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Proposed Model

A four-phase approach for systematically collecting data and measuring medication discrepancies when patients transition between health care settings

Korey A. Kennelty, Pharm.D., Ph.D.[a,b,c,*], Matthew J. Witry, Pharm.D., Ph.D.[d], Michael Gehring, B.S.[a,c], Melissa Dattalo, M.D., M.P.H.[a,c], Nicole Rogus-Pulia, Ph.D.[a,c]

[a] *William S. Middleton Memorial Veterans Hospital, Geriatric Research Education and Clinical Center (GRECC), 2500 Overlook Terrace, 11G, Madison, WI 53705, USA*

[b] *University of Wisconsin-Madison, School of Pharmacy, Social and Administrative Sciences Division, Madison, WI 53705, USA*

[c] *University of Wisconsin-Madison, School of Medicine and Public Health, Department of Medicine, Madison, WI 53075, USA*

[d] *The University of Iowa, College of Pharmacy, Department of Pharmacy Practice and Science, Iowa City, IA 52242, USA*

Abstract

Background: No methodological standards are available for researchers and clinicians to examine medication discrepancies between health care settings. Systematic methods of examining medication discrepancies will allow researchers and clinicians to better understand factors driving medication discrepancies, to better measure effects of medication reconciliation interventions, and to compare findings across studies.

Objective: This article proposes a four-phase approach for systematically collecting medication data and measuring medication discrepancies between a hospital and community pharmacies. Methodologic considerations related to studying medication discrepancies in health services research are also discussed.

Methods: A multi-disciplinary study team developed a four-phase systematic approach to improve quality of data and study rigor: 1) operationalization of a medication discrepancy, 2) acquiring medication data, 3) abstraction of medication data and creation of dataset, and 4) measuring and reporting medication discrepancies.

Results: Using this phase-based approach, the study team successfully identified and reported medication discrepancies between a hospital and community pharmacies at the patient, medication, and community pharmacy units of analyses.

Conclusions: Systematically measuring medication discrepancies that occur in the care transitions process is a critical step as researchers, clinicians, and other stakeholders work to improve health care quality and patient outcomes. This article detailed how a phase-based approach can be used in research to examine medication discrepancies as well as address the complexity of collecting medication data and analyzing

* Corresponding author. 2500 Overlook Terrace, 11-G, Madison, WI 53705, USA. Tel.: +1 608 256 1901x12585; fax: +1 608 263 9664.

E-mail address: kennelty@wisc.edu (K.A. Kennelty).

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medication discrepancies. Such methods should be considered when developing, conducting, and reporting research on medication discrepancies.
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Introduction

The Institute of Medicine (IOM) report, *To Err is Human*, highlighted the prevalence and devastation caused by medication errors in the US health care system.[1] The 2000 Report declared that the rates of medication errors and subsequent adverse drug events (ADEs) are unacceptable and immediate action to decrease these rates should be a national priority. In a later Report, the IOM committee estimated that nearly 1.5 million ADEs result from preventable medication errors annually, contributing to over $3.5 billion in avoidable health care costs.[1,2]

The majority of medication errors are thought to be preventable,[2] and multiple interventions may be required to significantly decrease medication errors, particularly when patients transition between health care settings. As such, The Joint Commission and the Institute for Healthcare Improvement identified medication reconciliation as a key intervention for decreasing medication errors and improving patient safety.[3,4] Medication reconciliation is the formal, comprehensive process of bringing patient medication records into agreement between the patient and their health care providers.[3] This complex process has been recommended at every patient transition point to prevent medication discrepancies and other medication-related issues.[5] Medication discrepancies are the mismatch, or inconsistency, of information between a patient's medications lists across health care settings.[6–9] Fragmented, inconsistent medication information between settings can jeopardize patient safety by placing the patient at risk of taking incorrect medications and complicating the provider's role of assessing and treating patients based on imperfect information.

Despite being the focal point of seminal IOM Reports and many research endeavors, no methodological standards are available for researchers and clinicians to examine medication discrepancies between health care settings. By understanding where medications discrepancies are occurring, interventions to strengthen medication reconciliation processes may be implemented. Thus, there is a critical need for a systematic method of examining medication discrepancies in health services research. This particularly is relevant given new mandates under the Affordable Care Act of 2010[10] which outlines payment reforms that will financially penalize hospitals with higher than expected readmission rates or other adverse events. This article addresses this need by proposing a four-phase approach for systematically collecting medication data and measuring medication discrepancies as well as considerations to be taken when examining medication discrepancies in health services research.

Background of the four-phase approach development

The four-phase approach was developed as part of an Agency for Healthcare Research and Quality (AHRQ)-funded study to examine the consistency of medication lists between the hospital and community pharmacies when older adult patients (65 years and older) transition from the hospital and into community care. Community pharmacy was broadly defined as licensed pharmaceutical dispensaries primarily operating on an outpatient basis. Briefly, medication records for 100 patients from a large academic Midwest hospital and over 40 community pharmacies were abstracted and compared retrospectively. Patients were identified for this study by the hospital's existing transitional care team. The transitional care team provides care to older adult patients who were admitted to the hospital for conditions such as pneumonia, congestive heart failure, or myocardial infarction and are discharged back into the community. As part of the transitional care program, patients and caregivers receive additional support during their early post-hospital period from a transitional care nurse via phone calls and/or home visits. Approval by the institution's Health Sciences Institutional Review Board (IRB) was obtained prior to implementing this study.

Upon study initiation in 2012, no standard data collection or measuring procedures were