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Utilizing clinical pharmacists and a medication assistance program to improve medication access for indigent and underserved patients in primary care

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ABSTRACT

Background: Medication Assistance Programs (MAP) provide needed medications to uninsured and underinsured patients. In 2019, 24% of adults had difficulty affording their medications. Literature has shown enrollment in MAP decreased emergency department (ED) visits, hospital admission, and total hospital cost.
Objectives: Primary objective described cost savings of MAP in patients identified by pharmacists. Secondary objectives included comparing rates one year before and after MAP utilization for hospitalization, ED visits, and combined hospitalization and ED visits. The purpose of the study was to evaluate the effect of pharmacists in improving medication access.
Methods: A retrospective observational cohort was conducted in primary care and family medicine resident clinics. Inclusion criteria included one or more visits with a pharmacist and MAP application between January 1, 2019 through December 31, 2019. The primary objective and demographics were analyzed using descriptive statistics. Secondary objectives were analyzed using paired *t*-test.
Results: In total, 18 patients saved $187,789, with an average of $10,432 per patient, for 35 medications. There were no statistically significant differences in average hospitalizations, ED visits, and combined hospitalizations and ED visits.
Conclusions: Pharmacists utilizing MAP resulted in cost savings and increased patient access to medications. The study did not find differences in hospital visits, ED visits, or combined hospital and ED visits.

Introduction

The rising costs of medications makes it difficult for patients who are underinsured or uninsured to afford medications. A poll conducted by Kaiser Family Foundation found that 59% of Americans believe that prescription medications developed in the last 20 years have made the lives of Americans better; however, 8 in 10 Americans believe that the cost of prescription medications is unreasonable.[1] With the list price of Medicare Part D medications increasing higher than the rate of inflation from July 2019 to 2020, adults are finding it difficult to afford medications.[2] According to the Kaiser Family Foundation, 24% of people report difficulty in affording medications. Those who found it most difficult to afford medications spent more than $100 per month on medications (58%), had four or more prescription medications (35%), were 50–64 years of age (30%), had fair to poor health (49%), and had an annual income of less than $40,000 (35%).[1] Due to cost, 29% of adults did not take medications as prescribed; resulting in a worsening of disease state in 8% of those patients.[1] Fortunately, resources such as Medication Assistance Programs (MAP) by drug manufacturers exist to help patients access medications that would otherwise be unaffordable.

MAPs allow for uninsured and underinsured patients to have access to medication(s) at reduced or no cost if approved by the manufacturer following submission of an application. While each MAP has different criteria for eligibility, most require documentation of income and verification of ineligibility for other assistance. The application process is often tedious, and older adults often find it difficult to complete the application since MAP applications typically have a 10th grade reading level.[3] A study by Collins and colleagues (2019) estimated that 43.8 million adults in the United States who had insurance for the entire year were underinsured. [4] Being underinsured led to 41% of adults delaying care due to cost compared to 23% with adequate insurance coverage.[4]

Abbreviations: MAP, Medication Assistance Program; FMRC, Family Medicine Resident Clinic; CPA, Collaborative Practice Agreement; ED, Emergency Department; CPT, Current Procedural Terminology; AWP, Average Wholesale Price; BMI, Body Mass Index; ADA, American Diabetes Association.

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Previous studies regarding programs for medication assistance focus on cost avoidance or decreasing hospital admission rates. Mayo and colleagues (2006) found that MAPs, for heart failure reduced total hospital cost, which was defined as six months before and after MAP enrollment by $145,984 in 28 patients, showing that patient education and MAP allows for decreased costs.[5] Korpu and colleagues (2018) found that after enrollment in MAPs, the average rate of admission to the ED, observation, or inpatient units decreased by 22.4%, showing that MAP increases indigent patient's access to medications that were previously not affordable and improves compliance, in addition to decreasing readmissions.[6] Another study conducted by Herity and colleagues (2018) found that after enrollment in an organization which assists patients with Medicare Extra Help and copayment assistance cards, over a timeframe of 24 months, ED visits decreased from 56% to 41% and hospital admission decreased from 47% to 23%. Herity and colleagues (2018) concluded that enrollment in a community-based program that helps seniors manage medications, connect with community resources, and overcome barriers to medication access displayed a reduction in acute health service use.[7]

