



The Role of Pharmacist-Led Medication Therapy Management in Chronic Disease Management and Public Health Initiatives

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ABSTRACT

Pharmacists are increasingly recognized for their role in optimizing medication therapy outcomes, particularly in managing chronic diseases such as cardiovascular disease, hypertension, and diabetes. This review explores the implementation of clinical pharmacist-led medication therapy management (MTM) services within legislative frameworks and public health initiatives. It highlights the impact of MTM on chronic disease management, particularly in underserved communities, and its potential to reduce healthcare costs and improve patient outcomes. By integrating pharmacists into interdisciplinary healthcare teams, MTM services can address medication adherence, enhance preventative care through lifestyle changes, and provide comprehensive support to patients with chronic conditions.

Keywords: Pharmacists, Medication Therapy Management, Chronic Disease, Public Health, Diabetes and Hypertension

INTRODUCTION

Pharmacists are poised to take on the challenge by optimizing medication therapy results in the diagnosis and management of cardiovascular disease, hypertension, and diabetes, and promoting preventative lifestyle measures such as nutrition and physical activity [1]. In fact, the success of their inclusion is well established in interdisciplinary chronic disease management activities, so much so that MTM is at risk due to the emphasis on reducing health care costs in patient care models. The purpose of this chapter is to describe the implementation of a clinical pharmacist-led medication therapy management (MTM) services within the legislative requirements of a pharmacy-based diabetes and hypertension screening and outreach grant as a model for future public health initiatives integrating pharmacist services. There is increasing concern regarding the large number of individuals affected by chronic diseases and disability in the United States [2]. The direct and indirect costs of chronic illnesses are staggering, with over 1.2 billion office visits, more than 600 million hospitalizations in 2010, and close to \$3.5 trillion spent on health care and lost productivity in 2017. The top culprits of increased health care costs are two of the most preventable and manageable chronic conditions in the United States: diabetes and hyperlipidemia (elevated low-density lipoprotein cholesterol). These two conditions are particularly concerning because many at-risk individuals remain undiagnosed, while diagnosed individuals are undertreated, often resulting in morbidity and mortality. Between 70-90% of deaths from CVD could be prevented by lifestyle changes with lasting effects, which result in quality-of-life improvement for those afflicted with chronic conditions and the potential to decrease the burden of health care costs for the individual and society [3].

Background and Rationale

At the pharmacy, critical and individualized recommendations can be made when pharmacists assess and evaluate the numerous medications patients are being prescribed. Especially in many underserved communities that do not have much access to comprehensive healthcare, community pharmacies are often where many individuals get their medical needs met. Most of the time, they are where people stop when they are in need of a particular medication or when they are seeking treatment for minor illnesses. Pharmacist-led medication therapy management services offer additional health services to those who do not have access to any other form of health services [4]. Aside from the use of primary care physicians, these services can provide similar care that many patients consider convenient and just down the street from where they reside. Public health initiatives can be further improved when these value-added services are included in their community-based programs aimed at improving the overall health status of those being served. Chronic diseases put a major financial burden on the U.S. health system, making them a

primary concern for public health officials. When patients are not taking their medications as prescribed, they are at a greater risk for a decline in health status, which can lead to higher medical costs and result in an overall decrease in quality of life. A type of intervention known as medication therapy management, led by a pharmacist, involves a collaborative process where pharmacists work directly with patients, providers, and other healthcare professionals to optimize medication use and improve health outcomes. Pharmacists use their clinical skills and knowledge to manage the health of patients. Because they undergo extensive clinical education and training in medication management, it is proposed that incorporating pharmacists into public health settings can provide added value and improve outcomes for patients [5].

Scope of the Study

Findings of this research will help the nursing community and similar healthcare providers associated with nurse-led clinics to provide more comprehensive treatment options for low-income patients with complex comorbidities by utilizing the current skills of nurses and pharmacists and enhancing knowledge and expertise through the implementation of MTM services provided by the pharmacist. Management of these patients is particularly challenging given the high prevalence of chronic conditions and the limited access to healthcare in the population. Intervention research that has documented the effectiveness of nurse-assisted management of chronic conditions in low-income populations, particularly in those with multiple coexisting conditions and restricted healthcare access. Pharmacists are uniquely positioned to excel in the delivery of public health initiatives to medically underserved populations, like those in urban and rural low-income communities [6]. However, few studies have examined the implementation of pharmacist-led MTM programs as part of services offered by nurse-led clinics to underserved communities desiring to improve chronic disease outcomes. As a result of pharmacist participants' specific learning and application to vulnerable populations in the health disparities initiative, the hope is that pharmacists will transition their practiced skills into their practice and continue to integrate them into corporate managed care programs, federally funded health centers, and socioeconomically challenged areas, which by design are to serve an underserved population [7].

