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Medication Therapy Management: Redefining the Pharmacist's Clinical Role

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Abstract

Clinical practice by pharmacists has changed significantly within last two decades no longer based on a product-focused dispensing model but rather a patient-focused clinical dispensing model. Medication Therapy Management (MTM) is a structured set of services that aim to promote the effectiveness of therapy processes through a structured assessment of the drug regimen, eliminating medication-related issues, and organising the interplay of difficult-to-treat schedules. MTM is now formalized with the Medicare Modernization Act of 2003 that has instituted pharmacists as integral members of interprofessional healthcare teams. The review will address the historical evolution of MTM, critically assess the main elements of the theory, such as careful and conscientious analysis of medications and evaluation of clinical and economic outcomes, comment on the limitations with regard to the implementation of the theory, and evaluate recent solutions to the problem, including the integration of telehealth and the application of artificial intelligence, as well as collaborative practice agreements that are now present in every state of the United States (50 of them). Systematic reviews show that, with the help of Medication Therapy Management services, the level of hospital readmission, emergency department visits, adverse drug events can be significantly lowered, and at the same time the problem of medication adherence, disease management results, and patient satisfaction can be increased. Nevertheless, there are still never-ending obstacles associated with reimbursement mechanisms, workflow integration, access to information, interprofessional collaboration that limits the prevalence of this use of services. Future research recommendations involve the shift to outcome-based measures of quality, its integration into value-based care models, the introduction of pharmacogenomic solutions and mitigation of the social determinants of health. As modern healthcare systems are becoming more and more quality-focused rather than volume-focused, medication therapy management (MTM) performs as a core facility to utilize pharmacist knowledge to achieve improved patient outcomes and to reduce healthcare spending.

Keywords: Healthcare, MTM, Medications Pharmacist

Introduction

The past practice of pharmacy was based on good dispensing of medications, preparing products and performing simple patient advice at the point of sale[1,2]. This drug sales model prevailed in the pharmacy throughout most of the twentieth century where pharmacists were involved mostly as suppliers of medications as opposed to clinical specialists. Nonetheless, rising complexity of pharmacotherapy, rising prevalence of chronic illness necessitating combination of drugs, and appreciation of problems associated with medication as an important cause of morbidity and cost in healthcare has prompted radical change in the role of the pharmacist[3,4].

Medication Therapy Management was an organized practice model that appeared to resolve these issues. MTM can be defined as a whole system of patient care services intended to maximize therapeutic results of individual patients by means of systematic medication evaluation, detection, and correction of medication-related issues, and continuous monitoring and follow-up[5,6]. Although, unlike traditional dispensing operations whose primary goal is to deliver products, MTM focuses on clinical evaluation, therapeutic decision making, patient education and coordination of care as fundamental pharmacist functions[7].

Legal basis and development of rules

Then MTM services started to receive the legislative basis in the United States through Medicare Prescription Drug, Improvement, and Modernization Act of 2003[8]. This historic Act created Part D prescription drug coverage and required that Part D plans provide MTM programs to eligible beneficiaries with multiple chronic conditions, multiple medications and high medication expenses[8,9]. It started implementation in 2006 to establish an unprecedented opportunity to transform pharmacy practice.

In response to the legislation, the American Pharmacists Association formed a multidisciplinary working group in 2004 to come up with consensus definitions and service standards. In 2008, the resulting framework identified five main components that currently characterize MTM practice, namely medication therapy review, personal medication record, medication-related action plan, intervention and referral, and documentation and follow-up[10,11]. These factors make MTM unique among routine dispensing and counseling as they are designed to narrow the gap between routine dispensing and counseling and involve a complex longitudinal medication management strategy.

The regulatory requirements have changed significantly since their first implementation. The Centers for Medicare and Medicaid Services have significantly increased MTM requirements by setting minimum levels of service in 2010, implementing standard service forms of documentation in 2013, and including criteria of MTM into Part D of Medicare Star Ratings starting in 2015[12]. These regulatory changes are indicative of an increased awareness of MTM as an instrument of enhancing quantifiable health outputs as opposed to the provision of services.

Growth outside of Medicare groups

Although the first model and reimbursement system was established by Part D of Medicare, MTM has grown far beyond the Medicare cohort[13,14]. Medicaid programs in states have implemented MTM services on beneficiaries with complicated medication schedules and long-term illnesses. Health plans and pharmacy benefit managers apply MTM programs because they understand that there are better outcomes and savings. Medications Hospital systems incorporate pharmacist-led medication

management in transitions of care programs, in chronic disease clinics, and in population health initiatives[15,16].

