Background

Transitions from one care setting to another are known to be critical junctures that put patients at very high risk of experiencing a medication error. Approximately 22% of potentially preventable medication errors occur during admission, 66% during transition to/from the ICU and 12% at discharge. Almost half of these errors are believed to result from inadequate medication reconciliation during handoffs. About 20% are believed to result in patient harm. Many of these errors would be prevented if appropriate and accurate medication reconciliation processes were in place. The Joint Commission’s National Patient Safety Goal 03.06.01 addresses the “maintenance and communication of accurate patient medication information” via medication reconciliation at each transition in care.

The majority of focused medication reconciliation efforts reported in the literature have utilized pharmacists as the driving discipline. Recently, the American College of Clinical Pharmacy issued a white paper that “defines the roles and responsibilities of pharmacists in ensuring optimal outcomes from drug therapy during care transitions.” Pharmacists are uniquely qualified to perform medication reconciliation because of their formal training in obtaining medication histories and extensive medication expertise. Studies have shown that pharmacists are able to obtain the best possible medication histories (BPMH), which are more accurate and comprehensive than those obtained by other healthcare professionals. Also, pharmacists often have training in both the inpatient and outpatient settings, which provides knowledge of operational logistics for both hospital and community pharmacies, which may facilitate optimal gathering of medication histories.

The post-discharge period is particularly vulnerable to medication misadventures. A recent study by Haynes et al. found 50.8% of patients who were discharged had one or more clinically important medication error during the 30 days after hospital discharge. Many of these lead to readmission. It is predicted that many factors may be contributing to post-discharge medication errors, including, but not limited to, new discharge medications leading to patient confusion, non-adherence, potential adverse drug events (ADEs), physician and system errors and patient safety issues. Additionally, outpatient pharmacy discrepancies.
and patient health literacy have been implicated as significant contributors to post-discharge medication errors.\textsuperscript{10} In 2004 the Institute of Medicine estimated that 90 million adults in the United States may have trouble understanding and acting on health information.\textsuperscript{11}

According to a consensus statement published by Greenwald et al.\textsuperscript{12}, a “comprehensive reconciliation system is needed across the continuum of care.” The current literature evaluates medication errors from two distinct perspectives: the inpatient/hospital setting and the post discharge/ambulatory care setting. To the best of our knowledge, no studies have analyzed medication discrepancies across the continuum of care defined as the movement of a patient from admission through post-discharge.

**Purpose**

This study is a two-part series analyzing (1) an ongoing inpatient pharmacy-driven care transitions service and (2) the implementation of a pilot extension of this service in the outpatient setting and its impact on medication related problems (MRP) throughout the entire continuum of care.

**Hypothesis**

A pharmacy-driven care transitions service can identify and resolve MRPs via medication reconciliation throughout the continuum of care which includes admission medication reconciliation, depart medication list review, hospital-to-community pharmacist handoff, follow-up phone call after discharge and post-discharge medication interview at a follow up appointment.

\textsuperscript{10} Terry C. Davis, Michael S. Wolf, Pat F. Bass, III, Jason A. Thompson, Hugh H. Tilson, Marolee Neuberger, Ruth M. Parker; Literacy and Misunderstanding Prescription Drug Labels. Annals of Internal Medicine. 2006 Dec;145(12):887-894

**Methods**

A single-center descriptive study is being conducted within the University of New Mexico Hospital (UNMH). This study is a collaboration between the pharmacy department and Family and Community Medicine Department. It has been submitted and approved by the Institutional Review Board. Data is being collected over four phases. Phase 1 provides admission medication reconciliation via patient/caregiver interview, phone reconciliation with the patient’s outpatient pharmacy and review of the existing medication list in electronic medical record. Phase 2 provides hospital-to-community-pharmacist handoff consisting of a review of the patient’s discharge medication list for accuracy and a phone call to the patient’s outpatient pharmacy to discontinue medications no longer needed. Phase 3 provides a follow-up phone call after discharge to assess adherence and tolerance and to remind patients to bring all medications to their follow-up appointment. Phase 4 provides post-discharge medication reconciliation at the follow-up clinic visit, completing the continuum of care. All patients who receive any phase 1-3 interventions of the care transitions service (CTS) will be eligible for the final outpatient phase 4 of the study. Patients will be identified at discharge using an electronic medical records scheduling system. During the patients’ follow-up appointment with their provider, a pharmacist will perform medication reconciliation as well as a health literacy test using the Newest Vital Sign (NVS) toolkit. Additional MRP, specific to the outpatient setting, will be identified. These may include medications that have been continued despite discontinuation orders at discharge, patient self-discontinuation of medications despite continuation orders at discharge and adherence divergences.

Patients \( \geq 18 \) years of age who speak English or Spanish and are able to provide verbal consent will be included. Patients without an extensive medication history or with a planned readmission will be excluded. For Phase 4, patients being discharged to a location other than home will be excluded.
Data being collected include patient demographics, past medical history, type of MRP, medications correlating to MRP and pharmacy interventions and recommendations. Primary outcomes include the type and prevalence of MRP present upon admission to UNMH and at follow up appointment at a UNMH Family Practice clinic. Secondary outcomes include: most common medication classes associated with MRP; patient-specific predictors of MRP; association between MRP and health literacy; and comparisons of patients who received some versus all phases of the CTS pharmacy program. Data analysis will be conducted using Statistical Package for Social Sciences. Descriptive analyses, t-test for comparison of means and linear regression will be employed.

Results for this research project are anticipated in June 2013.

Next steps

To date, we have been able to provide the CTS without procurement of additional staffing resources. However, it has become obvious that without additional resources, widespread implementation will not be possible. We have applied for a grant in hopes of providing financial assistance in furthering our efforts. If granted, we intend to use the funding for a 6-month, half-time pharmacy FTE to serve as a dedicated project coordinator for our CTS. This will facilitate expanding the scope of the CTS to other medical services and allow for evaluation of our impact to present to hospital administration to petition for a permanent, full-time CTS FTE. A project coordinator will also allow expansion of the CTS service hours and allow more community pharmacy interaction. It should also allow us to expand services from four to five days per week. The project coordinator will also be used to build an infrastructure that facilitates consistent hospital-wide department medication list reviews and hospital-to-community pharmacy handoffs. The coordinator will also be able to provide ongoing training and education to providers, CTS staff and other healthcare staff regarding Care Transitions. A dedicated project coordinator who can serve as a clinical preceptor will allow expansion of the number and type of Care Transitions rotations for pharmacy students, as well as the number of students on rotation at a given time. This will allow us more clinically trained personnel to use towards optimizing patient care.

Importantly, we see this grant opportunity and research study as a springboard to permanent, revolutionary changes, not just within our institution, but across the profession of pharmacy and healthcare overall. We envision the possible evolution of the CTS project coordinator to a Community Pharmacy Liaison (CLP), with Pharmacist Clinician (PhC) certification, that will function in both the inpatient and outpatient setting to optimize patient medication therapy. CTS staff will not only be performing medication reconciliation within the hospital and at clinic visits, but may also participate in regular meetings with community pharmacy colleagues to further optimize patient care across the continuum. We also envision collaborating with third-party payers, wherein care under this service leads to better outcomes among insured clients, which would lend itself to reimbursement for pharmacy consultant services. Collectively, these efforts will culminate in the level and customization of care that patients need and deserve.

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