Understanding Medication Therapy Management (MTM)

Two heterogeneous categories of medication therapy supervisions may be spurred by MTM. One class of interventions uses oversight of drug pharmacokinetic parameters that needs to be tailored. These parameters should regularly be adjusted pharmacokinetically. These parameters are waiting time and the degree of the time of plasma leucocytes stemming from the medicinal degree per division of time, the adaptation of remedy preparation. For instance, such overseeing of warfarin and metabolites, ascertains if and when its dosings need to be adapted [8]. The concept adapted from the World Fitness Institution (WHO) asking rate, protection, fit, shall be used here to establish interviews which are connected with the routine of chronic wellness issues capturing (CCS). The practice of medication therapy management, creation of explanations, and consumption of its claims may be seen as global tests. Particularly important, the WHO asks conjointly of the preference of a relevant formulary on the confounded ailment catalog. These global tests are mere measures of the expectations over the global population of troubled individuals. They are often very appraised by experts, which we shall call effective constituents for the extended discretion of the global tests. Medication therapy management (MTM) consists of a group of healthcare services provided by pharmacists who are the experts in prescribing practices to encourage the use of medicines. With the vision to ensure that patients get the highly optimized advantages of the medication directly, irrespective of the status of its disbursement [9]. In order to enhance the efficaciousness of the medication, pharmacists who are the MTM suppliers inspect the patient health and medications. The cause is to authenticate for any possible glitches of medication before they grow larger to establish rewarding treatment disbursements. The American Pharmacists Organization, elucidate MTM services, as "A distinct service or term connected with the completion of a thorough medication therapy review or a personal-use master record, established by a qualified pharmacist to identify, solve, and prevent any potential medication conflicts.

Definition and Components

The three main components of APhA are the Core elements of MTM. These are the first, patient mediations which mainly relates to the building and utilizing of the personal medication record (PMR) and medication-related action plan (MAP) to work and made a discussion with health care professionals and the patients and will take copious medicines prescribed by different clinicians [7]. The medication therapy review (MTR) basically identifies, resolves and prevents any medicines' related issues which occurs in the medication or therapy [8]. Actively, the pharmacist mediated or referred interventions will mainly be focused as medication problems which can be addressed by a pharmacist. The MTM treatment

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process also makes the structured patient care in a contextual way which starts with the initial risk assessment and then move along directly to the collaboration with the patient to make a joint appraisal for medicines-related needs. Medication Therapy Management (MTM) offers a unique set of healthcare services that are vital to public health initiatives in addressing chronic diseases. The American Pharmacists Association (APhA) Training Program offers a comprehensive framework for MTM services [8]. Generally, MTM services are patient centric, provided in exam rooms, face to face and should be conducted in privacy. Moreover, MTM services are mainly designed to aid the development of profound patient-pharmacist relationships. These services are essentially required in an environment characterized by multi-drug therapies, a dearth of sufficient time for consultation during medical visits and low health literacy of patients. Essentially, the aim was to focus on these services, utilizing the input from patients' health records coupled with aggregate data or resources such as state prescription monitoring programs, disease registries and laboratory wins. A comprehensive medication review (CMR) mainly verifies the best use of medicines based on the patient's health conditions. The targeted medication review (TMR) works mainly in harmony with the prescribers to work on Sig DME patients in their therapy.