The community pharmacies have also developed the traditional dispensing systems with planned MTM visits, the chronic conditions care services, the routine immunization programs, and medication synchronization[17]. The clinical pharmacists working in ambulatory care settings administer extensive medication reviews, control therapy using collaborative practice agreements, and coordinate with physicians and other healthcare providers[18]. Nursing home hire consultant pharmacists to review drug regimens and maximize therapy to residents with complicated needs[19].

This growth is indicative of larger healthcare delivery patterns to team-based care, value-based payment frameworks, as well as being aware that optimal medication utilization demands specific expertise beyond customary prescribing and dispensing functions[20,21].

The philosophical backgrounds of pharmaceutical treatment

The pharmaceutical care movement was the intellectual preparation of MTM, which emerged in the 1990s. Hepler and Strand proposed pharmaceutical care as the accountable administration of drug treatment with the objective of attaining certain results that accelerate the quality of life of the patient[22]. This model transformed the pharmacy practice by refocusing on patient outcomes and therapeutic responsibility rather than the drug products and dispensing process.

Pharmacist accountability through systematic assessment, care planning, monitoring, and patient education were stressed in pharmaceutical care as a method of identifying, resolving, and preventing drug-related problems[22,23]. Although pharmaceutical care was mostly a professional philosophy without standardized use or reimbursement formulas, it formed the conceptual foundation of MTM as a structured service model with clearly defined elements, documentation and reimbursement patterns[24].

Modern models of MTM practices

The modern MTM practice includes a variety of delivery models, which are tailored to various practice settings and patient populations. MMT Community pharmacy-based MTM is the model where pharmacists have regular scheduled visits with patients, and their medication reviews are conducted, which might result in medication-related issues and the formulation of action plans and recommendations to prescribers[25]. These services can be given face to face in the private consultation rooms or by telephone and video conferencing systems.

The models of the ambulatory care clinics integrating pharmacists in both primary and specialty care environment usually use the collaborative practice agreements, which grant the pharmacists authority to prescribe, amend, and follow up pharmacotherapy within the set procedures[26,27]. In these practice settings, pharmacists act as clearly defined interprofessional care team members, with activities, including patient assessment, ordering of laboratory investigations, prescription change, and overall management of disease conditions.

MTM based in hospitals emphasizes care transfers, with pharmacists performing medication reconciliation at the time of admission, discharge counseling, and post-discharge follow-up calls to prevent readmissions[28]. High-risk groups such as heart failure patients, patients with multiple comorbidities, patients on complex medication schedules are often targeted in medication therapy management services provided in hospitals.

Pharmacists are utilized by managed care organizations to provide telephonic MTM to health plan members who are determined to be high-risk due to medication-related

issues[29] as assessed via claims data analysis. These programs rely on predictive analytics to be able to target interventions at the most likely-to-benefit-patients and ensure that the program is more efficient and the investment is better maintained.

Outline and the structure of this review

This paper presents an in-depth analysis of MTM as the kind of transformative innovation that is redefining the clinical role of pharmacists. Some of the major dimensions covered in the analysis are the core elements of MTM and clinical processes comprising contemporary practice; evidence basis to clinical and economic and humanistic outcomes; barriers and facilitators to implementation and sustainability; new initiatives in the form of technology integration and advanced practice models, and in the context of evolving health care delivery and payment systems. The review is based on the synthesis of evidence of systematic reviews, meta-analyses, regulatory guidance documents, and practice implementation reports as a comprehensive picture of MTM as a professional service model and healthcare system intervention.

Advantages and Positive Impact

Improvement in clinical outcomes

A 2023 systematic review publication that appraised 81 articles showed that MTM had a significant impact on reducing hospital readmissions (22 percent), emergency department visits (12 percent), and adverse drug events (32 percent)[30]. In the case of diabetes, pharmacist-led MTM leads to a 0.8 to 1.2 percent hemoglobin A1c reduction, and a one percent decline in hemoglobin A1c is equal to a 21 percent decrease in diabetes-related deaths[31,32,33]. Nitroglycerin therapy yields systolic blood pressure for hypertension patients of 7 to 9 millimeters of mercury, with every 10-millimeter decrease of systolic blood pressure, reductions of 20 percent of major cardiovascular event occurrence[34,35]. Anticoagulation treatment generates perfection improvement in time in therapeutic range of 10 per cent to 20 per cent and reduced bleeding partaking[36,37].

