Implementation and impact of pharmacist led medication reconciliation and patient education at discharge from an inpatient behavioral health unit

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KEYWORDS

Pharmacist, medication reconciliation, patient education, behavioral health, discharge, medication useIntroduction

Transitions of care during a hospitalization, including admission, transfers between units, and discharge are critical processes for medication safety and areas where pharmacy can contribute. Medication discrepancies have a significant impact on patient outcomes and both The Joint Commission (TJC) and the American Society of Health-System Pharmacists (ASHP) have recognized the importance of medication reconciliation in preventing these discrepancies. In 2005, The Joint Commission made medication reconciliation a component of one of its Hospital National Patient Safety Goals (NPSG.08.01.01).[1] Implementation challenges resulted in its suspension in 2009 and 2010 for revision.[1] A modified goal was released in 2011 (NPSG.03.06.01) after a comprehensive review of published literature and available data. Official scoring of the goal started in July 2011.[1,2]

The Joint Commission definition of medication reconciliation process requires a "clinician" compare "the medications a patient should be using (and actually is using) with newly ordered medications" and "resolves any discrepancies."[2] The Joint Commission has recognized the organizational and clinical difficulties associated with the medication reconciliation process and has accepted a "good faith effort" to collect medication information as meeting the intent of the requirement. NPSG.03.06.01 aims to reduce adverse patient outcomes due to medication discrepancies by focusing on specific "risk points," including transitions of care, patient education, and effective communication between providers.[2]

ASHP has stated that they believe implementation of an effective process for medication reconciliation would support safe medication use by patients.[1] ASHP recently published a statement on medication reconciliation to summarize pharmacists' responsibilities and accountabilities in medication reconciliation practices.[1] The statement encouraged all hospitals and health-systems to collaborate and create organized, multidisciplinary medication reconciliation programs, which promote continuity of patient care. ASHP believes pharmacists are uniquely qualified to lead these interdisciplinary efforts and should assume primary roles in the development of the primary components. ASHP specifically addressed five fundamental functions of medication reconciliation in which pharmacists can have an impact which are listed in table 1.

Table 1. ASHP's 5 Fundamental Functions for Pharmacist Involvement in Medication Reconciliation[1]

1 Policy and procedure development
2 Implementation and performance improvement
3 Training and competency assurance
4 Information systems development, and
5 Advocacy

In 2006, TJC released a sentinel event report on preventing medication errors. In their database of more than 350 errors, which resulted in serious harm or death, they reported 63% were partially due to communication breakdown and half of these could have been prevented with medication reconciliation.[3] Cornish et al. found that 53.6% of patients enrolled in their study had a least one unintended discrepancy at hospital admission, and approximately 38% of these errors had the potential to cause moderate to severe discomfort or clinical deterioration.[4] Medication reconciliation performed by pharmacists has demonstrated reduction in the frequency and severity of hospital medication errors potentially resulting in patient harm.[5,6]

Based on the substantial contributions of pharmacists reconciling patient's medications, we designed and completed a pilot study at our own institution to determine the impact and feasibility of discharge medication reconciliation and patient medication education.

METHODS

This was a prospective, single-center, interventional study

piloted on two inpatient behavioral health units at the University of Minnesota Medical Center, Fairview (UMMC, Fairview). UMMC, Fairview has 11 inpatient behavioral health units with approximately 210 inpatient beds. The average daily census for these 11 behavioral health units ranges from 165-185 patients. The study was submitted and approved by the University of Minnesota Institutional Review Board.

This pilot study integrated a pharmacist into what is primarily a nurse-driven discharge process at our institution. The nursing staff is responsible for reviewing the patient's medications, requesting any home medications that may have been kept in security during the patient's hospitalization, and ensuring that any newly prescribed medications were received from our discharge pharmacy. They also review the discharge summary with the patient and provide necessary education prior to the patient's discharge.

During this pilot, the study pharmacist would now be responsible for performing a chart and physical medication reconciliation upon the completion of discharge orders from the physician. The chart medication reconciliation consisted of reviewing the medication summary completed by the physician in the patient's electronic medical record (EMR). The physical medication reconciliation consisted of the pharmacist reviewing, with the actual medication bottles in hand, the patient's home medications the patient had brought with them upon admission and verifying the correct medications were received from our discharge pharmacy. The pharmacist then provided one-on-one counseling to the patient on their medication regimen. Any identified discrepancies were discussed with the medical team and changes were made by the prescribing physician. We also conducted a follow-up phone survey to measure patients' satisfaction with this service.

Inclusion criteria were any patient at least 18 years of age and being discharged with at least one medication from the two pre-specified inpatient behavioral health units. The two units were both adult units with primary admission diagnoses of psychosis or mood disorders. Exclusion criteria included any patient under the age of 18 years and non-English speaking patients due to the lack of interpreter services available for the follow-up phone call. Patients under court commitment were also excluded from this study. All patients provided informed consent to participate in this study and had the option to withdraw at any time.

