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CLINICAL PHARMACY RESEARCH REPORT

The practice management components needed to support comprehensive medication management in primary care clinics

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Abstract

Background: Practice management (ie, the necessary resources and support to provide comprehensive medication management [CMM] in an efficient and productive manner) is a central part of CMM practice. However, research identifying the key components of CMM practice management was previously lacking.

Methods: Pharmacists providing CMM from 35 primary care clinics across five states were divided into three cohorts. One-on-one semi-structured interviews were conducted with the lead pharmacist from all clinics in Cohort 1. Participants were asked to describe the essential components of CMM practice management as they applied to their practice. Inductive coding of transcripts led to an initial practice management framework. Participants in Cohorts 2 and 3 reviewed the essential components and participated in individual cognitive interviews. Throughout this process, a series of four focus groups with managers who oversaw pharmacists providing CMM also occurred to obtain their initial perspectives, as well as feedback on the evolving essential components of practice management.

Results: Thirteen essential components of CMM practice management emerged: leadership support, availability and adequacy of clinic space, billing and revenue systems, methods for identifying patients in need of CMM, scheduling CMM services, care documentation, presence and scope of collaborative practice agreements, interprofessional collaboration, engagement of support staff, measuring CMM data, reporting CMM data and outcomes, quality assurance processes, and practitioner training. These essential components were grouped into five overarching domains: organizational support, care delivery processes, care team engagement, evaluating CMM services, and ensuring consistent and quality care.

Conclusion: This study defined the essential components of CMM practice management which may be used to guide CMM practice development and advancement.

KEYWORDS
clinical pharmacy services, medication therapy management, practice management

Pharmacists' roles in preventing morbidity and mortality were first described by Hepler and Strand in their landmark article, "Opportunities and Responsibilities in Pharmaceutical Care."[1] In this paper, the authors call on the profession to commit itself to the development of a professional practice that is patient-centered (as opposed to product-centered) and rooted in taking responsibility for achieving optimal outcomes from medications. Since then, the profession has developed a number of clinically-oriented services aimed at improving health and reducing health care costs. One such service that has evolved is comprehensive medication management (CMM).[2-4] CMM is defined as:

> "The standard of care that ensures each patient's medications (whether they are prescription, nonprescription, alternative, traditional, vitamins, or nutritional supplements) are individually assessed to determine that each medication is appropriate for the patient, effective for the medical condition, safe given the comorbidities and other medications being taken, and able to be taken by the patient as intended."[3]

Subsequent work building on the call to establish a professional practice for pharmacy states that a professional practice consists of three primary components: (a) a philosophy of practice, (b) a patient care process, and (c) a practice management system.[5] Expanding upon the prior definition of practice management put forth by Cipolle and colleagues,[5] the study team defined practice management as all of the necessary resources and supports to provide CMM in an efficient and productive manner. While the philosophy of practice and patient care process for CMM has been defined, [4,6-9] little research has been completed to define the core elements of practice management for CMM. This lack of a clear practice management framework may hinder the development of new CMM programs as well as the advancement of existing practices.

A number of pharmacy resources outline components of practice management,[10-14] but most are not based on robust research methods. Other health care disciplines, such as medicine and nursing, have developed practice management frameworks,[15-17] mainly for the purpose of guiding practice management education. However, many of the components of these frameworks are discipline-specific. For example, personnel management is a component that occurs in some surgical frameworks,[16,17] but may not be applicable to all health care disciplines. Therefore, an in-depth exploration into the necessary resources and supports that facilitate efficient, effective, and sustainable delivery of CMM was necessary to assist the pharmacy practice community in its efforts to expand CMM and optimize medication use in patients served. The purpose of this study was to identify and define the essential components of CMM practice management in order to develop a framework for CMM practice management.

1 | METHODS

This research was part of a larger CMM implementation and outcomes study[18] focused on enhancing the performance of CMM in primary care. This study was approved by the University of North Carolina Institutional Review Board. The University of Minnesota Institutional Review Board determined that this was not human subjects research and therefore did not require formal review.

