

Exploring the Concept of Medication Discrepancy Within the Context of Patient Safety to Improve Population Health

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Medication discrepancy is a concept often used in discussions about medication safety but has neither been fully explained nor clearly defined in the literature. This article explores medication discrepancy as it relates to patient safety and population health in the management of medications. Literature review reveals 2 main aspects of discrepancies in medication management; prescribing issues and patient adherence to regimens. Further development of the concept of medication discrepancy can be beneficial to the theorist, researcher, or clinician. Conceptual clarity about the various aspects of medication discrepancy in the context of patient safety has the potential to enhance quality improvement efforts and patient outcomes to improve population health. **Key words:** *medication discrepancy, medication error, medication reconciliation, medication safety, patient adherence, patient safety*

IN 1999 the Institute of Medicine (IOM) highlighted alarming hospital error rates leading to patient harm. The most common of these were medication errors, many resulting in increased morbidity and mortality.¹ In 2001, a second IOM report proclaimed that many hospital medication errors and resultant adverse drug events (ADEs) are preventable.² Despite IOM's focus on medication safety, data indicate an increased prevalence of ADEs.^{3,4} Medication errors lead to at least *1.5 million* ADEs among hospitalized patients and add *billions* of dollars in healthcare expenditure.⁵ Medication errors for nonhospitalized patients are more difficult to record; however, more than 2.5 billion prescriptions are dispensed yearly.¹ Research indicates that rates of ADEs in outpatients may be up to

4 times as high as that reported in hospital studies.⁶ Fatal medication errors in the home, not involving alcohol or street drugs, increased 564% during the past 20 years.⁴ As rates of per-capita prescription use continue to rise, ambulatory medication errors of even greater magnitude are estimated.⁷ Thus, effective strategies to reduce the incidence of ADEs and medication errors to improve the overall health of the population are critical.

Following the IOM reports, The Joint Commission (TJC), formerly the Joint Commission on Accreditation of Hospital Organizations (JCAHO), and the Institute for Healthcare Improvement (IHI) developed and introduced initiatives to improve hospital medication safety. TJC required accredited hospitals to initiate a medication reconciliation program by 2006, a process of comparing a patient's medication orders to all of the medications the patient has been taking, at each transition of care.⁸ IHI recommended that hospital organizations make medication reconciliation a part of their 100,000 (now 5 million) lives campaign.⁹ Both quality improvement agencies believe that these measures

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will improve patient safety by decreasing medication errors.^{8,9}

The definition of “medication reconciliation,” as it will be used in this article, is as follows: the *process* of identifying and correcting medication discrepancies to make 2 or more medication lists congruent. As such, the initial step in the process of medication reconciliation is identifying the discrepancies between 2 or more medication lists. Yet the definition of medication discrepancy and the processes that can be used to both prevent and correct medication discrepancies are poorly understood. In the absence of parameters that help to accurately identify medication discrepancies, medication reconciliation cannot be correctly completed and the risks of medication errors and ADEs remain. Thus, understanding the concept of medication discrepancy is a necessary element of medication reconciliation and safe medication utilization.

PURPOSE

The purpose of this article is to analyze one concept related to patient safety in medication management: medication discrepancy. Medication discrepancies have been addressed in the literature as a potential source of medication errors, yet the concept has neither been fully explained nor consistently defined. This concept analysis will result in an improved understanding of medication discrepancy, including examples of how the concept can be used to promote patient safety and population health. Defining attributes, antecedents, and consequences will be identified to more clearly establish the conceptual boundaries of medication discrepancies, a critical step in understanding its role in theory, research, and practice.