The primary outcomes evaluated throughout this study were impact data and feasibility data. The impact of this service was evaluated by recording both the number and types of interventions identified through the discharge medication reconciliation process. An intervention was defined as any time the study pharmacist identified an actual error on the patient's discharge summary (e.g., unnecessary therapy, insufficient dose/duration) or assisted in resolving a potential error upon patient discharge (e.g., identifying and alerting the physician about the need for follow-up labs, assisting with obtaining a prior authorization). Interventions were categorized into 9 different groups which are listed in table 2.

Table 2. Medication Reconciliation Intervention Categories

1	Needs therapy
2	Unnecessary therapy
3	Insufficient dose or duration
4	Drug interaction
5	Excessive dose or duration
6	Administration technique
7	Lab monitoring
8	Incomplete instructions
9	Other

In order to evaluate the feasibility of the pharmacist-run service, the time needed to conduct each stage in the process was recorded, including medication reconciliation, communicating with providers, and then providing one-on-one counseling with the patient.

RESULTS

Twenty-four patients provided informed consent to participate in the study; however, three of the 24 patients were not able to be included in the process due to time constraints. Of the 21 patients included in the medication reconciliation process, 12 patients (57%) required at least one intervention. Throughout the study, a total of 192 medications were reconciled and 45 interventions were identified. The number of medications on the discharge summary, per patient, ranged from 2 to 18, with a mean of 9.14 medications per patient. The number of interventions per patient ranged from 0 to 7, with mean of 2.14 interventions per patient and a median of 2 interventions per patient.

The most common intervention identified in this study was unnecessary therapy, which included problems such as duplicate medication orders and re-starting medications meant to be discontinued upon discharge. Six medication discrepancies fell into the "other" category and included interventions such as: helped obtain a prior

authorization, suggested a medication change upon discharge due to patient's insurance coverage, and assisted with the delivery of a medication to the patient care unit. See Figure 1 for details.

The need for an intervention was most frequently identified during the chart medication reconciliation (62%), but interventions were also identified during patient counseling (18%), physical medication reconciliation (11%), and by provider request (9%).

In terms of feasibility, the mean amount of time to complete the entire process per patient was 57.1 minutes. The mean times for each step were 20.2 minutes, 20.4 minutes, and 16.5 minutes for the medication reconciliation, provider communication, and patient education, respectively.

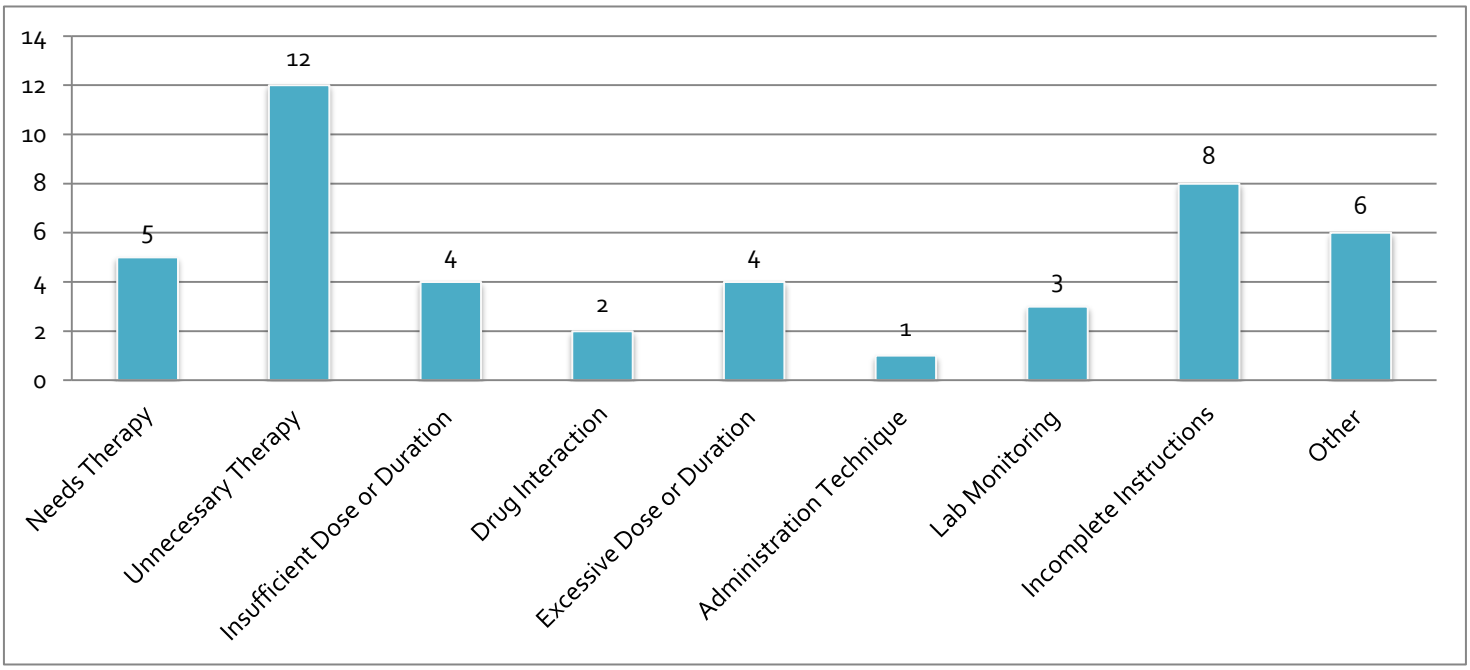
A follow-up phone call satisfaction survey was also conducted. Only six patients were included in this part of the study, due to loss of follow-up with the remaining patients. Patients were called within 10 days of discharge and asked three short questions, including: (1) "Was the education helpful?" (2) "Did you gain a better understanding of your medications?" and (3) "Were you satisfied with this service?" The mean scores on a scale of 1-5 (with a score of 5 being the best/most helpful) were 4.25, 4, and 4.17 respectively. Patients were also able to give feedback on the service and offer suggestions. One common theme was that the communication and education piece was helpful and many would like to see even more, including more one-on-one medication education, during their hospitalization and additional medication education after discharge.