At our institution, patients are identified as having difficulty affording medications by providers, clinical pharmacists, or other members of the healthcare team. In the primary care clinics, patients are referred to clinical pharmacists for disease state management and if identified as in need of medication assistance, the pharmacist will further evaluate the patient for eligibility of MAP programs. Clinical pharmacists collect demographic, household, and financial information for the MAP coordinator and determine what medication(s) may be optimal for patients. Patients who are deemed likely eligible for MAP by a clinical pharmacist receive an application from the MAP coordinator. The MAP coordinator summarizes and highlights all sections of the MAP application the patient is asked to complete as well as information to be provided by the patient. The MAP coordinator completes or facilitates the remainder of the paperwork, including procuring prescription(s), pre-filled application for completion by the provider, and if approved, refills of medications and reapplication (See Fig. 1). Previous literature has demonstrated significant need for MAPs in the uninsured and underinsured populations to improve access of necessary medications and improve patient outcomes; however, literature supporting the role of clinical pharmacists in identifying patients in need of medication assistance is lacking. The purpose of this study was to evaluate the effect of clinical pharmacists in improving medication access through MAP in medically indigent and underserved patients.

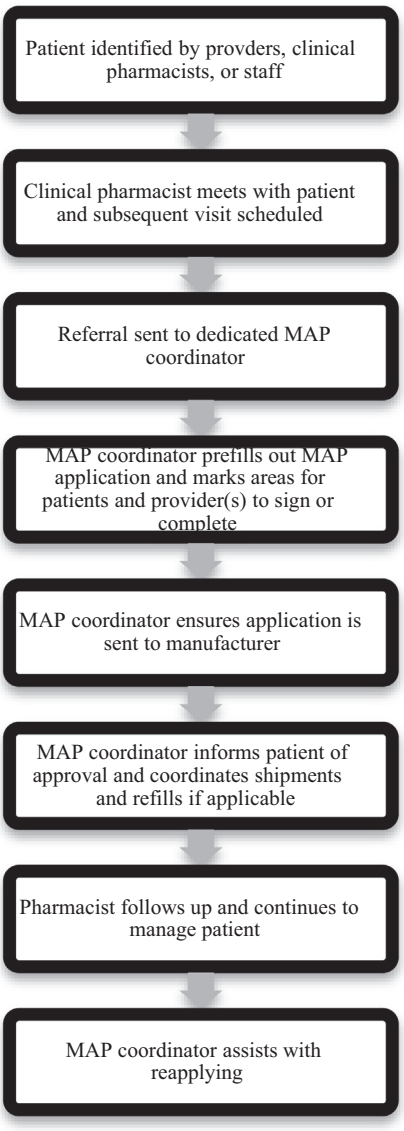

Fig. 1. MAP process.

Methods

Site selection

This study used a retrospective observational cohort conducted at 9 family medicine and internal medicine clinics and 2 family medicine residency clinics (FMRC). The clinic locations included in the study utilized clinical pharmacists as an extension of the primary care team. The embedded clinical pharmacists, practiced under a broad scope collaborative practice agreement (CPA) and met with patients one-on-one for co-management of disease states. The pharmacists also serve as resources for drug information, affordability of medications, clinical guideline recommendations, and provider/staff education.

Inclusion/exclusion criteria

Patients were identified using Current Procedural Terminology (CPT) codes for clinical pharmacist visits which were cross referenced against a list of MAP patients kept by the MAP coordinator. Patients were included in the study if they were at least 18 years of age, received services at the study clinics, had at least one visit with a clinical pharmacist, and applied for a new MAP medication from January 1, 2019 through December 31, 2019. Prisoners were excluded from the study.