1.1 | Participants

To be included in the larger project, all sites needed to have established CMM services delivered by pharmacists embedded in primary care clinics and report that they were offering CMM as defined in the American College of Clinical Pharmacy, "Standards of Practice for Clinical Pharmacists"[2] and the "Patient-Centered Primary Care Collaborative Comprehensive Medication Management Resource Guide."[3] Participating clinics were recruited by the University of Minnesota, the University of North Carolina, and the American Academy of Family Physicians (AAFP). The University of Minnesota and the University of North Carolina both recruited a diverse group of primary care sites they had previously worked with and knew met the inclusion criteria for the grant. AAFP put out a national call to members of the AAFP National Research Network to participate in the study, and those that responded and met the inclusion criteria were included in the study. If more than one pharmacist practiced at a site, one was selected as the lead for data collection. For this project, 35 out of 36 sites that were participating at the time of data collection were included. One site was not included because the same pharmacist was working at two participating sites. In addition, eight managers who oversaw pharmacists providing CMM at enrolled sites participated. All eight managers were also pharmacists.

All sites completed an initial baseline and demographic survey.[19] This information was used to create three diverse cohorts, taking into consideration the number of pharmacist full-time equivalents (FTEs) for CMM, the year CMM was established in the clinic, the number of patients receiving CMM in a typical week, as well as their affiliated health system. Cohorts were formed because input from all participating pharmacists was desired, but as this was a multistage project, it was also important to not overburden the pharmacists by seeking their input at every stage.

1.2 | Data collection—Phase 1

Data were obtained through a multistep process (Figure 1). First, a focus group was carried out with managers to obtain their perspectives on the essential components of CMM practice management.

All eight participating managers were invited to participate in a 90-minute focus group and six attended. Two of the managers attended in person, while four joined via Webex (Cisco, San Jose, California). Prior to the focus group, the managers were asked to list at least three components they felt were necessary for ideal practice management via a Qualtrics survey (Qualtrics, Provo, Utah). The lead investigator (D.L.P.) reviewed the responses and grouped them into similar categories before the focus group. The group then discussed the importance of each item to practice management and described each component as it would appear in an ideal practice. Because a practice management assessment tool was being developed in parallel

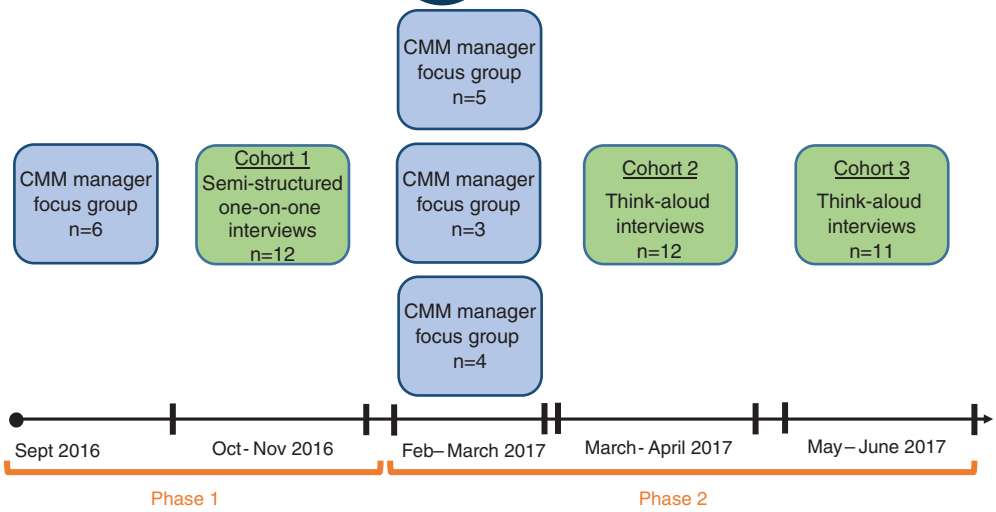

FIGURE 1 Methods outline and timeline. CMM, comprehensive medication management

to the framework,[20,21] participants were asked what each component would look like in an ideal practice to have a better understanding of the highest level of CMM practice management for each component.

