RESEARCH

Student Perceptions of the Pharmacist's Approach Across the Varying Levels of Medication Therapy Management Services

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Objective. To explore third-year pharmacy (P3) student perceptions of medication therapy management (MTM) after an introduction to the various levels of MTM services within an MTM course.
Methods. A qualitative survey was conducted of 158 P3 students. Open-ended questions were used to explore students' thoughts, feelings, and perceptions related to the pharmacist's approach in MTM following a lecture establishing differences in roles and responsibilities between the varying levels of MTM. Emphasis was placed on the pharmacist's role when providing comprehensive medication management (CMM). CMM is a higher-level direct patient care service with a whole-patient focus that goes beyond medication or disease specific focuses of either a comprehensive medication review (CMR) or targeted medication review (TMR). Thematic analysis was performed and an inductive approach to data analysis was used.
Results. The following five themes were identified: misperceptions entering the course, efficient delivery of MTM depends on understanding the differences between services, doctor of pharmacy education is a factor in confused MTM role expectations, role limitations exist and referrals to other providers, and the CMR meets unmet needs.
Conclusion. Students noted initial confusion between their roles and responsibilities during a CMM versus a CMR. Pharmacy educators should address the varying roles and responsibility differences across MTM services within their curriculum.

Keywords: Medication therapy management, comprehensive medication management, comprehensive medication review, student perceptions, pharmacy education

INTRODUCTION

Medication therapy management (MTM) is a service most commonly performed by pharmacists to identify and resolve medication-related problems, and has been shown to both reduce health care costs and improve clinical outcomes.[1] The largest national reimbursable, economically viable and scalable MTM program in the US has been administered by the Centers for Medicare and Medicaid Services (CMS) under the prescription drug benefit (Part D). Both privately administered prescription drug plans (PDPs) and Medicare Advantage plans (MA-PDs) are required by CMS to offer two levels of MTM referred to as comprehensive medication reviews (CMRs) and targeted medication reviews (TMRs) to certain beneficiaries at high risk for medication-related problems.[2] A CMR is an annual interactive, person-to-person, or telehealth consultation performed by a pharmacist or other qualified provider, and a TMR is a single-medication specific consultation used primarily to address non-adherence or therapy omission (2). To meet these requirements, several MA-PDs and PDPs contract with community pharmacists either directly or indirectly to deliver these services at the beneficiary's local pharmacy.

Surprisingly, despite the profession's realization of this highly sought after opportunity to provide reimbursable, direct patient care services in a community pharmacy setting, the provision of MTM, and in particular CMRs, has been slow and sporadic. These low provision rates are a priority concern for CMS, as evidenced by a recent decision to track and evaluate Part D MTM completion rates as part of their medication-related quality measures program.[3] As of 2014, MTM completion rates for CMRs were only 15.4% for PDPs and 30.9% for MA-PDs.[4]

Both time- and workflow-related barriers are commonly cited as impediments to MTM provision, yet in

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practice, community pharmacies within the same organization and with the same general work environments will have drastically different rates of CMR completion.[5,6] Without concrete answers as to why MTM implementation has not been rapidly adopted, the general question may be asked, "are pharmacists capable of consistently providing direct patient care in their practices, especially in the community pharmacy setting?"

The answer underlying these low MTM implementation rates in the community pharmacy is complex and multi-factorial. The financial sustainability of the MTM program is an important factor. Unlike inpatient clinical pharmacy services, outpatient clinical pharmacy services must be tied to revenue generation and must ultimately break-even or return a profit. Given that there are commonly only two types of reimbursable MTM services in the community pharmacy (CMR and TMR), these pharmacists are confined to the levels of care specified by CMS – which is in general, less comprehensive than the care offered by a pharmacist providing services in an ambulatory care environment.[7] The community pharmacist's role in the patient care team and access to patient medical information are likely also a contributor. Within the outpatient care arena, the ambulatory care pharmacist has access to a patient's medical information and plays a predefined role in the team with an established relationship with one or more of the patient's providers. In contrast, the community pharmacist typically does not have access to medical data or a formalized role in the patient care team.