Drug safety and prevention of harm

MTM methodically characterizes therapeutic duplications, medication interactions, medication-disease contraindications, inappropriate dosage, and untreated indications[38,39]. The pharmacist intervention finds 3 or 5 medication issues per patient of which 60 or 80 percent are clinically significant[40,41]. In the US, four hundred and twenty five thousand patients visit the emergency department each year because of medication-related issues and 120 thousand people are hospitalized due to the same issues[42]. MTM averts significant adverse events, meta-analyses indicate that there is a reduction of 32 percent in adverse drug events and 49 percent in serious adverse events[30].

Increased drug compliance

Lack of adherence occurs in 40 to 50 percent of chronic disease patients; this is a source of ineffective disease control and higher costs[43,44]. MTM targets adherence via patient education, simplification of regimen, medication synchronization and behavioral counseling, enhancing the adherence by [5,15] percentage points[45,46]. Medication synchronization schemes that manage refills on the same day of the month bring about a proportion enhancement of the coverage of 5 per cent to 10 per cent[47,48] in days.

Economic advantages

About 70 percent of the studies give positive return on investment with benefits to cost ratios of 1.3:12.2[51]. Ten years of analysis showed cumulative savings of 7 million dollars[52]. In the analysis of Medicare Part D, 1,123-dollar decrease in the annual healthcare costs per patient was found[53]. Prevented adverse events, fewer hospitalizations,

better disease control, and optimization of medication therapy are cost-saving measures[54,55].

Patient satisfaction and professional development

Patient satisfaction is also good with 85 to 95 percent of them expressing consultations as helpful[58,59]. MTM enhances the quality of life, medication literacy, and self-management ability[56,57,60]. To pharmacists, MTM supports pharmacists in terms of recognition as clinical practitioners, creation of advanced clinical competencies and enhancement of interprofessional connections[61,62,63,64].

Destruction and Disadvantage

Reimbursement and flow obstacles

The poor reimbursement is the most serious obstacle to implementation[65,66]. The payment rates in the Medicare Part D are not usually sufficient to examine comprehensive medication reviews of 30 to 60 minutes[67]. Most of the Medicaid programs fail to identify MTM as reimbursable and the coverage by the private insurance is also not consistent[68,69]. The budgetary issues do restrict investments in the consultation space, booking systems, and documentations platforms[70,71,72].

The main reason is lack of time, which is reported by 60 to 80 percent of pharmacists[74,75]. Large prescription volumes and understaffing also cause workflow conflicts in which pharmacists are unable to devote continuous time to any intensive reviews[76,77]. Effective integration entails appointing specific times, different consultation rooms, capable technical personnel, and organizational commitment[78].

Access to information and barriers between professions

Pharmacists do not have simulated access to electronic health records, restricting the examination of diagnoses, laboratory outcomes, and clinical records[79,80,81]. The unfinished claims data and privacy laws also further restrict access to information[82,83,84]. Research indicates that 70 84 percent of pharmacists recognize the inability to access information to be a key obstacle[85,86].

Doctors might not know much about pharmacist clinical training and capacity[88,89]. Hierarchies of the past establish senses of intrusion as opposed to cooperation[90,91]. Poor communication and role ambiguity are the sources of interprofessional tension[92]. About 60 70 percent of the pharmacists recognize interprofessional barriers[93,94]. Relationships are not formed through the internet, and they need a face-to-face relationship, proved value, evidence-based communication, and formal collaborative agreements[95,96].

Technology and patient engagement issues

Completion rates stand at 30 to 70 percent[97,98] with Medicare Part D programs. Poor awareness, time, transport and health literacy problems[99,100,101,102,103] influence participation. Such tactics as individualized contacts, customized delivery, specifics of communication through different cultures, and follow up contact[104,105] are part of strategies.

Among the technology requirements are documentation platforms, integration of electronic health records, clinical decision support, and telehealth capabilities[106,107,108,109,110,111]. There are several pharmacies with inadequate infrastructures and the digital divide curtails its uptake in rural and underserved populations[112].

Application and Practice Models

Community pharmacy-based MTM

The community pharmacies are the central venue of MTM delivery of many patients because they are accessible, and a majority of Americans reside within five miles of a community pharmacy, and a majority of the patients check their pharmacies on the monthly basis to refill their prescriptions[113,114]. Community pharmacy

MTM usually entails regular visits in which pharmacists undertake the medication assessment in privacy consultation areas.

