

**Pilot study of focus groups exploring student pharmacists' perceptions of a medication
management center internship**

Abstract

Introduction: This study explored student pharmacists' perceptions of: (a) their work experience at the Medication Management Center (MMC), and (b) if and how working at the MMC helped: fulfill curricular requirements at the college of pharmacy; develop leadership skills; and offer professional development opportunities.

Methods: Two focus groups were conducted with first-, second-, and third-year student pharmacist interns at the MMC in April 2019. Focus group questions inquired about interns': work experience; how working at the MMC fulfilled pharmacy curricula; leadership opportunities; and professional development opportunities. The focus groups were audio-recorded for verification purposes, transcribed, and analyzed thematically by two independent reviewers.

Results: A total of five student pharmacist interns participated in two focus groups. Four main themes were identified: (1) knowledge; (2) communication; (3) time management; and (4) leadership, mentorship, and networking. Participants had opportunities to acquire new knowledge and skills outside the classroom, providing them an academic advantage, while recognizing areas of deficiency. Students practiced their communication skills that helped improve language skills and manage difficult patients, although telephonic consultations were challenging. Students learned to prioritize time with patients but reported difficulty managing their work schedules. Leadership, mentorship, and networking opportunities facilitated learning and improved their self-confidence.

Conclusions: This qualitative analysis of focus groups identified four key themes, highlighting the many benefits available for student pharmacist interns working at an academic-based medication management center. Further research is needed to address challenges reported in this study and include a larger sample of student pharmacists for more generalizable results.

Keywords: student pharmacists; focus groups; medication management; leadership; professional development.

Conflict of interest: David R. Axon and Terri Warholak received funding from SinfoniaRx. Stephanie Forbes was the director of the Medication Management Center when this study was conceptualized, and later an employee of SinfoniaRx. Jessica DiLeo is an employee of the Medication Management Center.

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Introduction

Student pharmacists, as part of their pharmacy education, are expected to participate in real-life, patient-centered experiences to help develop clinical knowledge and professional skills.¹⁻² The Accreditation Council for Pharmacy Education (ACPE) guidelines stipulate that student pharmacists receive educational instruction regarding provision of Medication Therapy Management (MTM) services.² MTM, originally established under the Medicare Modernization Act of 2003, was designed to help Medicare Part D beneficiaries better manage their chronic conditions and medications.³ MTM encompasses patient-centered services provided by pharmacists in various care settings including: comprehensive or targeted medication therapy reviews; personal medication record reconciliation; medication-related action plan; intervention and referral; documentation and follow-up.⁴ MTM services reduce medication-related problems (MRPs), hospital readmissions,⁵⁻⁶ emergency department visits,⁷ and healthcare expenditures.⁸⁻⁹

Student pharmacists are exposed to many learning opportunities, yet some students choose to learn about MTM by working as a student intern at the University of Arizona College of Pharmacy Medication Management Center (MMC). The MMC provides pharmacist-delivered, telephonic MTM services to Medicare, Medicaid, and commercially-insured populations from health plans, pharmacy benefit managers (PBMs), and state programs. Pharmacists, and interns under their direct supervision, conduct comprehensive medication reviews (CMRs) and make recommendations to resolve any MRPs. The MMC call center offers student pharmacists a paid internship to facilitate advancing their clinical and professional skills through work experience. Students are immersed in the real-world application of MTM working through complicated cases involving patients with multiple chronic conditions. Student interns are required to work a minimum number of hours per month, averaging 10 hours per week, but they are able to decide how to distribute their hours each week. This provides flexibility for students (eg, to work fewer hours on the week of an exam and make up the hours another week) while meeting the needs of the MMC.