These factors – undefined role in the health care team, incomplete access to patient information, and narrowly defined levels of care that can be provided – may shed light into the more hidden, or latent barriers to MTM implementation. And each of these factors directly adds to the amount of time and effort required to provide direct patient care in the community. For example, the faxing of a prescriber for pertinent medical information necessary to appropriately workup a patient, followed by the subsequent fax to make recommendations, may be many times more time consuming than seeking information and making recommendations in an ambulatory care environment. More often than not, those recommendations are rejected because of a lack of a pre-established relationship, and consequently, lack of trust between the community pharmacist and the prescriber.[8] Further, complex drug regimens are the primary reason for patient eligibility for a CMR and because of this, it is not unusual that a pharmacist may spend upward of 60 minutes with the patient during a CMR session.[9] Unfortunately, in the case of a CMR, CMS rules state simply that the provider must enhance the patient's understanding of appropriate drug use, increase their adherence to medication therapy, and improve the detection of adverse drug events (2). Therefore, the needs of the patient often exceed the service the payer is requesting. Though one might assume that the level of reimbursement would match the time spent providing care for a patient to meet those additional needs, both MA-PDs and PDPs have typically compensated pharmacists at a flat rate for a completed CMR based on the level of MTM service provided alone, regardless of the pharmacist's level of effort. Tradeoffs are therefore required when providing care, and this is not unlike the struggles of our counterparts in medicine.[10]

This balancing of scope of service the payer is requesting with the pharmacotherapeutic needs of the patient is a relatively new challenge in community pharmacy. Historically the majority of clinical services provided by community pharmacists were not directly tied to third-party reimbursement. Instead they were provided as free MTM services as a value-added feature of a pharmacy or practice-based research study on the efficacy or effectiveness of pharmacist-provided care.[1,7] This variability and non-standardization of MTM programs may pose a challenge for educators because what was taught in the classroom was often not directly applicable to what was seen in practice.[11] The more limited scope of care required of the CMR and TMR creates a chasm between the desire, knowledge, and expertise a pharmacist has and the ability to apply those things in a direct patient care setting.

Partly in response to this chasm, the American College of Clinical Pharmacy (ACCP) released a paper in 2015 outlining a new level of pharmacist-delivered MTM care. So-called comprehensive medication management (CMM) is a newly defined level of care that encompasses a more complete application of the pharmacist's expertise when providing direct patient care services as part of a patient care team.[12] Like a CMR, a CMM is direct patient care aimed at improving a patient's health through optimal medication use. However, CMM also includes the assessment of the patient's clinical status, clinically appropriate follow-up evaluation appointments, as well as collaboration among members of the health care team, usually under a collaborative practice agreement. And, it is this assessment of the patient's clinical status which ACCP has defined as the major differentiator. In contrast to CMM, CMRs are medication-siloed and comprised of a once-yearly comprehensive medication review for only a certain segment of the population: those taking multiple medications, with multiple chronic diseases. Both the scope of services provided, and the population affected are limited. Consequently, the corresponding pharmacist interventions and time spent on the

delivery of care must be limited to match what is required and reimbursed for by CMS. To clarify, one may find it easiest to place the CMR on a continuum between the TMR, the lowest level of MTM service, and the CMM, the highest level of MTM (Figure 1).

With the continued slow growth in MTM implementation, student pharmacists are often looked to as a potential means to increase CMR completion rates.[13] However, many students themselves may have only an embryonic understanding of MTM, especially in light of the varying levels of MTM services, which includes the newly coined term CMM. If there is such a mismatch between the level of care provided and the level of care requested by payers like CMS, it may partially explain the modest rates of MTM provision in community pharmacies. To explore this phenomenon, a 50-minute didactic lecture was delivered to educate students on the various levels of MTM prior to delivery of a nationally recognized MTM certificate course. The objective of this qualitative study was to explore third-year pharmacy (P3) student perceptions and initial misperceptions of MTM after this lecture within a required MTM course.

