MTM services within community health centers

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INTRODUCTION

Pharmacists are well-trained, yet often underutilized within the primary care delivery system to identify, resolve, monitor and prevent medication-related problems (MRPs).[1] Medication therapy management (MTM) is a term which describes a broad range of services that are provided by pharmacists to optimize individual patients' therapeutic outcomes.[2] The MTM care process includes conducting a comprehensive patient medication assessment to identify appropriateness of drug therapy, developing and documenting a care plan to achieve patient-specific goals of therapy and performing follow-up evaluation to resolve drug therapy problems. When structured to allow patients, pharmacists, physicians, and other caregivers to coordinate efforts toward achieving drug therapy treatment goals, MTM services can improve clinical outcomes, improve patient medication adherence, enhance medication safety, and stabilize or reduce health expenditures. In the state of Connecticut, a network of pharmacists provides diverse clinical services in various healthcare settings. Recently, this network provided MTM services within community health centers across the state; the network and process of MTM implemented is described here.

PHARMNETEX

PharmNetEx, a subsidiary of the Connecticut Pharmacists Association, is a network of highly qualified pharmacists who provide diverse clinical services to optimize medication use and patient outcomes. Network pharmacists provide patient-centric services through a systematic approach involving patients and their providers. The centerpiece of network services is the provision of MTM, to optimize medication use and patient outcomes.

PharmNetEx pharmacists are currently providing MTM services to high risk chronic disease patients in Connecticut utilizing a web-based system that documents the current status of patient medical conditions, medication therapy, interventions and alternative therapy options as well as resolutions to current drug therapy problems.

The network seeks clinical service opportunities through contracting with private or public payers, employers, providers, and health systems for pharmacist services. The network recruits pharmacists from any practice setting to provide the contracted services, validating their credentials through competency and skill-based qualifications. Pharmacists are provided a project-specific training program and training on a standardized pharmacist documentation software system. The network training is focused on pharmacists providing a systematic approach to all services offered. The software system is HIPAA compliant with security access, and is web-based to enable flexibility of location in providing clinical services. The software system provides dozens of standardized and customized reports, ranging from patient and provider-specific reports to project-wide outcomes evaluation reports.

The network utilizes a clinical team to conduct quality assessments during various stages of each project to support pharmacists in providing optimal services, and to assure a consistent, standardized approach in providing the service. The network also encourages pharmacists to share ideas, concerns and questions with each other to take full advantage of the varied expertise within the pharmacist network.

Network pharmacists receive direct payment for their services, as reimbursement is correlated with a resource-based relative value scale (RBRVS) for each project. The RBRVS compensation system was developed between 1985 and 1992 by the American Medical Association, Harvard School of Public Health and the Health Care Financing Administration in response to Congressional demands for a physician reimbursement system founded on resource costs rather than usual and customary billing.[3,4] The RBRVS compensation system has been applied to the delivery of pharmaceutical care services by pharmacists. The current MTM RBRVS system takes into account the patient's pharmaceutical care needs and the complexity of care required by a patient.[5,6] The variables used to describe a patient's complexity for MTMs include: (1) the number of medical indications that require drug therapy, (2) the number of active medications the patient

is taking, and (3) the number of drug therapy problems the patient is experiencing. In the MTM RBRVS compensation system, the level of care reported corresponds to the lowest level of patient needs met by all 3 criterions within each level. To date, the network has used the RBRVS system to estimate the acuity level of patients within each project and set fixed reimbursement rates for initial and follow-up visits accordingly.

CASE APPROACH TO MTM

The process of MTM begins prior to meeting the patient for the first time. In this preparatory period, the network pharmacist begins to gather information from the patient's medical record as well as recent fill history from the community pharmacy. Patient information is entered into a web-based documentation system to organize patient information and generate various reports. Depending on the complexity of the patient, the pharmacist may spend from 30-90 minutes preparing for the first patient encounter. The process starts with the pharmacist generally reviewing the patient's medical record to gain an overview of their medical care and overall management plan according to the primary care provider (PCP). Next, the pharmacist creates a list of prescribed medications documented in the medical record and those filled in the community pharmacy, comparing this list against documented disease states. The complete drug regimens (e.g. dose, frequency, start date and stop date if applicable) are also noted. At this point the pharmacist is able to begin identifying potential medication related problems (MRPs) and discrepancies between prescribed medications and those filled by the patient. Additionally, since some patients see multiple providers that may span different practices, medication sources are identified. While reviewing the medication list, potential drug interactions are identified, reviewed and noted for discussion with the patient and provider. Pertinent laboratory values, radiologic findings, and results of other diagnostics (e.g. ejection fraction from an echocardiogram) are reviewed by the pharmacist to elucidate medication regimen choices and disease state severity and control. Additional reviews such as the immunization history may also be deemed appropriate. At the end of preparing for the visit, the pharmacist has entered all pertinent patient information into the documentation system, generated a list of potential discrepancies, MRPs, and questions to address with the patient.