As part of their internship, students partake in a monthly 'best practice' meeting to improve clinical and professional knowledge and develop interprofessional relationships. They can also gain experience regarding the administrative side of pharmacy management with opportunities to participate in new hire

interviews, staff onboarding, and operations meetings in conjunction with serving as leaders among their peers and new staff. Working side by side with other pharmacy students and healthcare professionals (ie, board-certified technicians and pharmacists, ambulatory care residents, clinical instructors and faculty), the University of Arizona College of Pharmacy MMC strives to: (a) enrich students' pharmacy education; and (b) prepare students for advanced pharmacy practice experience (APPE) rotations. As such, student pharmacist intern roles are carefully mapped to the Center for the Advancement of Pharmaceutical Education (CAPE) educational outcomes and each respective year of the University of Arizona College of Pharmacy curriculum, to ensure they are meeting established standards and milestones. For example, first-year interns may counsel patients on medication adherence while third-years might focus on clinical guidelines for cardiovascular conditions (see Figure 1).

Previous research has investigated the impact of implementation of MTM in the pharmacy curriculum on its students.¹⁰⁻¹² Hardin et al¹⁰ showed that patient-centered experiences, gained from providing MTM services, helped students gain a new sense of confidence, relevant knowledge, and useful skills. Agness et al¹¹ showed that MTM education experiences provided pharmacy students with a strong foundation for writing subjective, objective, assessment, and plan (SOAP) notes and action plans, skills typically beneficial during pharmacy school. Furthermore, Poole et al¹² concluded that implementation of MTM within the pharmacy core curriculum improved student proficiency, confidence and competence in performing MTM services. However, to our knowledge, no studies have explored student pharmacists' experiences working as an intern at a MMC.

The objectives of this pilot study were to: (a) explore student pharmacists' perceptions of their work experience at the MMC; and (b) if, and how, working at the MMC helps fulfill curriculum requirements at the college of pharmacy, develop leadership skills, and offer professional development opportunities.

Methods

Study design and population: This pilot project involved a cross-sectional design using focus group discussions to explore student pharmacists' perceptions of their work experience at the MMC. At

the time of the study (March – June 2019), a total of 23 student pharmacist interns were employed at the MMC, thus comprising the population from which to draw participants for the focus groups.

Eligibility: To participate in this pilot study, participants had to: be currently enrolled as a first-, second-, or third-year student pharmacist in the Doctor of Pharmacy (PharmD) program at the University of Arizona College of Pharmacy; and working as a student intern at the MMC. All eligible student interns were encouraged to participate.

Recruitment: Participant recruitment for the focus groups was conducted via an initial email from the MMC director. Regular reminders about upcoming focus groups were communicated via email by the MMC director and lead students (representatives from each year who liaise between MMC leadership and student interns).

In March and April 2019, participants were recruited to participate in one of the two, in-person focus groups conducted at the University of Arizona College of Pharmacy. Each focus group consisted of two to three individuals and lasted approximately one hour. Participants received no compensation for their time.

Development of the focus group guide: A focus group guide designed specifically for this project was developed through an iterative process with input from a collaborative team consisting of: two academic/research pharmacists with considerable expertise in survey design and managed care research, two senior pharmacists employed at the MMC, one of whom served as the MMC director, and two pharmacy residents with experience in managed care practice. Successive versions of draft focus group questions were revised until the team collectively approved the final guide, and agreed that the guide demonstrated good content validity. The focus group guide ensured consistency in administration procedures, helping to reduce potential bias across the focus group sessions. The five focus group guide topics addressed were: (1) work experience; (2) how working at the MMC helps fulfill pharmacy curricula requirements; (3) leadership opportunities; (4) professional development opportunities; and (5) anything else (see Figure 2).

