EXPLORING THE CONCEPT OF MEDICATION DISCREPANCY WITHIN THE CONTEXT OF PATIENT SAFETY TO IMPROVE POPULATION HEALTH

By

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EXPLORING THE CONCEPT OF MEDICATION DISCREPANCY WITHIN THE CONTEXT OF PATIENT SAFETY TO IMPROVE POPULATION HEALTH

Abstract

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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 paper explores medication discrepancy as it relates to patient safety and population health in the management of medications. Literature review reveals two 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.
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Exploring the Concept of Medication Discrepancy within the Context of Patient Safety to Improve Population Health

Keywords: medication discrepancy, medication safety, medication reconciliation, patient safety, patient adherence, medication error.

Introduction

In 1999 the Institute of Medicine (IOM) highlighted alarming hospital error rates leading to patient harm. The most common are medication errors, many resulting in increased morbidity and mortality.1 In 2001, a second IOM report proclaimed that many medication errors and resultant adverse drug events (ADE) 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 health care expenditure.5 Medication errors for non-hospitalized patients are more difficult to record, however, over 2.5 billion prescriptions are dispensed yearly.1 Research indicates that rates of adverse drug events in outpatients may be up to four 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 of Accreditation of Hospital Organizations (JCAHO), and the Institute for Healthcare Improvement (IHI) developed and introduced initiatives to improve 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. IHI recommended that organizations make medication reconciliation a part of their 100,000 (now 5 million) lives campaign. Both quality improvement agencies believe that these measures will improve patient safety by decreasing medication errors.

**Purpose**

The purpose of this manuscript is to explore 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. 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.

**Method**

The concept of medication discrepancy was analyzed using the framework developed by Walker and Avant (2004). Defining attributes, antecedents, consequences, and implications for practice, theory, research, and health policy are identified. Recommendations from the literature about interventions to manage medication discrepancies are discussed.

Literature 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, 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 the Institute for Healthcare Improvement,
The Joint Commission, 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.

A search for previous medication discrepancy concept analyses provided no results. Journal articles and research studies that describe medication discrepancies or medication reconciliation in various settings such as hospitals, outpatient clinics, and physician practices were identified. 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. 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 discrepancies and its impact on healthcare and population health in general.

Limitations of the research studies include small sample sizes and studies that did not incorporate the entire continuum of care but rather individual clinical organizations. A strength of the research studies is that they were conducted in a variety of locations including hospitals and outpatient settings.
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”. 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”. 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.

The literature review uncovered several definitions of medication discrepancies with two main themes, prescribing issues and patient adherence to the prescribed medication regime. (Table 1) Smith, et al. use the terms, “patient-level” and “system-level” to describe the two 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 (e.g., 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, inadequate clinical staffing, or inconsistent processes.
Bedell, et al. defined medication discrepancies 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”). 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.16

Kemp, et al. defined medication discrepancies 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 (e.g., 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).” 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.17

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. Discrepancies as defined 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.

A recurring theme in all of the discussions about medication discrepancies in the literature is that any type of medication discrepancy provides the potential for medication errors and/or adverse drug events (ADE), 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. Other types of discrepancies discovered were differences in dose, frequency, or route of medications taken, duplicate medication orders, or commission of medication.

**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. An error in a prescription medication history was defined as a discrepancy in one article while there was implication that medication discrepancies are errors or active failures in another. The phrase “error of omission” was seen in one article when descriptions of types of discrepancies were given. However, a discrepancy is not always considered an error.
clinician may intentionally make a therapeutic adjustment without documenting the change. 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. Inconsistency, differences, incongruence, discordance, and nonadherence are other words used in the literature to describe discrepancy in medication management.

**Defining attributes**

Several defining characteristics of the concept of medication discrepancy recur in the literature. Differences in the list of medications that the patient is expected to take and the list that is actually taken is common. Patient adherence may be affected by the patient’s need for more information and understanding about the medication, concerns about adverse effects, the inconvenience in the schedule for taking medications, filling prescriptions, and cost.