Benefits and Importance

MTM programs are advancing in part to develop community pharmacies' integration into outcomes-based models. In value-based care models, part of the health system's reimbursement is tied to patient outcomes. By expanding medication management beyond the dispensing process, community pharmacy complements the providers' efforts to improve patient health. Preliminary data on integrating community pharmacists into value-based care models indicate that attendance and adherence to behavior-change programs in addition to lifetime, long-term medication adherence improve [6]. Outcomes from pharmacists' involvement in MTM programs can inform the medical team if they revise their drug therapy treatment plans consequently. Pharmacists participating in value-based care models also encounter less need for prior authorization and can better manage the referral-to-specialty and medication-initiation processes. Several types of chronic medications, including those used for primary prevention, often are dosed and then the provider waits for the next appointment scheduled several months into the future to adjust medications. An advantage of integrating pharmacists involved in medication therapy management (MTM) programs is that it stands as a natural next step in expanding the role pharmacists have shown they can play in improving medication-related outcomes in different patient populations. Pharmacists engage with patients at multiple time points during the course of treatment, preparing them to assume responsibility for following their treatment regimen properly [8]. Pharmacists are key players in expanding the impact of public health initiatives. Those in the community can increase patients' willingness to vaccinate, understand medication adherence, and provide patients with diabetes control advice. While the pharmacist's role is situated at the community-patient crossroads, providers and pharmacists currently have limited means of interfacing to benefit from their potential contribution [4].

Role of Pharmacists in Public Health Initiatives

Community pharmacists are well-positioned to provide direct patient care services to efficiently and cost-effectively contribute to population health initiatives within healthcare systems and in the community. Public health initiatives provide a framework for prevention and management of chronic diseases. As pharmacists are medication experts, they play a key role within these initiatives for the management of chronic diseases. Further, community pharmacists are trained to engage patients at point-of-care and contribute to collaborative care teams. As a result, pharmacists play a distinctive role in community health services [5]. This is particularly important for individuals living in underserved communities as pharmacists can assess medication for potentially nonadherent and poorly responsive chronic diseases and offer best medication management solutions. Pharmacies and pharmacists in the U.S. are widely accessible throughout the country, and patients have a high frequency of engagement with their community pharmacists for medication and wellness needs. Hence, community pharmacists can be an essential asset in public health infrastructures for chronic disease prevention and management, particularly in underserved communities. Community pharmacies and pharmacists serve as crucial touchpoints in the public health infrastructure for chronic disease management and prevention [7]. Patients have regular access and interactions with their community pharmacists for medication needs and can obtain free or low-cost primary care services in certain states. This is particularly true in underserved communities, such as Federally Qualified Health Centers (FQHCs). FQHCs are health facilities that provide care to individuals on a sliding fee scale, based on an individual's ability to pay. The role of pharmacists in public health initiatives, particularly in FQHCs, is evolving and may be further developed to improve health outcomes in underserved communities.

Current Practices

Pharmacists have the necessary specialized training in medication therapy assessments and problem-solving skills to perform medication therapy management (MTM) services with deep knowledge in drug disease treatment and prevention of medication related problems. It is essential to foster an organisational culture, trusting relationships and links of accountability between pharmacists and other clinicians including the effective communication with both patients and providers that foster shared decision-making that makes pharmacists' contributions effective. Collaboration, strategies, to enhance communication skills, empower and trust in meaningful organizational role identification and to enhance relationships. Research conducted into pharmacist-led collaborations in chronic disease management has shown that integrating pharmacists into interprofessional healthcare teams leads to better patient outcomes. A study on coronary heart disease management through blood pressure risk estimation showed that when pharmacists communicated and implemented the clinical plans in an efficiently functional healthcare team reduces the non-high commencing doses & good adherence to antihypertensive medicines in 12.3% patients in routine clinical practice [7, 8].

Potential Impact on Underserved Communities

The practice of pharmacists offering disease state management services through a pharmacist-led MTM service model has existed within professional organizations for years. Community pharmacists can contribute to public health improvement through the integration of pharmacist-led MTM with public health teams. One of the primary goals of pharmacist-led MTM in these settings is to maximize medication efficacy and outcomes for patients. MTM services provide an important opportunity to offer public health advice and programming to patients with chronic diseases, helping to alleviate healthcare disparities. Pharmacists who deliver MTM care can help patients and their healthcare team better manage diseases like diabetes, asthma, and heart disease or other chronic conditions. Health disparities have many sources, including regional, education, resources and others. Major opportunity to improve health outcomes in these situations can be achieved through improving access to healthcare, increasing utilization of appropriate screening, increasing patient education and management support, and increasing appropriate medication utilization and management. Several of these opportunities can be improved by increasing the integration, both in concept and reality, of pharmacists into the public health team. Actions to support the role of pharmacists in health care and public health are outlined in the National Prevention Strategy [7,8].