The standard workflow of MTM in a community pharmacy starts with the patient identification according to the analysis of claims data, clinical judgment of a pharmacist, or physician referral[115]. With the help of phone, mail or in-person-invitations, eligible patients are contacted in order to set appointments. Pharmacists assess and develop prioritized intervention plans, create personal medication records and medication action plans, educate patients on the importance of proper medication use during the appointment by performing: complete medication history including prescription drugs, over-the-counter products, herbals, and supplements, reviewing medical history and current health issues, and reviewing problems related to medications[116].

After consultation, pharmacists record services with standardized format, report recommendations to the prescribers via fax, phone or use electronic health record messages and arrange follow-up contacts to evaluate the effectiveness of these interventions and therapy outcomes[117]. Community pharmacies often combine MTM with chronic disease management initiatives to treat patients with diabetes, hypertension, asthma, and dyslipidemia, having regular monitoring activities, using both medications review and point-of-care tests to assess related clinical parameters[118].

Medication synchronization program is a newer use of MTM principles applied in community pharmacy, involving aligning all patient prescriptions to be refilled on the same date during a month[119]. Synchronization programs enhance compliance by decreasing the number of visits to pharmacies, abolishing gaps in refills and establish periodic monthly contact points where short medical consultations and problem detection[120] occur.

MTM Telephonic and video-based MTMs have grown significantly in community pharmacy practice especially following COVID-19 pandemic acceleration of telehealth adoption[121]. Online MTM also provides more access to patients with transport problems, mobility issues, or scheduling problems without reducing the quality of services provided compared to face-to-face meetings[122].

Table 1: Elements and methods of community pharmacy MTM implementation

MTM Component	Community Pharmacy Implementation
Patient Identification	Claims data analysis for multiple medications, chronic conditions, high costs; pharmacist clinical judgment; physician referral
Appointment Scheduling	Phone outreach, mailed invitations, in-person recruitment; flexible scheduling including evenings and weekends
Medication Review	Private consultation area; 30-60 minute appointments; comprehensive assessment of all medications and health concerns
Intervention Development	Prioritize medication-related problems; create patient action plan; develop prescriber communication

Documentation	Standardized electronic platforms; integration with pharmacy management systems; compliance with payer requirements
Prescriber Communication	Fax, phone, electronic health record messaging; evidence-based recommendations with clinical rationale
Patient Follow-up	Scheduled follow-up appointments or calls; reassessment of outcomes; ongoing monitoring

Integration of ambulatory care clinics

Ambulatory care pharmacy practice involves direct admission of pharmacists into primary care or specialty clinic care teams, commonly through collaborative practice agreement, which give pharmacists the authority to start, alter, and supervise drug therapy within specifics of the protocols[123,124]. The pharmacists, under this model, act as full clinical practitioners as opposed to being consultants; they see patients independently or in conjunction with the physicians and have direct accountability in medication management.

Commonly encountered ambulatory care pharmacy clinics are also disease-specific such as diabetes, hypertension, dyslipidemia, anticoagulation, heart failure, chronic kidney disease, human immunodeficiency virus, hepatitis C, asthma, chronic obstructive pulmonary disease, and mental health conditions[125,126]. Primary care providers/specialist refer patients to comprehensive medication administration, therapy optimization, and continuous observation.

Detailed patient assessment, which includes: review of medical history, review of medication history, physical assessment parameters such as blood pressure, pulse, evaluation of laboratory values and diagnostic test results, and identification of medication-related issues and therapeutic objectives is performed by the ambulatory care pharmacists[127]. According to this evaluation, pharmacists prescribe new drugs, change dosings, cancel inappropriate therapy, request laboratory monitoring, educate patients, and schedule follow-up visits based on guidelines of collaborative practice agreements[128].

In ambulatory care practices, documentation is generally undertaken verbally through institutional electronic health records, allowing others such as physicians, nurses, and any other members of the care team to have a smooth flow of information[129]. This combined record is a support of coordinated care and facilitates that pharmacist interventions appear alongside the physician orders and nursing evaluation the same way as any other type of interventions.

Values have shown that, in a variety of chronic illnesses, the clinical results of the management of an ambulatory care pharmacy clinic have been equal or even better than the traditional physician-only form without increasing the burden on the physician[130,131]. These clinics are models of high-level MTM practice in which the pharmacists can make complete therapeutic decisions, but not offer advisory guidance.