METHODS

The concept of medication discrepancy was analyzed using the framework developed by Walker and Avant.¹⁰ An extensive literature review was conducted and analyzed. Litera-

ture searches were conducted to identify articles pertinent to medication discrepancy. The electronic databases CINAHL, OVID, PubMed, Cochrane Database of Systematic Reviews, and Google Scholar were searched using the following keywords: medication discrepancy, medication safety, medication error, medication reconciliation, patient safety, and patient adherence. The search included publications prior to February 2009. Additional searches were completed on several patient safety Web sites, such as those of the Institute for Healthcare Improvement, TJC, Healthy People 2010, Healthy People 2020, and the Agency for Healthcare Research and Quality. In addition to computer searches, reference lists of articles on medication discrepancies and medication reconciliation provided additional publications.

The topic of medication reconciliation was included in the search because there is an important link between the 2 concepts. Identifying medication discrepancies is an important and necessary first step in the process of medication reconciliation. Thus, articles related to reconciliation may provide information pertinent to the concept of medication discrepancy. In addition, since the TJC mandate in 2006, “medication reconciliation” has been a well-publicized topic and the term was likely to be listed as a key word in titles and abstracts of articles with information relevant to medication discrepancy.

A search for previous medication discrepancy concept analyses provided no results. Inclusion criteria for articles used for this concept analysis were that they were printed in English, published in peer-reviewed journals, and relevant to the main topic of medication discrepancy or medication reconciliation. Approximately 76 article titles were located and abstracts read. A total of 35 articles were selected for detailed review and analyzed to obtain understanding of the many facets of medication discrepancy. Of the 35 articles used for analysis, 6 were focused primarily on medication reconciliation with medication discrepancy as a secondary focal point. Journal articles and research studies that described

medication discrepancies or medication reconciliation in various settings such as hospitals, outpatient clinics, and physician practices were identified. Literature was collected until the content reached saturation.

Medication discrepancies have been studied and discussed by a wide range of international professionals. Articles were authored by physicians, pharmacists, nurses, and researchers living and working in the United States, Ireland, Canada, Singapore, and Denmark. International interest is indicative of the relevance of the concept of medication discrepancy and its impact on healthcare and population health in general.

Research studies that investigated medication discrepancies were found from a variety of settings, including outpatient clinics, physician offices, and acute care hospitals. Even though studies did not track medication discrepancies throughout the entire continuum of care, informative results depicted unique antecedents and consequences of medication discrepancy specific to the care setting. This variation provided opportunities to identify the many permutations of medication discrepancies, strengthening the concept analysis.

FINDINGS

Definition

Discrepancy is derived from the Latin root word *discrepare*, which means “be discordant”. As a noun, discrepancy is defined by the *Oxford English Dictionary* as “an illogical or surprising lack of compatibility between facts.”¹¹ The *Encarta World English Dictionary* defines discrepancy as “a failure to match: a distinct difference between two things such as figures that should match or correspond.”¹² And finally the *Merriam-Webster Online Dictionary* defines discrepancy as “an instance of being discrepant, being at variance, disagreeing”. The *Merriam-Webster Thesaurus* search revealed synonyms of inconsistency, difference, incongruity, divergence, and disagreement.¹³

The literature review uncovered several definitions of medication discrepancies with

2 main themes, prescribing issues and patient adherence to the prescribed medication regime (Table 1). Smith et al use the terms “patient-level”^{19(p142)} and “system-level”^{19(p142)} to describe the 2 broad categories of discrepancies. Patient-level discrepancies may be attributable to reasons the patient is not able to follow the prescribed regime such as knowledge deficits, cognitive impairment, or physical limitations (eg, tremor). System-level discrepancies evolve largely from factors that affect the ability of the prescribing practitioner to prescribe appropriately. Contributing factors may include communication issues such as incomplete, conflicting, or inaccurate home medication lists and/or prescribing practices. Prescriber failure to consider patient limitations that impede a patient’s ability to adhere to a medication regime can contribute to system-level discrepancies. Other examples of factors that lead to system-level discrepancies are incomplete, illegible, or inaccurate discharge instructions,¹⁹ inadequate clinical staffing, or inconsistent processes.

