QUALITATIVE RESEARCH IN PHARMACY EDUCATION

Characteristics of High-Performing Interprofessional Health Care Teams Involving Student Pharmacists

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Objective. To identify key themes of interprofessional models of care that offer experiential education opportunities for pharmacy learners.

Methods. Six pharmacists from four Area Health Education Centers in North Carolina participated in individual, 60-minute interviews. Using two pre-established frameworks, the data were analyzed qualitatively by two members of the research team to identify the characteristics of interdisciplinary care teams.

Results. At the level of the organization or health care system, the theme of appropriate resources and procedures emerged. At the level of the team, the themes of appropriate resources and procedures, communication, appropriate skill mix, climate, quality and outcomes of care, and respecting and understanding roles emerged. At the level of the individual, the themes of communication, respecting and understanding roles, and individual characteristics emerged. Three themes identified in a previous study failed to emerge in the interviews: leadership and management; personal rewards, training and development; and clarity of vision.

Conclusion. Although a growing body of evidence highlights the importance of designing practice models to achieve interdisciplinary care that is patient-centered and effective, capacity to support learners and effectively educate them in the principles and practices of team-based care is limited. This study provides critical insight into characterizations of interprofessional models that integrate pharmacy learners. Further research is needed to better understand the barriers to designing and implementing IPE in experiential settings.

Keywords: interprofessional education, experiential education, collaboration, pharmacist

INTRODUCTION

Calls for reform within health professions education highlight ongoing concerns about the ability of current curricula to prepare students for the evolving health care needs of society. Specifically, preparing students for the realities of real-world health care delivery and team-based care permeate conversations about curricular change as accreditors seek evidence of competency-based interprofessional outcomes. Research suggests that interprofessional immersion can improve learners’ view of their ability to work as a team, the extent to which they value working within a team, and their level of confidence to use core interprofessional education competencies. Despite these benefits, health professions schools have largely failed to design, implement, and sustain effective and scalable educational strategies that provide students with real-world, interprofessional patient care experiences.

Transforming experiential education to prepare the next generation of health professionals for collaborative practice is imperative for improving patient care and meeting the needs of patients. The Interprofessional Education Collaborative (IPEC) defined interprofessional team-based care as “care delivered by intentionally created, usually relatively small work groups in health care,
who are recognized by others as well as by themselves as having a collective identity and shared responsibility for a patient or group of patients. A growing number of models describe the characteristics of effective interprofessional teams. Nancarrow and colleagues, for example, triangulated a thematic synthesis of the literature with a qualitative study of 253 interdisciplinary staff members in the United Kingdom to identify 10 principles of good interdisciplinary team work, which included leadership and management, communication, quality and outcomes of care, clarity of vision, and respecting and understanding roles. Along the same lines, researchers from the Best Practice Innovation Collaborative of the Institute of Medicine (IOM) identified five principles of team-based health care, including shared goals, clear roles, mutual trust, effective communication, and measurable processes and outcomes.

Health care experts increasingly agree that including pharmacists on the health care team can improve care and reduce costs. Pharmacists on a health care team can help optimize medication outcomes and support the provision of comprehensive medication management. More specifically, the expanding roles that pharmacists fill within the interdisciplinary health care team can include assessing patient health, formulating a medication treatment plan, managing medication therapy and medication-related problems, providing patient education, and coordinating medication management within health care services or systems.

Although a growing body of evidence highlights the importance of designing practice models to achieve interdisciplinary care that is patient-centered and effective, capacity to support learners and effectively educate them in the principles and practices of team-based care appears limited. Meeting societal health care needs will require the reengineering of current practice models and the redesign of the interprofessional clinical learning environment for aspiring health care professionals. While literature describing the importance of interprofessional education (IPE) in experiential education is emerging, research is needed to better understand how to align practice and education opportunities so that innovative models of interprofessional experiential education can be successfully implemented and sustained. This, in turn, will support the development of a health care workforce well-prepared to function collaboratively in the care of patients and move us one step closer to transforming interprofessional practice.

