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Medication Therapy Management in the Primary Care Setting: A Pharmacist-Based Pay-for-Performance Project

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Abstract

Objectives: To evaluate the effect of medication therapy management on chronic disease management and generic drug prescribing in the clinic setting. *Methods:* Private insurer initiates Pay-for-Performance (PFP) project for clinic-based pharmacists in Iowa and South Dakota (n = 9 clinics) in 2009. Each pharmacist was assigned ~300 patients with at least 1 of 4 disease states (diabetes mellitus, hyperlipidemia, hypertension, and asthma). Pharmacists were expected to complete 2 medication reviews for each patient. The primary outcome was frequency of patients achieving goal levels: diabetes: hemoglobin A1c (A1c) <8%, low-density lipoprotein (LDL) <130 mg/dL, and blood pressure (BP) <140/80 mm Hg; hypertension: BP <140/90 mm Hg; hyperlipidemia: LDL <130 mg/dL; and asthma: percentage of persistent asthmatics on controller medication. Generic prescribing rates were evaluated for antihypertensives, cholesterol-lowering agents, proton pump inhibitors, and antidepressants. *Results:* A total of 827 patients at 3 clinics were included in the analysis. For diabetes, 77.1% had A1c <8%, 83.2% had LDL <130 mg/dL, and 76.3% had BP <140/80 mm Hg. For hypertension, 86.2% had BP <140/90 mm Hg. For hyperlipidemia, 80.6% had LDL <130 mg/dL. For asthma, 100% were on controller medication. One medication review was completed on 88.8% of patients. Generic prescribing rates ranged from 65.8% to 79.4%. *Implications/Adaptability:* A high percentage of patients achieved goal levels at clinics with clinical pharmacist services. A multidisciplinary approach to patient care may improve disease state management and medication cost savings.

Keywords

medication therapy management, incentive reimbursement, pharmacists, ambulatory care

Introduction

With rising health care expenditures, there has been increasing attention on improving quality of health care delivery while reducing costs. Improvement in the quality of care can take on many forms, including access, processes (eg, ensuring all diabetic patients have yearly dilated eye examinations), outcomes (eg, reduction in hospitalizations, diabetes-related complications, etc), patient satisfaction, and others.[1] In the ambulatory care setting, quality of care is generally aimed at achievement of recognized standards of care for chronic disease state management. Alarmingly, a 2003 study showed that patients in the United States receive only 56% of recommended care for chronic disease states.[2] Various quality indicators were used to assess this, including the use of an angiotensin-converting enzyme inhibitor (ACE-I) for patients with heart failure or patients with diabetes and proteinuria, antiplatelet therapy for patients who have had a noncardiac stroke or transient ischemic attack (TIA), and counseling on smoking cessation for patients with coronary artery disease. Medication-related problems are a significant quality issue within the health care system. Studies suggest that more than 1.5 million preventable medication-related adverse events occur annually in the United States,[3] and drug-related morbidity and mortality in ambulatory patients alone accounts for an estimated $177 billion annually.[4]

Many organizations have looked at changing the way providers are reimbursed as incentive to promote quality improvement. Pay for performance (PFP) is a payment system in which providers are rewarded financially for quality of care. This is in contrast to the traditional fee-for-service system which is based on quantity or volume of services provided, regardless of outcome. The fee-for-service reimbursement strategy provides little incentive for providers to improve quality and may even reward poor-quality care since providers

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Table 1. Medication Therapy Management (MTM) Performance Levels

	Performance Level		
	Level 1	Level 2	Level 3
MTM Review[a]	70%	80%	90%

[a] Members qualifying for the diabetes, hypertension, hypercholesterolemia, or asthma clinical suites in which medications were reviewed 2 or more times during the evaluation period.

receive additional payments to cover services needed when patients' initial therapies fail.[5] For these reasons, the Centers for Medicare and Medicaid Services (CMS) and other organizations have called for changes in reimbursement, shifting the focus toward quality of care. According to a 2005 survey, more than half the commercial health maintenance organizations (HMOs) are using PFP in their provider contracts.[6] PFP is aimed at providing financial support for achievement of predetermined performance measures and disincentives for care that does not achieve adequate outcomes. There are many different models of PFP, but common to all programs are 3 elements: a set of targets or objectives that will be evaluated, measures and performance standards for establishing the objectives, and rewards for those who meet or exceed the outcome threshold.[7] Some models may even include a financial penalty if a provider fails to achieve a minimum threshold.[8]