Data collection: Each focus group consisted of these components: introductions; study-related information; consent process; questionnaire; and focus-group guide and discussion. Participants received study information (ie, purpose, methods, use of their data, voluntary participation); and provided verbal

informed consent prior to the focus group discussion. The researchers answered all participants' questions before the focus groups started and they were reminded that participation was strictly voluntary. At the beginning of the focus group, participants completed an anonymous, paper-based demographic questionnaire regarding their age, gender, and year in pharmacy school. An experienced qualitative researcher (Axon) conducted the onsite focus groups, with support from two pharmacy residents (Aljadeed and Potisarach) who served as note takers to document the key points discussed in the focus groups. All sessions were audio-recorded to capture the full discussion and later transcribed verbatim; any personal identifiers were removed during transcription to ensure anonymity.

Data analysis: Demographic questionnaire data were summarized using Microsoft Excel.¹³ Two independent reviewers (Aljadeed and Potisarach) qualitatively coded transcribed focus group responses to identify key themes. Inter-rater reliability was calculated to compare the two sets of codes. A third independent researcher (Axon) facilitated consensus to resolve any discrepancies. Response saturation was reached after the second focus group; thus, no additional sessions were conducted.¹⁴ The University of Arizona Institutional Review Board approved this project.

Results

Five student pharmacist interns participated in the focus groups including first-year (n=1), second year (n=1), and third-year pharmacy students (n=3). The code lists provided a good match, with 89% agreement between the two independent coders and full agreement of themes after discussion with the third independent reviewer. The focus groups elicited four main themes, including: (1) knowledge; (2) communication; (3) time management; and (4) leadership, mentorship, and networking. Representative quotes for each theme are provided in Figure 3.

Theme 1: Knowledge

Participants discussed how working at the MMC helped them gain new knowledge and skills. For example, they mentioned: recalling the top 200 drug names and their indications, side-effects, and counseling points; reconciling branded and generic drug names; and more nuanced information such as distinguishing between selective and non-selective beta-blockers. Students perceived the MMC

experience gave them an advantage compared to many of their peers, both during pharmacy school and when taking the North American Pharmacist Licensure Examination (NAPLEX). Additionally, students reported gaining confidence by practicing essential skills such as documenting patient assessments and writing SOAP notes. They also commented that their MMC internship provided them with chronic care management experiences. However, they were less familiar with acute condition management that they might encounter in community pharmacy or dealing with the volume of clinical data they may experience in a hospital setting.

Theme 2: Communication

Participants described examples of developing their communication skills at the MMC, such as interviewing patients to complete medication reconciliation and update patient records. This experience was particularly helpful for students whose primary language was not English, allowing them to apply lessons learned from pharmacy school to these patient interactions. Students mentioned an improved self-confidence in communicating with patients and physicians, given their new knowledge and practicing their communication skills. Conversely, student interns identified MMC-specific communication challenges such as conducting telephonic versus face-to-face patient consultations, making it difficult to observe (eg, nonverbal cues) whether patients understood the recommendations provided. Building trust also was more challenging given they did not see the patient regularly.

Theme 3: Time management

Students described how their MMC internship helped develop their time-management skills. They acknowledged the need to identify and prioritize drug-related problems in a limited timeframe. Time management challenges also arose while working at the MMC. For example, students found it difficult, at times, to schedule their internship hours alongside schoolwork and other commitments.

Theme 4: Leadership, mentorship and networking

Finally, participants mentioned roles that developed their leadership and mentorship skills. For instance, students further along in their studies (eg, 'Team Leads') were able to mentor and train new

students, affording them opportunities to liaise between their student intern peers and MMC management. These leadership roles were generally well-received and helped strengthen other skills such as communication and confidence. Student interns commented that working with MMC pharmacists helped develop their professional networking skills and build working relationships with colleagues. Specifically, students appreciated opportunities to work with pharmacists involved in professional organizations (eg, State Board of Pharmacy) and those who provided feedback to the interns and learn from pharmacists in real-time.