Bedell et al defined medication discrepancy in an outpatient setting as “the difference between the list of medications in the medical record (referred to as *recorded medications*) and what a patient actually took, based on medication bottles and on self-reports (referred to as *reported medications*).”^{14(p2131)} A study of patients being treated at a hemodialysis center was conducted by Manley et al. In addition to the discrepancies identified between the medication history list and medications the patient actually reported taking (drug record discrepancies), another discrepancy was noted when the list of medications the patient provided and verified by clinical staff was found to differ from the electronic medical record. Both types of discrepancies were identified as potential sources that may lead to medication errors.²⁰ Medication lists notwithstanding, the most important information necessary for identification of medication discrepancies is the medications that the patient actually takes at home. Obtaining this information can be a challenge because patients

Table 1. Definitions of medication discrepancies in literature

Author/year of publication	Source/discipline	Definition
<i>Oxford English Dictionary</i>	Dictionary	“an illogical or surprising lack of compatibility between facts”
<i>Encarta World English Dictionary</i>	Dictionary	“a failure to match: a distinct difference between two things such as figures that should match or correspond”
<i>Merriam-Webster Online Dictionary</i>	Dictionary	“an instance of being discrepant, being at variance, disagreeing”
Bedell et al/2000 ¹⁴	Multidisciplinary research team: Physicians, Nursing	“the difference between the list of medications in the medical record (referred to as <i>recorded medications</i>) and what a patient actually took, based on medication bottles and on self-reports (referred to as <i>reported medications</i>)”
Kemp et al/2008 ¹⁵	Pharmacy	Medication discrepancies are “errors of omission (medications not included on the admission medication list), errors of commission (medications listed on the admission medication list but which were not being used by the patient), incomplete or inaccurate medication information (eg, wrong dose, route, or frequency of use or indication of use), and inconsistent allergy information (absent or incorrect medication or food allergies and their descriptions).”
Gleason et al/2004 ¹⁶ Cornish et al/2005 ¹⁷	Multidisciplinary research team: Intern medical students, Nursing, Pharmacy	A discrepancy was defined as any inconsistency or difference in the medication regimen noted during the manual comparison between admission orders and the history obtained by the physician, the admission profile, collaborative collection of data by the nurse and patient/advocate, or a pharmacy-generated list after patient/advocate interview.
Coleman et al/2005 ¹⁸ Cornish et al/2005 ¹⁷	Multidisciplinary research team: Physicians, Nursing, Pharmacy students	“Medication discrepancy is any difference between the medication use history and the admission medication orders. Examples include but are not limited to omission or addition of a medication, substitution of an agent within the same pharmacologic class, and change in dose, frequency, or route of administration”

sometimes admittedly modify their medication regimen, making any existing medication lists inaccurate.

Kemp et al defined medication discrepancy in their study of hospice patients as a disagreement or inconsistency between admission medication histories compiled by nursing staff as compared to medication histories completed by pharmacy staff 3 to 5 days later. Their definition was expanded to include medication discrepancies as “errors of omission (medications not included on the admission medication list), errors of commission (medications listed on the admission medication list but which were not being used by the patient), incomplete or inaccurate medication information (eg, wrong dose, route, or frequency of use or indication of use), and inconsistent allergy information (absent or incorrect medication or food allergies and their descriptions).”^{15(p3)} The results of this study were alarming. All patients ($N = 58$) had at least 1 medication discrepancy, with an average of 8.7 discrepancies per patient, increasing the risk for potential medication-related adverse events.¹⁵

Gleason et al and Cornish et al provided similar definitions of medication discrepancies in their studies of the reconciliation of discrepancies in medication histories and admission orders of newly hospitalized patients. A discrepancy was defined as any inconsistency or difference in the medication regimen noted during the manual comparison between admission orders and the history obtained by the physician, the admission profile, collaborative collection of data by the nurse and patient/advocate, or a pharmacy-generated list after patient/advocate interview.^{16,17} Discrepancies were identified in more than half of the 204 direct admission patients interviewed in the Gleason study and in 53.6% of the 151 patients interviewed in the Cornish study. Both studies found that the most common type of discrepancy was the omission of a medication that the patient was taking prior to admission.^{16,17}