Following this focus group, an interview guide was developed to be used with pharmacists in Cohort 1 (Appendix S1). The interview guide was informed through managers' responses to the Qualtrics survey, themes that emerged in that focus group, and reviewing the literature.[10,12,14,22] The interview guide was pilot tested by interviewing three primary care pharmacists not involved in the study.

The 12 pharmacists in Cohort 1 participated individually in a phone-based 60-minute semi-structured interview. After reviewing the definition of CMM practice management, the pharmacists were asked to describe the essential components of CMM practice management from their perspective and what these components looked like in their practice. All interviews and the focus group were audio recorded and transcribed verbatim by a commercial transcription agency.

1.3 | Data analysis—Phase 1

Two investigators (D.L.P. and C.K.F.) developed an initial coding scheme based on the transcripts from the manager focus group and the Cohort 1 interviews. The lead investigator applied holistic coding to all transcripts using NVivo 11 for Windows (QSR International, Melbourne, Australia). Holistic coding is often done in first-cycle coding and serves to "'chunk' the text into broad topic areas, as a first step to seeing what is there."[23] For example, if a participant discussed their documentation, rather than coding for nuances, the lead investigator coded the entire passage "documentation."

The two investigators discussed application of holistic codes and developed subcodes to further describe the data. Prior to meeting, the two investigators would read through the assigned holistic codes and independently subcode the data. During meetings, they would then discuss the subcodes they had developed to come to an agreement on a final subcode schema. As the coding structure was defined, it was shared with the larger research team to obtain feedback for clarity and structure. Finally, the framework was used to draft a practice management assessment tool, which is described elsewhere.[20,21]

1.4 | Data collection—Phase 2

To enhance the validity of the data and draw out further nuances of the essential components and items in the practice management assessment tool, another series of focus groups were conducted with the managers. In this phase, all focus groups took place via videoconferencing using Webex. The first focus group lasted 90 minutes and was attended by five of the seven managers that were invited (due to organizational restructuring, there was one fewer manager at this phase of the project), while the second and third focus groups lasted 60 minutes and were attended by three and four managers, respectively. During the focus groups, the lead investigator reviewed each component of the framework as it was presented in the tool and requested the managers' feedback on each component's codes and subcodes that had been formed into the tool.

After the manager focus groups were completed, cognitive interviewing was conducted with all 12 pharmacists in Cohort 2 and 11 pharmacists in Cohort 3 (one pharmacist that was interviewed in Cohort 1 was interviewed again in Cohort 3 because they were covering service for one of the lead pharmacists of a different participating clinic). Cognitive interviewing is used "to study the manner in which targeted audiences understand, mentally process, and respond to the materials we present,"[24] in this case, the CMM practice management framework and resulting tool. No new components were suggested during interviews with Cohort 3, indicating that data saturation had occurred. All interviews were conducted one-on-one via videoconferencing. The focus groups and interviews were recorded and transcribed verbatim, except for one pharmacist who declined recording; detailed note-taking was used during this interview instead.

1.5 | Data analysis—Phase 2

The lead investigator reviewed the transcripts from the focus groups and interviews to identify potential revisions to the framework and tool and considered these with the input of the full research team. To create an audit trail, participant comments were documented in

Excel (Microsoft, Redmond, Washington), along with any revisions. A revised version of the framework and tool were drafted after incorporating the feedback of the managers and pharmacists.

By the middle of Cohort 2, sufficient input had been collected on the essential components that they could be organized into domains. This was accomplished by displaying the 13 components via Webex and asking pharmacists how they would group the components and what names they would give each group. In addition, managers in the final focus group were also asked to group the components into domains. Based on the input from the pharmacists and managers, the essential components were grouped into five domains which were confirmed and agreed upon by the remaining participants in Cohorts 2 and 3, as well as the full research team.

