelsky, R.N., M.S.N., Shanique Powell, Karen B. Farris, Ph.D., Barry L. Carter, Pharm.D.*	A large, tertiary care, academic medical center. Total of 592 subjects signed consent and had complete data for the present sub-study. Subjects were randomized to the enhanced	The intervention consisted of clinical pharmacist medication reconciliation, patient education and improved communication of the discharge medication plan, as devised by the hospital physician and care team, to primary care	The control group received only usual hospital care without any involvement of the PCM. All of the patients in the study received the exposure to the usual hospital medication list collection process, which was most often done by the	Rate of medication discrepancies compared across groups. A total of 592 subjects from internal medicine, family medicine, cardiology and orthopedic services were evaluated for this study. Clinically important medication discrepancies in the primary care physician record were different between groups 30 days after hospital discharge following a clinical pharmacist's intervention. The mean number of medication discrepancies per patient for the enhanced group being nearly half the number in the control group. However,	prospective, randomized, blinded, controlled trial.

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
			intervention (n=195), minimal intervention (n= 199) or control (n=198) groups.	physicians and community pharmacists.	patient's floor nurse on admission. They also received the typical discharge summaries from the University of Iowa Hospitals and Clinics sent to primary care physicians for their records.	this effect did not persist to 90 days post-discharge and did not extend to community pharmacy records.	
8	Improving Medication Information Transfer between Hospitals, Skilled-Nursing Facilities, and Long-Term-Care Pharmacies for Hospital Discharge Transitions of Care: A Targeted Needs Assessment Using the Intervention	Luiza Kerstenetzky, PharmD, Matthew J. Birschbacha, Katherine F. Beacha, David R. Hager, PharmD, BCPS, and Korey A. Kennelty, PharmD, MS, PhD	All adult patients who were discharged from academic Midwest hospital to a Skilled Nursing Facility (SNF) were identified through a report generated from an electronic	SNF and Long Term Care (LTC) pharmacy staffs were also interviewed regarding the continuity of medication information post-discharge from the hospital.	Medication discrepancies were quantified by comparing the hospital discharge medication list with the SNF medication administration records and LTC pharmacy profile one day after the patient was discharged from the hospital.	At least one medication discrepancy was discovered in 77.6% (n=45/58) of SNF and 76.0% (n=19/25) of LTC pharmacy medication lists. A total of 191 medication discrepancies were identified across all SNF and LTC pharmacy records. Of the 69 SNF staff interviewed, 20.3% (n=14) reported patient care delays due to omitted documents during the hospital-to-SNF transition. During interviews, communication between the SNF/LTC pharmacy and the discharging hospital was described by facility staff as unidirectional with little opportunity for feedback on patient care concerns.	Before after qualitative and quantitative design

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
	Mapping Framework (2018)		health information database				
9	Electronic Health Records and Adverse Drug Events after Patient Transfer (2010)	Kenneth S. Boockvar, MD, Elayne E. Livote, MPH, Nathan Goldstein, MD, Jonathan R. Nebeker, MD, Albert Siu, MD, and Terri Fried, MD	469 patients transferred between 7 nursing homes and 3 hospitals in New York and Connecticut between 1999-2005	U.S. Veterans Affaiirs (VA) patients, with an Electronic Health Record (EHR)	non-VA, without an EHR	The overall incidence of ADE caused by medication discrepancies was 0.20 per hospitalization episode. After controlling for demographic and clinical covariates, there were no significant differences between VA and non-VA groups in medication discrepancies (mean difference 0.02; 95%CI −0.81 to 0.85), high-risk medication discrepancies (−0.18; 95%CI −0.22 to 0.58), or occurrence of an ADE caused by a medication discrepancy (odds ratio 0.96; 95%CI 0.18 to 5.01).	observational cohort study