The infiltration of a PFP model as a strategy has largely been targeted at physicians and health systems; however, there is increasing recognition of the value of pharmacists as part of the health care team.[9] Pharmacists can play a role in improving the quality of care by performing comprehensive medication reviews, identifying and resolving drug therapy problems, recommending cost-effective medications, improving adherence to medications, and providing patient education. Numerous studies have demonstrated the benefit of pharmacists in a clinic setting.[10-19] Studies have also shown improvements in obtaining standards of care when pharmacists and physicians collaborate.[17,20] Additionally, medication therapy management (MTM) can reduce drug-related adverse events by 50% to 60% and help to avoid $45 billion in direct health care costs.[21] Pharmacists have been shown to improve quality by promoting safe and effective medication use, while controlling drug costs. Yet, pharmacists are an underused resource, with one of the biggest barriers being lack of reimbursement. In this report, we describe a PFP project with clinical pharmacists practicing in an ambulatory care setting. The objective of the project was to evaluate the effect of MTM services on chronic disease state management and generic drug prescribing rates in the clinic setting. This report will discuss methodology, highlight results from 3 participating clinics, and describe lessons learned. To ensure commonality among data reported, only results from the 3 clinics that were part of the same health system utilizing the same electronic health record in the Des Moines metropolitan region are discussed in this report.

Methods

A primary insurer initiated a PFP project for clinic pharmacists in Iowa and South Dakota (n = 9 clinics), in 2009. The 3 pharmacists (C.F.K., K.K.H., and C.D.L.), all had established practices at these clinics and saw patients independently of the physician for anticoagulation, diabetes, and other chronic disease state services. Pharmacists were invited to participate if their practice site had participated in the physician-only PFP project in previous years. In instances where the patient volume was high, the pharmacist selected certain physicians to achieve an assignment of around 300 patients. This process was done to make the patient load manageable and somewhat consistent across sites. All patients who met the eligibility criteria and had the selected physicians listed as their primary provider were included in the project. The 4 clinical suites (ie, disease states) included in the project were diabetes, hypertension, hypercholesterolemia, and asthma. The evaluation period was between January 1, 2009, and February 28, 2010.

Prior to 2009, multiple meetings occurred between representatives from both the insurer and state pharmacy association. This was the source of initiation of the project. A brainstorming meeting was then held in January 2009, with representatives from the insurer, state pharmacy association, and clinic pharmacists. Discussions included the value of a pharmacist in a clinic setting, methods and measurements desired, and next steps for planning. Following this meeting, telephone conference calls were held once or twice a month to provide project updates.

The 3 main components of this project included MTM, disease state management, and generic utilization. All were evaluated based on performance levels 1 to 3, with level 3 indicating the best level of performance. To achieve each level, a minimum percentage of patients were required to meet the assigned criteria. A reimbursement amount was awarded if the level was attained (Table 1). These clinical suite performance levels were 5 percentage points higher than those of the physician-only project which had been determined by the primary insurer. These higher levels were set as it was thought that the multidisciplinary care of the pharmacist–physician team could achieve better outcomes than physician-only care.

MTM was required to be eligible for assessment of the 4 clinical suites. Documentation included date of review, medication review dispositions (medications added; medication changed with reason for the change such as dose change, cost, efficacy, or other; medication deleted; no medication change), and immunization status (influenza only). Data were to be submitted on a monthly basis by the pharmacist using the MTM Measure Worksheet provided by the primary insurer. Patients were to receive 2 medication reviews annually with a minimum separation of 90 days. PFP assignments for the medication review class can be found in Table 1.

To be eligible for the diabetes, hypertension, and/or hypercholesterolemia clinical suites, patients had to be 18 years of age or older. Patients diagnosed with diabetes and either hypertension or hypercholesterolemia were included in the

Table 2. Clinical Suites Performance Levels Based on Clinical Measures

Clinical Suite	Measurement	Performance Level		
		Level 1	Level 2	Level 3
Diabetes	Hb A1c <8.0%	70%	75%	80%
	Hb A1c <7.0%[a]	–	–	55%
	LDL <130 mg/dL	75%	80%	85%
	LDL <100 mg/dL[b]	–	–	60%
	BP <140/80 mm Hg	65%	75%	80%
Hypertension	BP <140/90 mm Hg	75%	80%	85%
Hypercholesterolemia	LDL <130 mg/dL	75%	80%	85%
Asthma	Controller medication	85%	90%	95%