2 | RESULTS

Table 1 presents selected characteristics of participating pharmacists, and Table 2 presents the characteristics of their practice sites. Analysis of the data resulted in a CMM practice management framework consisting of 13 essential components that are organized into five domains. Table 3 presents the domains, their essential components, and an illustrative quote of each component. The following describes the emergent essential components of CMM practice management organized under their domain.

TABLE 1 Participant characteristics (n = 34)

Characteristic	N
Sex	
Female	29
Male	5
Graduation year from pharmacy school (n = 33)	
1990-1995	1
1996-2000	2
2001-2005	8
2006-2010	14
2011-2015	8
Pharmacy degree	
BSPharm and Pharm.D.	4
Pharm.D.	30
Residency training	
PGY1	29
PGY2	6
Board certified (n = 33)	
Pharmacotherapy	9
Ambulatory care	16

Abbreviations: BSPharm, Bachelor of Pharmacy; PGY1, post-graduate year one; PGY2, post-graduate year two; Pharm.D., Doctor of Pharmacy.

TABLE 2 Clinic characteristics (n = 35)

Characteristic	N
Practice location	
Minnesota	22
New Mexico	1
New York	2
North Carolina	9
Wisconsin	1
Clinic is a certified patient centered medical home (n = 34)	
Yes	27
No	7
Pharmacist FTEs dedicated to clinic, mean ± SD (n = 34)	0.73 ± 0.53
Years since CMM was first established at practice, mean ± SD (n = 34)	8 ± 5.3
Approximate number of CMM visits at clinic within a week per FTE, mean ± SD (n = 34)	21.7 ± 15.6

Abbreviations: CMM, comprehensive medication management; FTE, full-time equivalent.

2.1 | Organizational support

2.1.1 | Leadership support

Leadership support can come from a variety of sources. For example, those pharmacists working in larger systems often have pharmacy leadership (eg, a pharmacy manager), clinic-level leadership, and executive leadership. It was noted that having pharmacy leadership allows pharmacists to focus more on service delivery because the leadership tasks (eg, addressing clinic issues, developing scheduling processes) are being carried out by others. In addition, participants discussed various ways that leadership support CMM, such as ensuring pharmacists have space to provide CMM, advocating for the use of CMM, and encouraging participation in medical provider meetings.

2.1.2 | Availability and adequacy of clinic space

The space and location where pharmacists work were described as encompassing two distinct areas: the pharmacists' patient care workspace and their nonpatient care workspace. Pharmacists spoke of the importance of having their nonpatient care workspace visible and accessible to the care team. Participants described that working near medical providers fosters relationships and increases collaboration. As a result, care team members can easily consult with pharmacists and vice versa. When describing patient care workspace, pharmacists spoke about not only having access to an exam room, but the importance of the space meeting the needs of a CMM visit in terms of size. Consideration needs to be given for additional people that may be present during a CMM visit, such as family members and interpreters, and access to necessary office equipment (eg, computer, phone).

TABLE 3 The essential components of CMM practice management organized by domain along with illustrative quotes