METHODS

Medication Therapy Management (MTM) and the Pharmacists' Patient Care Process (PPCP) is a required course that teaches P3 students the concept and application of MTM and the pharmacists' patient care process (PPCP). Students enter the course with a basic knowledge of MTM terminology from other didactic courses, and as part of their community introductory pharmacy practice experience (IPPE). Course instruction is delivered using lectures, cases, and hands-on experience with MTM web-based platforms. The course is intended to prepare student pharmacists to transition directly into the practice of MTM during their advanced practice pharmacy experiences (APPEs), which begin the subsequent semester. A component of the course is delivery of the American Pharmacists Association (APhA) Delivering Medication Therapy Management (MTM) Services Certificate training program. However, this national certificate training program does not differentiate between the varying levels of MTM services, such as the difference between a CMM and a CMR. To address what the course director perceived as a foundational misunderstanding of the practice and provision of MTM, a lecture was added to the 2015 course schedule devoted to differentiating levels of MTM services, namely that of the more robust CMM-level MTM service from the more narrowly defined CMR-level MTM service. The lecture's content and objectives were directly derived from the Community Pharmacy Foundation's resource, "Get the medications right: a nationwide snapshot of expert practices," as well as a position statement paper from ACCP.[12,14]

All 158 P3 students enrolled in the course at the University of Tennessee Health Science Center College of Pharmacy were eligible to participate in the study. Participation was voluntary, and students were asked to complete the online survey on their own time outside of class and within one week of the previously described lecture in the fall of 2015. There was an additional reminder to complete the survey at day five. Responses were collected anonymously, and students were not told beforehand about the post-class survey. Survey questions were developed by a panel of two faculty members and three practicing community pharmacists who engaged in MTM at their practice site. An open-ended survey methodology was chosen over the more traditional close-ended approach to gather an understanding of student opinions in their own words, in contrast to close-ended questions which confine the respondent to a select set of choices offered. As there is a paucity of research on student perceptions of the varying levels of MTM services in general, it would not be possible to ensure a comprehensive set of close-ended responses that would accurately reflect the students' thoughts, feelings, and attitudes. Additionally, an underlying methodological issue with current MTM barrier research may be cuing the participant to think or respond in a particular way.[15] In contrast, open-ended survey questions innately have less chance of bias from question prompting.[16] Furthermore, to answer the present

TMR = targeted medication review; CMR = comprehensive medication review; CMM = comprehensive medication management

Figure 1. Spectrum of MTM Services.

research question with a traditional pre-test post-test design would likely create response-shift bias in which the students would generate invalid pre-test scores. This is due to the phenomenon whereby respondents "do not know, what they do not know." In a series of experiments, Schuman and Presser compared the use of open-ended versus close-ended survey questions.[17] They concluded that when first surveying a sample regarding a particular phenomenon, begin with open-ended questions to subsequently inform the development of "closed alternatives that reflect the substance and wording of what people say spontaneously."

The brief, open-ended online survey questions (Table 1) were administered using Qualtrics (Provo, UT) and was accessible on traditional and mobile web browsers. Thematic analysis was performed after the survey was closed by the primary investigator, who has been trained in qualitative research, and a qualitative research-trained student research assistant. Coding was performed individually, with periodic meetings to obtain inter-coder agreement. Analysis was assisted through the use of NVivo for Mac (QSR International, Burlington, MA), and an inductive approach to analysis using grounded theory was used. Once a final set of themes was developed, these themes were checked by a convenience sample of student participants to ensure the validity of the data. Disagreements between identified codes and student participant checkers were discussed separately by the two coders and used in the creation of the final set of themes. Approval for this project was granted by the University of Tennessee Health Science Center (UTHSC) Institutional Review Board (IRB).

RESULTS

The response rate was 80.4% (127 of 158 students completed the survey). The P3 student respondents represented the three campuses comprising the University of Tennessee Health Science Center (Memphis, Knoxville, and Nashville) and were in their final semester prior to entering APPEs. The data analysis resulted in five broad themes, which are described below. Supporting quotes are summarized in Table 2.

Misperceptions of MTM services upon entering the course was the first theme. Several student self-identified misperceptions of the various MTM services were found in the manuscripts. One initial perception of MTM that arose from the data was that MTM was a single service, rather than an umbrella term for several services, and that it was overly time-consuming and impractical. There was also an initial feeling of a need to address and resolve each patient's problems identified during the CMR without assistance from other members of the patient's health care team and during the confines of the single, annual session. Others noted that they felt responsible for the entire patient's clinical status, and that they were expected to perform physical assessment during the CMR session. Others noted that they had originally felt the CMR was an academic exercise, which was not feasible in a real-world community pharmacy setting.