No.	Title (Year)	Authors	Setting	Intervention	Comparators	Outcome	Study Design
10	Medication Safety: an audit of medication discrepancies in transferring type 2 diabetes mellitus (T2DM) patients from Australian primary care to tertiary ambulatory care	Madonna Azzi, Maria Constantino, Lisa Pont, Margaret Mcgill, Stephen Twigg, And Ines Krass	300 randomly selected adult T2DM patients who attended the Diabetes Centre between 01 January 2010 and 31 December 2011 at Royal Prince Alfred Hospital (RPAH) Diabetes Ambulatory Care Centre	audit of outpatient clinical medical records	The rates and types of medication discrepancies were identified by comparing the structured nurse–patient interview (SNPI) with the primary care [General Practitioner (GP)] referral letter, where the SNPI was considered the best possible medication history. Discrepancies were identified as addition, omission, dose and insulin-type discrepancies. Each category was mutually exclusive.	Over 80% of referral letters contained at least one discrepancy with a median of two discrepancies per referral. Of a total of 744 discrepancies, the majority were omissions (58.9%). Insulins had the highest discrepancy rate. Factors independently associated with medication discrepancies were GP referral letter type, total number of medications and medication regimen type	Retrospective audit of outpatient clinic records.

DISCUSSION

Medication reconciliation addresses the conceptually plausible and well-documented problem of unintended medication discrepancies introduced across transitions in care.[12] The actual effect of medication reconciliation on reducing clinically significant discrepancies in the inpatient setting remains unclear.[13] Medication reconciliation has attracted interest because of its potential effect on reducing at transition of care utilization. This systematic review investigated the current status of medication history and the relationship with medication discrepancies during transition of care. The quality of medication history during transition of care can affect the occurrence of medication discrepancy that can have an impact on the risk of ADE. Hospital-based, medicines reconciliation processes frequently identify and resolve unintended prescribing discrepancies between healthcare providers. Statistical process control analysis showed reliable documentation (complete, verified and intentional changes clarified) of current medication on 49.2% of patients' discharge summaries, to have improved (to 85.2%) according to a post study audit the year after the project end when pharmacist-led involvement in discharge reconciliation increased significantly, and improvements in the numbers of medicines prescribed in error, or omitted from the discharge prescription, are demonstrated.[14] Drovandi et al. also stated that clinical pharmacists in paediatric wards may reduce drug-related problems and improve patient outcomes and the benefits of pharmacist involvement appear greatest when directly involved in ward rounds, due to being able to more rapidly identify medication errors during the prescribing phase, and provide real-time advice and recommendations to prescribers.[15] The initiatives were pharmacist-led but involved close working and shared understanding about roles and responsibilities between doctors, nurses and patients or their carers.

Discrepancies in the medication history were found to be significantly reduced by providing a standardized, IT-guided checklist to the physicians. Since the lack of a complete medication history leaves patients at risk for medication errors, the intervention applied in that study will likely enhance the medication safety and reduce complications due to drug-related problems.[16] Desnoyes et al. also said that Potentially Inappropriate Medication (PIM) Check is the first electronic prescription-screening checklist designed to detect PIM in internal medicine and intended to help young healthcare professionals in their clinical practice to detect PIM, to reduce medication errors and to improve patient safety with mean agreement and usefulness ratings were 4.32/5 (95% CI 4.28 to 4.36) and 4.11/5 (4.07 to 4.15), respectively, during the first Delphi-round and 4.53/5 (4.51 to 4.56) and 4.36/5 (4.33 to 4.39) during the second ($p<0.001$).[17]

Many patients suffer potentially adverse drugs events during the transition of care from home to a hospital, by involving pharmacists in compiling medication history, drug reconciliation that focuses on patient safety while entering the Emergency Department can contribute to reducing the risk of possible ADE occurring and improve follow-up of patients medication-based therapy.[18] One-third of the medication discrepancies identified had no justification. Medication discrepancies are more likely to occur in medical wards and children, with cardiovascular drugs, with patients being hospitalized for more than 5 days, where the process of reconciling drugs led by pharmacists on a regular basis can benefit medical wards and children with a special focus on cardiovascular drugs, with timely and reasonable advice by health professionals it is important that those who can reduce the behavior of changing patient regimens while also giving different considerations to patients who are hospitalized for more than 5 days.[19]