Discussion

This is the first study of its kind to explore student pharmacists' experiences working as interns at the MMC. Student perceptions were generally positive, while also recognizing some limitations of working at the MMC compared to other settings. Importantly, the benefits identified by students correlate with domains three and four (affective domains) of the CAPE outcomes¹ and those of co-curricular activities as well. The on-the-job training MTM provision model employed here is limited in the existing literature, thus suggesting the importance of this study. However, our findings parallel those of others who found that students gained real-life experience practicing MTM under the supervision of a pharmacist as a part of their advanced pharmacy practice experience (APPE) rotation¹⁵ and that their confidence in providing MTM and communication skills increased post-patient encounters evaluated by faculty and staff members.¹⁶

This pilot project had some limitations. In particular, the small number of participants (n=5), most of whom were P3 students (n=3) is a limitation. However, this represented 22% of the MMC student interns at the time of the study (n=23) as well as each year of the didactic pharmacy program. The larger representation from P3 students might have biased the results towards the views of more experienced students. Given the unique nature of this internship, the small population from which to sample participants, and voluntary participation, the small sample size is a limitation that is difficult to address. The focus groups were only conducted at one MMC, and thus has limited external validity that may not represent student pharmacist interns at MMC's across the United States. However, these project findings

are interesting and may inform evidence-based revisions to the MMC internship program, which could also be expanded to additional MMC sites.

Future work could involve a larger sample of student pharmacist interns working at other MMC's across the country to improve the reliability and generalizability of the results. Longer term research could coincide with pharmacy program curricular changes to identify if any new themes emerge as a result. Furthermore, a quantitative investigation could explore whether any associations exist between student pharmacists working as interns at the MMC, and their academic performance eg, pharmacy coursework, or examination results from the Pharmacy Curriculum Outcomes Assessment (PCOA®) or the NAPLEX.

Conclusions

Four key themes emerged from these focus groups, highlighting many benefits for student pharmacists working at a medication management center, including: improving knowledge, communication, time management; and leadership, mentoring, and networking skills. Further research is warranted to evaluate a larger student pharmacist sample and to address identified challenges such as gaining experience in other clinical settings and scheduling work hours around coursework and other commitments.

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Figure 1. Medication Management Center (MMC) Student Pharmacist Interns' Activities Mapped to The Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes¹

Pharmacy School Year	Medication Management Center (MMC) Student Pharmacist Intern Activities	Center for the Advancement of Pharmacy Education (CAPE) Domain
1	<ul style="list-style-type: none"> ● Cost Savings ● Drug Optimization ● 30 to 90 Day Conversion ● Adherence - Immediate Need ● Adherence - Lipids, Hypertension, Heart Failure, Osteoporosis, etc. 	3.2 Educator 3.3 Patient advocacy 3.6 Communication 4.4 Professionalism
2	<ul style="list-style-type: none"> ● Acetaminophen Toxicity ● Respiratory- Add Rescue ● STAR adherence - Angiotensin-Converting Enzyme Inhibitor/Angiotensin II Receptor Blocker, Statin, Diabetes 	3.2 Educator 3.3 Patient advocacy 3.6 Communication 4.4 Professionalism
3	<ul style="list-style-type: none"> ● Heart failure - Add Metoprolol/Angiotensin-Converting Enzyme Inhibitor/Angiotensin II Receptor Blocker ● Ischemic Heart Disease - Angina Add Agent ● Myocardial Infarction - Add Statin/Angiotensin-Converting Enzyme Inhibitor/Angiotensin II Receptor Blocker ● Asthma - Add Inhaled Corticosteroid ● Diabetes Mellitus - Add Statin ● Chronic Obstructive Pulmonary Disease - Add Agent ● Cardiovascular Condition - Add Statin 	2.1 Patient-centered care 3.1 Problem solving 3.4 Interprofessional collaboration 3.6 Communication 4.4 Professionalism

Figure 2. Initial and Probing Questions Posed in Focus Group Discussions with Student Pharmacists to Explore Their Perceptions of Working at the Medication Management Center