Study data points

Data points collected for the study were patient name, medical record number, social security number, date of pharmacist encounter, MAP medication name, Average Wholesale Price (AWP) of MAP medication, clinic location, ED visits, hospital admissions, number of days hospitalized, number of medications assisted with, MAP approval date, patient age, gender, race/ethnicity, work status, comorbidities, primary and secondary insurance, marital status, body mass index (BMI), renal function, and hemoglobin A1c. Lab values were collected three months prior to study admission. If multiple values existed the most recent was utilized. To determine study entry date, referred to as MAP utilization date, there were two methods utilized; 1) documentation in the chart for arrival of MAP medications (preferred method) or, 2) the date of clinical pharmacist visit. Other data points were collected 1 year prior to and after study enrollment. The Ascension Via Christi and University of Kansas School of Medicine Institutional Review Boards approved this study for expedited review, exempt from full review, and informed consent was not required. This research did not receive any grants or other funding from agencies in the public, commercial, or not-for-profit sectors.

Table 1
Baseline demographics (n = 18).

	N (%)
Gender	
Male	10 (55.6)
Age, mean, yr ± SD	59.2 ± 11.2
Race	
White	18 (100)
Marital Status	
Single	3 (17)
Widowed	4 (22)
Divorced	4 (22)
Married	7 (39)
Work Status	
Unknown	1 (5.6)
Not employed	2 (11.1)
Employed	4 (22.2)
Retired	11 (61.1)
Primary Insurance	
Self-pay	6 (33.3)
Medicare	12 (66.7)
Clinic Location	
Internal Medicine	18 (100)

Table 2
MAP cost savings.

Medication Savings	Amount
Total Savings; No. medications	$187,789;35
Average Savings per Patient ± SD	$10,432 ± $6965
Savings Range per Patient	$1774 – $30,308

Outcomes

The primary objective was to describe the cost savings to patients identified by a clinical pharmacist and receiving MAP medications one year before and after MAP utilization date. Cost savings were calculated using AWP. Secondary objectives were comparing rates for hospitalization, ED visits, combined rates of ED and hospital visits one year before and after MAP utilization date. An additional secondary objective was to compare the number of medications one year before and after MAP utilization date.

Statistical analysis

Data analyses were completed at the individual or group level as applicable. Demographic variables were described using descriptive statistics (means, standard deviations, ranges, etc.). Where appropriate, paired *t*-test, Pearson correlations or Wilcoxon Signed Ranks Test were used to identify any associations among the other research variables.

Results

A total of 31 patients were screened for study inclusion. Based upon inclusion and exclusion criteria, 13 patients were excluded. Reasons for exclusion included no visit with a clinical pharmacist (6 patients), renewal of MAP medication (6 patients), and outside entity completed MAP application (1 patient). See Table 1 for demographic information.

In total, the clinical pharmacists and MAP coordinator assisted 18 patients with 35 MAP medications, with an average of 1.9 medications per patient (range 1 to 4). Twenty-six medications were for diabetes, 8 were for respiratory conditions, and 1 was for incontinence. Upon further analysis of diabetes medications, 9 were basal insulin, 8 were bolus insulin, 5 were GLP-1 agonists, 2 were basal insulin/GLP-1 agonists combination medications, and 2 were SGLT-2 inhibitors.

In regards to the primary outcome, total savings of assisted MAP medications were $187,789 based on AWP, resulting in an average savings of $10,432 (range of $1774 to $30,308) per patient. The average savings per medication was $5365 (see Table 2). See Table 3 for additional results.

Discussion

The results from this study suggest that clinical pharmacists embedded in internal medicine and family medicine clinics can increase patient access to medications for treating chronic conditions. Utilizing a dedicated MAP coordinator to assist with application completion and submission allowed for an average cost savings of $10,432 to patients.

Upon analysis of the data, the majority of medications utilized through the MAP program were for diabetes management. The clinical pharmacists utilize the American Diabetes Association (ADA) guidelines for management of patients with diabetes. After the addition of metformin, other recommended therapies are typically brand name medications, leading to diabetes being a costly disease state to manage. Due to the high cost and complexity of medication management in diabetes, pharmacists are frequently consulted to manage diabetes and help patients with costs of medications through MAP. The exploratory analysis revealed that clinical pharmacists were able to statistically and clinically lower hemoglobin A1c from 9.2% to 7.04% by improving access to diabetes medications. Per ADA guidelines, a standard hemoglobin A1c goal is <7% and this study found an average hemoglobin A1c slightly above the standard goal following utilization of MAP medication(s) for diabetes.[8]

The study did not find a significant difference in hospital or ED visits, despite patients being started on or continuing more optimal medication through MAP utilization. A reason for this non-significant outcome may be due to patients using medication samples or paying out of pocket until arrival of MAP medications; potentially contributing to why there was no significant difference for the number of medications before and after MAP enrollment.