Essential component	Example quotation
Organizational support	
Leadership support	*I think [clinic leadership] are respected by the clinicians, so when they say something, it's generally listened to, so when you get that kind of endorsement, that carries weight…not just with clinicians, but with nursing staff, and what-not. (C1P12)*
Availability and adequacy of clinic space	*Often times, I will have patients here and be unable to see them in as timely of a way as I would like to or anybody would really like to just due to space, so I think that space is a resource that is important. (C1P6)*
Billing and revenue systems	*The way that our management is most interested in what we are doing is through our financial model, because while they agree that our service is great and they want us to be there wholeheartedly, they want to make sure that the budget balances at the end of the day, too. (C1P4)*
Care delivery processes	
Methods for identifying patients in need of CMM	*I would say that being able to [identify CMM patients] in an efficient way, which is something we have been working on this year…I think that's important to be the most efficient in the way that you can. (F1)*
Scheduling CMM services	*Scheduling is absolutely paramount to what's going on….When we talk to a community pharmacy who doesn't have potentially a documentation system and does not have any ability to schedule visits, that's a huge barrier, something that we know is there. You have to have the ability to schedule your patients. (F1)*
Care documentation	*I guess one thing that may be assumed but probably should be said is just having access to the patient's medical record… I think being able to see the patient's full history and that whole picture, is very, very important. And being able to [have] read/write access to that, being able to document in that same system means that everyone else has access to what I'm putting in there, and I think that helps really establish it as an integrated presence in the clinic. (C1P12)*
Care team engagement	
Presence and scope of collaborative practice agreements	*Having collaborative practice agreements is huge, because that makes it easier for everybody… I remember when I started; I would have all these ideas of things that I wanted to do… But I would come to a clinician and say I wanted to increase this dose, which means you'll have to order these labs, and I had one of my best advocates say this is all great, but I'm going to have to stop referring to you because it's too much work for me in my inbox. So being able to leverage a collaborative practice agreement, to say now when I see your blood pressure patients, I'll just take care of it, was huge, because that actually impacted their daily work more than anything. (C1P12)*
Interprofessional collaboration	*I think it's the driver. Without being able to collaborate, I would not be able to be effective…working in a silo would not be a good thing when it comes to medication management. (C1P7)*
Engagement of support staff	*One thing I think is really important and valuable that we do not currently have in a full-time role is the staff support. Right now, our pharmacists schedule all of their own visits, they check the patient in themselves, they conduct the visit, they document the visit, and they check the patient out…the burden of all that is really on the pharmacist. (C1P2)*
Evaluating CMM services	
Measuring CMM data	*I think our data is the strongest; specifically, the clinical data. That really speaks to providers. It speaks to their quality measures; it speaks to the clinic quality measures. And within our team, that was the most meaningful for our practitioners to work on, their clinical data. (C1P10)*
Reporting CMM data and outcomes	*I've felt it's really important to own your own outcomes… So we own our outcomes and then it needs to be efficient and non-intrusive to practice, so it cannot be manually collected or manually gathered. For the practitioner to document them, it has to be an easy way to document them. And then to the extent that you can engage your IT department or your recording department to help build easy reports, so you can get that information on the turn of a dime, versus OK, now my resident is going to work on this for three months doing manual chart reviews on every patient that we saw to gather the data. (F1)*
Ensuring consistent and quality care	
Practitioner training	*A very important thing that we have learned is that just because you train somebody initially to do something right, they develop weird and bad habits… So we have started to understand the importance of certain annual retraining aspects, whether it's around appropriate documentation, having another person shadow them, or them going to shadow other people, or having their manager sit in on visits. We update our practice model every year and have people sign off on it to say that they have read it and that they will follow it. Those types of things I think are important as well. You cannot just train once, unfortunately. (C2P1)*

(Continues)

TABLE 3 (Continued)

Essential component	Example quotation
Quality assurance processes	*We do quarterly peer reviews, so we pair a pharmacist with a pharmacist and we deliberately change it up every time, so every quarter they will meet and they will review a new note and a follow-up note and then go through a quality assurance documentation and talk about are all the required elements there, clinical decision making that the pharmacists made. Are there standardization questions that need to be brought back to leadership to make a decision on? We found that very helpful, and it's more of a peer-to-peer conversation. It's not seen as punitive necessarily. (F1)*

Abbreviations: C, cohort; CMM, comprehensive medication management; F, focus group; IT, information technology; P, pharmacist.

2.1.3 | Billing and revenue systems

Pharmacists participate in a number of mechanisms for billing and revenue. For example, some pharmacists spoke of billing through mechanisms that were not created for pharmacists, such as Medicare Annual Wellness Visits. Another strategy for generating revenue was to perform co-visits with physicians so that the physician could bill at a higher level. Other pharmacists, however, can bill fee-for-service through current procedural terminology codes. Finally, with many organizations shifting from a fee-for-service financial model to one of value-based payment, several participants spoke of generating revenue through value-based payments.