The IPEC specifically identified needs to advance this area, including “acknowledgement that evaluation and research work will strengthen the scholarship in this area” and “prompt dialogue to evaluate the “fit” between educationally identified core competencies for interprofessional collaborative practice and practice needs/demands.” In addition, IPE is an accreditation standard across numerous health professions, including pharmacy. Key elements of the Accreditation Council for Pharmacy Education’s Standard 11: Interprofessional Education include interprofessional team dynamics, interprofessional team education, and interprofessional team practice, which states that “all students competently participate as a health care team member in providing direct patient care and engaging in shared therapeutic decision-making.” Meeting these standards presents a number of challenges, and makes it timely and critical to better understand the characteristics of highly functioning teams involving pharmacy learners.

As pharmacy educators work to prepare aspiring practitioners for real-world care, the dynamic relationship between interprofessional education and collaborative practice warrants closer examination. While a large and growing body of literature examines the effectiveness of team-based care and the importance of interprofessional education, there is a paucity of research concerning the integration of pharmacy learners into effective team-based practice models. The purpose of this study was to identify key themes of interprofessional models of care present in experiential education opportunities for pharmacy learners.

METHODS

Purposeful sampling procedures, specifically criterion sampling, were employed in this study as it was germane that the practitioners had direct knowledge about or experienced the explored phenomenon. Thus, our sample was limited to practitioners who were known to have direct daily patient care activities as part of interprofessional teams as defined by IPEC, and who also intentionally included their pharmacy learners (pharmacy residents and student pharmacists) in that service. The research team relied on their professional relationships and knowledge of the state’s health care system to compile a list of prospective participants, each of whom was believed to be a member of a strong interprofessional team, who were from diverse practice settings, including various outpatient and inpatient services.

To identify the interprofessional care sites that would be discussed in this study, the research team first used convenience sampling to identify initial participants. The researchers corresponded via email with people they knew who met the criteria for the study. The researchers then asked those initial participants to snowball the sample by identifying additional people that they believed met the criteria for the study. The researchers and the participants were asked to keep referrals confidential.
Further, the researchers did not inform participants about who else was or was not invited to participate in the study. All of those invited to participate agreed to participate.

The final sample included six clinical pharmacists (two female and four male participants) from four geographically dispersed areas of the state [ie, from four different Area Health Education Centers (AHEC)]. The NC AHEC program spans the entire state (ie, includes all counties) and was established to meet the state’s health and health workforce needs by organizing, supporting, and bridging academic institutions and communities.

Data were collected by one member of the research team through individual 60-minute audio-recorded interviews. Three interviews were conducted in person and three were conducted via phone because of distance. The interviews were guided by a semi-structured protocol with the following overarching questions: What is the current structure of the interdisciplinary team in your practice? How do you promote effective collaborative care within your interdisciplinary team? How do you engage learners (student or resident trainees) in the process of promoting effective collaborative care within your interdisciplinary team?

The audio recordings were transcribed verbatim by a third-party company. Upon receiving the transcriptions, the data were analyzed by two members of the research team. Though predetermined codes gathered from the literature guided the data analysis process, the researchers acknowledged and discussed potential emerging codes. The data were coded in two ways. Guided by theory on ecological models, the data were first coded on the system level: mesosystem (eg, organization), microsystem (eg, team), and individual.19 This theoretical framework was used to account for the multiple levels at which patient care is influenced. In other words, collaboration may be influenced by certain aspects of the organization, varying dynamics of the team, or specific characteristics of the individual. When appropriate, data were coded at multiple levels. The researchers then coded the data according to the 10 principles of good interdisciplinary team work identified by Nancarrow and colleagues.11 The researchers coded the data individually and then met to discuss findings. Areas of disagreement were discussed until consensus was reached. Findings were reviewed by the research team through peer debriefing and sent to each of the study participants for member checking. The study was reviewed by the UNC Institutional Review Board and classified as exempt.

