Using pharmacy technicians to improve the accuracy of medication histories collected in the ED

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Primary Intended Outcomes
1. Decrease the percentage, frequency, and types of medication history errors made in the emergency department (ED).

Relevant PPMI Recommendations

E4. The following is a critical component in the implementation of optimal pharmacy practice models:
   E4e. Expansion of pharmacy technician responsibilities.

Situation Analysis

ADEs (adverse drug events or injuries due to drug-related interventions) occur far too often in our society and, in many instances, are preventable.¹ For example, a 2006 report brief by the Institute of Medicine (IOM) concluded that there are at least 1.5 million preventable ADEs that occur each year in the United States.²

Another finding showed that each preventable ADE that took place in a hospital added approximately $8,750 to the cost of the hospital stay.² Furthermore, more than 40 percent of medication errors are believed to result from inadequate reconciliation in handoffs during admission, transfer, and discharge of patients. Of these errors, approximately 20 percent are believed to result in patient harm.³

A comprehensive, accurate medication history is necessary for proper practitioner evaluation and clinical assessment of the patient, as medication histories provide insight to potential medical problems and facilitate the continuity of treatment. The acquisition of a patient’s medication history is also the first step to the medication reconciliation process, in which there is direct comparison of the medications that a patient was previously taking to the current medication regimen, and any discrepancies or problems are resolved.

Although integral to patient care, medication history documentation is often challenging. Potential barriers include patient confusion/impaired memory, variations in clinical status (i.e. fatigue, decreased alertness), poly-
pharmacy use, limited access to patient records, time constraints, and language or cultural differences. In some instances, it is necessary to consult outside resources such as a patient’s pharmacy or assisted living facility to attain accurate and comprehensive information.

A variety of errors may occur during the medication history process, including use of previously documented information that may be outdated; a drug commission (addition of a drug that the patient is not actually taking) or omission (failure to document a drug that the patient is taking); or an incorrect drug, dose, and/or frequency.

Additionally, when transcribing from patient medication bottles, caution must be taken to avoid transcribing outdated information and/or prescriptions of other household members. Medication history errors also have the potential to remain throughout the hospital stay and after discharge. Consequently, errors made on the medication history may have implications for future patient care and events.

Traditionally, nurses in the ED have collected patient medication histories. However, their ability to obtain complete and accurate records may be limited due to heavy workloads, time constraints, and increasing patient care responsibilities. Nurses are generally assigned to multiple patients at a time, and are often preoccupied with direct patient care activities.

In contrast, there are clear advantages to using skilled pharmacy technicians to obtain medication histories in the ED. They have a fundamental knowledge of medications, the majority of their time can be devoted to the process of obtaining accurate and thorough medication histories, and decentralization of pharmacy personnel promotes multidisciplinary teamwork.

Furthermore, use of pharmacy technicians allows increased time for nurses to devote to direct patient care activities and increases communication with patients, leading to increased patient satisfaction.

In recognition of an opportunity to make improvements in workflow that would lead to both increased patient safety and quality of care through the reduction of medication history errors, nursing leadership collaborated together with pharmacy personnel at Morton Plant and Mease Countryside Hospitals (both part of the Baycare Health System in the Tampa Bay area) to provide full-time employee hours for the creation of an ED Medication History Pharmacy Technician position.

**Service Description**

The ED Medication History Pharmacy Technician is an essential and valuable team member who obtains accurate and thorough patient medication and allergy histories. The medication histories are utilized by healthcare prescribers to optimize safe practices and provide high quality care to patients. The technician functions as a member of the pharmacy team as well as an integral component of the ED. Additional duties may include inventory and stocking of Pyxis, delivery of patient medications, and communication between ED personnel and pharmacy.

During the training process, the ED Medication History Pharmacy Technicians were provided a series of educational lectures pertaining to patient communication, high-risk medications, and the medication reconciliation process. Subsequently, they were taught a systematic approach to collect medication histories consisting of a patient interview, utilization of a checklist, asking prompting questions, reviewing and updating old records, and contacting the patient’s pharmacy (or other sources such as the physician, assisted living facility, or family) if there were any uncertainties.
The technicians were also trained to update patient allergies (with associated reactions) and to document the last date and time that each medication was administered (if known). A focus was placed on obtaining medication histories for the patients that were most likely to be admitted to the hospital (i.e. elderly, higher acuity level).

Prior to working in the ED, the pharmacy technicians learned how to use the related software programs as well as drug information resources to assist with medication history documentation (i.e., international drug product names via Drugs.com and pictorial descriptions of products in clinical pharmacology). They also worked directly with the pharmacy resident for two weeks prior to working independently.