A limitation of the study was inconsistent documentation for MAP medication arrival, which was relied upon for determination of date of entry into the study, leading to potentially imprecise numbers of hospitalizations and ED visits. Another limitation of the study includes multiple health systems in the surrounding area; therefore, not all hospital or ED visits may have been captured. The study time period of one year before and after MAP utilization date included the beginning of the COVID-19 pandemic, potentially affecting hospital and ED visits. Small sample size was also a limitation of the study. Due to the small sample, all patients in the study were white and the majority had Medicare making the results less

Table 3
Secondary objective and exploratory results.

	One Year Prior To MAP Utilization Date, N ± SD	One Year After MAP Utilization Date, N ± SD	*p* Value (95% CI)
Total ED Visits per patient average	0.28 ± 0.57	0.39 ± 0.78	0.61 (−0.56 to 0.34)
Total Hospital Visits per patient average	0.11 ± 0.32	0.11 ± 0.32	1 (−0.24 to 0.24)
Combined ED and Hospital Visits per patient average	0.39 ± 0.20	0.5 ± 0.25	0.72 (−0.75 to 0.52)
Number of medications per patient average	11.33 ± 5.91	11.78 ± 6.61	0.25 (−1.23 to 0.34)
ED visits related to MAP medications, per patient average	0.11 ± 0.32	0.06 ± 0.24	0.58 (−0.15 to 0.26)
BMI, per patient average	32.95 ± 7.41	33.79 ± 6.82	0.09 (−1.83 to 0.15)
eGFR, per patient average	54.7 ± 8.06	55.5 ± 9.06	0.68 (−5.09 to 3.49)
Hemoglobin A1c, per patient average	9.2 ± 2.00	7.04 ± 0.87	0.03 (0.23 to 4.08)
Number of Days Hospitalized, per patient average	0.67 ± 2.38	0.17 ± 0.51	0.4 (−0.73 to 1.73)

generalizable. At the study institution, when Medicare patients are in the coverage gap for prescription medications, the clinical pharmacists typically receive referrals to determine if MAP or another resource could be utilized to decrease the cost of medications. Upon analysis, it was noted that there was an absence of patients from the FMRC sites. At these sites, patients can purchase medications at significantly reduced cost, due to being an eligible 340B site, often replacing MAP assistance.

When considering indication of MAP medications, previous studies focused on a single disease state while this study's design and intention was to broadly evaluate MAP utilization for any disease state at primary care clinics, though the majority of MAP medications were for diabetes.[5] Unlike previous studies, no significant differences were found regarding hospital visits, ED visits, or combined hospital and ED visits.[5–7] Compared to other studies, this study is unique due to collaboration between clinical pharmacists and MAP coordinator to improve outcomes and prevent disease progression while ensuring patients are successfully accessing previously unaffordable medications.[6,7] Utilization of the MAP coordinator increases efficiency of the MAP application process as well as reduces the burden and difficulty of completing the initial application, refill requests, and application renewals. A MAP coordinator is a vital component to our successful MAP process for indigent and underserved patient populations.

Conclusion

Referral to a clinical pharmacist in primary care clinics resulted in an average medication savings per patient of $10,432 for patients identified in need of medication assistance and enrolled in MAPs, which increased medication access. The results of this study highlight the benefit of clinical pharmacists' involvement in chronic disease state management. Future larger studies are needed to evaluate the effect of clinical pharmacists and MAP for multiple disease states in the primary care setting.

CRediT authorship contribution statement

Brianna Pickett: Conceptualization, Methodology, Investigation, Writing – original draft, Visualization. **Tiffany R. Shin:** Conceptualization, Methodology, Writing – review & editing, Visualization. **Melissa Norton:** Conceptualization, Methodology, Writing – review & editing, Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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