Chronic Disease Management in Underserved Communities

Community health centers, also known as Federally Qualified Health Centers (FQHCs), are pivotal access points for comprehensive, family-oriented public health services that prioritize high-quality care delivery and care access to individuals who experience financial barriers to healthcare access. The U.S. Department of Health and Human Services offers FQHCs support to maintain their underserved patient care mission through a per-patient cost-based prospective payment system called the Prospective Payment System (PPS). Moreover, given the nature of FQHCs' funding, they are incentivized to provide care in the most effective and efficient manner possible, though this requires creative application of personnel resources. Furthermore, community health centers are at the forefront of reducing disparities in healthcare access and provide care to patients regardless of individuals' ability to pay. By fostering resources and community partnerships, academic institutions have significant potential to contribute to improved patient health through the protection, promotion, and restoration of health in their surrounding community, particularly in populations vulnerable to health disparities like those served by FQHCs [6]. Efforts expanding pharmacy services in FQHCs are underway, with Medication Therapy Management (MTM) being one of the primary services being offered. To date, state-level efforts have established mechanisms of health profession student and faculty involvement at FQHCs, expanded or added FQHC-based pharmacy services for state residents, earned money for the FQHCs from state Medicaid expansion of pharmacist-provided services, and/or enhanced practice readiness and human capacity of young pharmacy professionals and future educators [5]. According to the Centers for Disease Control and Prevention (CDC), individuals living below the poverty level have a 40% greater prevalence of chronic conditions like cardiovascular disease compared to those at or above poverty level [7]. Moreover, racial and ethnic minorities have a lower prevalence of primary care visits, the most cost-effective healthcare sector for chronic disease prevention and treatment. However, among those who make visits, the quality of care is less than expected. These disparities in prevalence and primary care visit quality result in significant health and healthcare cost disparities among underserved populations, which is the population of interest in this article. The health of underserved populations is shaped by multiple factors, and their healthcare access is impacted by financial and social barriers. Participation in public health initiatives is

essential for improving health in underserved communities, reducing healthcare costs, and narrowing healthcare access disparities. Box 1 highlights the disproportionately high chronic disease and limited healthcare access among underserved individuals in the United States, one of the defining characteristics of the population of interest in this article.

Challenges and Disparities

Gap in care is not only a barrier that is relevant to all the chronic diseases but particularly to the underserved population. A pharmacist provides a comprehensive review of services related to patients' medications for the identification and resolution of medication therapy problems. Especially in the rural areas or among the underserved populations access to the affordable health care services is a need and MTM program fits the best in relation to it. Pharmacist is the most accessible healthcare provider after nurses, who can provide direct access to healthcare in the rural areas and medically shortage areas. Pharmacist is not only accessible provider but also knowledgeable in medication management and can provide optimal management of all the chronic diseases happening simultaneously [9]. Pharmacist is specifically trained and well equipped to provide medication therapies for the underserved populations affected by multiple chronic diseases. Pharmacist can also help in understanding the complexity of income, low literacy, food access, and living conditions like environmental, social, and physical health related needs. Pharmacist can connect patients to social and supportive services provided by other community resources. Pharmacist can provide improved management of several chronic diseases happening at simultaneously with the flexibility in timings. Pharmacist as a care provider can make care continuum smoother and effective as pharmacists' working hours are overlapping and can provide a point of care for better cross-disciplinary approach. Also, when a pharmacist is in shortage areas, it gives the primary care provider to spend more time in managing disease and coordinating with the patient rather than writing or changing the medications. Chronic diseases disproportionately affect racial and ethnic minorities, particularly those from low-income, underserved communities [8]. Health professional shortage areas referred to those having inadequate health care professionals to population ratios. Factors that determine shortage areas include supply and demand issues, socio-demographic composition, distance, weather, accessibility, or health access barriers like language, cultural differences, and socioeconomic status [8]. These factors negatively affect conceptualization and management of diseases and conditions that contribute to disparities in health outcomes and compromised quality of life. Medical therapeutic management (MTM) services can address these problems for underserved populations. The project described in this report provides direct evidence of the ability to impact chronic disease outcomes with MTM provided by clinical pharmacists in a rural or medically underserved primary care setting [8]. The results can have implications for integrating MTM services in public health initiatives to improve chronic disease outcomes in areas of under-resourced primary care clinicians and according to evaluation could lead to sustainable pharmacist position in the respective area.

