Original Work

Impact of Pre-Visit Medication History Phone Calls on Patient Rooming Time in the Ambulatory Cardiology Clinic: Pilot Project

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Abstract

Purpose: This project evaluates the impact of pre-visit medication history phone calls by pharmacy technicians on patient rooming time in an ambulatory cardiology clinic.

Methods: A pilot was conducted in one department at a regional health system. Patients with upcoming appointments were contacted by a pharmacy technician one to two days prior. The technician reconciled home medication lists, updated allergy information, assessed medication compliance and affordability, and conducted beta-lactam allergy assessments. A clinical pharmacist reviewed each encounter. A control group was used for comparison. The primary outcome was the difference in average rooming time, defined as time spent in "Chart Review," "History," or "Rooming" in the electronic health record. Secondary outcomes included the number of medication changes, beta-lactam allergy assessments conducted, and identification of compliance or affordability issues.

Results: The pilot group (37 patients) had a shorter average rooming time than the control group (40 patients) (4.72 minutes vs. 5.29 minutes, p = 0.23). The average number of medications per patient was 10.8 (range 3-31, Q1 7.0, Q3 14.0, IQR 7.0). Six patients had medications added and 24 had medications removed. Eight patients had beta-lactam allergies assessed. No patients reported affordability issues, and one reported compliance issues.

Conclusion: Pre-visit medication history phone calls by pharmacy technicians reduced average rooming time and provided updated medication lists in an ambulatory cardiology clinic, potentially improving patient care and provider efficiency by ensuring accurate medication information and proactively identifying potential medication issues.

Medication reconciliation is the process of creating and maintaining the most accurate list of all medications a patient is taking, including medication name, dosage, frequency, and route. It is a key component of patient safety and quality of care, as it can prevent medication errors, adverse medication events, and medication interactions.[1] Medication reconciliation is especially important for patients with chronic conditions, such as cardiovascular disease, who often take multiple medications and have frequent transitions of care. However, medication reconciliation can be challenging and time-consuming for the practice, as patients may not have an updated medication list or may not remember all the details of their medications. Moreover, medication reconciliation may not be prioritized by busy nurses and providers who have limited time for each patient encounter. Therefore, there is a need for an efficient and accurate medication reconciliation process that can improve patient care and provider satisfaction. Currently, patients who present for ambulatory clinic visits do not receive a medication history completed by pharmacy technicians. Pharmacy technicians only complete medication histories for patients prior to scheduled surgeries, patients that present to the Emergency Department, and patients admitted to the hospital.

One possible strategy to improve ambulatory medication reconciliation is to involve pharmacy technicians in the process. Initial support for this came from regional administration when it was realized that patients in the ambulatory setting were not receiving the same level of care as those in the inpatient setting, specifically as it related to medication reconciliation. Pharmacy technicians are trained and qualified to collect and verify medication information from patients, as well as to update electronic health records (EHR) and communicate with pharmacists and providers.[2-3] Pharmacy technicians can perform medication reconciliation tasks before the patient's visit by conducting pre-visit phone calls or during the patient's visit by interviewing the patient in the waiting room or in the exam room.

Previous studies have shown that pharmacy technician-led medication reconciliation can reduce medication discrepancies, improve medication adherence, and increase patient satisfaction.[4-5] However, the impact of pharmacy technician-led medication reconciliation on patient rooming time, which is the time spent by nursing and support staff to prepare the patient for

the provider encounter, has not been well studied. Patient rooming time can affect the workflow and efficiency of the clinic in addition to the patient's perception of the quality of care. Reducing patient rooming time may allow more time for the provider to focus on the patient's clinical needs and improve patient satisfaction. Alternatively, optimization of rooming time may allow providers to care for additional patients throughout the day by enhancing clinic throughput.[6]

This pilot project's objective was to evaluate the effect of pre-visit medication history phone calls conducted by pharmacy technicians on patient rooming time in the ambulatory cardiology clinic. Prior to the pilot, existing workflows were such that the rooming staff in the ambulatory clinic would review the medication list with the patient as part of the rooming process. It was hypothesized that patients who received pre-visit phone calls would have shorter rooming time than patients who did not receive pre-visit phone calls, as the phone calls would ensure that the patients had updated medication lists before being seen in the clinic. The number and types of medication changes made by the technicians, the number of beta-lactam allergy assessments conducted, and the number of patients with compliance or affordability issues identified were also assessed.

