Impact of a Pharmacy-Driven Transitions of Care Medication Reconciliation Following Hospitalization

Journal of Pharmacy Technology
2020, Vol. 36(2) 68–71
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/8755122519900507
journals.sagepub.com/home/pmt

Rebecca L. Stauffer, PharmD, BCPS¹
and Abigail Yancey, PharmD, FCCP, BCPS¹

Abstract

Background: Medication changes are common after hospitalizations, and medication reconciliations are one tool to help identify potential medication discrepancies. **Objective:** To determine the impact of a pharmacy-driven medication reconciliation service on number of medication discrepancies identified. **Methods:** This was a retrospective cohort, chart-review study conducted at an internal medicine outpatient clinic. Patients at least 18 years of age were eligible for inclusion if they presented for a hospital follow-up appointment within 14 days of discharge between September 1, 2015, and May 31, 2016, from a system hospital. The 2 cohorts were patients with a pharmacist-completed medication reconciliation note written in the electronic health record on the date of their hospital follow-up appointment and those without. The primary outcome was number of medication discrepancies identified during medication reconciliation. Secondary outcomes included types of discrepancies, 30-day hospital readmission, and 30-day emergency department visits. This study was approved by the facility institutional review board. **Results:** Seventy-nine patients were included, and 38 patients had a pharmacist-completed medication reconciliation (48%). A total of 64 medication discrepancies were identified in 26 patients; of these, 49 discrepancies were resolved during the appointment (77%). There was an average of 2.46 medication discrepancies (± 2.34) per patient. The most common discrepancy was missing medications. Thirty-day readmission rate was 5.3% in the intervention group and 19.5% in the control group ($P = .054$). **Conclusions:** A pharmacist-completed medication reconciliation identified many medication discrepancies that were then resolved. From this study, pharmacist-led medication reconciliations following hospital discharge appear valuable.

Keywords

medication reconciliation, medication discrepancies

Background

Transitions of care has become a very hot topic within health care over the past decade. Transitions of care is defined as the movement of a patient from one health care provider or setting to another.^{1,2} During these transitions of care, it is extremely important for communication across the care settings and between medical providers. The lapse in communication may affect patient safety, quality of care, and health outcomes, such as readmissions.³ In a study by Jencks and colleagues,⁴ approximately 20% of Medicare Fee-for-Service patients were readmitted to the hospital within 30 days of discharge.

The Institute for Healthcare Improvement developed a *How-to Guide: Improving Transitions from the Hospital to the Clinical Office Practice to Reduce Avoidable Re-hospitalizations* for clinicians.⁵ One key area identified in the guide was the postdischarge appointment focusing on a

detailed medication reconciliation with attention to the pre-hospital regimen. As many medication changes may be made at hospital discharge, medication reconciliation is necessary to identify potential medication discrepancies to ensure patient safety. Medication reconciliation is defined by the Joint Commission as the process where a clinician compares the medication a patient is taking (and is actually using) with the new medications that are ordered for the patient and resolves any discrepancies.⁶

A study conducted at a Canadian teaching hospital found an overall incidence of postdischarge adverse events of

¹St Louis College of Pharmacy, St Louis, MO, USA

Corresponding Author:

Rebecca L. Stauffer, Department of Pharmacy Practice, St Louis College of Pharmacy, 4588 Parkview Place, St Louis, MO 63110, USA.
Email: Rebecca.Stauffer@stlscop.edu

23%, and of these 72% were adverse drug events. Approximately half of the adverse events reported were preventable or ameliorable.⁷ When comparing a patient's discharge medication list with the patient's actual medication use, one study found that 70% of patients were affected by drug discrepancies, most commonly missing drug or extra drug.⁸ Postdischarge appointments in the ambulatory care setting may help recognize medication issues or patient status changes after a transition of care. Among Medicare beneficiaries readmitted to the hospital within 30 days, approximately 50% did not have a follow-up encounter in between hospitalizations.⁴

Pharmacists are in a unique position to assist in the post-hospital visit. One systematic review found a statistically significant reduction in adverse drug event-related hospital revisits, emergency department visits, and hospital readmissions in the group that received pharmacist-led medication reconciliation versus the usual care group.⁹

In 2015, a pilot study was completed at our internal medicine outpatient teaching clinic assessing the number of medication discrepancies found during medication reconciliation at a post-hospital follow-up appointment. A total of 18 patients were enrolled in the study and received medication reconciliation by a clinical pharmacist. There were 21 identified medication discrepancies, which affected 9 of the 18 patients. The most common discrepancies were the following: differing dosage, extra medication, and missing medication. All discrepancies were communicated and rectified with the medical team. Due to satisfaction with the transition of care pilot process, a transitions of care medication reconciliation visit with the clinical pharmacist was implemented for patients attending their hospital follow-up appointment, as a standard of care.