The second theme was efficient delivery of MTM depends on understanding the differences between services. Students' feelings of time constraints when providing services were central to this theme. These comments seemed grounded in a student's own internship, IPPE, or work experiences where the student may have felt pressure to deliver care or provide products with limited available time. They noted that time constraints related to CMR reimbursement mandated an efficient use of time during the session. Some expanded on the idea that there are several types of clinical services a pharmacist can provide, each with its own focus and payer-defined expectations. Therefore, because of reimbursement-related time constraints, it is not always possible to deliver additional services beyond what the payer has requested during a CMR session in a busy pharmacy.

Theme three was the idea that doctor of pharmacy education is itself a factor in confused MTM role expectations. Student views of MTM prior to the lecture were also rooted in prior experiences in the classroom setting. Prior patient workups in other courses led to a self-imposed expectation to deliver care above and beyond the requirements and limitations of some levels of MTM, such as the CMR. In a few examples, students specifically

Table 1. Open-Ended Survey Questions Administered to Third-Year Pharmacy Students

Survey Questions
1. In the space below, please describe a misperception you had regarding CMR prior to starting the course. Then, describe what you know now.
2. In the space below, please explain why a pharmacist's priority is to address medication-related problems, rather than overall general patient problems, when providing a CMR.
3. In your own words, please describe why during the course of a CMR less severe medication-specific problems can sometimes be high priority problems. And, explain how patient-identified medication related problems may factor into this phenomenon.

CMR=comprehensive medication review

Table 2. Supporting Quotes from Qualitative Student Pharmacist Responses

Theme	Student	Excerpt
Misperceptions of MTM Services Upon Entering the Course	25	"I assumed that MTM practice took considerable amounts of time to complete and was inconsistent between patients."
	34	"[The] misperception I had dealt with trying to do too much in a CMR session. Now that I know to focus on medication related problems, it lifts a burden of trying to do too much in too short a time for the patient's overall health."
	49	"My misperception regarding MTM relates to [prioritizing problems] . . . I think it is great that MTM is more narrow than my original broad perception. It would allow the provider leading the session to really focus on the patient's medication related issues and extend referrals to those that are best suited to meet their other patient needs."
Efficient Delivery of MTM Depends on Understanding the Differences Between Services	75	"Typically, CMR is constrained to a certain amount of time so the pharmacist has to ensure that he/she covers what he/she can in the most efficient way. Disease [state] management (DSM) requires more time and for the CMR, we are more concerned with providing only medication reviews."
	55	"CMRs [have] to be targeted and specific, otherwise it will take up more time than possible to run a pharmacy. CMR has the goal of being succinct and efficient, and thus pharmacists must focus on the medications."
	1	"The goal of a CMR is to address a patient's medication related problems. This makes the CMR session more efficient and focused on that particular goal. You won't have enough time to address all of the patient's health related problems during a typical [CMR] session."
	52	"Time is always limited in anything that we do, so a pharmacist must use his or her time most efficiently. We cannot try to fix every health-related problem in our limited time. Counseling a patient on medication related problems is what the entire CMR session is about, so prioritizing things is essential."
Doctor of Pharmacy Education Favors Confused MTM Role Expectations	26	"[I thought] MTM was comprehensive and covers all of the patient's possible health problems. This is likely because I was used to therapeutics, where we are presented with patient cases and challenged to find every problem the patient might have."
	68	"When we had to do individual cases before the first class, I struggled so much to perform MTM with the patient. I was overwhelmed by the amount of information and the limited time to come up with assessment and plan. Then, I realized that the MTM is totally different from presenting a patient's case in Applied Therapeutics."
	107	"Before starting the course, I believed that [the CMR session] was a session dedicated to looking at the entire patient problem list. I thought that pharmacies were to address every single issue the patient had. Now, I understand that the pharmacist's role here is more focused on medication related problems. With this understanding in mind, the idea of MTM seems less overwhelming."
Role Limitations Exist and Referrals to Other Providers	70	"Before starting the course, I believed that [the CMR session] was a session dedicated to looking at the entire patient problem list. I thought that pharmacies were to address every single issue the patient had. Now, I understand that the pharmacist's role here is more focused on medication related problems. With this understanding in mind, the idea of MTM seems less overwhelming."
	107	"Because many of the pharmacists do not have patient's lab results and other information pertinent to completely assess patient's condition, it is imperative for the pharmacist to focus on only those issues the pharmacist can intervene on effectively."
	66	"A pharmacist must address medication related problems over general patient problems when providing MTM because time is limited and our main focus should be on addressing medication problems and being able to refer the patient to the correct resources to address other problems."