Transitions of care programs within hospitals

Hospital systems use MTM as an essential part of transition of care programs that are aimed to decrease readmissions and enhance medication safety of care transitions[132,133]. Medication reconciliation is carried out by pharmacists when someone is hospitalized to determine discrepancies between the drugs used at home and medication orders at the time of admission, and thus avert adverse events due to either omitted drugs or avoidable duplications[134].

Pharmacists can also engage in interdisciplinary rounding, consult drug information, administer drugs on renal and hepatic functioning, observe adverse effects and set up patients to leave the hospital [135]. During discharge, pharmacists provide in-depth pharmacist-guided medication counseling during which all discharge medication are reviewed and drug changes from pre-admission regimens are clarified, as well as, inhalers or injectable medications demonstrating the correct administration technique and written lists of medications and action plans are presented[136].

Follow-up in the post-discharge stage is a crucial MTM implementation used in the transition of care. Pharmacists make telephone calls between 48 and 72 hours after discharge to determine medication adherence, detect side effects or complications, respond to patient questions, restate discharge instructions, and discuss medications changes/laboratory follow-up with primary care providers[137,138].

Research indicates that 30-day hospital readmissions can decrease by 15-25 percent using pharmacist-led transitions of care interventions, especially among patients who are heart failure patients, have multiple comorbidities, or have complicated medication use[139,140]. The pharmacist knowledge of medication in care transfers is knowledge that meets one of the riskiest times of adverse events and therapy failures.

Health plan MTM and managed care

To enhance the quality of medication use and decrease costs among enrolled populations, health insurance plans, pharmacy benefit managers, and managed care organizations adopt MTM programs[141,142]. Such programs normally leverage the claims data analytics to determine high-risk members who fulfill their eligibility guidelines including having more than one or more chronic illnesses, high Drug expenditure, consumption of high risk drugs, or patterns that indicate non-adherence and non-suited therapy[143].

Pharmacists hired by or contracted by the health plan are conducting outreach to identified members to complete medication reviews over the phone[144]. Such remote consultations are similar to your regular in-person reviews, except they are conducted completely by verbal means with some support provided by the mailing of written information such as personal medication records and medication action plans[145].

Managed care MTM programs are highlighted to focus on those members with the highest likelihood of benefit, with predictive analytics and machine learning algorithms identifying those at the highest risk of taking an adverse event, hospitalization, or cost of medications[146]. The population health strategy has maximized program effectiveness and program payoff because it focuses resources on the members that need it most and could be intervened upon[147].

The health plan MTM pharmacists detect medication issues such as; the presence of therapeutic duplication, drug reaction, high-risk medication use in geriatric patients, gaps in treatment, and non-adherence patterns as manifested in refill information[148]. Interventions encompass patient education, prescriber outreach encompassing therapy suggestions, case management care coordination, case manager and disease management programs linkage, and linkage to patient support programs in case of prescription drug affordability[149].

Clinical quality measures used in the effectiveness measures of managed care MTM programs comprise diabetes control, blood pressure control and meeting cholesterol goals; safety measures which entail a decrease of high-risk medication use as well as the negativity of adverse events; and economic measures which are considered as healthcare utilization and total

cost of care[150]. The progressive health plans incorporate the MTM outcomes in value-based contracting with pharmacy networks and providers.

Joint practice clinics and treatment of diseases

As part of collaborative practice agreements pharmacists may be allowed to have particular disease conditions or classes of medications with specific authority to initiate, modify and discontinue treatment using evidence-based practice guidelines[151,152]. The collaborative practice agreement is currently legally authorized in all 50 states, or by regulation, and is a significant policy success pointer towards successful advanced MTM practice[153].

Typical applications of collaborative practice involve anticoagulation management clinics, in which pharmacists treat warfarin including dosing adjustments, monitoring of international normalized ratio[154]. It has always been demonstrated that pharmacist anticoagulation administration is a better indicator of time in therapeutic range compared to standard care, with lower frequencies of bleeding and thromboembolic events[155].

Pharmacists working in diabetes collaborative practice clinics enable the initiation and changes of insulin and oral antihyperglycemic agents, request hemoglobin A1c and other lab-based monitoring, modifications of medications depending on glucose pattern, and extensive diabetes self-management education[156]. Clinics that treat hypertension give powers to start and adjust antihypertensive drugs based on evidence-based interventions with objective of gaining blood pressure control[157].