2.2 | Care delivery processes

2.2.1 | Methods for identifying patients in need of CMM

There are many different methods that participants discussed to identify patients. Often, many pharmacists start out by self-identifying patients to be seen for CMM based on the patients coming into the clinic on that day. However, participants also spoke about the limitations of self-identifying patients, such as patients and providers not necessarily wanting the service at that time and the logistics of coordinating the pharmacist's visit around the primary care provider's visit. Therefore, many clinics and health systems rely on electronic tools to assist in identifying patients. Using electronic means is often an effective way to identify patients for CMM and allows the pharmacist more time to provide patient care. However, participants pointed out that algorithms are not perfect and that they occasionally identify patients for CMM that are stable and do not have medication therapy problems.

2.2.2 | Scheduling CMM services

Once patients are identified, the next step in the care delivery process is scheduling the visit. There are several different methods and intricacies of scheduling CMM visits. Participants discussed how important it is to be able to schedule in the electronic health record, as well as having a consistent scheduling process. Another method of scheduling assistance that is beneficial to pharmacists is patients having the ability to schedule their appointments online. Also noted as an important feature were automated appointment reminders that are sent out to patients.

Finally, an additional aspect of scheduling that some participants mentioned was whether their clinic does outreach. Performing outreach includes various strategies to prospectively reach out to potential patients for CMM to inform them about the service and/or gauge their interest in making a CMM appointment. This can be accomplished in several different ways, such as through phone calls, letters, or promotional mailings.

2.2.3 | Care documentation

When discussing care documentation, participants spoke of the importance of documenting in the same system used by the rest of the care team so that they would not have to double document. Various documentation efficiency tools were also mentioned, such as auto-populating or short-hand text, drop-down menus, and commonly used order sets which result in certain parts of the note being auto-populated so that the pharmacist does not have to manually enter this information. In addition, participants talked about different efficiency tools for inputting their notes. For example, some talked about how they have transcription tools (eg, speech recognition and transcribing). However, some participants commented that these tools actually made them less efficient. Many primary care providers have assistants who may act as scribes that work with them and can type the visit note as the provider is conducting the visit. One of the focus group members mentioned how, in an ideal practice, this would be a useful service to also provide pharmacists. Finally, because documentation takes up a significant amount of pharmacists' time, many participants noted the importance of creating documentation improvement initiatives, such as creating disease-specific templates to make documenting more efficient.

2.3 | Care team engagement

2.3.1 | Presence and scope of collaborative practice agreements (CPAs)

Several pharmacists spoke of the importance of CPAs and the challenges that occur when CPAs are not in place. However, there was significant variation in the scope of CPAs among participants. For example, some pharmacists use protocols. One participant described protocols as being very “black and white” because they allow for little

flexibility in clinical decision making on the part of pharmacists. Condition-specific CPAs, which some pharmacists described having in place, allow for slightly more autonomy. Those with the most autonomy to initiate, discontinue, and/or modify patients' medications described having broad CPAs limited only by the exclusion of certain drug classes or conditions.

Also included in CPAs are pharmacists' ability to order labs, durable medical equipment, and imaging. However, there was some disagreement among pharmacists about whether the ability to order durable medical equipment and imaging was essential to practice given the limited amount of imaging or durable medical equipment pharmacists would realistically order.

2.3.2 | Interprofessional collaboration

Many participants highlighted their relationships and collaboration with other care team members as important to their CMM practice management. For some, interprofessional collaboration has increased their scope of practice because they have been able to build trusting relationships, which has allowed them to broaden their CPAs. Participants described collaborating with other providers in a variety of ways, such as conducting collaborative visits, communicating recommendations, and developing care plans. Collaboration can also occur through presence at clinic and/or organization meetings. To foster interprofessional collaboration, a few pharmacists discussed the content and process of a CMM orientation when a new care team member is hired.