RESULTS

Participants described various interprofessional models at their institutions that included pharmacists and pharmacy learners (Table 1). Specialty or focus areas included ambulatory care, acute care, family practice, consulting, wellness visits, internal medicine, and various clinics. The disciplines engaged in the models varied, with all involving medicine and/or nursing. Other disciplines engaged in one or more models included physician assistants, nutritionists, psychologists, social workers, care assistants, and behavioral specialists. Similarly, the types of learners involved varied between models, with all including student pharmacists and most also including pharmacy and medicine residents. A wide range of care activities involving students were described, including but not limited to clinics, home visits, annual wellness visits, problem-based learning, seminars, rounding, consultations, huddling, and counseling.

Table 2 provides summary findings for each principle of a good interdisciplinary team. Findings and representative quotes from the qualitative data can be found in Appendix 1. At the level of the organization or health care system (ie, mesosystem), the theme of appropriate resources and procedures emerged. Comments associated with this theme primarily related to physical structures, such as availability of space and location of pharmacist office, and to organizational procedures that enabled teamwork.

At the level of the team (ie, microsystem), appropriate resources and procedures also emerged as a theme. As it relates to procedures involving learners, one participant noted, “First day is a lot observation [for pharmacy learners], taking it all in. Then over time, they usually get very comfortable with the model because it is consistent and standardized...” Additional themes at the team-level included communication, appropriate skill mix, climate, quality and outcomes of care, and respecting and understanding roles. Pharmacists discussed building a culture of trust among the professional team as well as developing a safe atmosphere for learners to ask questions. For example, one pharmacist stated, “I think our team does a fantastic job of creating an environment where it’s okay to not know things. When you don’t know things, it’s okay to ask questions and show some of that vulnerability.” Another stated, “A lot of what I talk about [with learners] at the beginning of the rotation is to say, ‘think through language. Think through communication, and let’s practice being part of a positive communicating team.”

Three themes emerged at the individual level. Communication was described as an absolutely essential skill for pharmacists. Participants described promoting the development of this skill in students, noting the importance of students learning to express their voice on the team. Participants also highlighted the importance of
individual characteristics, such as knowledge, experience, and knowing strengths and weaknesses. As one participant noted, “I tell [the medical student and pharmacy student]. . .you both have a skillset that the other may not possess at the same level. . .I want you to work together and I want you to teach each other at least one thing with each patient.” The theme respecting and understanding roles highlighted the importance of the pharmacist or student pharmacist understanding their role on the team and the opportunity to offer expertise that no one else on the team possesses: “What do I bring to the team that other people don’t have? What sorts of things do I need to take care of, that if I don’t do it then it’s not going to get done?” Pharmacists also noted the importance of having a learner who was self-driven and understood his or her role on the team, eg, “you [pharmacy student] can recommend anything you want on this rotation, you just have to convince me of it.” They have to go through a very good assessment that leads up to their plan and justifies it.”

The theme barriers emerged inductively. This theme described challenges to interdisciplinary care and barriers to effectively integrating learners into team-based environments, including logistics, shortages, billing, scope of practice, and resources, such as space and time. Of note, while inclusion of learners on the interprofessional team allowed for better care of the patient, pharmacists discussed the complexity of incorporating learners into day-to-day functions. Three of the 10 themes from the Nancarrow framework failed to emerge in the interviews: leadership and management; personal rewards, training, and development; and clarity of vision.

**DISCUSSION**

Health care is transforming from fee-for-service to a value-based system, and this includes a focus on improving the quality of care and patient outcomes. In today’s environment, it is impossible for the physician to accomplish these goals on his or her own. Consequently,
health care is moving towards one that is centered on teams with a focus on the individual patient and on population health. As stated by Mitchell and colleagues, “The high-performing team is now widely recognized as an essential tool for constructing a more patient-centered, coordinated, and effective health care delivery system.”

Providing IPE experiential education opportunities that integrate pharmacy learners into interdisciplinary practice models is critical for preparing aspiring pharmacists for the complexities and realities of team-based care.