(*Continued*)

Table 2. (*Continued*)

Theme	Student	Excerpt
	104	"My basic understanding of medication therapy management before this class was that it was an appointment a person could make with their community pharmacist to go over what their medications were and how to improve their health from there. This is not entirely correct. Medication therapy management is much more focused than this. By using the pharmacists' patient centered care approach, a pharmacist now has a standardized way to approach a patient about their medications. This allows for a pharmacist to focus on what they know best: medication. Medication therapy management allows the healthcare provider to find medication-related problems and work with other members of the healthcare team to fix them to provide the best outcomes for the patient."
The CMR Meets Unmet Needs	124	"A less severe medication related problems may be a high priority because of the possible impact on quality of life for the patient. Sometimes there are small changes that you can make that are more important to the patient (even if the mediation related problem is not as severe as others)."

drew from experiences learned when creating a SOAP note during a therapeutics case in class. These students felt that, regardless of the level of MTM being provided, they were responsible for working-up and addressing all patient problems during the single MTM encounter. This contrasted with their feelings after learning the specific responsibilities of the different levels of MTM services.

Role limitations and the utilization of referrals to other providers was the fourth theme. Students were aware that there are several factors that may limit the role the pharmacist may have when providing MTM, and consequently impact how a pharmacist approaches and develops a plan for a particular patient. Factors noted to impact this role included the level of MTM service being delivered and the pharmacist's access to the patient's medical history.

Secondary to these role limitations, students noted that referrals to other providers are often necessary. Students felt that a referral to the primary care physician (PCP), ambulatory care pharmacist, or specialist may be an appropriate intervention in circumstances where a pharmacist must fulfill a more limited role due to constraints in time, communication, and patient information access. Therefore, some problems identified during an MTM appointment may be resolved via a pharmacist's referral to other health care providers when they cannot effectively or appropriately intervene on those problems themselves.

The fifth and final theme was that the CMR meets an unmet patient need. Some students suggested that they experienced an internal redefinition of the CMR after being introduced to the concept of CMM. The students noted that the CMM is clinically important as it ensures high quality care, and that the less robust level of care provided during the CMR is also important because it serves a unique purpose from which a patient may not otherwise benefit. Specifics surrounding CMR-specific value revolved around the idea that no other member of the health care team ensures the patient is educated on their medication regimen, the regimen is affordable, and the patient's quality of life is not negatively affected by medication burden.

DISCUSSION

This paper is the first to explore student perceptions surrounding the various levels of MTM services. These uncovered thoughts, feelings, and attitudes are vital to educators, especially those engaged in the instruction of MTM. If a student's preconception is that a pharmacist's approach to MTM does not differ across the various levels of MTM services, practice settings, or roles on the patient's health care team are not addressed, it is possible that it may lead to downstream issues with MTM implementation and delivery. Students who enter practice with such an underdeveloped understanding may overextend themselves when first engaging in MTM services, or fail to engage in MTM services altogether. Our results demonstrate there is indeed cause for concern and future research.

Despite the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 opening the door for pharmacist reimbursement for MTM, it still remains under-implemented in many pharmacies more than a decade later, especially in the community setting. A key latent barrier underlying most other reported MTM implementation barriers is the perception that MTM is a single service, rather than a hierarchy of several services. This study's findings suggest that a student's initial perceptions of the traditional Medicare Part D CMR are that

of an overwhelming or difficult-to-implement service, subsequently creating a hesitation to take a "first step," and a bias that MTM services are impractical in some settings. It is understandable how those without formal training or platform-based training alone (eg, Mirixa or Outcomes) during an internship or experiential site may mistake a CMR for a CMM, and be consequently overwhelmed with patient workup and interventions.

