Medication reconciliation in the emergency department performed by pharmacists

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ABSTRACT

Patients are at risk of having their medication histories inaccurately documented while being admitted to an emergency department (ED). Allowing a pharmacist to access patient medication history is an effective way of reducing the number of errors. We sought to determine if having a pharmacist (as opposed to the admitting clinical team) verify patients' medication histories would result in fewer discrepancies in inpatient medication regimens. We performed a prospective cohort comparison study of adult ED patients admitted to general medicine floors for continuing care. In the intervention group, pharmacists in the ED performed a brief inquiry into the patients' medication history, a process called medication reconciliation. In the control group, the admitting clinical team conducted the medication reconciliation. Both groups received a second reconciliation by a trained pharmacy team and all discrepancies were recorded. Our cohort had 172 intervention and 172 control subjects. In the control group, 561 medication discrepancies were recorded while no medication discrepancies were observed in the intervention group. Having pharmacists consult with patients in the ED about their medication histories led to fewer discrepancies than when admitting clinical teams performed the same inquiry.

KEYWORDS Discrepancy; emergency department; medication history; medication reconciliation; pharmacist

Medication reconciliation is the formal process in which a health care professional meets with a patient to ensure accurate and complete medication information is obtained at the interface of care. Our objective was to determine which method would result in fewer discrepancies during inpatient medication reconciliation: having either a pharmacist in the emergency department (ED) or the admitting team of clinicians verify patients' medication histories. We hypothesized that patients' medication histories verified by pharmacists in the ED would have fewer discrepancies. A discrepancy is any difference between reconciled medication information and what a patient actually takes.

METHODS

We performed a prospective cohort comparison study of adult (aged ≥ 18 years) ED patients admitted to general

medicine floors for continuing care at our 635-bed academic medical center. Most of the 22,856 patients admitted through the ED from October 1, 2014, to October 31, 2015, received medication reconciliation before admission. We excluded (1) patients with multiple admissions due to potential bias arising from these patients possibly already having a completed medication history on file from a previous visit and (2) patients who were not admitted to general medicine floors. The institutional review board of our institution approved this study.

The intervention group consisted of a convenience sample of patients for whom a pharmacist obtained a formal medication history before creation of admission orders. The control group represented random patients whose medication histories were obtained by the admitting clinical team, which consisted of physicians, nurses, and medical students. Medication histories obtained by pharmacists (intervention group) and admitting clinical teams (control group) were

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scanned onto the patients' profiles. The intervention and control groups received a second standardized medication reconciliation using the initial scanned copies as originals. All discrepancies were recorded. Discrepancies included unnecessary therapy/patient no longer taking medication/completed therapy, medication omission, wrong frequency, wrong dose, wrong indication, wrong route, duplicate therapy/entry, wrong formulation/salt, and wrong drug.

Pharmacists were in the ED daily from 2:00 PM to 12:00 AM for the intervention study (February 15, 2016–March 16, 2016). For the control group, a retrospective chart review was conducted between November 23, 2015, and December 20, 2015.

To obtain a complete and accurate medication history, pharmacists in the ED interviewed patients or caregivers to elicit the name, dose/strength, formulation/salt, frequency, route of administration, and indication of all medications (e.g., prescriptions, over-the-counter medications, vitamins, herbal remedies, and investigational drugs). Updates to allergy and immunization information were also documented. Sources of information potentially reviewed were prescription bottle labels, self-prepared medication lists, consultations with family members, and telephone consultations with local pharmacies, long-term care facilities, and primary care providers and other physicians. If a patient was previously hospitalized at or cared for by any physician affiliated with our institutions, electronic discharge summaries and outpatient medication lists were also reviewed. At the conclusion of this process, a finalized home medication list was entered into the patient's electronic medical record.

RESULTS

Our cohort had 172 intervention and 172 control subjects. In the control group, 561 medication discrepancies were recorded; none were observed in the intervention group. The most frequent discrepancies were unnecessary

drug therapy (150), medication omission (148), and wrong frequency of medication administered (123) (*Table 1*).

DISCUSSION

Physicians, nurses, and pharmacists face many challenges during the admission order process. Accurately documenting a patient's home medications and allergies at the time of admission improves the efficiency and quality of patient care and helps prevent medical errors. Pharmacists are suited to conducting medication history interviews and reconciling medications because they are more familiar with drug names, characteristics, effects, dosage forms, and administration than other clinicians. Pharmacists can readily identify inconsistencies and mistakes in self-reported medication histories.^{1,2} Additionally, pharmacists have the expertise and experience to scrutinize questionable drug orders and optimize a patient's drug therapy through clinical interventions.

An incomplete or inaccurate medication history may lead to interrupted and inappropriate drug therapy during hospitalization and affect patient safety.^{3,4} Potential drug interactions and treatment duplications may result from prescribers being unaware of patients' complete lists of home medications.

Another important part of medication reconciliation is the patient's allergy history, immunization history, and use of nonprescription medications and herbal preparations. Even if these products are not continued during hospitalization (or are only used occasionally), they can have significant interactions and adverse effects.^{1,5} In our study, patients were more likely to mention their allergies, immunizations, or use of over-the-counter products when specifically prompted by the pharmacist.

The biomedical literature contains evidence that pharmacist-conducted medication reconciliations are more accurate, save money, and increase patient safety.⁵ We encountered no resistance from physicians or nursing staff during our study; on the contrary, the physician and nursing staff strongly

Table 1. Medication discrepancies in the intervention group and control group

Type of discrepancy	Intervention group (n = 172)	Control group (n = 172)
Unnecessary therapy/ patient no longer taking medication/completed therapy	0	150
Medication omission	0	148
Wrong frequency	0	123
Wrong dose	0	90
Wrong indication	0	24
Wrong route	0	12
Duplicate therapy/entry	0	9
Wrong formulation/salt	0	4
Wrong drug	0	1
Total	0	561

supported the prospect of the pharmacist's role and expertise in conducting medication reconciliations.

Our study found no medication discrepancies noted after pharmacist-led medication reconciliations as compared to 561 discrepancies with admitting personnel medication reconciliations. The most frequent discrepancies were unnecessary drug therapy, medication omission, and wrong frequency of medication administration.

Some general benefits of medication reconciliations performed by pharmacists in the ED are reduction of hospital stay and future emergency room visits, decrease in drug-related admissions, reduced medication errors or adverse drug events, increased documentation concerning patient allergies, increased accuracy and completeness of medication histories, and cost-effectiveness.⁶

Pharmacist-led medication reconciliation programs should include all admissions. A pharmacist stationed in the ED has the highest likelihood of gathering the most complete data. Literature supports the idea that complete medication reconciliations prevent medication errors during and after the patient's hospital stay.

Many hospitals have limited pharmacy services in the ED. An ED pharmacist ideally would provide clinical services such as code participation, education to clinicians and patients, toxicology consultations, and initial management of antibiotics. While it is important for a pharmacist to be involved in the clinical aspects of patient care, documenting medication, immunization, and allergy histories is vital to appropriate patient care and best handled by a pharmacist. In addition, pharmacists can monitor for potential drug interactions and inappropriate drug therapies.

We excluded patients not admitted to general medicine floors due to intubation, extensive trauma, or other medical

conditions that limited communication. Other limitations of this study include convenience sampling, the retrospective design of the control group compared to the prospective design of the intervention group, and the possibility of the Hawthorne effect resulting from pharmacists knowing their medication reconciliations would be scrutinized.

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