Methods

This was a pilot project conducted in an ambulatory cardiology clinic at a regional health system in Wisconsin. The included population consisted of patients who had an appointment in the ambulatory cardiology clinic during the pilot period of January 2023 through March 2023. Patients were eligible for inclusion if they were being seen by the pilot provider, were 18 years or older, had a valid phone number, and had at least one medication on their home medication list.

Patients who met the inclusion criteria were contacted by a medication history pharmacy technician one to two days before their appointment. The technician used a standardized script to introduce themselves, verify the patient's identity, and explain the purpose of the call. The technician then reconciled the patient's home medication list within the electronic health record, using open-ended questions to confirm the medication name, dosage, frequency, route, indication, and last dose taken for each medication. The technician also updated the patient's allergy information, conducted beta-lactam allergy assessments if appropriate, and inquired about medication compliance and affordability. Beta-lactam allergy assessments were conducted on patients with a documented or reported beta-lactam allergy, and patients were assessed as to their reaction severity and evaluated for candidacy of allergy removal. Of note, no beta-lactam allergies were removed as part of the pilot project, as that was deemed out of scope. The technician documented the encounter in the EHR and flagged any medication-related issues or questions for the ambulatory cardiology clinical pharmacist. The pharmacist reviewed and cosigned the encounter and communicated with the provider if necessary.

A control group of patients who did not receive pre-visit phone calls was selected for comparison. These patients had their medication lists reviewed by rooming staff as part of the rooming process, prior to being seen by the provider. The control group consisted of 40 patients who had an appointment in the ambulatory cardiology clinic during the same time period as the pilot group. Of the 40 patients, 20 were chosen who were seen on the same dates as patients from the pilot group to ensure consistency among staff involved in the rooming process. The remaining 20 patients fell within the range of dates when the pilot was conducted. The control group patients met the same inclusion and exclusion criteria as the pilot group patients.

The primary outcome of the project was the difference in average rooming time between the pilot and control groups. Rooming time was defined as the sum of active time spent in "Chart Review," "History," or "Rooming" in the EHR. Active time was measured by the system's timer, which recorded the time spent in each activity and paused when the user switched to another activity or left the system idle. Rooming time was collected retrospectively from the EHR. Secondary outcomes included the number and types of medication changes made by the pharmacy technicians, the number of beta-lactam allergy assessments conducted, and the number of patients with compliance or affordability issues identified. Medication changes were categorized as additions, removals, or modifications of medications on the patient's home medication list. Beta-lactam allergy assessments were categorized as low risk, moderate risk, or high risk based on a standardized assessment template. Compliance and affordability issues were identified based on the patient's self-reported status.

Data analysis was performed using Microsoft Excel. Descriptive statistics were used to summarize the primary and secondary outcomes. The difference in average rooming time between the pilot and control groups was tested using an independent t-test. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 37 patients were included in the pilot group and 40 patients in the control group. The primary outcome of the project was the difference in average rooming time between the pilot and control groups. The results are shown in Table 1. The pilot group had a shorter average rooming time than the control group (4.72 minutes vs. 5.29 minutes), though the difference was not statistically significant ($p = 0.23$).

The secondary outcomes of the project were the number and types of medication changes made by the pharmacy technicians, the number of beta-lactam allergy assessments conducted, and the

TABLE 1. Comparison of Patient Rooming Time

Group	Average Rooming Time (min)	Minimum Rooming Time (min)	Maximum Rooming Time (min)
Pilot (n=37)	4.72	1.88	12.90
Control (n=40)	5.29	2.18	14.31

number of patients with compliance or affordability issues identified. The results are shown in Table 2. The average number of medications on a patient's home medication list was 10.8 (minimum 3, maximum 31). Six patients had medications added to their medication list and 24 patients had medications removed from their medication list. The average number of medications added and removed per patient were 3.3 and 2.2, respectively. Eight patients had beta-lactam allergies assessed and all were candidates for allergy removal. No patients reported affordability issues, and one patient reported compliance issues. Of note, this data was collected without comparison to the control group, limiting the ability to draw conclusions about the medication reconciliation quality of those completed by pharmacy technicians compared to other staff.