Nonadherence by the patient has been described as a type of medication discrepancy. Coleman, et al. explained the difference between intentional nonadherence and nonintentional nonadherence. 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. Both types of discrepancies warrant investigation and intervention to prevent possible medication errors.

Incongruence is often found between the list of medications that the patient takes at home and the list that is prescribed in the hospital or in the prescribing provider’s office. This may be due to inaccuracies that are commonly found in the patient’s medication list obtained when interviewing patients in both acute and non-acute care settings. The most common type of
discrepancy is omission of a regularly used medication. An inaccurate home medication list generated at any point of care leads to more discrepancies in subsequent care encounters and steps of medication management.

**Antecedents**

The underlying antecedent of discrepancy in medication management is an inaccurate or incomplete medication history. This was noted in the literature as a recurring problem (often preceding prescribing discrepancies) due to lack of information available to the clinician about medications the patient normally takes at home. Incomplete medication histories obtained at the time of hospital admission accounted for more than a quarter of hospital prescribing errors in one study. Medication history errors may include omission, commission, incorrect drug name, incorrect strength, dose or frequency. 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 (e.g., may be due to cognitive impairment)
3. Complex home medication use history (5 or more medications)
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 due to 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 nurses or physicians and gather a more accurate list of home medications and allergies.)

22,24,26,30,31

8. Absence of prompting patient and/or family about over-the-counter, herbal, and other self prescribed remedies (These non-prescribed 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 system 32

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 overestimated. 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 adverse drug events.20,26,29

Contributing risk factors for medication discrepancy were noted in the literature. The most common risk factors are patients of older age (over age 65) and taking a high number of recorded medications.15 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.15 Other risk factors identified are chronic illness, chronic cognitive impairment, variable health literacy, and increased frequency of handoffs between practitioners.25
Discrepancies are common between the prescribed medication regimen and the regimen that is actually followed by the patient. 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. Issues related to patient adherence to medication regimens are antecedents 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

Ineffective communication among healthcare providers is a contributing factor to many preventable medication discrepancies.2,21 Transitions in patient care, especially from hospital to home, are vulnerable times for the occurrence of medication discrepancies and errors.14,19,21,25,24,28-31 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. 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.15,24,27,33 In addition, patient and family education is essential with confirmation that understanding occurred.

Some facilities utilize therapeutic substitutions when a non-formulary 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.34 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.

**Consequences**

Medication discrepancy compromises safety in patient care and leads to unexpected health events, decreased quality of life, and increased healthcare costs. Medication errors 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. Medication discrepancies that occur due to deficits in communication among health care providers are common and ubiquitous. Research shows that inadequate communication during transfer of care is associated with compromised patient safety and adverse clinical outcomes. Clear communication is important not only among healthcare clinicians but also with the patient and/or family/caregiver.

Healthcare costs of medication-related problems 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 due to drug-related problems at an annual cost of more than $14 billion. Hospital admissions attributable to either medication nonadherence or adverse drug reactions in older adults are significant. This population of adults (age 65 or greater) is more likely to visit emergency rooms and to be rehospitalized with issues related to medications. Preventable adverse drug reactions, emergency room visits, and medication-related hospitalizations have
resulted from medication discrepancies. Older patients may experience avoidable decline in health as well as significant costs for additional care related to medication discrepancies.

**Model case**

Emma Jones, an 85-year-old widower presents to the hospital emergency room accompanied by her daughter. She lives alone and has a history of heart failure. She is short of breath, lethargic, and appears anxious. The emergency room 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 non-specific 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 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 three. In addition to her routine home medications, the prescribed discharge medications 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 with her daughter present 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 including resuming the diuretic medication, Diuril®, which she was taking before hospitalization, assuming that was the expectation based on the instructions provided. She has taken Diuril® for several years without problems. She did not understand that she was now taking two 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.