WORK EXPERIENCE
Tell me about your work experience at the MMC?
Probe: What is a typical workday for you at the MMC?
Probe: What are your responsibilities at the MMC?
FULFILLMENT OF PHARMACY CURRICULUM
Has your work experience at the MMC helped you succeed in pharmacy school? If so, how?
Probe: What skills have you gained from working at the MMC?
Probe: What knowledge have you gained from working at the MMC?
LEADERSHIP DEVELOPMENT
Has working at the MMC helped your leadership development? If so, how?
Probe: Do you hold any leadership role(s) at the MMC?
Probe: Tell me about a time when you demonstrated leadership skills at the MMC?
Probe: Tell me about a time when you took the lead on a project at the MMC?
Probe: Tell me about a time when you led by example at the MMC?
PROFESSIONAL DEVELOPMENT
Has working at the MMC helped your professional development? If so, how?
Probe: Has working at the MMC helped you gain professional development attributes or characteristics? (eg commitment, confidence, independence, motivation, communication, etc.). If so, how?
Probe: Can you give an example where you have observed or experienced professional behavior?
CLOSURE
Is there anything we missed that you would like to talk about?
What is the most important point we discussed?

MMC = Medication Management Center

Figure 3. Themes Identified and Representative Quotes from Focus Group Discussions of Student Pharmacists' Perceptions of Working at the Medication Management Center

Theme	Representative Quote
Theme 1. Knowledge	<p>“As a first year pharmacy student, you are tested on the top 200 drugs, names, indications, common side effects ... general counseling points ... and as someone who worked as a pre-pharm and now as a P1, I pretty much knew all of the top 200 drugs before going into pharmacy school.”</p> <p>“They talk about selective beta-blockers and non-selective beta-blockers. So, they give us like mnemonic or how to know them ... so, I remember to distinguish where beta-1 would work.”</p> <p>“It was a big advantage because I didn't have to invest as much time studying those drugs as other classmates who may not have had any pharmacy jobs.”</p> <p>“Chronic disease state management is not overwhelming. My classmates ... are like: “I haven't seen any of these, I don't understand them.” I was like: “Oh, we just did the 2019 guideline updates”... so, I feel like foundationally, I have a little bit better advantage.”</p> <p>“Most of our population doesn't know generic names ... that can be really helpful because I know a lot of times, I mean they say that in NAPLEX and stuff, it's going to be brand or generic, they are not necessarily going to give you both”</p>
Theme 2. Communication	<p>“Interviewing patients is not intimidating because I interview patients every single day ... for 4 hours shift probably a minimum 8 patients.”</p> <p>“I have communication barriers, accent kind of thing when I talk to patients. So, when we did that class, the communication class, I also tried to put into practice when I go to work at MMC.”</p> <p>“Having the confidence to call the doctor's office and speak to, sometimes the doctor themselves to recommend changes.”</p>
Theme 3. Time management	<p>“Ideally you spend an hour talking to each patient, you know, but I think it's helpful to be able to pick and choose, like okay that is really important, identify that as a problem, I need to talk to this patient about this.”</p> <p>“You have a minimum monthly, minimum hour goal, but you get to pick where you put it. The only problem you run into is we're open six to six, so if you have class until four, or whatever, you have to have a minimum two hour shift so you can't work that day.”</p>
Theme 4. Leadership, mentorship, and networking	<p>“I am the team lead for the year one interns ... we have monthly meetings with all the management ... if my fellow P1s have an issue with something, they'll come to me and I can either answer it right then or I can go back to management.”</p> <p>“Both the training and my personal leadership opportunity is really valuable ... it's really important being able to communicate to someone, not only clinical things but also just general operation, you know, day to day things.”</p> <p>“Pharmacists that we work with are involved like in the Arizona Board of Pharmacy, and you really see them really involved in a lot of, like, other organizations. So, I feel like working with them is, kind of like networking.”</p>

P1 = first year student pharmacist

NAPLEX = North American Pharmacist Licensure Examination®

MMC = Medication Management Center