

Research Article

Improving the accuracy of medication and allergy records between a primary care clinic and pharmacy

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ABSTRACT

Background: Much attention has recently focused on medication errors associated with inaccurate medication histories and reconciliations. This includes a Joint Commission National Patient Safety Goal, which encouraged a search for better methods of medication reconciliation.

Objectives: To examine the effect on the accuracy of patients' documented medication history and allergy lists with the introduction of formal collaboration between their primary-care provider's office and their local pharmacy.

Methods: The names of patients who frequented both the designated pharmacy and the resident-based clinic were collected. Their medication lists and allergy records from both locations were compared. A letter was sent to the clinic physician with the patient's pharmacy medication fill history

and allergy list for reconciliation. The lists were later collected again for a post-intervention comparison.

Results: The rate of disagreement between the documented medication history at baseline was 1.18 (CI 1.06 - 1.31; $p = 0.0018$) times higher than the rate seen at the three month follow-up. The rate of allergy recorded errors decreased by 1.17 (CI, 1.05 - 1.31; $p=0.0063$) times at follow-up.

Conclusion: This study demonstrated that a collaborative relationship between the patients' pharmacy and primary care clinic improved the accuracy of patient medication and allergy records. This relationship will aid providers in identifying medication inconsistencies and improving patient safety.

Keywords: medication errors, medication reconciliation, medication history, allergy history

Introduction

Much attention has recently focused on medication errors associated with inaccurate medication histories. This includes a Joint Commission National Patient Safety Goal, which encouraged a search for better methods of medication reconciliation. Obtaining accurate medication histories is important in reducing adverse drug events. One study reported that over two years' time, an estimated 700,000 emergency room visits were due to adverse events; 120,000 of those resulted in hospital admission.¹ A three year survey evaluating medication errors in patients 65 years of age and older found similar results.² In the ambulatory setting, at least 40% of adverse drug events are estimated to be preventable.³ Our quality improvement study aims to increase the accuracy of medication and allergy records in a resident-run, primary-care clinic by initiating correspondence with the patients' pharmacy.

Methods

Study setting

Patients were seen by internal medicine and medicine-pediatric residents in their out-patient clinic and also utilized a local, privately-owned pharmacy.

Study design

Patients were included if they used the designated pharmacy and the resident clinic. The only exclusion criterion was age less than 18 years. Medication and allergy lists were concurrently obtained from the pharmacy and the clinic along with the patients' diagnoses. The lists were compared, and a baseline agreement rate between the two sites was recorded.

Any variation in the medications between the two providers was considered an error, including dosages and prescribing directions. A letter from the pharmacy that included the prescription fill history and allergies was distributed to the clinic physicians. The physicians were provided with a facsimile number to communicate back to the pharmacy regarding any changes or updates. The physicians were informed but not mandated to use the information provided by the pharmacy. This action reflects the nature of the standard medical practice. All changes provided by the physician were documented in the pharmacy. After three months, the medication and allergy lists were once more obtained from the two sites. These were again compared, and all disagreements were documented.

Statistical analysis

The Poisson Model was used to compare baseline and

follow-up data. Logistic analysis was used to determine if the rate of errors changed from baseline to follow-up. The Partial Correlation analysis was used to determine correlation between the percent correct pre- and post-intervention and the disease score. The disease score was calculated using the Charlson Comorbidity index. It was estimated that 50 patients would be needed to detect a change of 5%. The significance level was set at $\alpha = 0.05$. SAS 9.4 software was used for the analysis. The quality assurance project received exemption status from the investigational review board.

Results

Of the 140 patients screened, 112 met the inclusion criteria. Patients were excluded because the resident clinic was not their primary care provider ($n = 17$), they were under the age of 18 years ($n=9$), or died after the names were obtained ($n=2$). At follow-up, seven additional patients were excluded: due to death ($n=2$), changed primary care provider ($n=3$), or changed pharmacies ($n=2$), leaving 105 patients for analysis. Their average age was 50 years (21-81 years). The average Charlson Comorbidity index score was 2 (range 0-7). The number of physicians that were contacted was 41.

The average percent of medication correct for each patient between the documented medication history and the prescription fill history improved from 48.7% initially to 57.8% post-intervention. Percent in documented allergies improved from 25% to 38%. The rate of agreement for both is statistically significant ($p = 0.0018$ and $p=0.0063$). Table. The number of individual patients having medication discrepancies did not change; however, fewer patients' allergy lists conflicted ($p=0.0017$). The association between error rate and disease score was not statistically significant.

Discussion

This study demonstrates that increased correspondence between patients' pharmacy and primary-care provider leads to a significant improvement in the rate of agreement in their medication list and documented allergies. Our results were within the range published in the literature.^{4,5} Two studies comparing pharmacy insurance claims and primary-care office medication records found a discrepancy rate of 35-76.9%.^{4,5} Another study evaluated patients' office medication records, compared to pharmacy records, and found an 8% accuracy rate.⁶ A fourth study evaluated the medication and allergy records in

a primary care clinic compared to information from the patient, discovering an average of 3.2 medication errors and two allergy errors per patient.⁷

This study's limitations include: first, data was limited to one pharmacy regardless of the number of pharmacies the patients used; second, over-the-counter medications may not have been documented at the pharmacy; third, the study was not designed to test for patient safety outcomes; and forth, only 50% of the residents responded back to the pharmacy. The physicians may have utilized the information provided for them from the pharmacy and there may not have been a need for the additional communication. Therefore, it is difficult to ascertain the exact number of residents who utilized the information provided by the pharmacy.

Implications

Improving the accuracy of medication and allergy lists is a major part of improving patient safety. Other studies have identified ways to improve accuracy by including other healthcare providers, but those studies did not include pharmacists.^{8,9} This study demonstrates that by including the patient's pharmacist, the rate of discrepancies was decreased. Further studies should be conducted to determine if the results can be extrapolated to all pharmacies.

Conclusion

This study demonstrated that establishing formal correspondence between a patient's pharmacy and primary-care clinic improves the accuracy of their medication and allergy records. Enhanced communication will aid the providers in identifying discrepancies and improving patient safety.

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Table 1: Results Comparing Baseline and Post-intervention.

	Odds Ratio, Pre v. Post, (CI)	p-value
Medication Rate of Errors per Patient Record	1.18 (1.06, 1.31)	0.0018
Percent of Patients with at least one Medication Error	0.76 (0.20, 2.81)	0.6758
Allergy Rate of Errors per Patient Record	1.17 (1.05, 1.31)	0.0063
Percent of Patients with at least one Allergy Error	1.23 (1.08, 1.40)	0.0017

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