The time spent on the pre-visit medication history encounters by the pharmacy technician and the ambulatory clinical pharmacist were also evaluated. During the pre-visit telephone encounters, medication history pharmacy technicians spent an average of 3.93 minutes (minimum 1.20, maximum 22.13) total in each patient chart, and the supervising pharmacist spent an average of 1.83 minutes (minimum 0.48, maximum 4.63) total in the chart. Total time spent in the patient chart was collected based on the amount of active time spent in each patient chart as part of the encounter.

Pharmacy technicians were scheduled additional hours to complete this pilot work, while the ambulatory clinical pharmacist incorporated this review into standard workflow with no additional time allocated. It is worth noting that completing pre-visit medication history encounters as part of the pilot did add additional work and time to involved pharmacy staff.

TABLE 2. Changes Made by Medication History Pharmacy Technicians

Variable	*Number or mean*
Number of medications per patient	10.8
Number of patients with medications added to list	6/37
Number of patients with medications removed from list	24/37
Number of medications added per patient	3.3
Number of medications removed per patient	2.2
Number of beta-lactam allergy assessments conducted	8/37
Number of patients with affordability issues identified	0/37
Number of patients with compliance issues identified	1/37

TABLE 3. Total Number of Calls and Time Spent on Pre-Visit Medication History Encounters

Variable	*Average Time of Encounter (min)*	*Total Number of Encounters*
Technician 1	3.79	19
Technician 2	5.43	2
Technician 3	22.13	1
Technician 4	2.7	12
Technician 5	3.77	3
Pharmacist	1.83	37

Discussion

This pilot project found that pre-visit medication history phone calls conducted by pharmacy technicians resulted in shorter average rooming time and updated medication lists for patients in the ambulatory cardiology clinic. Although the difference in rooming time between the pilot and control groups was not statistically significant, it may still have operational importance, as it could translate into increased patient throughput for the clinic, more time for the provider to address the patient's clinical needs, and improved patient satisfaction. Moreover, the pre-visit phone calls ensured that the patients had accurate and complete medication information before being seen in the clinic, which is an important step for the provider to determine what medications the patient is taking and identify if any changes need to be made. Since many patients do not come to the clinic with a medication list and may not remember all their medication details, it can be difficult to identify potential necessary changes. The technicians also updated the patient's allergy information, conducted beta-lactam allergy assessments, and inquired about medication compliance and affordability. These tasks may help to optimize the patient's medication therapy, prevent adverse medication events, and improve medication adherence. That said, this process does introduce additional work for pharmacy staff, including both pharmacy technicians and pharmacists.

The findings of this pilot are consistent with previous studies that have shown the benefits of pharmacy technician-led medication reconciliation in various settings.[4-5] However, the impact of pharmacy technician-led medication reconciliation on patient rooming time has not been well studied. To our knowledge, this is the first pilot project to evaluate the effect of pre-visit medication history phone calls conducted by pharmacy technicians on patient rooming time in the ambulatory cardiology clinic.

This pilot has several limitations that should be considered. First, this was a pilot project with a small sample size and a short duration, which may limit the generalizability and statistical power of the results. Second, the control group was not randomly selected, but rather matched by date and inclusion criteria, which may introduce selection bias and confounding factors. Third, the rooming time was measured by the EHR system's timer, which may not reflect the actual time spent by the support staff on various tasks, as they may have performed other activities during the rooming process. Fourth, the project did not measure the impact of the pre-visit phone calls on other outcomes, such as provider satisfaction, patient satisfaction, adverse medication events, or clinical outcomes.

Future studies with larger sample sizes, longer durations, and randomized designs are needed to confirm the findings of this pilot and to evaluate the impact of pre-visit medication history phone calls on other outcomes.

Conclusion

In conclusion, this pilot project demonstrated that pre-visit medication history phone calls conducted by pharmacy technicians resulted in shorter average rooming time and updated medication lists for patients in the ambulatory cardiology clinic. This service may improve patient care and provider efficiency by ensuring accurate medication information and identification of potential medication-related problems. Pharmacy technicians can play a valuable role in the medication reconciliation process and contribute to the quality and safety of patient care.

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