A recurring theme in all of the discussions about medication discrepancies in the litera-

ture is that any type of medication discrepancy provides the potential for medication errors and/or ADEs, whether in the process of prescribing medications or the patient’s ability to follow the regimen. The literature identifies various types of medication discrepancies and several articles noted that the most common type is omission of medications.^{15,16,17,21,22,23} Other types of discrepancies discovered were differences in dose, frequency, or route of medications taken, duplicate medication orders, or commission of medication.^{15,16,17,21,22,24}

Surrogate terms

Several articles used surrogate terms or related concepts to describe medication discrepancy. Error is a word that was used interchangeably with the concept in parts of the literature.^{24,25} An error in a prescription medication history was defined as a discrepancy in one article²⁴ while there was implication that medication discrepancies are errors or active failures in another.²⁵ The phrase “error of omission”^{15(p3)} was seen in one article when descriptions of types of discrepancies were given. However, a discrepancy is not always considered an error. A clinician may intentionally make a therapeutic adjustment without documenting the change, resulting in a discrepancy between the medication list in the medical record and the medications the patient is actually taking.²⁴ The reason for this intentional change in the medication list must be communicated to other healthcare providers to avoid concerns about unintended changes. In addition, Coleman et al recommend using the term “discrepancy” instead of error to imply a lack of agreement or incompatibility between different medication regimens.¹⁸ Inconsistency, differences, incongruence, discordance, and nonadherence are other words used in the literature to describe discrepancy in medication management.^{15,22,26,27,28} After careful consideration of the literature analyzed, the following definition of “medication discrepancy” is proposed for this concept analysis:

differences or variances in medication(s) the patient is actually taking compared to the list of medication that his/her healthcare provider(s) believe the patient is taking.

Defining attributes

According to Walker and Avant, defining attributes of a concept are characteristics surrounding the concept that appear repeatedly in the literature. The most common attributes identified for medication discrepancy were (1) patient-specific characteristics; (2) poor communication, and (3) nonadherence of the medication regimen.

Of the patients who were affected by medication discrepancies in the literature, specific characteristics were frequently observed. The most common were patients of older age (over age 65) and taking a high number of recorded medications.¹⁴ Another factor is the number of prescribing providers participating in the care of a patient; the larger the number of prescribing providers, the greater the chance of medication discrepancies.¹⁴ Other researchers noted that these patients had more chronic illness, chronic cognitive impairment, variable health literacy, and increased frequency of handoffs between practitioners.¹⁸

Ineffective communication among health-care providers is a contributing factor to many preventable medication discrepancies.^{2,22} Transitions in patient care, especially from hospital to home, are vulnerable times for the occurrence of medication discrepancies and errors.^{17,18,19,22,25,28,29,30,31} Primary care providers rate medication information as highly important in handoff communication for providing safe follow-up care. Studies show that communication between hospital-based and primary care providers is suboptimal at the time of hospital discharge.^{14,25,27,32} Timely transmission of important medication changes and other pertinent discharge information to the outpatient providers are imperative to safe medication management and continuity of care.^{14,25,27,33} In addition, patient and family education is essential with

confirmation that understanding occurred. For example, some facilities utilize therapeutic substitutions when a nonformulary medication is ordered. A therapeutic substitution medication has at least one active compound that is substituted for another within the same therapeutic class of drug. This different active compound is considered therapeutically equivalent with the same efficacy and safety profiles.³² However, this practice may provide additional risks for discrepancies if communication about the substitution is not clear to clinicians and patients. Caution must be taken at discharge to ensure that the facility-substituted medication is replaced with the patient's original medication or, if it will not be replaced, that adequate patient/family/provider education is delivered to prevent duplication.

