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Transitions in Care: Medication Reconciliation in the Community Pharmacy Setting After Discharge

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Abstract
Objective: To assess the feasibility of a workflow process in which pharmacists in an independent community pharmacy group conduct medication reconciliation for patients undergoing transitions in care.
Methods: Three workflow changes were made to improve the medication reconciliation process in a group of three independent community pharmacies. Analysis of the process included workflow steps performed by pharmacy staff, pharmacist barriers encountered during the medication reconciliation process, number of medication discrepancies identified, and pharmacist comfort level while performing each medication reconciliation service.
Key Findings: Sixty patient medication reconciliation services met the inclusion criteria for the study. Pharmacists were involved in all steps associated with the medication reconciliation workflow, and were the sole performer in four of the steps: verifying discharge medications with the pharmacy medication profile, resolving discrepancies, contacting the prescriber, and providing patient counseling. Pharmacists were least involved in entering medications into the pharmacy management system, performing that workflow step 13% of the time. The most common barriers were the absence of a discharge medication list (24%) and patient not present during consultation (11%). A total of 231 medication discrepancies were identified, with an average of 3.85 medication discrepancies per discharge. Pharmacists' comfort level performing medication reconciliation improved through the 13 weeks of the study.
Conclusions: These findings suggest that medication reconciliation for patients discharged from hospitals and long term care facilities can be successfully performed in an independent community pharmacy setting. Because many medication discrepancies were identified during this transition of care, it is highly valuable for community pharmacists to perform medication reconciliation services.

Introduction

Transitions in care are defined as the movement of patients from one health care practitioner or setting to another as their condition and care needs change.[1] During these transitions, patients are much more susceptible to medication errors and medication related problems due to many factors including medication changes, complex medication regimens, and incomplete handoff of information between the many caregivers and health professionals involved in the patient's care.[2,3] Not only do medication errors increase the possibility of causing patient harm, they also lead to substantial increases in healthcare utilization and costs.[4]

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According to the Joint Commission, a United States health care accrediting organization, medication reconciliation is the process of comparing a patient's medication orders to all of the medications that the patient has been taking. This reconciliation is done to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions. As part of the National Patient Safety Goal 03.06.01, medication reconciliation should be performed across the continuum of care, at every transition in care in which new medications are ordered or existing orders are rewritten.[5,6] There have been many studies evaluating the importance of medication reconciliation being performed in the hospital upon admission and discharge,[2,7-11] but few studies exist that examine community pharmacies' ability to perform medication reconciliation for patients being discharged from hospitals or long term care facilities. The purpose of this study was to assess the feasibility and standardization of a workflow process by which pharmacists in an independent community pharmacy group conduct medication reconciliation for patients undergoing transitions in care. In

order to properly determine feasibility, the authors examined the number of medication reconciliations performed each week, the average time each medication reconciliation took, barriers and complications experienced, medication discrepancies found, and pharmacists' comfort level while performing the medication reconciliation.

Methods
This study was designed as a prospective, exploratory, quality improvement study and was conducted at three community pharmacies in rural Wisconsin. Each pharmacy dispenses between 150 and 350 prescriptions every day. Seven of the 10 pharmacists had PharmD degrees and all had various certifications. The study received exemption from the University's Health Sciences Institutional Review Board. Prior to the study's start date, pharmacy staff generated suggestions for improving and standardizing the current medication reconciliation workflow process used in the pharmacies. Three workflow changes were then standardized:

1. Pharmacist requests that the discharging facility fax the patient's discharge medication list to the pharmacy;
2. Technician presents medication reconciliation forms to the pharmacist before entering and filling the prescriptions through the pharmacy management system, and
3. Pharmacist uses the personal medication record printed from the pharmacy management system to perform medication reconciliation and to review with patient during consultation.

The data collection started on November 1, 2010 and continued through January 31, 2011. Patients were included if they had been discharged from a hospital or long term care facility and were going to another health care setting or home. The patient also had to have previously received medications from the pharmacy. Patients were excluded if they utilized more than one pharmacy for prescription medications and the pharmacist could not verify all previous and current medications being taken. Patients presenting emergency department prescriptions only were excluded.