Abbreviations: Hb A1c, hemoglobin A1c; LDL, low-density lipoprotein; BP, blood pressure.
[a] Includes only patients with Hb A1c <8.0%.
[b] Includes only patients with LDL <130 mg/dL.

diabetes clinical suite performance evaluation only. Clinical outcome measures for the diabetes suite included hemoglobin A1c (A1c) (<8% and <7%), low-density lipoprotein ([LDL] <130 and <100 mg/dL), and blood pressure (BP) <140/80 mm Hg. The clinical outcome measure for the hypertension suite was a blood pressure <140/90 mm Hg at the final clinic visit. The clinical outcome measure for the hypercholesterolemia suite was LDL <130 mg/dL at the end of the evaluation period. The asthma clinical suite had no age limit, with an outcome measure of percentage of patients with persistent asthma prescribed either a long-term control medication (inhaled corticosteroid) or an acceptable alternative steroid-sparing control medication. The PFP performance levels for the clinical suites can be found in Table 2.

Generic utilization assessed the percentage of generic prescriptions for each drug class written by the physicians, based on cumulative pharmacy claims data. Categories included antihypertensives (generic ACE-I or angiotensin receptor blocker [ARB], including diuretic combination drugs), cholesterol-lowering agents (generic 3-hydroxy-3-methylglutaryl-coenzyme A [HMG-CoA] reductase inhibitor), antidepressants (generic serotonin–norepinephrine reuptake inhibitor [SNRI] and selective serotonin reuptake inhibitor [SSRI]), and proton pump inhibitors [PPIs]). Pharmacy claims data were gathered on a monthly basis. For a prescription to be included, the Drug Enforcement Administration (DEA) number or the National Provider Identifier (NPI) of the prescribing professional must have been included on the claim submitted to the insurer. The generic utilization was calculated by dividing the total number of generic prescriptions by the number of all prescriptions (brand plus generic) in the drug category during the evaluation period. The generic utilization efficiency performance levels can be found in Table 3.

The timeline for action for the study included a variety of deadlines. Contract signature and clinician assignments were due by June 1, 2009. Monthly, updates on progress were due to be submitted to the insurer. The insurer was responsible for providing quarterly reports on performance status and level percentages. The MTM performance level, all had a start and end date of January 1, 2009 and February 28, 2010, respectively. This measurement period was selected to coincide with the time frame for the ongoing physician-based PFP project.

The health system involving the 3 sample clinics created a note within their electronic health record. This note included specific templates to document the reason for visit, immunizations, laboratory monitoring, goals and results, and plan and discussion. This enabled analytics to retrieve and summarize the data. To increase generic prescribing rates, profiles of patients currently prescribed brand name medications in the targeted classes were reviewed to determine whether a switch to generic therapy was warranted.

A second year pilot was anticipated with an added requirement that the clinic would need to meet at least performance level 1 of the MTM and at least performance level 1 for all targeted drug classes in the generic utilization performance evaluation measure to be eligible to receive the MTM award and the generic utilization performance award.

Statistical analysis was performed using 2-tailed chi-square analysis with Yates Correction for goal levels attained for the clinical suites at the PharmD clinics compared to all PFP clinics in the 2 state regions. Descriptive statistics were reported for all other measures assessed.

Results

A total of 827 patients at 3 primary care clinics were included in the analysis. This represents a sample of data from clinics that participated in the study. There were 131 patients with diabetes, 427 with hypertension, 299 with hypercholesterolemia, and 27 with asthma. The majority of patients (n = 649) had only 1 diagnosis. The mean age of patients included in the analysis was 53.2 years old (range 3-91).

The percentage of patients at pharmacist clinics (n = 3) compared to all clinics in the physician-based project, who achieved goal levels for each clinical suite is listed in Table 4. For diabetes, a higher percentage of patients (77.1%) achieved an A1c of <8.0% compared to all patients in the physician-based PFP project, although this difference was not statistically significant ($P = .258$). Of these patients with diabetes, 83.2% had an LDL of <130 mg/dL compared to 77.3% of all patients ($P = .137$). A higher percentage of patients in the pharmacist clinics (76.3%) had a blood pressure of <140/80 mm Hg compared to 63.6% of all patients ($P < .001$).

For hypercholesterolemia patients, 80.6% had an LDL of <130 mg/dL. This suite was not included in the physician-based PFP project, so no comparator data were available. For hypertensive patients, a higher percentage of patients (86.2%) achieved a blood pressure reading of <140/90 mm Hg ($P < .001$). For asthmatic patients, all patients classified as persistent asthmatics were prescribed a long-term controller medication, which was similar to all clinic patients ($P = .546$).