Nonadherence was not always an attribute in every circumstance of medication discrepancy; however, it was a frequent occurrence in situations described in the literature. Patients report barriers to adherence of medication regimens such as difficulty filling prescriptions, costs, adverse drug effects, uncertainty about the prescribing provider's instructions, and inconvenience or complexity of regimens.^{14,18,22} Nonadherence was discussed in more detail by Coleman et al and described as a type of medication discrepancy. The difference between intentional and unintentional nonadherence was explained. Intentional nonadherence occurs when a patient understands the planned regimen of the prescribed medications, but chooses not to follow the plan and does not take the medications as prescribed. Unintentional nonadherence occurs when a patient does not understand or is unaware of the prescribed regimen and therefore adherence was not by choice.^{18,19} Both types of discrepancies warrant investigation and intervention to prevent possible medication errors. Issues related to patient adherence to medication regimens may be precursors to discrepancies between medications that are prescribed and those that patients actually take at home, leading to potential adverse events and/or

ineffective medication use.²⁷ It is important for healthcare providers to realize possible patient barriers to adherence and discuss with patient/family possible solutions to their individual circumstances. Modification to the medication regimen may be warranted if resolution of barriers cannot be achieved, thereby building consensus among the patient/family and providers that the regimen will be followed, resulting in avoidance of medication discrepancies and ensuing consequences.

MODEL CASE

Emma Jones, an 85-year-old widower, presents to the hospital emergency department accompanied by her daughter. She lives alone and has a history of heart failure and osteoporosis. She is short of breath and lethargic and appears anxious. The emergency department nurse questions Mrs Jones and her daughter about the patient's home medication history. In their eagerness to get to the hospital, both patient and daughter forgot to bring medication bottles and together begin to list routine medications that Mrs Jones takes at home. She takes several heart medications and a "water pill". Neither of them can recall the specific name of the "water pill" nor the dose. The emergency nurse enters the nonspecific term "water pill" into the home medication list and asks the daughter to bring the unknown medication bottle or the name and dose of the medication to the hospital as soon as possible.

Mrs Jones is diagnosed with pneumonia and is admitted to the acute care unit for treatment. The hospitalist assumes her care and reviews her home medication list before ordering admission medications. All home medications were ordered (except the "water pill") including her blood pressure medication, a beta blocker, calcium, and vitamins. In addition, an antibiotic and a diuretic, furosemide (40 mg), were prescribed. Mrs. Jones improved quickly and is ready for discharge on day 3. In addition to her routine home medications, the prescribed discharge med-

ications included a 10-day supply of oral antibiotics and continuation of furosemide (40 mg) daily. The day of discharge was very hectic and her nurse mentioned that the floor was "short-staffed". Discharge instructions were completed in her daughter's presence and a new list of home medications was given to her daughter. Mrs Jones returned to her home feeling confident that she could care for herself.

Mrs Jones followed the prescribed medication regimen outlined by her discharge nurse. She resumed taking the diuretic medication ("water pill"), Diuril, which she was taking before hospitalization, assuming that was the expectation. She has taken Diuril for several years without problems. She did not understand that she was now taking 2 diuretics: furosemide (40 mg) and Diuril. She did wonder why she was urinating so often.

Two days later Mrs Jones was seen in the emergency department with weakness, syncope, and hypotension. This time her daughter remembered to bring all medication bottles. A discrepancy was discovered between the discharge medication list from 2 days prior and the home medication list that was generated in the emergency department from the medication bottles brought from home.

This case describes the identified defining attributes of medication discrepancy: patient characteristics of aging and chronic health conditions, poor communication between patient and provider, and nonadherence (in this case unintentional nonadherence) of the medication regimen.