During the initial patient encounter, the pharmacist exercises listening skills to learn about the patient's medication experience in order to set a welcoming tone and environment for future patient-pharmacist interactions. The pharmacist continues to gather information to perform a comprehensive medication therapy review. Ideally, the patient should bring in all current medications, including over-the-counter (OTC) and complimentary alternative medicines. This will allow the pharmacist to identify medications the patient is taking that may not be documented in the PCP's medical record, including those from other prescribers the patient is seeing. Additional information may include home testing results (i.e. self-monitored blood glucose values), allergies and intolerances to medications and any complaints or concerns brought forward by the patient. The pharmacist should also spend time to understand the patient's healthcare priorities and information regarding the patient's adherence to prescribed therapy. The Morisky scale is one tool commonly used to provide an objective view of the patient's adherence to medications and their medication taking behavior, with a score of 0 to 2 suggesting high adherence and >2 suggesting low adherence.[8]

After fully gathering patient information, the pharmacist is able to assess for MRPs. A MRP is defined as "any undesirable event experienced by a patient which involves, or is suspected to involve, drug therapy, and interferes with achieving desired goals of therapy"[2] and can be broadly categorized into four categories: appropriateness, efficacy, safety, and adherence.[5] Depending on the complexity of the patient, it is unlikely that all discrepancies and MRPs will be addressed and resolved during the first visit. Exercising sound clinical judgment in order to suggest changes in a systematic process will allow the pharmacist to determine how changes in the medication regimen have affected outcomes. According to the severity of the medical conditions and the priorities of the patient, the pharmacist should prioritize the identified MRPs. Additional follow-up visits with the patient assure that each MRP will be addressed accordingly. Along with each MRP, the pharmacist identifies a potential resolution which may be appropriately addressed at the patient level. A patient medication summary is completed and given to the patient. All medications, including OTCs, are listed in the summary along with their indications and directions. Specific reminders and counseling points are added in a narrative format after the medication list.

Additionally, time is spent educating the patient on relevant topics identified by the pharmacist or raised by the patient. Many MRPs require intervention from the patient's providers and therefore the pharmacist provides

recommendations for those MRPs within the MTM report sent to the PCP. The report includes a complete list of prescribed and OTC medications, identified MRPs linked to the patient's medications and conditions, and recommendations to resolve MRPs when applicable. A narrative format is also used to address the recommendations and any other relevant patient information for that visit. The report is sent directly to the provider (via fax) for acknowledgement and for filing in the patient's medical record.

Perhaps one of the most important steps in the process of MTM is arranging follow-up visits with the patient. The process of MTM should be seen as a continuous relationship with a patient that will evolve as medical conditions change, MRPs are resolved and new MRPs arise.[2] Follow-up sessions may be conducted over the phone for established patients or those with less complex histories, or may require additional in-person visits. The number of follow-up visits and the frequency of visits will also be individually determined based on the complexity of the patient and the severity and urgency of the MRPs identified. Prior to the follow-up visits, the pharmacist must again prepare by identifying changes in the medical history and medication list since the last patient encounter. Attention should be paid to recommendations made previously in an effort to resolve or prevent MRPs. The prioritized MRP list should be revisited and adjusted according to new MRPs. After each visit, again the patient is given an updated medication list and action plan and the provider is sent a complete MTM report from the pharmacist.

CASE APPLICATION: EA, A 50 YEAR-OLD SPANISH FEMALE

During the preparation for the first encounter with patient EA, the network pharmacist collected pertinent medical history information using the medical record as well as communicating with EA's designated community pharmacy. EA had three prescribing healthcare providers, her PCP, a mental health provider within the same practice and an outside gastrointestinal (GI) specialist. EA's past medical history, prescribed medications and pertinent baseline laboratory values can be found in **Box 1.**

EA was discouraged and overwhelmed due to her perceived lack of positive outcomes and number of daily medications. Moreover, she expressed that she lacked understanding of how her medications worked and their potential adverse effects. EA stated she came to see the pharmacist hoping to find some answers.

Box 1 EA is a 50 year-old Spanish female.