### Table 2. Characteristics of Interdisciplinary Teams Involving Pharmacists and Pharmacy Learners

| Principle of Good Interdisciplinary Team Work<sup>a</sup> | Theme Present at Organization Level<sup>b</sup> | Theme Present at Team Level<sup>b</sup> | Theme Present at Individual Level<sup>b</sup> | Example Quote for Team Category |
|--------------------------------------------------------|-----------------------------------------------|----------------------------------------|-------------------------------------------|--------------------------------|
| Leadership and management                              |                                               |                                        |                                           |                                |
| Communication                                           |                                               |                                        |                                           |                                |
| Personal rewards, training, and development             |                                               |                                        |                                           |                                |
| Appropriate resources and procedures                    |                                               |                                        |                                           |                                |
| Appropriate skill mix                                   |                                               |                                        |                                           |                                |
| Climate (including team culture of trust)               |                                               |                                        |                                           |                                |
| Individual characteristics                              |                                               |                                        |                                           |                                |
| Clarity of vision                                       |                                               |                                        |                                           |                                |
| Quality and outcomes of care                            |                                               |                                        |                                           |                                |
| Respecting and understanding roles                      |                                               |                                        |                                           |                                |

<sup>a</sup> Descriptions of each theme can be found in Appendix 1; themes are drawn from research by Nancarrow and colleagues<sup>11</sup> and organized according to Systems Theory,<sup>19</sup> which includes the mesosystem (eg, organization), microsystem (eg, team), and individual. Each principle of good interdisciplinary team work was coded at the level of the organization (ie, mesosystem), team (ie, microsystem), and individual. Some themes were coded at multiple levels

<sup>b</sup> Light gray boxes indicate the theme was present at the organizational level; medium gray indicates the theme was present at the team level; dark gray indicates the theme was present at the individual level

When we hit the midpoint [of the rotation], I tell [the students] that my new expectation for the remainder of the month is that you really start to express your voice on the team.

It’s just this space where we all gather and talk through the patients. When we’re in that space, the pharmacist is tasked with kind of talking through the medication management aspects of the patient that the [medical] resident is working with.

When they [pharmacy and medicine learners] work on these teams, they can really clearly identify, “okay, I have a skill set that other members on the team don’t have.” They also identify early on, “these other team members have skill sets that I don’t have.”

We’re all trained in different ways, we have different skill sets, so we’re going to be thinking about problems from different perspectives. If we appreciate that, then we’re a really high-functioning team.

We do encourage the students, when they’re working side by side with physicians-in-training to... really think about what would be the optimal therapy and to ask questions about ways to get there.

It’s an organized way of thinking through how you function as a team in a clinical setting - what are the different roles of the nursing student, the pharmacy student, the medical student, and how do you work together to optimize the patient’s care?
This study examined interdisciplinary models that engaged pharmacy learners in various collaborative processes in an effort to identify common characteristics of those models. This study provides insight into the characteristics of experiential IPE in high-functioning interdisciplinary teams involving pharmacists and pharmacy learners. The results of this study suggest that qualities of an interdisciplinary teams include communication, appropriate resources and procedures, appropriate skill mix, climate, individual characteristics, quality and outcomes of care, and respecting and understanding roles. These findings align with other models of interdisciplinary care that emphasize similar characteristics, such as communication, trust, and clear roles.9,10,20,21

Reviewing and coding the interview data at the systems level highlighted the importance of dedicated organizational resources and procedures to interdisciplinary care and the integration of learners into those care models. A substantial body of research describes organizational needs for interdisciplinary care, including training, information systems, and administrative support.22,24 Similarly, research explicates organizational inhibitors of experiential IPE, such as imbalances in student numbers, costs, competition between universities, and space limitations, and emphasizes the need for dedicated resources and procedures to support this work.15,25,26 Taken together, this body of literature further highlights the importance of organizational commitment to experiential IPE and the need for appropriate resources and procedures to support the integration of pharmacy learners into these models of care. Addressing strategies at the organizational level to help pharmacists and the care team is an essential next step if we are to reduce barriers to placing learners in the clinical environment.