**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
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,20,29,31 use of information technology to manage ongoing medication history,32,33 development of systematic, standardized processes for obtaining medication histories 23,37 and implementation of a follow-up program to support patients/families after discharge from hospitals.24 The research demonstrates that these interventions promote medication safety and population health by preventing medication discrepancies.18,24,25,30,33

Special attention must be given to compiling a complete and accurate list of home medications including over-the-counter and non-prescription 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.18,19,22,24-26,28,31

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.20 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. Expanded use of 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 the improved use of information technology and management of 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 Joint Commission (TJC) recently announced that their 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 The process of medication reconciliation will become much more manageable when successful interventions or processes to prevent medication discrepancies are developed.

**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 health care professionals.23,29

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.

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. Advances in conceptual knowledge create opportunities to advance theory, research, and practice to eliminate or prevent the negative effects of medication discrepancies thereby enhancing patient safety and health outcomes.
References


16. Manley HJ, Drayer DK, McClaran M, Bender W, Muther RS. Drug Record
Discrepancies in an Outpatient Electronic Medical Record: Frequency, Type, and
Potential Impact on Patient Care at a Hemodialysis Center. *Pharmacotherapy.*

17. Kemp LO, Narula P, McPherson ML, Zuckerman I, Medication reconciliation in

of discrepancies in medication histories and admission orders of newly hospitalized


20. Varkey P, Cunningham J, Besping S. Improving Medication Reconciliation in the
33(5):286-29

21. Glintborg B, Andersen SE, Dalhoff K. Insufficient communication about medication
use at the interface between hospital and primary care. *Quality and Safety in Health Care.*


23. Tam VC, Knowles SR, Cornish PL, Fine N, Marchesano R, Etchells EE. Frequency, type
and clinical importance of medication history errors at admission to hospital: a systematic
review. *CMAJ.* 2005;173(5).


37. Rozich JD, Howard RJ, Justeson JM, Macken PD, Lindsay JE, Resar RK. Standardization as a Mechanism to Improve Safety in Health Care. *Joint Commission Journal on Quality and Safety*. 2004;30(1)


41. The Joint Commission. Medication reconciliation National Patient Safety Goal to be reviewed, refined. 2009


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Table 1

Definitions of Medication Discrepancies in Literature

<table>
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<th>Author/year of publication</th>
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<td>Bedell, et al./2000</td>
<td>“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)”</td>
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<td>Kemp, et al./2009</td>
<td>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 (e.g., 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)”</td>
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<td>Gleason, et al./2004</td>
<td>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.</td>
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<td>Cornish, et al./2005</td>
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<td>Smith, et al./2004</td>
<td>Patient-level discrepancies encompass reasons the patient is not able to follow the prescribed regime. System-level discrepancies may evolve from communication issues such as incomplete, conflicting, or inaccurate medication lists or prescriber failure to consider patient cognitive or physical limitations (i.e. fine motor skills) that impede a patient’s ability to adhere to a medication regime. Other examples of system level discrepancies are incomplete, illegible, or inaccurate discharge instructions, inadequate clinical staffing, or inconsistent processes.</td>
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<tr>
<td>Coleman, et al./2005</td>
<td>“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”</td>
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Table 2
Schematic Representation of Medication Discrepancies

Antecedents of Medication Discrepancy

- Patient/family lack of understanding of importance of maintaining complete and accurate home medication list
- Inconsistent non-standardized process for obtaining medication history
- Educational preparation of person obtaining medication history
- Ineffective communication among healthcare providers at transition of care
- Inadequate patient/family education/teaching about changes in medication regimen

Defining Attributes of Medication Discrepancy

- Inaccurate/incomplete list of home medications
- Omission of medication from medication history and/or orders
- Non-adherence to medication regimen due to patient-level factors that lead to discrepancies
- Non-adherence to medication regimen due to system-level factors that lead to discrepancies

Consequences of Medication Discrepancy

- Medication errors – omission, duplication, wrong dose, wrong frequency
- Inappropriate drug therapy
- Possible adverse drug events (ADE) and/or drug interactions
- Higher care utilization (e.g., medication related readmission to hospital/emergency department visits)
- Adverse clinical outcomes
- Increased healthcare costs