

Integrating Components of Medication Therapy Management Services into Community Pharmacy Workflow

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Abstract

Objective: The objective of this study was to develop and evaluate a process for integrating components of medication therapy management services into a community pharmacy workflow. Secondary objectives were to evaluate outcomes as well as patient and pharmacist satisfaction with this change. **Methods:** This prospective, 3-month observational study took place in a small, independent community pharmacy. This intervention included a redesigned work system that included a seated private desk area and focus on the pharmacist, rather than the technician, being the first contact when patients entered the pharmacy. Pharmacists participated in a focus group before and after the implementation of the new workflow to better understand the delivery of the intervention and assess satisfaction. Process outcomes included time spent with the patient, the number of medication-related problems identified and recommendations made, the type of disease education provided, type and number of immunizations administered, and health monitoring tests performed. Patient satisfaction surveys were distributed after completing the intervention during the third month of the study. **Results:** A total of 56 patients were enrolled in this study resulting in 82 encounters. Forty medication-related problems, including experiencing an adverse drug reaction and ineffective therapy, were identified with recommendations made to patients or prescribers. Disease education, such as goals of therapy, was provided 46 times. Health monitoring tests, such as blood pressure, were performed 16 times and eight immunizations were administered. The revised workflow incorporating components of MTM services was successful in that 39% of encounters were less than two minutes and 49% of encounters were between two and five minutes in length. Only 12% of encounters were greater than five minutes. Overall, patients were very satisfied with the intervention. Pharmacists responded positively, but expressed concern that the changes to the work system prevented them from overseeing technician functions. **Conclusion:** Pharmacists in community practice are able to provide components of medication therapy management services during a brief, face-to-face interaction with patients. Overall, patients and pharmacists were satisfied with the changes to the pharmacy work system and that additional work system changes are needed to further expand the role of the community pharmacist and facilitate patient-pharmacist interactions.

Background

Medication-related problems are a significant burden to the United States health care system.¹⁻³ In 2001, the annual drug related morbidity and mortality was estimated to be approximately \$177 billion.⁴ Medication-related problems can be classified into various categories including: unnecessary drug therapy, ineffective drug therapy, additional drug therapy needed, drug interactions, drug

contraindications, non-adherence to drug therapy, and adverse drug reactions.⁵⁻⁷ These medication-related problems are able to be identified and resolved by pharmacists in the community pharmacy practice setting.⁸⁻¹⁰

The scope of pharmacy practice in community settings has expanded considerably in recent years with the addition of medication therapy management (MTM) services as one major driver of this expansion. The consensus definition for MTM covers a wide array of patient care services including medication therapy reviews, disease education and management, health and wellness, pharmacogenomics, anticoagulation management, pharmacotherapy consults, and immunizations.¹¹ Pharmacists' involvement in helping

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patients improve patient management of diabetes, asthma, anticoagulation, hypertension, and hyperlipidemia have been documented in the literature.¹²⁻¹⁶

Despite the benefits of these pharmacist services, the provision of MTM has not been widespread in the community pharmacy setting due to challenges related to integration of these services into the workflow of the pharmacy. Workflow, as described in this paper, is the step-by-step process used to fulfill a prescription order for a patient. A recent study determined that pharmacists interacted with 25.0% of the patients that were picking up prescriptions at the walk-in window. Pharmacists spent 143 ± 84 seconds counseling patients.¹⁷ The design of the pharmacy work system is identified as a major barrier to facilitating patient-pharmacist interaction. Implementation of new and emerging care models depends on themes related to environment, organization, philosophy of practice, a patient care process, and clinical knowledge.¹⁸⁻²⁰ Schommer et al identifies work system design, entrepreneurial orientation, and organizational flexibility as the key components to provide MTM.²¹ Other reasons that pharmacists' do not providing patient counseling have been studied extensively in the literature. Major themes of this research include lack of compensation for services, excessive workload, physical layout and lack of patient demand.²²⁻²⁴ These factors were considered during the conceptualization of this study.

Providing MTM services are separate from the dispensing function of the pharmacist and patients receive MTM on an appointment basis.¹²⁻¹⁶ This could be one reason for the lack of widespread adoption of these services. This project will evaluate if components of MTM services can be integrated into the community pharmacy workflow. This would allow increased access to MTM services for patients and act as a supplement to MTM being provided on an appointment basis.