While organizational support is critical, most themes in this study emerged at the team level. Indeed, research on interdisciplinary care and IPE has focused primarily on team dynamics, with evidence largely pointing to communication as the predominant facilitator of effective collaboration.27-30 In our study, participants emphasized the importance of teaching pharmacy learners how, what, and when to communicate with various team members. This finding aligns with other research in pharmacy education. Buring and colleagues, for example, identified choosing effective communication tools and techniques and overcoming barriers to team communication as IPE competencies for student pharmacists.20

A growing body of evidence also describes the importance of respecting and understanding roles of team members. As it relates to IPE, some consideration should be given to how learners come to understand the role of team members, the role of the patient, and their own roles in the care process. Should boundary setting be discussed with learners or does it occur passively during the learning experience? Related to communication and roles, other studies also emphasize the influence of climate, culture, and trust in the effectiveness of interdisciplinary care and ensuring that the right mix of skills are present in the collaboration.10,11,31,32 Research explicating how students should be taught the principles of climate, culture, and trust in the context of IPE is limited. Providing learners with the necessary knowledge and leadership skills is also needed for successful interprofessional clinical learning experiences, as awareness of the systems issues and impact of those issues on climate, culture, trust, and collaboration are needed as we integrate more students interprofessionally.

When analyzing the data for themes at the individual level, this study elucidated those aspects of collaboration critical to ensuring pharmacy learners are prepared to engage with teams. The IPEC competencies focused on role development, effective communication, respect, and trust were identified, which was not surprising as they are the most recognized components of effective teamwork. However, it is important for these skills to be introduced early in the curriculum and reinforced over time as culture at each clinical learning environment will vary, and students must be empowered to serve as change agents to maximize these essentials skills in their setting as well as to have flexibility in their response to the culture.

Although several principles of teamwork clearly emerged, several principles from the Nancarrow and colleagues11 framework did not emerge as characteristics of the experiential IPE models examined in this study. Clarity of vision, for example, was not emphasized by participants, perhaps because some aspects of interdisciplinary care are already determined by government agencies or third-party payers. Also, clarity of vision may be more prevalent at the organizational leadership level, whereas the team level may be more focused on logistics and management of implementation. The two themes leadership and management, and personal rewards, training, and development, also failed to emerge. Because of the shift from a fee-for-service model to one focused on outcomes, many providers are focusing more on these issues. The fact that these issues were not identified in our interviews could have been because our participants recognized themselves as part of a well-functioning team and these traits were inherent in their everyday practice. Teams that are not recognized as well-functioning may be more focused on these issues and desire development training to establish these characteristics. One solution for addressing this complex issue is to offer an interprofessional coach who provides assistance to the
learners and the health care providers as they strive to improve teamwork and collaborative behaviors.33

Several barriers to these models were identified by participants. While the idea of interprofessional teams and learners is becoming more prevalent, the current physical, logistical, and personnel structures may not be equipped to handle such demand. Having adequate space for learners in patient rooms and working areas, establishing effective processes for managing learners, and allocating time and resources required for teamwork may be critical to ensuring that these models are feasible, effective, and sustainable. Other barriers known to impact experiential education in pharmacy may also warrant consideration in the context of these models, such as preceptor development, quality assurance, and assessment.34,35