Opportunities for Improvement

In our study, Medication Therapy Management as a Sustainable Business Model to Improve Outcomes from Chronic Diseases in Federally Qualified Health Centers, we explored how MTM services in partnership with a clinical pharmacy team within the care team at one FQHC can be integrated into the clinic's already existing systems of care to maximize patient referrals, billing, and interprofessional collaboration around evolving models of care practice. After receiving MTM services integrated into their ongoing care through a randomized control arrangement, participants in the experimental group displayed significant improvement in their A1c levels compared to those in the control group, 0.64% ($p = 0.021$). Additionally, patients with uncontrolled blood pressure before receiving MTM services experienced a decrease in their blood pressure after receiving MTM services ($p = 0.028$) [6].

Case Studies and Success Stories

Many pharmacists became PDC certified, including our healthcare professionals. Injections for diabetes and hypertension control percentages rose from 32% and 58% to 108% and 78.76%, respectively. A majority of the success stories in this program synthesis were specific to individual practices collaborating within a whole community model ranging in a manner of settings, ultimately focusing on enhancing therapeutic outcomes for patients. It is noted that at every meeting within any of the entities that individually collaborated, numerous primary barriers were overcome. Also, the results of successful and measured enhanced therapeutic outcomes were presented and evaluated at the end of the pilot programs. Throughout the development, implementation and evaluation phases of the pilot program, ideas were shared on how the practice (NOAH Community Health Center) could move beyond the demonstration pilot program to enhanced patient-centered outcomes. At NOAH Community Health Center in the greater Phoenix area, a health system pharmacist executed a pilot MTM program targeted specifically

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toward the Black/African American and Hispanic/Latino ethnic groups. NOAH is a national health center and Federally Qualified Health Center and operates 14 public health clinics across various communities in Phoenix to improve the health and well-being of these underserved populations. The facility was actively involved in the Comprehensive Medication Management in Team-Based Care to Manage Complex Patients II, Asthma, Diabetes and Congestive Heart Failure studies, and was the site of six community-based residencies from the University of Arizona College of Pharmacy. Within two years, the pharmacist collaborated with primary care, case managed, attended Shared medical appointments and panel management meetings to assist with initiatives where he introduced the concept of increasing chronic disease/black & brown community pharmacists to the community. The overall outcomes were in diabetes and hypertension [8-9].

Examples of Effective MTM Programs

Many programs in underserved areas have effectively incorporated MTM and improved chronic disease management. These programs have not only improved patient health outcomes, but the compounding benefits of the programs have saved money across the system. Examples of successful programs include, but are not limited to, Agape Clinic's Medication Assistance Program, Susan G. Komen Foundation's Pink Alliance, American Heart Association's community programs, and Baylor's Diabetes Health and Wellness Institute. Agape Clinic, located in southeast Dallas, provides primary care and slowly integrated clinical pharmacy services for patients with chronic conditions. The Medication Assistance Program includes managing medication flow for clinic appointments, adherence support, and coordination of care with community partners. The program incorporates medication assistance as part of their holistic patient care to work on the social determinants of health including access to safe, effective, and affordable medicine. The clinical pharmacist screens for medication access during each clinic appointment to minimize medication refill delays and coordinate care with Agape's designated partnering community pharmacy. The Medication Assistance Program has grown into a preferred clinic that seeks out innovative health initiatives through patient-centered care [7].

Measurable Outcomes

The projected results of this pilot study lay the groundwork for the future potential of embedding pharmacy services in Chicago's UJIMA Network for association with clinical outcomes, economic benefits, and improvement of public health. Embedded therapy management pharmacists can work as members of a collaborative practice model. In this study, the network was scalable and capable of accessing social determinants of health for individuals at risk. Regulatory changes must happen through health professional oversight and include collaborative practice models within public health-based Department of Human Services and Medicaid managed care organizations [6]. The activities must integrate healthcare, dental care, medications, and counseling for the growth of the nearby community. The final goal of such integrated models is to improve individual, community, and population health, resulting in value-added health care at a dispensary level. A value-added formula using Medicaid managed care funding contracts can be calculated. The measurable outcomes of this work include comparing clinical, humanistic, and economic outcomes pre- and post-MTM services data. Clinical markers tracked include A1C, blood pressure, and LDL. Humanistic measures include medication adherence, quality of life through self-reported patient health surveys (SF-36), and patient satisfaction with MTM services. Economic indicators may include medication possession ratios (MPR), outcomes generated from the quality of life instrument, and adherence to evidence-based therapy guidelines.

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