These 3 clinics with pharmacist services also performed well when compared to national averages and recognized benchmarks for several of the measures studied (Figure 1).

Table 3. Generic Utilization Efficiency Performance Levels

Medication Category	Performance Level (Based on % of Prescriptions Dispensed as Generic)		
	Level 1	Level 2	Level 3
Antihypertensives—generic ACE-I or ARB, including diuretic combinations	65%	80%	85%
Cholesterol-lowering agents—generic HMG-CoA reductase inhibitors use	55%	65%	70%
Antidepressants—generic SNRI and SSRI drug use, excluding any combinations	60%	75%	80%
PPI—generic PPI use excluding any combinations	60%	75%	80%

Abbreviation: ACE-I, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; SNRI, serotonin–norepinephrine reuptake inhibitor; SSRI, selective serotonin reuptake inhibitor; PPI, proton pump inhibitor.

Table 4. Goal levels Attained for Clinical Suites at PharmD Clinics Compared to all PFP Clinics in the 2 State Regions

Clinical Suite	Measurement	PharmD Clinics, Attained/All (%)	All Clinics, n, Attained/All (%)	*P* value[a]
Diabetes	Hb A1c <8.0%	101/131 (77.1)	9101/12 593 (72.3)	NS ($P = .258$)
	Hb A1c <7.0%[b]	58/101 (57.4)	6188/9101 (68.0)	$P = .031$
	LDL <130 mg/dL	109/131 (83.2)	9639/12 461 (77.3)	NS ($P = .137$)
	LDL <100 mg/dL[c]	83/109 (76.1)	7221/9639 (75.1)	NS ($P = .854$)
	BP <140/80 mm Hg	100/131 (76.3)	8015/12 593 (63.6)	$P < .01$
Hypertension	BP <140/90 mm Hg	368/427 (86.2)	38 474/49 881 (77.1)	$P < .001$
Hypercholesterolemia	LDL <130 mg/dL	241/299 (80.6)	NR	
Asthma	Controller medication	27/27 (100)	2131/2156 (98.8)	NS ($P = .546$)

Abbreviation: Hb A1c, Hemoglobin A1c; LDL, low-density lipoprotein; BP, blood pressure; NR, not reported.
[a] Calculated using chi-square with Yates Correction (2-tailed).
[b] Includes only patients with Hb A1c <8.0%.
[c] Includes only patients with LDL <130 mg/dL.

A higher percentage of diabetic patients in pharmacist-affiliated clinics had an A1c <7.0% and an LDL of <100 mg/dL. For hypertension, BP control was better than the national average; and for asthma, more patients were on a controller medication.

MTM was completed for 737 patients (89.1%) included in the study. The type and description of MTM services is summarized in Table 5. Of the patients who received MTM, 378 (45.7%) had 2 reviews during the study period. The majority of the first reviews were chart audits (88.9%). The most common type of recommendation made by clinic pharmacists involved adding medications.

At the end of the study, generic prescribing rates ranged from 52.0% to 82.0% for the 4 classes of medications evaluated (Table 6). All 3 clinics saw improvement in prescribing rates for cholesterol-lowering agents and PPIs. Two clinics had an increase in generic prescribing for antidepressants, and one clinic showed improvement in antihypertensives. Changing from a higher tier brand name medication to a lower tier generic agent can result in significant cost savings for the involved patient.

Discussion

The clinics that utilize pharmacists achieved better surrogate clinical outcomes for the majority of measures compared to all clinics in the physician-based PFP project in Iowa and South Dakota. We are unable to fully elucidate the reason/reasons why these 3 clinics had improved outcomes. All 3 clinics have had pharmacists on-site for at least 3 years prior to the evaluation period. Therefore, it is possible that the clinical outcome measures for these clinics may have exceeded the statewide average in previous years. As well, these clinics may have a better infrastructure that allows for closer monitoring and management of chronic diseases. It is also possible that the MTM initiatives provided by the pharmacists during and prior to this evaluation period helped improve the outcomes for these patients.