2.3.3 | Engagement of support staff

Participants mentioned several areas where support staff assist in their CMM practice, such as scheduling patient visits, rooming patients and taking any necessary vitals, billing CMM visits, administering vaccinations, and working with CMM contracts. Many mentioned that other health care providers have these resources available to them and that having the same resources for CMM would allow pharmacists to be more efficient and have the ability to see more patients.

Regarding the access that pharmacists have to support staff, participants reported a wide range of responses. Some mentioned having no dedicated support staff to assist with CMM, while others mentioned having access to support staff, but that they were a shared resource for the entire clinical team. Having support staff dedicated to assist with CMM was mentioned as being ideal, but difficult to achieve.

2.4 | Evaluating CMM services

2.4.1 | Measuring CMM data

Participants described measuring a variety of factors associated with CMM, such as the number of medication therapy problems identified and resolved, clinical outcomes, fiscal measures, descriptive measures of their patient population, pharmacist productivity, and satisfaction of pharmacists, as well as the satisfaction of patients and providers with CMM. There was some debate, however, on whether certain measures were useful to CMM. For example, some participants felt collecting clinical data was not important because they had already achieved buy-in from their administration, whereas other participants stated that this was important to their practice. However, having data on a variety of different measures was mentioned as useful because certain members of the organization are interested in different measures.

2.4.2 | Reporting CMM data and outcomes

How CMM data are extracted, to whom the data are reported, and how the data are being reported are also important pieces of CMM program evaluation. Participants talked about the various people they share CMM data with, such as their CMM team, the clinic where they practice, leadership, their health system, and reporting data externally through publications. One pharmacist commented on how sharing CMM data with the rest of her clinic and her supervisor helps to demonstrate the impact of CMM. Another pharmacist spoke of how sharing CMM data with providers helped them to see the value of the service.

Some participants discussed how they had to manually extract CMM data because their electronic health record was not set up to pull the desired data. However, a manager stressed the importance of being able to easily pull data from the electronic health record because manually pulling data is very time intensive.

2.5 | Ensuring consistent and quality care

2.5.1 | Practitioner training

The process of training pharmacists was discussed as being essential to ensuring consistency and standardization of CMM. However, this is an essential component that may only be applicable within health systems or larger practices. For example, there were a number of participants that did not have a training process, simply because they were the only pharmacist within their organization or their team did not frequently hire new pharmacists.

2.5.2 | Quality assurance processes

Pharmacists engage in a variety of quality assurance processes to ensure quality and consistency in care. One quality assurance strategy that participants employ is doing a peer chart review to ensure that quality standards are being met and that CMM is being delivered with sound clinical care. Another quality assurance strategy that is used is chart audits. This involves random review of records to ensure that CMM documentation is completed accurately and consistently. This review may be completed by a program manager, with an emphasis

on program compliance more so than clinical quality. Finally, participants talked about using information gleaned from their quality assurance processes as a way of identifying changes that need to be made across the system to improve CMM.

3 | DISCUSSION

This study relied on the experience of program managers and practitioners from sustained, mature CMM practices to produce a core set of domains and essential components of practice management that support the integration and delivery of CMM into primary care medical practices. The resulting practice management framework consists of 13 essential components grouped into five domains. It should be noted that initially naming the domains as stages was considered. It was thought that there may be a sequential order one should go through when addressing practice management. However, during cognitive interviewing, it was pointed out that many of the aspects of practice management need to occur simultaneously and that putting concepts into sequential stages may lead pharmacists to believe they have to achieve one stage before moving on to the next. As a result, the term domain was chosen to refer to the themes of this work and it should be stressed that this study did not seek to determine whether any domain was perceived to have a relatively higher importance or value than others.

There are some similarities between components of practice management presented in existing pharmacy resources and the practice management framework of this research. For example, evaluating and monitoring outcomes,[10,11,13,14,25] interprofessional care,[10] financing pharmacy services,[10-14] and quality assurance/improvement[10,12] are all components that are presented in existing resources that were also essential components of this work. However, many components of practice management that have been presented previously in pharmacy have not been specific to CMM and therefore were not identified as essential by the managers and pharmacists in this study. Marketing and promotion of services is often cited in many resources,[11,12,14] but was not considered essential by the participants of this study. This is likely because the practices that were involved in this project had established CMM services, so marketing and promotion were not as necessary as someone just beginning their practice. In addition, most of these sites receive the majority of their patient volume from referrals and population health strategies, so external marketing may not have been deemed necessary.