Methods

The objective of this study was to develop and evaluate a process for integrating components of MTM services into a community pharmacy workflow. Secondary objectives were to evaluate outcomes as well as patient and pharmacist satisfaction with the work system changes. This study was approved by the Institutional Review Board at Virginia Commonwealth University.

Study Design

This was a prospective 3-month observational study conducted at an independent community pharmacy in Richmond, VA. The pharmacy fills approximately 70 prescriptions per day and is staffed at any given time by one

pharmacist and two technicians. There are three relief pharmacists who work part-time at the pharmacy. Other services provided by this pharmacy include compounding, travel immunizations, and comprehensive appointment-based MTM. This study consisted of a pre- and post- study focus group with pharmacy team members, an intervention period, and a patient satisfaction survey. A focus group guide was developed with questions to identify the perceived benefits of providing the service, anticipated challenges, and impact of the change on patients. The guide was reviewed and revised for clarity by investigators (JG, LM) with experience in conducting focus groups. An investigator (CL) conducted the pre-study focus group to discuss the proposed work system changes and evaluate the benefits and barriers to providing the service. The session was video recorded and transcribed verbatim. Content analysis was used to analyze the results of the focus group. This information was used to aid the development of the new workflow process to integrate components of MTM services. The components of MTM services to be integrated into the workflow were medication therapy reviews, disease education, lifestyle modifications, health monitoring tests and immunizations.

Workflow Process, Work System Changes, and Service Intervention

Prior to this study, technicians were primarily responsible for greeting patients when they entered the pharmacy to pick-up prescriptions. The technician would offer the patient counseling by the pharmacist and collect payment for the prescriptions. If a patient indicated they wanted counseling, the pharmacist was called over to talk with the patient at the register.

The workflow was redesigned to promote pharmacist engagement with patients. After prescription verification by the pharmacist, a pharmacy technician entered prescription information into the patient pharmacy record before placing the completed prescriptions into the will-call bins. Each patient record was saved and accessed by pharmacists when patients picked up their prescriptions. As patients entered the pharmacy, the pharmacist greeted patients and collected patient prescriptions from the will-call bin. The pharmacist directed the patient to the seated desk area that was constructed to perform the intervention. Patients were auto-enrolled when they picked-up prescriptions at the pharmacy unless they indicated they asked the pharmacist to skip the service. The intent was to conduct the service for all patients in the pharmacy; however, participation by pharmacists was voluntary. Not all patients entering the pharmacy during the study period were provided this service.

Pharmacists did not address all aspects of the intervention at each visit. Pharmacists were encouraged to talk about different aspects of the patient's medications and health each time and identify appropriate follow-up to any problems documented from a previous encounter. An encounter was defined as a sit-down interaction between patient and pharmacist. An intervention was defined as providing a recommendation to solve a medication-related problem, providing disease or health education, administering an immunization, or providing a health monitoring test. A pharmacy technician collected payment for the prescriptions at the cash register terminal after the pharmacist completed the encounter.

Pharmacists first focused discussion on the medications that patients were picking up during that visit to the pharmacy. This included discussion related to how patients were taking their medications, what the medications were being used for, how the medication works, and potential adverse reactions that could occur. Patients were also asked to demonstrate proper injection technique and demonstrate that medical devices were being used properly, if applicable. Pharmacists documented where patients stored their medications. Through these questions, pharmacists attempted to identify and make recommendations for any medication-related problems. The seven categories of medication-related problems could be documented by pharmacists. These included unnecessary medication(s), additional medication(s) needed, ineffective medications, contraindications, interactions, non-adherence, and adverse drug reactions experienced. Pharmacists took steps to resolve medication-related problems through a recommendation directly to the patient, an offer to contact the patient's physician directly, or a recommendation that the patient follow-up with their physician.

Pharmacists also provided patients with education about their diseases specific to the prescriptions being picked up at that encounter. Pharmacists inquired about patient medical history and lifestyle habits to make evidence-based recommendations for a patient's goals of therapy and lifestyle choices. Pharmacists provided education related to disease progression and signs or symptoms of uncontrolled or worsening disease.

