Outcomes of medication therapy review in a family medicine clinic

Ila M. Harris, Sarah M. Westberg, Michael J. Frakes, and James S. Van Vooren

Abstract

Objective: To evaluate the effects of pharmacist-conducted medication therapy review (MTR) and intervention on the quality of care of patients in a family medicine clinic.

Design: Prospective, observational, cohort study.

Setting: Family medicine clinic in Minnesota during 2000–2001.

Patients: Patients were enrolled in a statewide nonprofit managed care organization; selected patients were seen by a clinical pharmacist.

Intervention: Following MTR, medication-related problems (MRPs) were identified and resolved.

Main outcome measures: MRPs identified and resolved, improvement in clinical status, achievement of therapeutic goals, important medication use, and reduction in number of medications.

Results: 92 patients were included in the study, with a total of 203 patient encounters. MRPs were identified in 90% of patients, with a total of 250 identified. Overall status of medical conditions improved in 45% of patients, 46% stayed the same, and 9% declined ($P < 0.001$). Significant improvement in status was found for hypertension ($P = 0.007$), dyslipidemia ($P = 0.002$), and asthma ($P = 0.011$). Significant improvement was seen for aspirin use for myocardial infarction prevention (50% vs. 93%, $P = 0.031$) and inhaled steroids for asthma (36% vs. 64%, $P = 0.031$). The number of medications was reduced from an average of 3.92 to 3.04 ($P < 0.001$) per patient.

Conclusion: MTR and intervention by a pharmacist positively affected quality of care in this family medicine clinic.

Keywords: Drug use review, medication-related problems, outcomes, medical clinics, medication therapy management.

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Adverse medication-related events result in 3% to 23% of hospital admissions and cause more than 7,000 deaths each year in the United States, with a cost of more than $136 billion per year.[1,2] The Institute of Medicine (IOM) identified preventing medication errors as one of the top priority areas for national action.[2]

Medication therapy management (MTM) may be an effective method for preventing medication errors and improving outcomes in the outpatient setting. The core elements of MTM are (1) completing a medication therapy review (MTR), which includes identifying medication-related problems (MRPs); (2) creating a personal medication record; (3) developing a medication-related action plan; (4) completing an intervention or referral; and (5) documentation and follow-up.[3] When this study was implemented, the elements of MTM were not yet developed and pharmaceutical care concepts were used.[4,5] The pharmacist in this study implemented several but not all of the core elements of MTM: MTR, intervention, documentation, and follow-up. Therefore, the terminology MTR with intervention will be used because full MTM was not conducted.

The outcomes of clinical pharmacy activities in ambulatory clinics have been described in the literature. Studies have shown improved clinical outcomes[6–18] and economic benefit.[6,7,9–11,13–16,19–22] Disease management clinics,[6–9,16] population-specific clinics (geriatrics),[10,12] and general pharmacist-run clinics[11,17] have demonstrated considerable improvements in patient outcomes. General, comprehensive clinical ambulatory care pharmacy services have also improved patient outcomes,[18,22] but some only showed identification of MRPs and pharmacotherapeutic interventions.[14,15] In our study, we sought to assess the outcomes of MTR with intervention by a clinical pharmacist in a family medicine clinic in which the pharmacist and physicians work together closely.

At a Glance

Synopsis: Medication therapy review and intervention by a pharmacist at a university-based family medicine clinic positively affected quality of patient care. A total of 250 medication-related problems were identified in 83 patients (90%). Overall status of medical conditions improved in 45% of patients, 46% stayed the same, and 9% declined ($P < 0.001$). Significant improvement in status was found for hypertension ($P = 0.007$), dyslipidemia ($P = 0.002$), and asthma ($P = 0.011$). Significant improvement was seen for aspirin use for myocardial infarction prevention (50% vs. 93%, $P = 0.031$) and inhaled steroids for asthma (36% vs. 64%, $P = 0.031$). The number of medications was reduced from an average of 3.92 to 3.04 ($P < 0.001$) per patient.

Analysis: *The current study is further evidence of the positive outcomes of pharmacists in the ambulatory setting. It is unique in that it evaluates outcomes of comprehensive care of a nonspecific group of patients by a pharmacist in a primary care setting in which the pharmacist and physician work together side by side in the same physical space, which differs from most of the published studies of clinical pharmacy services in ambulatory settings.*

Objective

The primary objective of this study was to evaluate the effects of pharmacist conducted MTR with intervention on the quality of care of patients in a family medicine clinic.

Methods

Patients were seen at a clinic that is part of a university-based family medicine residency program, and all patients were seen by a clinical pharmacist who is on the faculty of the medical residency program. The practice is an interprofessional clinical practice in which the clinical pharmacist works side by side with physicians, using the same medical record and seeing patients together, consulting at the point of care.

The participants in this study were already scheduled to see a physician in the clinic. Before their visit, the clinical pharmacist reviewed patient charts to determine which patients were at greatest risk for MRPs and thus in need of MTR. Inclusion criteria were (1) enrollment in UCare Minnesota, a state-wide nonprofit managed care organization; (2) multiple medications (five or more); (3) multiple medical conditions; and/or (4) medical conditions that result in high use of the health care system (e.g., asthma, diabetes). There were no exclusion criteria.

This prospective, observational, cohort study took place during 1 year (2000–2001). The study was approved by the institutional review board at the University of Minnesota. The study patients met with the pharmacist either immediately prior to or following the physician while in the exam room. During the visit by the pharmacist, MTR was conducted. The pharmacist assessed the initial status of each condition and documented this in a computer software program (Assurance; Medication Management Systems, Inc.). All of the outcomes evaluated were defined a priori. Patients were followed up at their future visits to the clinic. The number and duration of follow-up visits were determined based on patient needs.

Quality of care measures

MRPs. MRPs were identified and classified, and intervention was done to resolve the MRP, either independently or by a recommendation to the physician. The MRPs were organized into classes as defined by Cipolle et al.[4]

For each MRP identified, an intervention was made to resolve the problem and the type of resolution was documented. Only MRPs where action was taken were documented; however, most MRPs resulted in an intervention. At follow-up visits, resolution of MRPs was confirmed, and new MRPs were identified and resolved.

Improvements in clinical status. Overall clinical status was assessed and categorized by the clinical pharmacist caring for the patient. At follow-up visits, the status of each medical condition assessed was documented and whether the condition improved, stayed the same, or worsened was determined.