One limitation of this data set is that it only includes analysis of 3 of the 9 participating clinics in this pilot project. The 3 participating pharmacists in this descriptive article are part of the same integrated health system in a metropolitan area and share the same electronic health record. In addition, they all practice under collaborative practice agreements which allow for medication dose adjustment, generic substitution, and laboratory monitoring for the disease states evaluated in the PFP project. This ability to make changes independently of the provider may have positively impacted the pharmacists' ability to improve patient care. In addition, all 3 pharmacists communicated with their physicians either face to face or through the electronic health record. Each pharmacist on the pilot project worked independently and implemented the MTM services on his or her own accord. The participating pharmacists did have monthly conference calls to discuss various aspects of the PFP project with the

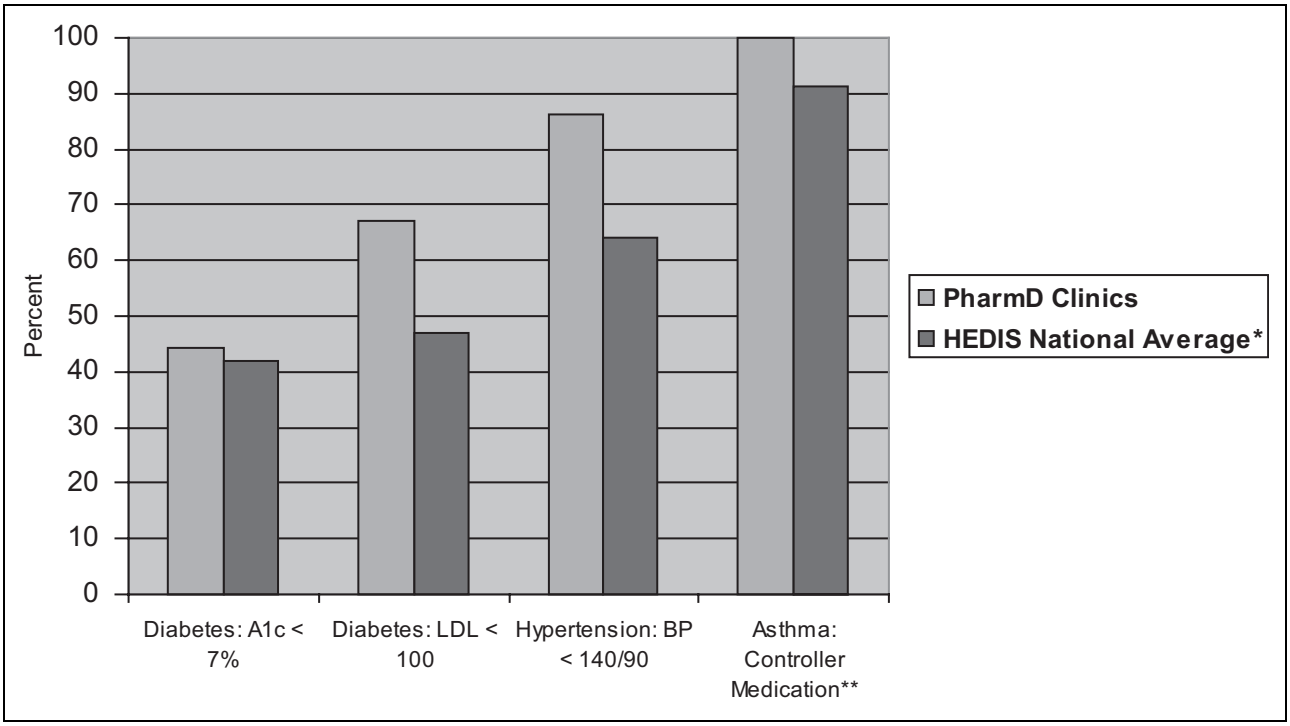

Figure 1. Goal levels attained for clinical suites at PharmD clinics compared to HEDIS* national average for commercial insurance plans. *Healthcare Effectiveness Data & Information Set (HEDIS) national average for commercial plans.[22] **HEDIS data for patients 12 to 50 years of age with persistent asthma.

Table 5. Type and Description of Medication Therapy Management Services Provided

	Review 1	Review 2
Patients receiving review, n (%)	737 (89.1)	378 (45.7)
Type of review, n (%)		
Chart	655 (88.9)	358 (94.7)
In person	80 (10.8)	20 (5.3)
Phone	2 (0.3)	0 (0.0)
Type of recommendation		
Medication added	113	82
Medication changed	112	5
Medication discontinued	22	8
Medication dose adjusted	80	56

opportunity to share ideas about how to implement population-based MTM services.

Several other limitations with possible implications on the results of the project exist. First, Framingham risk scores were not calculated for patients with hyperlipidemia to determine LDL goal. Instead, all patients were categorized as goal LDL of <130 mg/dL when some may have had goals of <160 mg/dL or <100 mg/dL. Second, measures for certain disease states were less strict than those of nationally recognized clinical practice guidelines (eg, Hb A1c, BP, LDL for diabetes). These measures were used to be consistent with those of the physician-only PFP project. Third, generic prescribing rates did not take into account sample brand-name medications the patient may have received from the prescriber's office or the possibility that some patients may pay cash for low-cost generic options (eg, 4-dollar generics).