CONTRARY CASE

Mrs Jones's daughter, Cynthia, learning from her mother's experiences with medication discrepancies, manages her own medication regimen perfectly. She maintains an up-to-date home medication list using an online personal health record application. Whenever she visits her nurse practitioner, they review her electronic medication list together and make necessary changes.

Cynthia recently was treated in an outpatient department of the local hospital. She provided an accurate, up-to-date, electronic list of home medications to the admitting nurse. Upon discharge, the nurse instructed Cynthia to resume her home medications as previously prescribed and, in addition, to take a prescribed pain medication as needed for postprocedural discomfort. Cynthia updated her electronic home medication list before discharge, comparing the new medication information with the new prescription in the presence of the discharge nurse.

This contrary case describes a “gold standard” practice of maintaining an accurate and up-to-date home medication list and following the prescribed regimen. The list is updated at each transition of care in order to avoid medication discrepancies, thereby preventing potential medication errors and ADEs.

Antecedents

Three antecedents that were always found in the literature regarding the concept of medication discrepancy were (1) patients take medications or herbal remedies for some health condition; (2) patients encounter a healthcare provider who conducts a medication history to develop a medication list; and (3) the medication list generated by the healthcare provider does not accurately reflect the medications the patient takes.

The most problematic antecedent of medication discrepancy is an inaccurate or incomplete medication history leading to an imprecise list of medications that the patient actually takes at home. This was noted in the literature as a recurring issue (often preceding prescribing discrepancies) due to lack of information available to the clinician. Incomplete medication histories obtained at the time of hospital admission accounted for more than a quarter of hospital prescribing errors in one study.²⁴ Medication history errors may include omission, commission, incorrect drug name, and incorrect strength, dose, or frequency.²⁴ Several contributing factors may affect the clinician’s ability to obtain

a true and accurate list of patients’ medication histories:

1. Lack of patient/family understanding or knowledge of the home medication regimen and importance of providing this information to clinicians
2. Medication history uncertain (eg, may be due to cognitive impairment)³⁰
3. Complex home medication use history (5 or more medications)³⁰
4. Emergency admissions that find the patient/family less prepared with information about medication history
5. Time constraints of staff who rush through the process of collecting medication information on admission because of inadequate staffing
6. Differences in shift performance, differences in day of week performance (weekend vs weekday)
7. Background of the person recording the medication history (Pharmacists have been found to complete a more thorough interview of patient/family than do nurses or physicians and gather a more accurate list of home medications and allergies.)^{23,25,26,30,31}
8. Absence of prompting patient and/or family about over-the-counter, herbal, and other self-prescribed remedies (These nonprescribed medications may pose additional risks of significant adverse and interaction effects.)^{26,31}
9. Lack of a standardized process for collecting the medication history
10. Lack of an electronic medication reconciliation system³⁴

An understanding of these contributing factors is important for clinicians, because the primary antecedent, an accurate medication history, is often determined by these dynamics. This knowledge will allow clinicians an opportunity to intervene and intercept factors contributing to medication discrepancies.

Maintenance of an accurate and complete patient medication list requires ongoing diligence by the patient and healthcare providers. The importance of this first step

in the process of safe and successful medication management cannot be overstated. Maintaining an accurate and complete patient home medication list is a key step in providing a thorough medication history, which will assist healthcare providers in selecting appropriate therapy for control of chronic conditions, management of acute disease, and prevention of ADEs.^{21,26,29}

Consequences

The primary consequence of medication discrepancies is compromised patient safety in healthcare, leading to increased risk for medication administration errors, ADEs, emergency department visits, and readmission to hospitals. The snowball effect of these unexpected events leads to increased healthcare costs and decreased overall quality of life.