Looking to health care disciplines outside of pharmacy, there is a significant body of literature surrounding practice management. Several journals exist solely devoted to practice management, such as the *Journal of Medical Practice Management* and also *Family Practice Management*, a journal of the American Academy of Family Physicians. Most journal articles address individual elements of practice management, such as strategies to maximize the electronic health record,[26] creating more effective appointment management systems,[27] and increasing staff productivity.[28] While some components, such as billing and evaluating outcomes are consistent themes across most disciplines and the CMM practice management framework, many practice management components are discipline and/or practice specialty-specific. Additionally, an issue that occurs when comparing these resources is the diverse terminology that is used.

This work sheds light on the elements of practice management that are specific to CMM to form a comprehensive framework that describes the practice holistically. Many previous pharmacy practice management resources center around building a CMM practice,[11-14] and therefore the focus is on specific aspects of starting a practice, such as conducting a needs assessment, determining site location, and developing a care model. While building the practice is key, practice management extends beyond the establishment of the service. Practice management must also include systems to support efficiency and functionality. In addition, practice management supports the sustainability and growth of CMM. For example, to generate additional pharmacist FTEs for a practice, it is important to track and measure outcomes to demonstrate value of CMM. This facet of practice occurs in the essential components of *measuring CMM data* and *reporting CMM data and outcomes*. Similarly, processes to ensure standardization of CMM, such as those presented in *quality assurance processes* also support sustainability.

This work is significant because many practitioners providing CMM do not have a frame of reference for what is needed for CMM practice management. As one pharmacist in Cohort 1 stated, “It's hard when you don't know what you don't know. I don't know what people are doing at other clinics. I don't have that global experience to know what I could be doing better, or how other people do do it better.” Through this study, the various aspects of CMM practice management were examined and, as a result, a framework was developed that can now be used to inform current practitioners, pharmacy residents, and students about the practice management components needed to support and sustain a CMM practice.

3.1 | Application of the framework to education and research

While the primary purpose of completing this research was to create a framework that would guide implementation and improvement of practice management components in day-to-day practice, this research also has implications for education and future research. With respect to education, this framework can serve as a guide for instructional activities for student pharmacists and pharmacy residents. It is essential that students and residents recognize the importance of practice management in building and sustaining an effective practice and engage in structured learning activities to apply their knowledge and skills in this area.

Additionally, there are many dimensions of research that can further advance or apply the framework outlined in this study. For example, this framework can serve as the basis for defining the essential components of practice management in nonprimary care settings. It

can also support more focused research on the development of the systems and strategies that allow a practice to optimize their performance within each of the identified essential components.

3.2 | Limitations

This work relied on a convenience sample of practitioners and managers associated with organizations participating in a broader study. As a result, the majority of practice sites were part of large integrated health systems and were primarily located in Minnesota and North Carolina. In addition, all sites had established and relatively mature CMM practices. Therefore, the experiences participants expressed in their interviews and focus groups may not be representative of all pharmacists providing CMM in primary care. Also, while not a limitation, an important consideration is that this framework was developed based on the insights of those working in primary care clinics. CMM practices in other settings, such as community pharmacies, specialty settings, and other locations may rely on a different practice management framework due to the context of the practice setting and resources available. In addition, certain components may not be applicable to every practice given their culture, organizational structure, resources, practice setting, and/or state regulatory environment.

4 | CONCLUSION

The results of this work produced a framework to describe CMM practice management. This framework consists of five domains and 13 essential components. As the need for CMM intensifies given the increasing cost, complexity, specificity, and use of medications, understanding the intricacies of CMM practice management will be essential in creating successful and sustainable practices and, in turn, decrease medication-related morbidity and mortality.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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