To capture and document the process utilized each time a medication reconciliation service was performed, a de-identified data collection sheet was created. (Figure 1) The sheet included a table to identify whether a pharmacist or technician performed the particular step in the medication reconciliation workflow. Steps were categorized as patient identification, gathering documents, entering medications into computerized pharmacy management system, verifying

medications with pharmacy patient profile, resolving discrepancies/changes, organizing prescriber calls/faxes and providing patient counseling. The sheet also included an area to record how long the medication reconciliation process took from the point of patient identification to medication counseling completion. The questionnaire required pharmacists to respond to three questions after the medication reconciliation service was completed:

1. What challenges/barriers/complications were encountered?
2. What positive or negative feedback regarding this service was received from the patient/caregiver during counseling and/or follow up?
3. What was your comfort level while performing the med rec? (0=not comfortable at all, 10=extremely comfortable)

After the medication reconciliation documentation form was completed, the data were analyzed using Microsoft Excel® 2003. The challenges, barriers, and complications cited by the pharmacists were analyzed qualitatively for themes by two independent pharmacist researchers. In addition, the discharge medication list and the pharmacy patient profile and fill history were compared to identify and categorize the number of changes made during this transition of care. The discrepancies were categorized into new medication started, medications stopped, dosing changes, and frequency changes.

Results
Patient Characteristics
A total of 75 patients undergoing a transition in care presented prescriptions to the pharmacies during the study period. Fifteen patients were excluded from the study based on the above criteria. The study population was primarily women (62%), with an average age of 69 years (range: 31-98).

Medication Reconciliation Workflow
The number of medication reconciliations performed by the pharmacies ranged from 1 to 10 per week over the 13-week study period. (Figure 2) The average time spent performing each medication reconciliation was 27.5 minutes (range: 5 to 210). When outliers were removed, the average time spent was 23.5 minutes (range: 5 to 76). The pharmacists felt that the three workflow changes improved the efficiency of the process and allowed for decreased interruption in the workflow.

Pharmacists were involved in all steps associated with the workflow, and were the sole performer for four steps:

verifying discharge medications with the pharmacy medication profile, resolving discrepancies, contacting the prescriber, and providing patient counseling. Technicians performed the majority of medication entry into the pharmacy management system. (Figure 3)

Barriers/Complications
Seven themes emerged when the barriers were analyzed: discharge medication list unavailable (25%), patient not present (12%), unclear orders (10%), prescriber unavailable (10%), insurance/billing (8%), time (3%) and multiple prescribers (2%). During one-third of the medication reconciliation services, the pharmacist cited no barriers or challenges with the medication reconciliation process.

Medication discrepancies
Of the 60 study patients, 42 (70%) of them experienced 3 or more medication discrepancies during this transition in care, and 95% had at least 1 medication discrepancy. The mean number of discrepancies was 3.85 per discharge, with a range from 0 to 17.

The most common type of medication discrepancy/change was a new medication being started, which accounted for 70% of the documented changes. Dosing changes (17%) and medications stopped (13%) were the second and third most common discrepancies, with only one medication frequency change identified.

Pharmacists' Comfort Level
The pharmacists' average self-reported comfort level while performing the medication reconciliation was 8.15 on a scale of 0-10. During the first two weeks of the study, the average comfort level was 7.2 and 6.5, respectively. The final four weeks revealed pharmacists' comfort level averaging 9.6, 8.5, 9 and 10, respectively. Comfort level appeared to be related to barriers associated with the particular reconciliation service, such as the unavailability of the physician or patient.

Discussion
The results of our study indicate that medication reconciliation can be successfully performed in independent community pharmacies for patients discharged from hospitals and long term care facilities. While some barriers do exist, including access to patient information and someone other than the patient picking up the prescriptions, the medication reconciliation process utilized by the pharmacists facilitated the identification, verification and resolution of medication discrepancies. The majority of discrepancies that took place during transitions in care were new medications started post discharge. While many facilities have discharge medication counseling provided by nurses or pharmacists, it is critical for

community pharmacists to verify these discrepancies with patients and to provide necessary education to avoid potential medication errors. In this study, the vast majority (95%) of patients served had at least 1 discrepancy, emphasizing the importance of this service.

In our study, the pharmacists were involved in all steps of the medication reconciliation process. They identified the majority of patients undergoing transitions in care because most often, the discharging facility would call in new prescriptions to the pharmacist. One possible workflow change for improved feasibility is to delegate the duty of obtaining a discharge medication list to a technician. The task of organizing the medication lists could be delegated as well. These changes would permit the pharmacist to spend more time performing clinical duties rather than logistical duties.