The pharmacist provided health monitoring tests based on current medications and diseases. These included measuring blood pressure and pulse. Pharmacists also screened patients for immunization-related needs and administered immunizations when appropriate. Current Center for Disease Control and Prevention immunization guidelines were used to determine eligibility of each patient for immunizations.²⁵

A laptop computer at the pharmacist desk was used as part of the patient care documentation. This computer was connected to a secure, password protected, wireless network through the pharmacy. Pharmacists logged on to the computer through remote desktop connection which allowed access to a HIPAA compliant hard drive. This hard drive stored enrolled patient's pharmacy records on a Microsoft Excel spreadsheet.

After completion of the intervention for an encounter, pharmacists were asked to record the type of interventions made using an anonymous web-based tracking form created using Google Form. Pharmacists also estimated the amount of time spent with patients during the encounter. Outcomes data was collected in this manner and aided the data collection and analysis process.

A paper patient satisfaction survey was distributed to patients' in-person who completed an intervention during the final month of the study period. Basic demographic information, including age and gender, were collected about survey participants. Survey participants were asked how many years they had been a customer at the pharmacy and the number of prescriptions they used. The survey consisted of ten statements that asked patients to evaluate their satisfaction with the changes to workflow. The items were in a 5-point Likert scale format.

The pharmacy team met in a post-study focus group to evaluate the changes, discuss the benefits and barriers, and develop a plan for continuing the service in the future. This session was video recorded and results transcribed verbatim. Content analysis was used to analyze the results of the focus group.

Results

Pre-intervention Focus Group

A total of 5 pharmacy team members participated in the focus group. This included one pharmacist-in-charge, two clinical pharmacist coordinators, and one certified pharmacy technician.

Overall, the pharmacists felt the proposed work system changes would be positive and help increase patient awareness about the knowledge and skills of a pharmacist. Concerns with patient participation, related to time for and purpose of the service, were brought up and cited as a potential barrier to providing patients with this service. One pharmacist summarizes this below:

'Pharmacy is going to change and I think this is a good way to start the process of changing patients mind of what a

pharmacy is and what [pharmacists] do. I do feel like there's gonna be some people that are like I don't have time for this and why are you doing this.'

Documentation procedures for the new service were discussed with the pharmacists and technician. One pharmacist pointed out that patient interactions are not currently documented. Pharmacists agreed that there was not currently a good system for documenting patient encounters. The use of a computer spreadsheet was viewed as a positive step in that direction.

'I definitely think documentation of what we're doing as pharmacists when we talk to patients at the time of pick-up. I don't think there is a streamline for that. We don't document that now unless there's a problem.'

Pharmacists discussed the possibility of using the results of this study as evidence when proposing legislation for pharmacists to be compensated for their time spent delivering direct patient care services. Pharmacists felt it was important for pharmacy to be recognized for their services and compensated appropriately. Pharmacists noted that without current documentation it made it difficult to justify.

'We can show our value down the line when we need information sent to public officials who are, you know, passing a law. Here is what we do in our pharmacy and here are the results.'

Intervention

A total of 56 patients were enrolled in the study resulting in 82 total patient encounters. Twenty-seven of these patients were male (48.2%). The average age of the patients was 61.8±20.0 years. Data was collected from January 2013 through the beginning of April 2013.

An average of 1.3 interventions were provided per patient encounter. There were 40 medication-related problems identified during the three month intervention period (figure 1). The most commonly identified medication-related problem was the patient experiencing an adverse drug reaction, while the least commonly identified problem was improper use of a medical device.

Recommendations were made by pharmacists when a medication-related problem was identified. Of these recommendations, 77.5% (n=31) were made directly to the patient (*e.g. correct use of inhaler*). Another 12.5% (n=5), required the pharmacist to fax a recommendation to the prescribing physician and 10% (n=4) of the medication-

related problems identified resulted in asking the patient to follow-up with the physician.

Pharmacists provided disease-related education a total of 46 times. This included pharmacists talking with patients about their goals of therapy (*e.g.*, A1c, blood pressure, cholesterol) on 21 encounters. Pharmacists also provided patients with information on how to tell if their disease was poorly controlled or progressing (n=13). Less commonly pharmacists talked with patients about making healthier food choices (n=9) and the benefits of exercising (n=3).

Pharmacists administered a total of eight immunizations (two herpes zoster vaccines and six influenza vaccines). Others were screened by pharmacists, but patients opted to 'think about it' or 'check with their physician.' Health monitoring tests including blood pressure and pulse were performed 16 times.