This study was limited to participants from a single school and state (NC) and represented only one discipline. In addition, the sample was purposively selected to represent high functioning teams, limiting the perspectives in this study to those that have successfully implemented interdisciplinary teams with embedded pharmacy learners. Although the sample was limited, this sampling procedure enabled the researchers to collect rich, in-depth information about the study topic. In addition, the data were analyzed using the Nancarrow and colleagues’ framework.11 Other frameworks may have provided insights into other aspects of interdisciplinary teamwork. Further, while the framework created by Nancarrow and colleagues was used to analyze the data and the ecological model was used to organize the data into levels, these frameworks were not used to develop the interview questions. Such sequencing may have limited the themes which emerged during data analysis. It was also beyond the scope of this study to examine the effectiveness and outcomes of the interdisciplinary teams; however, assessing the impact of a team and identifying the processes by which a team could determine whether it is meeting goals or should improve its processes could be a critical advancement of this work. Considering these limitations, future work could be aimed at exploring the perspectives of other health care providers. Further research is also needed to better understand the barriers to designing and implementing IPE in experiential settings. Examining the factors that influence the diffusion and successful implementation of innovations in practice could be an important contribution to the literature.36 Deeper dives into specific aspects of the themes identified in this study may also be warranted. Additional analyses into individual skills, for example, may uncover skills and competencies proposed by other frameworks, such as creativity and humility from the IOM discussion paper.10 Finally, further work is needed to better understand the intersection of pharmacy with other disciplines as the vast majority of interdisciplinary studies focus on physicians and nurses.37

CONCLUSION

Although research suggests that interprofessional immersion can improve learners’ view of their interdisciplinary ability and confidence, highly functioning teams that include pharmacy learners have not been well described. This study examined various models of health care teams involving pharmacists and learners and identified key characteristics of those models. Advancing research and practice initiatives involving IPE in real-world settings is critical for preparing aspiring health care professionals for the challenges of patient care and a fragmented health care system.

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Appendix 1. Themes of Interdisciplinary Care that Emerged from Interviews with 6 Pharmacists Working in Interprofessional Teams. The themes are drawn from Nancarrow and colleagues\(^{11}\) and organized according to Systems Theory,\(^{19}\) which includes the mesosystem (eg, organization), microsystem (eg, team), and individual. Some themes were coded at multiple levels.

| Theme | Theme Description | Example Quotes (NOTE: some quotes may represent more than one theme) |
|-------|-------------------|-----------------------------------------------------------------|
| **Mesosystem (organization, health care system, medical institution)** | Structures (eg, team meetings, organizational factors, team members working from the same location) and procedures are in place to uphold the vision of the service (eg, communication systems, appropriate referral criteria) | I pretty much sit in a space that is very near where they see patients. [Health care providers] can come ask questions in the middle of the flow of patient care and it would be done face to face. [The patient note] is documented exactly the same as a physician note is...so it’s completely streamlined with the way everybody else documents. |
| **Microsystem (team, interpersonal)** | Ensuring that there are appropriate systems to promote communication within the team | We do all sorts of communication and it’s based on urgency of need and physical location of each of our team members. A lot of what I talk about [with learners] at the beginning of the rotation is to say, “Think through language. Think through communication, and let’s practice being part of a positive communicating team.” |
| **Appropriate resources and procedures** | Structures (eg, team meetings, organizational factors, team members working from the same location) and procedures are in place to uphold the vision of the service (eg, communication systems, appropriate referral criteria) | It’s just this space where we all gather and talk through the patients. When we’re in that space, the pharmacist is tasked with kind of talking through the medication management aspects of the patient that the [medical] resident is working with. First day is a lot of observation [for pharmacy learners], taking it all in. Then over time they usually get very comfortable with the model because it is consistent and standardized to a certain extent. |
| **Appropriate skill mix** | Sufficient/appropriate skills, competencies, practitioner mix, balance of personalities; ability to make the most of other team members’ backgrounds; having a full complement of staff, timely replacement/cover for empty or absent posts | I think we have to recognize that team-based care creates better outcomes when we have a lot of people around the table that have particular skill sets. When they [pharmacy and medicine learners] work on these teams, they can really clearly identify, “okay, I have a skill set that other members on the team don’t have.” They also identify early on, “these other team members have skill sets that I don’t have.” |
| **Climate** | Team culture of trust, valuing contributions, nurturing consensus; need to create an interprofessional atmosphere | Whole new treatment options arise because of having different people in there and having an environment where you’ll feel comfortable asking those questions. We’re all trained in different ways, we have different skill sets, so we’re going to be thinking about problems from different perspectives. If we appreciate that, then we’re a really high-functioning team. |