Medication discrepancies occur when inaccurate or incomplete medication histories are obtained leading to possible omission, duplication, wrong dose, wrong frequency, inappropriate drug therapy, ineffective medication use, and potential drug interactions.^{26,29} Many preventable emergency department visits and medication-related hospitalizations, consequences of medication discrepancies, have occurred and were reported in the literature.²⁵

Medication discrepancies that arise because of deficits in communication among healthcare providers are common and ubiquitous. Research shows that inadequate communication during transfer of care is associated with compromised patient safety and adverse clinical outcomes.^{14,33} Clear communication is important, not only among healthcare clinicians but also with the patient and/or family/caregiver, in order to avoid confusion or misunderstanding about a change in the home medication regimen.

Healthcare costs of medication-related discrepancies in the United States each year are enormous. Older adults, the largest consumers of prescription drugs, are particularly vulnerable to drug-related issues and an estimated 3 million of them are admitted to

nursing homes each year because of drug-related problems at an annual cost of more than \$14 billion.³⁵ Hospital admissions attributable to either medication nonadherence or adverse drug reactions in older adults are significant.³⁶ This population of adults (age 65 or above) is more likely to visit emergency departments and to be re-hospitalized with medication-related issues. Preventable adverse drug reactions, emergency department visits, and medication-related hospitalizations have resulted from medication discrepancies.²⁵ Older patients may experience avoidable decline in health as well as significant costs for additional care related to medication discrepancies.²⁵ Unexpected medication-related admissions to healthcare facilities, along with the costs for additional healthcare, place excessive physical, emotional, and financial strain on older patients and their families (Table 2).

IMPLICATIONS FOR PRACTICE, THEORY, RESEARCH, AND POLICY

As healthcare professionals achieve a better understanding of the concept of medication discrepancy in the context of patient safety, advances in research, theory development, clinical practice, and health policy regarding medication management can be achieved. Comprehension of the multifactorial components of medication discrepancy captures the complexity of medication management.

Despite the attention that medication discrepancies have received in the literature, there is no evidence-based best practice recommendation for managing medication discrepancies. Many studies identified interventions that may be beneficial in promoting safe medication management, such as improved communication among healthcare providers,^{14,25,27,33} education of healthcare professionals and patients/families about the importance of maintaining accurate and complete medication lists especially during care transitions, implementation of a medication reconciliation program,^{21,29,31}

Table 2. Components of Medication Discrepancies

<p>Antecedents of Medication Discrepancy</p> <ul style="list-style-type: none"> • Patient takes medication and/or herbal remedies for health condition • Patient encounters healthcare provider who obtains medication history and compiles a list of home medications • The medication list generated by healthcare provider does not accurately reflect the medications that the patient actually takes at home. <p>Defining Attributes of Medication Discrepancy</p> <ul style="list-style-type: none"> • Patient-specific characteristics such as older age (over age 65), taking a high number of medications, care given by several prescribing providers, more chronic illness, chronic cognitive impairment, variable health literacy, and increased frequency of handoff between practitioners. • Poor communication among healthcare providers, patients, and families especially during transitions of care • Nonadherence of the medication regimen <p>Consequences of Medication Discrepancy</p> <ul style="list-style-type: none"> • Medication errors—omission, duplication, wrong dose, wrong frequency • Inappropriate drug therapy • Possible ADEs and/or drug interactions • Higher care utilization (eg, medication-related readmission to hospital/emergency department visits) • Adverse clinical outcomes • Increased healthcare costs
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use of information technology to manage ongoing medication history,^{32,33} development of systematic, standardized processes for obtaining medication histories,^{24,37} and implementation of a follow-up program to support patients/families after discharge from hospitals.²⁵ The research demonstrates that these interventions promote medication safety and population health by preventing medication discrepancies.^{16,18,25,30,33}

Special attention must be given to compiling a complete and accurate list of home medications including over-the-counter and nonprescription remedies. Studies have shown that pharmacists, using their medication knowledge, experience, and patient-counseling skills during the medication history interview, obtain the most complete and accurate medication-related information. Active involvement of clinical pharmacists in the hospital and outpatient settings has led to increased patient safety, improved outcomes, and cost savings.^{16,17,18,23,24,26,28,31} Realistically, however, increased involvement by pharmacists in obtaining the medication histories of most patients in these settings is unlikely due to limited availability and cost of pharmacy consult. Therefore, development of educational programs for nurses, including enhanced medication history taking skills, is encouraged. Nurses will then be better prepared to obtain accurate and complete lists of home medications, thus preventing medication discrepancies.