Methods

This was a retrospective cohort, chart-review study that included patients, at least 18 years of age, receiving their primary care at the internal medicine outpatient teaching clinic. Patients needed to have a hospital follow-up appointment within 14 days of discharge between September 1, 2015, and May 31, 2016, from a system hospital. The study was approved by the facility's institutional review board.

The study included 2 cohorts, those who had a pharmacist-completed medication reconciliation and those without. Patients included in the pharmacist-completed medication reconciliation group had a documented pharmacist note in their electronic health record (EHR) from the date of their hospital follow-up appointment. This note was reviewed during data collection.

During the pharmacist-completed medication reconciliation, prescription bottles or a patient's medication list was compared with the documented medication list in the EHR. This EHR medication list should have been up-to-date as

patients were only included if they were recently discharged from a system hospital. For patients who did not bring in prescription bottles or a medication list, medications were discussed verbally. For patients not seen by the pharmacist, medication reconciliations were not consistently completed and/or documented.

The primary outcome was the number of medication discrepancies identified during medication reconciliation in the pharmacist-completed medication reconciliation group. Secondary outcomes included the number of medication discrepancies by category in the pharmacist-completed medication reconciliation, the number of medication discrepancies resolved following pharmacist intervention, and the number of medication discrepancies resolved by category following pharmacist intervention. A missing medication discrepancy was identified if a medication listed on the patient's EHR medication list was not in the patient's possession (not including as needed medications). An extra medication discrepancy was identified if a patient was taking or brought in a medication that was not on the EHR medication list (ie, was discontinued). A medication discrepancy was considered resolved when the identified issue was rectified, for example, the patient's pharmacy was called to verify a prescription was received for a missing medication.

Additionally, 30-day hospital readmissions and 30-day emergency department (ED) visits were assessed between groups. Descriptive statistics were used for the evaluation of medication discrepancies. Differences in readmission rates and ED visits were assessed using χ^2 tests. A *P* value of <.05 was used to denote statistical significance.

Results

A total of 79 patients were included in the analysis, and 38 patients (48%) had a pharmacist-completed medication reconciliation at their hospital follow-up appointment. Patients had a wide variety of primary diagnoses for hospitalization and a majority of patients seen by the pharmacist brought in their prescription bottles or a medication list for medication reconciliation (Table 1). The average age of patients with a pharmacist-completed medication reconciliation was 55.4 years and 48.3 years in the group without. Twenty-six of the 38 patients (68%) seen by the clinical pharmacist had at least one medication discrepancy identified. Of patients with at least one discrepancy, the average number of medication discrepancies was 2.46 (± 2.34) per patient. A total of 64 medication discrepancies were identified and 49 (77%) were resolved during the appointment (Table 2). The most common medication discrepancy was a missing medication. This occurred when a patient did not have a prescribed medication that was listed in their EHR. On pharmacist-led medication reconciliation, discrepancies most commonly involved antidiabetic (34%), cardiovascular (23%), and diuretic (16%) agents.

Table 1. Baseline Demographics (n = 79).

Variables	Frequency
Age (years), mean (range)	51.7 (27-87)
Female, n (%)	50 (63.3%)
Seen by pharmacist, n (%)	38 (48%)
Brought medication bottles, n (%) ^a	18 (47.4%)
Brought medication list, n (%) ^a	6 (15.8%)

^aDenominator is the number of patients seen by pharmacist.

Table 2. Medication Discrepancies.

Discrepancies	Identified (n = 64)	Resolved (n = 49)
Missing medication	16	9
Extra medication	13	13
Dosage differs	12	12
Frequency differs	5	5
Adverse drug reaction	0	0
Duplication	0	0
Known allergy/intolerance	0	0
Discharge instructions incomplete	6	5
Other	9	5

The overall 30-day hospital readmission rate was 12.67%, with a 5.26% rate in the group with a pharmacist-completed medication reconciliation versus 19.51% in the group without ($P = .054$). There was no statistically significant difference in 30-day ED visits between groups (Table 3).

Discussion

Medication changes at hospital discharge is common and medication reconciliation is necessary to identify potential discrepancies. A systematic review found there was a statistically significant reduction in adverse drug event–related hospital visits, ED visits, and hospital readmissions in the group of patients who received pharmacist-led medication reconciliation at hospital transitions versus the usual care group.⁷ Another recent review on interventions to reduce medication discrepancies or errors in primary care or ambulatory care settings during the transition from the hospital found that the pharmacist is a key player in preventing discrepancies.¹⁰

Our current study adds to the literature that shows that a pharmacist-completed medication reconciliation within 14 days of hospital discharge identified many medication discrepancies that were then resolved during patient appointments. Although not statistically significant, there was a trend toward decreased 30-day readmission rates in patients that were seen by a pharmacist at the hospital follow-up

Table 3. Secondary Outcomes.