Evidence to support this latent barrier of hesitation to take a "first step" exists beyond our student cohort. A review of the current literature suggests common themes concerning barriers to MTM include insufficient time and staffing, concerns regarding compensation, and lack of proper training.[5-7,18-20] Adequate time to provide MTM appears to be the most unanimous challenge. However, in a study that separated survey respondents into groups of pharmacists who provide MTM with compensation, pharmacists who provide MTM without compensation, and pharmacists who are simply interested in providing MTM, only the latter group listed time and staffing as significant barriers to implementation of MTM.[5] In other words, the respondents who were not providing MTM services perceived time and staffing to be larger barriers than those currently providing it. These misperceptions can be hazardous as they may paralyze a provider from making progress in the participation in or implementation of MTM services at their practice site. These same misperceptions mirror the results of this study, and possibly hint at a larger problem within the profession.

Practical experience in the field alone may not be enough to correct this phenomenon uncovered in this study's student cohort. In a study that interviewed Texas pharmacists about MTM, many felt uncomfortable with certain aspects of the service.[20] The majority of these respondents expressed interest in receiving training to become more competent in the core components of MTM and in expanding their knowledge in general about providing MTM to patients. Independent community pharmacy managers were surveyed in another study aimed at gauging attitudes toward and barriers to implementation of MTM services. The study looked at the difference between those who contracted with Mirixa, a third-party MTM platform, and those who did not. Although 41% of those who were not contracted with Mirixa stated they felt unfamiliar with MTM, a surprising 20% of those who were contracted with Mirixa felt the same way.[19]

A renewed focus on MTM training and education is needed to overcome misperceptions and lack of MTM-preparedness. This training and education must include emphasis on the various levels of MTM, and the subsequent roles and responsibilities of each. Although our study focused on this training within the Doctor of Pharmacy curriculum, those pharmacists in practice should also be engaged through continuing education offerings, as many in practice also lack a strong foundational understanding of the various MTM services.

Pharmacists in general, and community pharmacists in particular, continue to advocate for a larger role on the patient care team. However, this misplaced desire to provide comprehensive care during the delivery of a CMR or TMR inevitably leads to an overwhelmed pharmacist, prescriber, and patient, as these services are clearly defined by CMS as medication-centric, and not meant for more general disease state management. Although better outcomes are likely with CMM-type services, it would be unwise to attempt to perform this level of care within the confines of a standard annual CMR session. It is our experience that this clinical "bootstrapping" is widespread across community pharmacy practice and teaching sites – and as a result, the provision of CMRs is unsustainable in many of these settings because of this misalignment of the pharmacist's lofty patient goals and the payer's more modest goals for the program.

There are several limitations of this study. First, although the term CMM has been accepted by ACCP, it has yet to gain universal support by other pharmacy stakeholder groups or CMS. The open-ended survey questions used may be viewed as coaxing. Although these types of questions are not uncommon in qualitative research studies, they typically are subsequent to more broadly phrased questions. However, unlike traditional semi-structured interview questions which allow the interviewer to lead with an open-ended question, and follow with pre-determined probing questions to guide response collection, an online survey does not allow this gradual narrowing of focus guided by an interviewer. For this reason, questions were framed in such a way as to simultaneously inquire about a general domain (eg, pharmacist's priorities) and also probe about subdomains (eg, priority assignment between medication-related problems and general medical problems). Also, there was a lack of methodological triangulation, which is the use of multiple modes of qualitative data collection to create a more complete picture. Lastly, qualitative research is hypothesis generating and not hypothesis testing. As this study serves as the first step in this exploration, it provides interesting information that can be used to springboard further research on this topic.

CONCLUSION

This is the first study of its kind that uncovered student pharmacists' perceptions surrounding MTM services. After a 50-minute didactic lecture on the varying levels of MTM services, students noted their own misperceptions related to the feasibility of MTM provision and initial

confusion between their role and the varying levels of MTM services. This data is vital as students who enter practice with an underdeveloped apprehension of how their approach varies based on the MTM service being provided may overextend themselves when first engaging in MTM services. Therefore, it is recommended that pharmacy educators emphasize the varying roles and responsibility differences across MTM services within their curriculum.

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