Another collaborative practice activity is the use of immunization programs in which pharmacists use protocol or prescription to administer vaccinations to expand access to preventive services[158]. Tobacco cessation interventions employ joint contracts to enable drug stores to prescribe nicotine replacement therapy and other cessation aid at the same time offering behavioral counseling[159].

Collaborative practice models reflect the development of MTM whereby advisory recommendation underwent transformation in becoming the direct therapeutic management whereby the pharmacists are put at the fore front to provide the specific ailment or medication group[160]. This model of advanced practice leverages the greatest use of clinical training of the pharmacist and overcome barriers to access as well as physician-time limitation in routine management of chronic diseases.

Conclusion

The practice of pharmacy has undergone significant changes with the advent of medication Therapy Management; it no longer entails dispensing of a product, but patient-centered clinical services. The MTM became formalized by the 2003 Medicare Modernization Act, which not only established a framework but it also mandated pharmacists to take central role in the optimization of medication therapy success and prevention of medication related ills. More than 20 years of implementation and research have yielded strong evidence that MTM yields clinically significant improvements in patient safety, disease control, medicine adherence and healthcare utilization and positive economic returns through preventing adverse events, saving preventable hospitalization.

The main components of MTM, such as comprehensive medication review, personal medication records, medication action plan, systematic intervention and referral, and strict documentation have developed standardized medication management processes that had made MTM unique compared to traditional dispensing and daily routine counseling. Such structured procedures have facilitated consistent service provision,

measurement of quality and measurement of outcomes in different practice settings and patients.

This is despite the high prospects of success, where the implementation of MTM continues to have barriers. Poor financial sustainability in the cognitive clinical service is hindered by inadequate reimbursement of cognitive clinical services, especially in community pharmacy establishments with a small dispensing margin. Difficulties in workflow integration, time constraints, and staffing hindrances contribute to the problems in providing systematic service delivery to every qualified patient. Poor access to overall patient health data threatens the capacity of pharmacists to evaluate the suitability of medication and track results. Interprofessional relationship impediments and inconsistent physician acceptance of pharmacist recommendations influence the recollection of the intervention and coordination of care. Difficulties associated with patient engagement provide suboptimal engagement rates where they restrict participation and dependency of MTM.

Their solution is achieved through concerted actions on different fronts. Financial sustainability requires policy advocacy regarding the pharmacist provider status and fair reimbursement. Service integration requires workflow redesign, expanded scope of pharmacy technician role, and MTM time allocation time. The access to information is enhanced by the involvement of health information exchange and integration of electronic health record. The development of collaborative practices and interprofessional education form relationships and demystify roles. The involvement and interaction are promoted by patient-centered communication and the ability to deliver the information in a flexible manner.

New-fangled innovations have the potential to broaden MTM abilities and productivity. Patterns of telehealth delivery have proven their viability and acceptance by patients, especially since the COVID-19 pandemic increased the pace of remote care. Predictive analytics and artificial intelligence allow detecting high-risk patients and focus the interventions on the individuals with the greatest chances to help. There are structural authorities in advanced therapeutic management in all the 50 states through collaborative practice agreements. The incorporation of aspects of value-based care generates sustainable funding based on the outcome of the population health. Precision medicine Pharmacogenomic applications can enhance the use of genomics to provide therapy shows that is precise to the genetic makeup of an individual.

The next MTM development will be determined by the shift towards outcome-based quality measures that are based on real patient improvement of their health condition, instead of rates of service deliveries. Combined with social determinants of health screening and intervention, affordability, health literacy, and barriers to access play an influential role in medication use. The progression of pharmacists toward advanced clinical competencies can be achieved under the focus of workforce development, in preparation of the latter to take on broader therapeutic roles. Implementation practices undertaken internationally provide new models and best practices that can be considered in varied contexts of healthcare systems.

In these circumstances in which health care organizations are beginning to emphasize on value rather than volume, the unique drug knowledge that pharmacists offer is becoming increasingly crucial. Pharmacists are the closest caregivers to the majority of the society whose pharmacotherapy knowledge is unsurpassable by other fields. This knowledge is used in systematic implementation of MTM to enhance the safety of

medications, the management of chronic disease, the reduction of healthcare utilization that is preventable, and the development of patient-centered care. The change between the medication dispenser and the medication therapy manager is not only an indication of professional growth, but also a healthcare system necessity in response to the complexity of pharmacotherapy, the prevalence of medication-related problems, and proven utility of pharmacist intervention in avoiding negative consequences and maximizing the therapeutic effectiveness.

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