(Continued)
### Appendix 1. (Continued)

| Theme                                      | Theme Description                                                                 | Example Quotes (NOTE: some quotes may represent more than one theme) |
|--------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Quality and outcomes of care               | Patient-centered focus, outcomes and satisfaction, encouraging feedback, capturing and recording evidence of the effectiveness of care and using that as part of a feedback cycle to improve care | I always say – it’s like a wagon wheel, the patient’s in the center and we all have input along the way. We do encourage the students, when they’re working side by side with physicians-in-training to...really think about what would be the optimal therapy and to ask questions about ways to get there. Everybody is really picking up a lot of roles, there’s a lot of cross training that goes on quietly but everybody is part of the team. It’s an organized way of thinking through how you function as a team in a clinical setting - what are the different roles of the nursing student, the pharmacy student, the medical student, and how do you work together to optimize the patient’s care? ...it can be challenging with the changing culture of a team based on the variations in attendings. In my practice, they serve in 2 week increments while the other members of the team serve for 4 weeks. Therefore, the dynamic of the team (eg, leadership styles, teaching philosophies) can change literally overnight. |
| Respecting & understanding roles           | Sharing power, joint working                                                       | I tell [the medical student and pharmacy student] right up front, I say ‘you both have a skillset that the other may not possess at the same level...I want you two to work together and I want you to teach each other at least one thing with each patient.’ I think listening to your team is super important. Making sure that before we make recommendations, that we hear all the information... |

**Individual (provider, learner)**

| Communication | Individuals with communication skills | Communication is absolutely essential and how you do it can make or break a team. I think team-based care, or collaborative care, it’s all about how you show up. Not only know your role and performing it effectively, but how do you communicate the drug therapy issues that you identify? When we hit the midpoint [of the rotation], I tell [the students] that my new expectation for the remainder of the month is that ‘you really start to express your voice on the team.’ |

**Individual characteristics**

| Knowledge, experience, initiative, knowing strengths and weaknesses, listening skills, reflexive practice; desire to work on the same goals | I tell [the medical student and pharmacy student] right up front, I say ‘you both have a skillset that the other may not possess at the same level...I want you two to work together and I want you to teach each other at least one thing with each patient.’ I think listening to your team is super important. Making sure that before we make recommendations, that we hear all the information... |
Appendix 1. (Continued)

| Theme                               | Theme Description                      | Example Quotes (NOTE: some quotes may represent more than one theme) |
|-------------------------------------|----------------------------------------|---------------------------------------------------------------------|
| Respecting & understanding roles    | Autonomy                               | My usual caveat is, “you [pharmacy student] can recommend anything you want on this rotation, you just have to convince me of it.” They have to go through a very good assessment that leads up to their plan and justifies it. ...identifying as a pharmacist, what is my role on the team? What do I bring to the team that other people don’t have? What sorts of things do I need to take care of, that if I don’t do it then it’s not going to get done? |

**ADDITIONAL THEME**

| Barriers                            | Challenges to interdisciplinary care and effectively integrating learners into team-based environments, including logistics, shortages, billing, scope of practice, and resources | There is barely any space for me to go in the workroom, much less a student. Logistics, I think is really the hardest so especially as our volume of learners goes up. Make sure everybody knows it’s going to take a little more time to work as a team. Sending those two [medical and pharmacy learner] in ahead of time is going to take an extra 15 minutes. |

**FAILED TO EMERGE AS A THEME**

| Leadership and management           | Having a clear leader of the team, with clear direction and management; democratic; shared power; support/supervision; personal development aligned with line management; leader who acts and listens | |
| Personal rewards, training and development | Learning; training and development; training and career development opportunities; incorporates individual rewards and opportunity, morale and motivation | |
| Clarity of Vision                   | Having a clear set of values that drive the direction of the service and the care provided. Portraying a uniform and consistent external image | |