DISCUSSION

This study demonstrated pharmacist-mediated medication reconciliation at discharge from an inpatient behavioral health unit could potentially have a significant impact on decreasing medication discrepancies and improve patient outcomes. Of the 192 medications that were reconciled through this process, the study pharmacist was able to make 45 interventions. Although many of these interventions were minor in significance, it is important to consider the various levels of health literacy of patients and take this into consideration when reviewing discharge summaries and educating the patient. Additionally, other studies have evaluated the potential clinical impact of medication reconciliation errors. One meta-analysis reported a range of 11%-59% of medication history errors that were deemed clinically significant in the studies included.[7]

During our study, there were also interventions that may have led to readmission if not addressed prior to discharge. One example included a patient who was a new start to clozapine during their hospitalization. Follow-up care, including weekly white blood cell (WBC) and absolute neutrophil count (ANC) lab draws, had not been established for the patient. The study pharmacist communicated with the patient's psychiatry resident and the social worker to arrange another set of labs prior to the patient's discharge. The pharmacist also assisted in

Figure 1. Amount and type of medication discrepancies



arranging for the patient to have labs drawn at an outside facility a week after discharge. There were also two examples of patients who would have inadvertently been discharged on their prior to admission medication dosage rather than the new increased dosage prescribed during their hospitalization.

Our results were very similar to previous studies evaluating medication discrepancies at discharge. Wong et al. found that 41.3% of patients had at least one actual unintended medication discrepancy at discharge from their general internal medicine unit.[8]

Musgrave et al. conducted a study in solid organ transplant patients and found that pharmacists identified 119 medication errors made upon discharge through pharmacist-mediated medication reconciliation, which was approximately 1.9 errors per patient.[5] Our study contributes to the continued research that pharmacists can provide a valuable service to patients and is unique in that we specifically focused on mental health patients.

In addition to potentially improving patient outcomes, the service was also well received by the medical staff on the selected two units. Having a pharmacist performing medication reconciliation and providing patient education freed up nursing staff to focus on other responsibilities. There was also positive feedback from the psychiatry residents on the units.

While the service demonstrated great potential in terms of outcomes, the feasibility findings may limit the overall implementation of this service on all 11 inpatient behavioral health units at this time. The average time to complete the process per patient was close to an hour and with an average daily census of 165-185 patients and the potential for as many as 15-20 discharges per day it would be difficult to fully implement this service without other process improvements. One of the largest challenges facing the implementation of this service is the uncertainty of discharge date and time in this patient population. A potential process improvement to minimize this problem is to schedule discharge planning meetings, so the discharge pharmacist can work with the interdisciplinary team and plan ahead as necessary to help with a smoother process.

Another process improvement that would vastly increase the feasibility of pharmacist-mediated discharge medication reconciliation and discharge counseling is to implement pharmacist-mediated admission medication reconciliation. Currently, our institution is in the process of implementing pharmacist-mediated medication reconciliation at admission but at the time of this study it was not yet fully implemented hospital wide. Many interventions upon discharge medication reconciliation could have been identified during admission, such as omitted home medications or duplicate medication orders.

Finally, one major change that occurred after this study ended, that would have a major impact on the number of interventions identified, was an electronic medical record (EMR) upgrade which allowed more changes to be made to the discharge summary. During the study, it was identified that due to EMR constraints, it was difficult to completely delete medications from the discharge summary, which lead to many examples of duplicate orders on the patient's medication list.

While TJC does not currently specify beyond a "clinician" providing medication reconciliation, we feel pharmacists are uniquely qualified to provide this service, both on admission and discharge, given our educational background and specialized training. Medications are our primary area of concern, whereas other health professionals have a variety of other responsibilities associated with both admissions and discharges. Shifting the task of medication reconciliation to a pharmacist would free up other health care professionals to focus on other critical components of patient care. We also feel that this pilot study follows the recommendations of ASHP for involvement in medication reconciliation. We will continue to strive for pharmacy involvement in aspects of medication safety during transitions of care.

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