The self reported comfort level of the pharmacists trended upward throughout the study, indicating that as the pharmacists became accustomed to the workflow changes, they were more comfortable with the medication reconciliation process. One workflow change that made a difference in efficiency was access to the comprehensive discharge medication list promptly post discharge. This commonly cited barrier emphasizes a broader health system issue and the importance of using a continuum of care perspective. If a "best practices" discharge medication list and discharge process was designed for health system pharmacies, it could positively impact the delivery of quality patient care in the community pharmacy setting.

Interestingly, time to perform the medication reconciliation was only cited twice as a barrier by the pharmacists. This is in contrast to other pharmacy services literature, where time is often the first or second most common barrier reported.[12-17] This contrast could be due to pharmacists in this study reporting actual barriers or impediments to work around while completing steps in the process, as opposed to reporting perceived barriers to providing the service. The study pharmacists viewed medication reconciliation as a professional patient care responsibility and made time for it in their workflow regardless of other required tasks.

Future research could identify a standardized discharge list format, implement strategies to improve continuity of care, capture patient perspectives, and assess variations in workflow steps, such as increasing technician utilization and conducting a timely follow-up.

The limited time frame and study population size limits the generalizability of the results to a broader community pharmacy group. All workflow steps were based on

pharmacist and technician estimates; a timed process analyses was not used. Patients were not surveyed for their perceptions about the pharmacy service.

Conclusion

This study verified that medication reconciliation can be successfully performed in a community pharmacy and that patients undergoing transitions in care from hospitals or long term care facilities have many medication discrepancies associated with them, indicating the importance of medication reconciliation in community pharmacies.

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Figure 1. Data Collection Form

Medication Reconciliation

Date:_____   QS1 patient code:_____   How was med rec determined?

Time spent on med rec process from start to finish _____

Workflow aspects completed by pharmacist and/or technician (check please)

	RPh	Tech
Patient identification		
Gathering documents		
Medication entry into computer		
Verifying medications with profile		
Resolving discrepancies		
Prescriber calls/faxes (if occurred)		
Providing patient counseling		
Other _____		
Other _____		

What challenges/barriers/complications were encountered?

What positive or negative feedback regarding this service was received from the patient/caregiver during counseling and/or follow up?

What was your comfort level while performing the med rec? (1=not comfortable at all, 10=extremely comfortable)

0   1   2   3   4   5   6   7   8   9   10
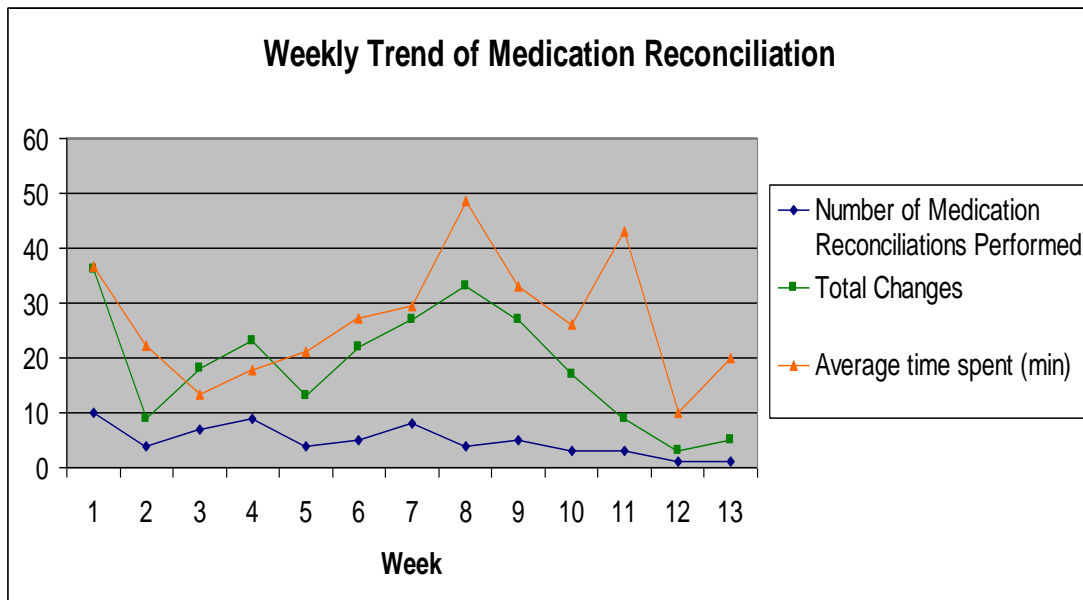
Figure 2. Medication reconciliation

Figure 3. Pharmacy Staff Involvement in Medication Reconciliation Process