When the PFP project was conceived and initiated by the insurer, it was designed to be a 2-year project. The first year was to be a "learning period" to evaluate the project design, in regard to proper patient selection and clinical targets. The insurer and the pharmacists were then to make adaptations during the design of the second year of the project. Unfortunately, the health insurer terminated the project after the first year of the pilot due to restructuring of all PFP projects. We believe that it is important to share this unique PFP project that rewarded clinic systems utilizing pharmacists in the chronic care model. Based on our involvement with the PFP project, we hope to share some of our lessons learned and ways to work with managed care organizations to design similar PFP projects in the ambulatory care setting.

Lessons Learned

The majority of patients allocated to the pharmacists in the project never had face-to-face meeting with the clinic pharmacist. We believe that the personal interaction with patients leads to improved clinical outcomes. There was less perceived value of completing chart audit with limited knowledge of the personal background of the patient. Thus, we believe that the best way to fully evaluate the benefits of the clinic pharmacist would be to analyze patient outcomes on those patients referred by the providers to the pharmacist for medication management.

Table 6. Generic Prescribing Rates by Clinic From Baseline to Study End, %

Medication Category	Clinic 1 (Baseline)	Clinic 1 (Study End)	Clinic 2 (Baseline)	Clinic 2 (Study End)	Clinic 3 (Baseline)	Clinic 3 (Study End)
Antihypertensives	64.6	63.3	79.7	77.7	57.9	65.2
Cholesterol-lowering agents	66.4	78.5	65.1	80.3	66.1	79.7
Antidepressants	55.8	52.0	70.3	79.5	67.7	71.9
Proton pump inhibitors	66.7	82.0	47.0	72.7	75.3	81.7

Another limitation of this project was the number of low-risk patients on the MTM list. Many patients were already appropriately treated with medication and at therapeutic goal levels. Many of these patients may see their primary care provider annually for refills and therefore were of low yield for needing more than one medication review during the calendar year. We would therefore recommend that there should be some type of mechanism to identify higher risk patients.

The short turnaround time for this project limited our abilities to make great impact on many of the patients. We received our patient lists in May 2009 and the evaluation period concluded in February 2010. Each pharmacist had to design processes to track and manage the 300 patients allocated to them. This type of population-based care was new to all the pharmacists and required extra time and effort to initiate the service, when they already had busy clinical workloads. Therefore, many patients only received one MTM review during the evaluation period because of time restraints. The announcement of project termination in January 2010 may also have negatively impacted the number of MTM reviews completed. All of the participating pharmacists would have been better prepared for year 2 of the project since they had developed the necessary databases and processes to manage the allocated patients.

One of the perceived benefits of evaluating the clinic records during the MTM review was that there were a fair number of patients who had ''fallen through the cracks'' and needed to return to the clinic for physician evaluation or laboratory monitoring. These patients were alerted of the need to return for follow-up by appropriate clinic staff. This type of reminder alert can also be accomplished with the use of disease registries that create reminders/alerts. The clinic pharmacist can educate staff on the appropriate follow-up care for various chronic conditions (eg, diabetes laboratory monitoring—A1c testing, kidney testing).

The potential impact of pharmacists on improving the generic prescribing rates of physicians can be a difficult task for certain categories of medications. The physician ultimately controls the medication choice at the onset of therapy. For example, if a brand-name antidepressant has been started and the patient achieves clinical remission of his or her depression, it becomes difficult to convert that patient to a generic antidepressant in the future. It may be more appropriate to analyze generic prescribing rates on medication categories that are more amenable to therapeutic interchange, for example PPIs. A strategy implemented by some of the clinics was to eliminate or decrease the number of brand-name drug samples available in their respective primary care clinic. We do not have statewide data about the generic prescribing rates for the 4 medication categories, so we are unable to determine whether these are improved in the pharmacist-affiliated clinics.

Conclusion

We observed a high percentage of patients achieving goal levels for each clinical outcome measure at clinics with pharmacist services. A multidisciplinary approach to patient care may improve disease state management and medication cost savings. Health systems should continue to work with insurers to implement and evaluate payment systems for clinics incorporating pharmacist services in the patient-center medical home model.

Declaration of Conflicting Interests

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