PMH

IBS with diarrhea, back pain, asthma, mood disorder, depression, insomnia, RLS, migraine headache

Medications per medical record

Fluticasone/salmetrol 500/50 mcg 1 puff BID	Lamotrigine 100 mg QD
Oxycodone/acetaminophen 5/325mg every 6 hours	Nortriptyline 25 mg QHS
Topiramate 50 mg BID	Docusate 100 mg BID
Ropinirole 0.5 mg TID	Albuterol 1 puff every 6 hours PRN wheezing
Hyoscyamine ER 0.125 mg BID	Hydrocortisone acetate 1 suppository every 6 hours PRN hemorrhoids

Allergies: None

Pertinent baseline labs

Lab test	Result
SCr	0.9 mg/ml
BUN	15 mg/dl
ALT	35 units/L
AST	20 units/L

Abbreviations: BID=twice daily; ER=extended release; IBS=irritable bowel syndrome; mcg=micrograms; mg=milligrams; TID=three times daily; PRN=as needed; RLS=restless leg syndrome

During the interview with EA, the pharmacist learned about EA's perception of her care as well as her medication adherence practices. EA scored a 2 on the Morisky scale, which was congruent with her described practice. EA reported taking all of her medication as prescribed with a few exceptions: reduced use of ropinirole due to lack of efficacy, reduced use of hyoscyamine because she felt it caused constipation and lacked efficacy and increased use of topiramate because she felt it reduced her migraine headaches. EA reported using loratadine as needed for allergy symptoms and denied taking other OTC or herbal supplements. The pharmacist also noted a bottle of oxymorphone ER 20mg prescribed by her GI specialist, which was not listed in the PCP's records. EA had several complaints mostly surrounding her GI and pain management. EA complained of constipation and abdominal pain which she attributed to hyoscyamine, although the pharmacist noted that according to the medical record her complaints started with the initiation of chronic opioids rather than initiation of hyoscyamine. EA's back pain was 5 out of 10 today and she also complained that she has had more difficulty breathing since the discontinuation of

montelukast by her PCP. In the medical record, the PCP documented potential impact of montelukast on EA's mood disorder and discontinued therapy as a preventive measure. The pharmacist verified at this time that EA's technique was appropriate for her prescribed inhalers.

According to EA, her priority was to gain control of her pain, which in her view, was affecting her mood. Her GI specialist prescribed oxymorphone for EA's abdominal pain related to IBS while her PCP prescribed scheduled oxycodone/acetaminophen for her back pain. These medications were both prescribed around the same time. Despite adhering to the prescribed regimen, EA did not feel adequate pain relief and instead felt they did not help at all. She reported feeling depressed about this and began taking propoxyphene/acetaminophen she had left from a previous prescription in hope of achieving pain relief.

It became apparent to the pharmacist that there were several discrepancies between the prescribed medications and those the patient took daily as well as several potential MRPs (**Box 2**). After reviewing this information with EA, together they agreed that of highest priority was EA's pain management which was impacting her psychological health and likely contributed to her constipation. Keeping this in mind, as well as the complexity and multitude of MRPs, the pharmacist created a patient medication summary and reviewed his recommendations with EA. The recommendations included: 1) refrain from taking propoxyphene/acetaminophen since this medication was not currently prescribed and has many associated side effects, 2) make appointments with the GI specialist and PCP to further discuss pain management, showing a complete medication list to each provider so a collaborative plan can be established, 3) discuss with the PCP and behavioral health providers re-initiation of montelukast. Although of lower priority, additional items included her use of topiramate for migraines and the lack of efficacy of ropinirole. EA was encouraged to take these medications as prescribed until they could be further addressed with her providers. Additionally, the pharmacist discussed with EA that although hyoscyamine could also lead to constipation, it was prescribed to control her diarrhea symptoms of IBS, and that likely together with chronic opioid use she had become constipated. Although there may be alternative agents for her IBS, the pharmacist suggested one recommendation at a time. The pharmacist also discussed with EA the chronic nature of her conditions and that continued visits would be necessary to continue to work on resolving the MRPs identified. EA was given a complete list of her medications and a follow-up visit was schedule for 1 month later to review the action plan and progress on resolving identified MRPs.