	With Pharmacist Medication Reconciliation (n = 38)	Without Pharmacist Medication Reconciliation (n = 41)	P
30-day hospital readmissions, n (%)	2 (5.26%)	8 (19.51%)	.054
Days to readmission, mean (range)	20 (16-24)	13.7 (1-28)	.327
30-day ED visits, n (%)	6 (15.79%)	4 (9.76%)	.431
Days to ED visit, mean (range)	10.8 (2-19)	17.8 (11-25)	.171

Abbreviation: ED, emergency department.

appointment compared with those who were not. There were some significant limitations to our current study. This study had a small sample size, which could have led to the lack of statistical significance. Another limitation that is often encountered in the clinical setting is poor documentation of medications included in the EHR, with varying information regarding adherence. As this was a retrospective chart review, data collection was dependent on explicit documentation in the EHR of noted discrepancies and their resolution. It is possible additional occurrences may have been missed. It was also not possible to compare medication discrepancies between the 2 groups, as medication discrepancies were not commonly mentioned in the medical resident notes. An additional limitation that could affect the results of this study is that all 30-day hospital readmissions and ED visits were included, even if it was unrelated to the primary diagnosis or a medication issue. For example, one patient was initially admitted for sepsis; however, the patient was readmitted due to a car accident. Last, patients were seen by a pharmacist depending on pharmacist availability, as there was no full-time coverage and the pharmacist's schedule varied depending on the week. There were occasions when a pharmacist was not present in the clinic to complete post-hospital medication reconciliations. Patients were not scheduled in advance to meet with the pharmacist based on disease state or number of medications. Due to the large variability in primary hospital diagnoses, it was not possible to identify subsets of patients that benefited the most from the pharmacist-completed medication reconciliation.

Conclusion

This study provides additional evidence that a pharmacist-led medication reconciliation at a hospital follow-up appointment is a valuable asset to reduce medication discrepancies.

Authors' Note

The study results were presented as a poster at the American College of Clinical Pharmacy Virtual Poster Symposium in Spring 2019.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Rebecca L. Stauffer <https://orcid.org/0000-0002-3522-4245>

References

1. The Joint Commission. *Transitions of Care: The Need for Collaboration Across Entire Care Continuum*. Oakbrook Terrace, IL: The Joint Commission; 2013. https://www.jointcommission.org/assets/1/6/TOC_Hot_Topics.pdf. Accessed May 25, 2018.
2. Centers for Medicare and Medicaid Services Transition of care summary. May, 2014. Available at: https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/8_Transition_of_Care_Summary.pdf. Published May 2015. Accessed May 25, 2018.
3. National Transitions of Care Coalition. Improving transitions of care. <http://www.ntocc.org/Portals/0/PDF/Resources/NTOCCIssueBriefs.pdf>. Accessed May 25, 2018.
4. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med*. 2009;360:1418-1428. doi:10.1056/NEJMsa0803563
5. Schall M, Coleman E, Rutherford P, Taylor J. *How-to Guide: Improving Transitions From the Hospital to the Clinical Office Practice to Reduce Avoidable Rehospitalizations*. Cambridge, MA: Institute for Healthcare Improvement; June 2013. <http://www.ihl.org/resources/Pages/Tools/HowtoGuideImprovingTransitionsHospitaltoOfficePracticeReduceRehospitalizations.aspx>. Accessed December 30, 2019.
6. The Joint Commission. *National Patient Safety Goals Effective January 2019. NPSG.03.06.01*. Oakbrook Terrace, IL: The Joint Commission. https://www.jointcommission.org/assets/1/6/NPSG_Chapter_HAP_Jan2019.pdf. Accessed December 30, 2019.
7. Forster AJ, Clark HD, Menard A, et al. Adverse events among medical patients after discharge from hospital. *CMAJ*. 2004;170:345-349.
8. Foss S, Schmidt JR, Anderson T, et al. Congruence on medication between patients and physicians involved in patient course. *Eur J Clin Pharmacol* 2004;59:841-847.
9. Mekonnen AB, McLachlan AJ, Brien JA. Effectiveness of pharmacist-led medication reconciliation programmes on clinical outcomes at hospital transitions: a systemic review and meta-analysis. *BMJ Open*. 2016;6:e010003. doi:10.1136/bmjopen-2015-010003
10. Kee KW, Char CWT, Yip AYF. Interventions to reduce medication discrepancies or errors in primary care or ambulatory care settings during the transition from the hospital to primary care. *J Family Med Prim Care*. 2018;7:501-506. doi:10.4103/jfmpe.jfmpe_196_17