A pharmacist-driven intervention focused on patient education and medication reconciliation after discharge improved medication use and reduced health care resource utilization.[20] In 2-hospital cluster-randomized controlled trial, found that a medication reconciliation intervention consisting of novel IT

and process redesign involving physicians, nurses, and pharmacists was associated with a 28% relative risk reduction in unintentional medication discrepancies with potential for harm, a type of potentially ADE. The absolute risk reduction between the 2 arms was 0.39 potentially ADE per patient or a number needed to treat 2.6 patients to prevent 1 potentially ADE.[21] The intervention was more successful in patients at high risk for medication discrepancies and possibly more successful at hospital 1 than at hospital 2.

An integrated pharmacist who rounds with the hospital team or works in the physician office is able to build relationships with providers in the hospital and community and may have a greater effect. The ongoing involvement of clinical pharmacists in transition to care with planned effective communication and reconciliation of drugs can reduce discrepancies and adverse drug events over the long term for hospitalized patients.[22] Needs assessment guided by the Intervention Mapping framework has lent to several planned process improvements initiatives to help reduce medication discrepancies during the hospital-to-skilled nursing home transition as well as improve communication between healthcare entities, the involvement of long term care pharmacies in the needs assessment was helpful for targeting fragmentation in the communication of medication information when patients transfer from the hospital to a skilled nursing home setting and can help to reduce medication discrepancies during the hospital-to-skilled nursing home transition as well as improve communication between healthcare entities.[23] Opening lines of communication along with aligning healthcare entity goals may help prevent medication-related errors.

Hospitalized nursing home residents in the Veteran Affairs setting had no difference in the occurrence of medication discrepancies, high risk medication discrepancies, or ADEs caused by medication discrepancies at the time of transfer as compared to those in the non-VA setting.[24] ADEs from errors in medication ordering are common even in a highly computerized system where the barriers to effective medication reconciliation and review at the time of transfer in a computerized setting include: computerized medication information that is incomplete or unclear, a reliance on the computer by providers that leads to less thorough patient interviews and less careful medication reviews, poor computer interface design, and competing provider tasks such as high volume or very ill patients. There was no difference, with and without an EHR, in the occurrence of medication discrepancies or ADEs caused by medication discrepancies at the time of transfer between sites of care and by reducing such problems may require specialized computer tools to facilitate medication review.

The extent of medication discrepancies indicates that methods of transferring patient information from one interface of care to another in the Australian health care system are highly sub-optimal, potentially dangerous and in need of improvement. Computerized physician-order entry systems are not enough to prevent medication discrepancies, as both computer-generated and hand-written referrals were associated with medication discrepancies. Study found a high prevalence of medication discrepancies in ambulant Type-2 Diabetes Mellitus patients referred from primary to tertiary care, with the most common discrepancy being drug omission, and effectively and consistently performing medication reconciliation at interfaces of care continues to be a challenge for all health care professionals [25] A clear problem lies within the primary care sector; thus, training admitting physicians and medical students to undertake medication reconciliation may have some benefit. The type of General Physicians referral letter, medication regimen and total number of medications were independently associated with medication discrepancies. To improve patient care and minimize discrepancy rates, the health care system should explore, test and adopt methods of improving General Physicians-recorded patient medical histories, and the medication reconciliation process.

CONCLUSION

All studies found that involving best possible medication history in identifying medication discrepancies and communicating this information affected medication discrepancies in the medical record. Medication reconciliation supported by information technology was an important tool for minimizing the percentage of medications with unintentional discrepancies. Of particular note, omission errors were reduced in a great extent after the use of an electronic tool. However, limitations in the available literature such as lack of well-designed studies precluded us from concluding that no effect exists. Careful integration of electronic interventions with other medication reconciliation components (i.e., supportive roles and processes) to improve outcomes of interest would be more appropriate. This study suggests that health care team, especially clinical pharmacists may fill an important role in identifying medication discrepancies and communicating this information to affect their impact.

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