Box 2: Medication related problems identified by pharmacist upon initial visit with EA

Medication related problem	Recommendation/Action
Safety: two scheduled opioids without clear indications	Consider discontinuation of oxycodone/acetaminophen given lack of efficacy and prescribed oxymorphone from GI specialist
Safety: adverse event constipation	Consider prescribing Miralax
Efficacy: worsening of asthma symptoms	Considers reinitiating montelukast in collaboration with behavioral health
Efficacy: lack of efficacy from ropinirole	Consider discontinuation
General: update medication list	Patient is taking oxymorphone 20mg BID as prescribed by GI specialist and OTC loratadine for allergies
Efficacy: topiramate for migraine prophylaxis	Reserved for follow-up visit to explore more with patient. For now patient encouraged to continue as prescribed for mood disorder.

Abbreviations: BID=twice daily; GI=gastroenterologist; OTC=over-the-counter

The MTM report was sent to the PCP. Recommendations included 1) discontinuation of scheduled oxycodone/acetaminophen due to lack of efficacy and constipation, and oxymorphone prescribed by GI specialist, 2) consider prescribing Miralax for constipation relief, 3) with consultation of the behavioral health provider, consider restarting montelukast in light of worsening asthma symptoms and prior mental health stability and, 4) consider discontinuation of ropinirole. The pharmacist chose to address MRPs associated with migraine management for the follow-up visit, since more information was needed in terms of EA's history of migraines to adequately address this therapy.

Prior to the one month follow-up visit the pharmacist updated the records regarding changes made since the last visit with EA. Of note, oxycodone/acetaminophen was changed to as needed and new prescriptions for naproxen as needed and Miralax were started. When meeting with EA, she reported that her GI specialist discontinued oxymorphone and her constipation improved with the use of Miralax. Her abdominal pain was mostly resolved and she maintained hyoscyamine twice daily per her GI specialist, who acknowledged that if she became constipated again, they would explore alternative therapies to manage her IBS. EA's back pain was 4 to 5 out of 10 and she used her as needed medications with modest relief. She was satisfied at

this time with her pain relief in exchange for her relief of constipation. Although suggested by the pharmacist, montelukast was not restarted and EA reported her follow-up appointment with her behavioral health specialist was next week. She had a written list of topics to discuss, including montelukast and her topiramate use. Ropinirole was also still listed as an active medication. EA overall appeared in better spirits and she expressed feeling more informed and prepared to ask questions and discuss her therapies. There were no new MRPs identified by the pharmacist and therefore they continued to work on unresolved MRPs previously prioritized. The pharmacist updated EA's action plan and updated the note regarding unresolved MRPs to the PCP.

DISCUSSION AND CONCLUSIONS

The case used to illustrate the process of delivering MTM above was a more complex example of the cases experienced by network pharmacists. However, there are several important lessons learned by the network pharmacists. Clearly, the case presented had several MRPs that remained unresolved after two visits. This highlights the need for a continuous relationship with the patient requiring multiple follow-up visits to adequately address all MRPs. Pharmacists need to be prepared to address MRPs stemming from all pharmacologic areas in order to comprehensively evaluate and care for patients. As in the case above, the patient's MRPs influenced each other and there was a complex interplay of behavioral health, pain management and GI conditions. Additional training in motivational interviewing may be beneficial as developing the patient-pharmacist relationship is central to providing MTM. Valuable information is gained from directly interviewing the patient and in some cases may otherwise not be learned, such as medications prescribed by providers outside of the PCP and the use of OTC medications as in the case above. In their survey responses at the end of network project period, patients overwhelmingly indicated that meeting with the pharmacist had increased their medication awareness and empowered them to ask questions, learn more about their medications and communicate more with their providers.

There are also several challenges identified by network pharmacists that should be discussed. It is not uncommon for patients to see multiple providers, often in different practice environments. In these cases, it becomes even more important for the pharmacist to communicate clearly with providers and to encourage the same of patients so as not to perpetuate gaps in communication that may exist. Pharmacists can be very valuable in this role, coordinating the medication list amongst all prescribers to generate a comprehensive, accurate list of prescribed medications. Finally, providers may not be responsive or may be delayed in their response to recommendations made by the pharmacist. Certainly, over time, the pharmacist and provider will build a relationship which may help to facilitate the acceptance of recommendations. Other times, the pharmacist may have to settle with knowing they have done all they can to fulfill their role in promoting safe and effective use of medications.

When conducting a MTM program it is important to have time and resources available to assess the efficiency and efficacy of the program. A systematic approach to an outcomes analysis that provides both clinical and subjective evaluations of the program is a valuable tool to improve future services. The evaluation should include clinical outcomes that highlight successes and barriers to success, a critical assessment of the MTM process, and feedback from patients, providers and the pharmacists involved in the program. A continuous quality improvement process will ensure fine-tuning of the program to achieve optimal therapeutic outcomes.

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