Key Elements for Position Success

1. Collaboration should occur between the ED nursing staff and pharmacy department to develop an ED Medication History Pharmacy Technician position. This collaboration also has the benefit of promoting multidisciplinary teamwork.

2. ED pharmacy technicians should receive adequate training that includes a focus on effective and appropriate communication techniques.

3. A systematic approach should be applied when collecting medication histories, including a personal interview (whenever feasible), use of a checklist, asking prompting questions to uncover additional data, a review/update of previously documented medications, review of medication allergies and reactions, and documentation of the last administration dates and times (if known).

4. A feedback system should be incorporated to enhance the skills of the pharmacy technician and to assist in program validation and expansion.

Resource Utilization

**Personnel:** ED Medication History Pharmacy Technician, 8 hour days, 7 days a week.

**IT and other infrastructure:** Workstation on wheels with institutional software, mobile phone

**Supply Expense:** See above

**Return on Investment:** Did not measure

Recognized Intangible Benefits

It is notable that both the incidence and severity of ADEs prevented due to increased accuracy of medication history documentation are difficult to measure. In this study, we included only the errors that could be ascertained through documented electronic records, leading to the possibility of additional errors that may have been undiscoverable. Additionally, research in this area is relatively new and limited to small-scale studies.

ADE’s (including drug-drug interactions and drug-disease interactions) may lead to the need for additional medical therapies or interventions, patient transition to a higher level of care, and/or a prolonged length of hospital stay—all of which increase costs to the patient and/or institution. Additionally, medication history errors may remain after a patient is discharged and potentially lead to problems in the future.

In addition to improving patient safety, interaction with the pharmacy technician increases attention and service to the patients, leading to greater customer satisfaction. It also frees up additional time for nurses to dedicate to direct patient care tasks, and assists prescribers in appropriately assessing and caring for the patient.

Overall, this program has led to improvements in patient safety and increased satisfaction of nurses, prescribers, and patients. The success has been
demonstrated through this study, through practice, and via anecdotal feedback from our team members. In addition, we recently added nine additional Medication History Technicians within our hospital system.

This study demonstrates that trained pharmacy technicians can significantly improve the accuracy of medication histories obtained in the ED. The results also indicate that skilled pharmacy technicians are suitable candidates to collect medication histories, and support the expansion of pharmacy technician roles to improve patient safety and care. Similarly, recent literature supports the utilization of pharmacy technicians to collect patient medication histories.4,5

Outcome Measures
A total of 300 ED medication histories taken by pharmacy technicians and nurses were evaluated. Medication histories conducted by pharmacy technicians were accurate 88 percent of the time, compared to 57 percent by nurses (P< 0.0001). We also conducted a sub-analysis excluding all over the counter medication (OTC) errors, and accuracy increased to 93 percent vs. 65 percent, respectively, (P< 0.0001).

A total of 19 errors (1.1 percent) were made by pharmacy technicians vs. 117 (8.3 percent) by nurses ([RR] 7.5; P< 0.0001). The most common type of error was an incorrect or missing dose (10 vs. 59, P< 0.001), followed by an incorrect or missing frequency (0 vs. 30, P< 0.0001), and a drug commission (5 vs. 23, P = 0.004). There were no differences between groups regarding the documentation of patient allergies. Documentation rates of high-risk anticoagulant and antiplatelet administration times were greater for pharmacy technicians vs. nurses (76 percent vs. 13 percent, P< 0.001).

Lessons Learned
1. Trained pharmacy technicians can significantly improve the accuracy of medication histories collected in the ED.

Suggestions for Other Hospitals/Health Systems
1. Candidate selection for the ED Medication History Pharmacy Technician position should emphasize interpersonal communication skills, problem solving abilities, display of initiative, resourcefulness, and the ability to work effectively with minimal supervision.

2. ED pharmacy technicians should be trained using a methodical approach encompassing familiarity with software programs, shadowing of current medication reconciliation technicians (if applicable), communication techniques, and review of potential challenges that may arise.

3. We also suggest relocating a current pharmacist workstation to the ED and having the pharmacist review all medication histories obtained by the pharmacy technician for accuracy and appropriateness. This will further improve the accuracy of the medication histories, as well as promote multidisciplinary collaboration, with minimal additional costs or time. It will also enhance pharmacy support to the ED staff regarding drug information and pharmacotherapy recommendations.

Helpful References