Patient and family/caregiver education about the importance of maintaining an updated medication list and reconciling the list during every healthcare encounter is fundamental in preventing medication discrepancies.²¹ Improved medication use in the transition period after hospital discharge can be supported by effective communication about new medications using lay terminology, highlighting key information and side effects, and ensuring comprehension of teaching.³⁸ Confirming patients' understanding of the purpose and use of any newly prescribed medication promotes adherence to medication regimens and prevents discrepancies and errors.

More research is needed in all areas of medication safety including medication discrepancy and reconciliation. Research using patient-centered approaches to discover methods to improve patients' abilities to develop, use, and maintain accurate medication lists is critical. Intervention studies must use a variety of approaches with large sample sizes and interdisciplinary methods. The

Medication Discrepancy Tool (Coleman et al) may be an effective tool in research and practice to identify types of medication discrepancies. Expanding information technology has been cited by Healthy People 2010, IOM, Agency for Healthcare Research and Quality, and others as an important focus for improving communication and medication safety.^{2,39,40} Studies directed toward improving information technology and evaluating electronic medication programs are needed to ensure that these systems work to their fullest potential. Software companies can benefit from the direction of healthcare professionals and patients to develop new advanced systems that promote quality and safety in medication management.

Healthcare policy makers and quality improvement organizations must consider the complexity of medication management before mandating requirements. The TJC recently announced that its Accreditation Committee acknowledged that many organizations are struggling to meet requirements of the National Patient Safety Goal for medication reconciliation. The committee agreed to “evaluate and refine the expectations for accredited organizations.”^{41(p1)} The process of medication reconciliation will become much more manageable when successful interventions or processes to prevent medication discrepancies are developed. A broader approach to reform in healthcare policy would include the coordination of improved models for patient/family education and smoother care transitions to prepare patients/families for self-management of medication, supporting a healthier population and community.^{42–44} Such approaches have been shown to improve patient outcomes and reduce healthcare costs.^{45,46}

CONCLUSION

Medication discrepancy is a concept that is becoming more evident in the literature and has been recognized as a type of barrier

to safe medication management and optimal patient outcomes. Unintended medication variances during care transitions, especially on admission to and discharge from hospitals, are common occurrences. Better tools and methods to prevent and identify medication discrepancies are of utmost importance in providing safe and effective medication management.

A critical factor in preventing and identifying discrepancies is developing and maintaining an accurate list of medications that the patient is taking at home with access to this list readily available to both patients and healthcare professionals.^{24,29} Developing standardized, evidence-based strategies for obtaining accurate medication histories and communicating effectively during care transitions can simplify medication management, increasing safety and reducing costs.^{28,37} Community-wide efforts to educate the population about the importance of maintaining an up-to-date complete home medication list is an important step in promoting patient involvement in minimizing the occurrence of medication-related events. Enhancing clinical skills through educational offerings may enable nurses and other clinicians to improve medication history taking with prompt identification and interception of medication discrepancies.

Medication discrepancy and medication safety will continue to be important considerations in meeting population health goals as well as regulatory quality improvement goals. Knowledge about the concept of medication discrepancy in the context of patient safety is progressing, considering the lack of consistent definitions in the nursing and medical literature. This concept analysis provides additional information and insights into the complexity of medication safety and improves understanding of medication discrepancies. Progress in conceptual knowledge creates opportunities to advance theory, research, and practice to eliminate or prevent the negative effects of medication discrepancies, thereby enhancing patient safety and health outcomes.

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