Pharmacists estimated the amount of time spent with patients during each encounter. Of the encounters, 39.0% were less than two minutes in length (n=32) and 48.8% were between two and five minutes in length (n=40). Time with patients between six and ten minutes in length accounted for 9.8% of encounters (n=8). Finally, 2.4% of all encounters were reported to be greater than ten minutes in length (n=2).

Patient Satisfaction Survey

A total of 22 surveys were distributed and all were returned. Table 1 summarizes the demographic information for survey respondents. The results of the satisfaction survey are found in table 2 and reports how satisfied patients were related to the changes in pharmacy workflow.

Overall, patients were satisfied with the changes to the workflow. Patients felt that sitting down to talk with the pharmacist was beneficial and most agreed that they learned something new as a result of talking to the pharmacist. Patients also felt that the conversations were more private than before this change.

Post-study focus group

Two pharmacists and an investigator (CL) met after the completion of the intervention period to evaluate the work system changes, discuss the impact of the service and determine the future of the intervention. Due to a schedule conflict, another pharmacist participated in a one-on-one interview with the investigator. The pharmacy technician did not attend the post-study focus group. Pharmacists indicated that the service was of value to the patient and overall improved the quality of care for patients. Pharmacists felt

they were contributing to improved medication use for patients who were involved with this intervention.

'The interaction with the patient in actually identifying things that would not have been identified, had we not sat down to talk about [their medications].'

Pharmacists concluded as a group that a major barrier to the intervention was the lack of integration between the dispensing software and documentation program in Microsoft Excel. One pharmacist noted the apprehension to talk with patients due to the fear that the documentation system was not going to be accessible.

'I agree that in the beginning, figuring out the computer even though it was up and running like there were times where I'd go and something was wrong and so I couldn't do it and it was kind of like uh, you have that hold back of well there might be an issue and I don't want to have an issue so that was kind of a barrier to go to that other system.'

Pharmacists indicated that they would like to continue providing this service. Pharmacists agreed that they enjoyed the more structured conversations with patients. Concerns were expressed over being removed from the traditional dispensing role. The inability of the pharmacist to oversee technician functions was cited as a problem.

'Since I'm in the position of being the pharmacist-in-charge and managing the store, I feel I need to keep a hand in the dispensing part to keep an eye out for claims not paid or paid under and things like that. Being out there the whole time for me, it wouldn't be comfortable for me since I'm in charge I feel like I need to know what everyone is doing.'

Discussion

This is the first study to evaluate the integration of components of MTM services into the dispensing workflow of a community pharmacy. MTM has been provided by community pharmacists for years. These are typically appointment-based interventions in which pharmacists spend significant time performing comprehensive MTM services.²⁶⁻²⁸ Other studies have focused on specific disease states and performed targeted interventions for one disease on an appointment basis.⁹⁻¹³ Pharmacists are also compensated for providing those MTM services. This study performed a general, brief intervention when a patient arrived to pick up prescription medications to target medication-related problems, disease education, immunizations, and health monitoring tests.

Other studies have reported rates of medication related-problems in the community pharmacy practice setting. The rates of adverse drug reactions (17.2%) in this study were comparable to multiple other studies published. Ernst et al and Cipolle et al reported rates of adverse drug reactions to be 17.3% and 21.3%, respectively.^{8,10} The medication-related problem of additional drug therapy needed was lower in this study (8.6%) than what has been reported in previous studies which has ranged from 23.0% to 56.4%.⁸⁻¹⁰ This may have occurred because the intervention was too short for the pharmacist to obtain complete patient medical history or laboratory data from a patient's physician. It is also possible that pharmacists did not assess for this medication-related problem for each patient.

Pharmacists in this community practice setting were able to identify medication-related problems and provide recommendations to patients regarding their medications and diseases. Pharmacists' recommendations were made directly to patients in 77.5% of the cases. This is comparable to another study in which 80% of recommendations were made directly to the patient.⁹ It is unknown whether or not the pharmacist recommendations resolved the medication-related problems. The majority of these encounters took place in less than five minutes indicating that it may be possible to provide this service to a higher volume of patients without significant wait times.

Patients were satisfied with the changes to the prescription pick-up process. Of note, the majority of patients (n=15) have been a customer at the pharmacy for more than 5 years. Patients felt that the brief interaction with their pharmacist was beneficial to them. This study demonstrates that changes to the pharmacy work system can have a positive effect on patients' perception of pharmacist services.

Pharmacists felt that they were helping patients more directly and that the service expanded their ability to improve the quality of care. The documentation of the intervention was cited as a barrier by all of the pharmacists due to the lack of comfort using the system. Pharmacists noted the need to oversee the rest of the pharmacy made it difficult to provide the service to each patient picking up prescription medications. However, this may be the direct result of pharmacists not embracing the changes to the work system and the perceived need to be directly involved with all aspects of the dispensing process. The above reasons can be attributed to the reasons the changes to the workflow were not always followed and intervention not performed. Since the pharmacy technician was absent at the post-study focus group the impact of the changes from the technician's perspective is not known.

Limitations

This study had a low number of patient encounters due to a number of factors. Buy-in from pharmacy team members for providing the intervention was not completely achieved. There were no incentives or compensation for pharmacists to provide the service and this could be one reason for the low number of encounters. Other factors might include the lack of standardized training with the documentation process. This might have caused apprehension using the spreadsheet and prevented the pharmacist from initiating the intervention. It is still unknown how the pickup process could be applied to higher volume pharmacies. Even with a low volume of prescriptions, the intervention was not performed for all patients entering the pharmacy. Changing pharmacist's habits was difficult and pharmacists were not required to provide the intervention when a patient picked-up their prescriptions. Prescription information had to be manually loaded into the Microsoft Excel documentation system. If this was not completed, interventions with patients became more difficult as pharmacists would not know what medications were being picked-up. Patients also had a varying number of encounters. Some patients only had one intervention while others had multiple interventions. It is unknown how many patients refused the intervention. The satisfaction survey and focus groups were not validated and involved only a subset of the study participants.

There are multiple ways in which to improve this study and its potential for scalability. Incorporating documentation of the intervention into the current pharmacy management software or allowing two software systems to interface would allow for a streamlined process and improve the data collection process. Additional expansion of the pharmacy work system capacity is another way components of MTM services can be further integrated into the community pharmacy dispensing process.

Conclusion

The community pharmacy practice work system can be modified so that pharmacists are able to provide components of MTM services during a brief, face-to-face interaction with patients. Overall, patients were satisfied with the changes to the pharmacy work system. Pharmacists reported concerns about the implementation of the changes on their ability to carry out the intervention. Additional work system changes may be needed to facilitate patient-pharmacist interactions.

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Table 1 – Patient Satisfaction Survey (n=22)

	Category Choices	Number
Gender	Male	10
	Female	12
Age	18-39	6
	40-64	7
	65+	9
Years as a Customer	<1 year	4
	1-4 years	3
	5+ years	15
Number of Prescriptions	1	3
	2-5	10
	6+	9

Table 2 – Patient Satisfaction Survey Results (n = 22)

<i>Now that you have been able to participate in the new prescription pick-up process (sitting down with the pharmacist at prescription pick-up), please give us feedback on the new process compared to the old process:</i>			
Statement	Strongly Agree (%)	Agree (%)	Neutral (%)
The pharmacist helps me in a timely manner	20 (90.9)	2 (9.1)	--
Sitting down with the pharmacist to discuss my medications is beneficial	18 (81.8)	4 (18.2)	--
The conversations I have with my pharmacist are more private	13 (59.1)	9 (40.9)	--
The pharmacist spends an appropriate amount of time with me	16 (72.7)	6 (27.3)	--
The pharmacist provided me with education about my medications	18 (81.8)	4 (18.2)	--
The pharmacist provided me with education about my health condition(s)	12 (54.5)	10 (45.5)	--
I learned something new as a result of the new prescription pick-up process	16 (72.7)	5 (22.7)	1 (4.6)
I am confident that I am taking my medications correctly	15 (68.2)	7 (32.8)	--
Health monitoring tests performed at the pharmacy are beneficial to me	9 (40.9)	10 (45.5)	3 (13.6)
I am more comfortable asking the pharmacist questions	16 (72.7)	6 (27.3)	--

I am satisfied with the changes to the prescription pick-up process	15 (68.2)	7 (32.8)	--
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Figure 1 - Number and Type of Medication-related Problems Identified

