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INSTRUCTIONAL DESIGN AND ASSESSMENT

Teaching and Assessing Primary Care Skills: The Family Practice Simulator Model

Zubin Austin, PhD, Lisa Dolovich, MSc, Elaine Lau, PharmD, Diana Tabak, Connie Sellors, BScPhm, Anthony Marini, PhD, and Natalie Kennie, PharmD

Leslie Dan Faculty of Pharmacy, University of Toronto

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Objectives. To describe development of a Family Practice Simulator (FPS), an interprofessional curricular innovation in which physicians, pharmacists, and other health care professionals work with standardized patients over the course of a simulated 7½-hour "typical" day in a family practice setting.
Assessment. Outcomes for the FPS were developed through review of previous literature, standards of practice guidelines, and educational outcomes documents. Simulations were developed, including pharmacist-patient interviews, pharmacist-physician interactions, and pharmacist-nurse interactions.
Results. Post-workshop evaluations (n=8) demonstrated the value of the FPS in rapidly orienting and training pharmacists moving into primary care practice and assisting them in developing new collaborative, interprofessional teamwork skills.
Conclusions. While clinical simulation has traditionally been focused on patient-practitioner interactions only, the value of simulating a practice style, location (eg, a family practice setting), and multiple types of tasks are beneficial in training pharmacists for more effective, collaborative work with physicians.

Keywords: simulation, pharmacist-physician collaboration, standardized patients, primary care, family practice, objective structure, clinical evaluations

INTRODUCTION

The evolution of roles and responsibilities of pharmacists in primary care poses an intriguing dilemma for pharmacy educators. Since the 1980s when pharmaceutical care was first described as a model of practice and curriculum development, there have been questions raised concerning the relative lack of clinically oriented pharmacy practice sites and skilled educator-preceptors at these sites (particularly in community pharmacy). Specifically, students who are taught to be pharmaceutical care providers may experience disconnectedness when they work in clinical sites that do not fully provide the opportunity for the ideal practice they have learned in school. While the gap between idealized curriculum and real-world practice exists in most professions, the gap between pharmacy education and typical community practice can be quite significant.

Recognizing the dearth of practice sites in which clinical skills may be taught, modeled, and assessed, there have been increasing numbers of reports outlining the value of clinical simulations in health professional education. First widely reported in the medical education literature, the use of standardized patients (professional actors specially trained to portray patients with specific disease conditions and/or psychosocial needs) has grown in a variety of health professions.[1]

Many colleges and schools of pharmacy use standardized patients for the teaching of interviewing and/or physical assessment as a way of providing an opportunity to learn new skills in a controlled setting without posing any risks to real patients.[2] The experience of using clinical simulations within pharmacy practice and education has been generally positive despite significant cost and logistics issues.[3] More importantly, the use of simulated patients allows for teaching and assessment in a consistent, standardized manner. This may be of particular relevance in the context of pharmacy education and practice, where real-world practice may not, in some cases, provide sufficient opportunities for such consistency.

Pharmacists are increasingly embarking on practice within or linked with family physician group practices. Family practice is an unfamiliar environment to the majority of pharmacists. The inter-professional nature of family physician group practice requires pharmacists to work collaboratively in teams with other health care professionals rather than as sole practitioners. The ways in

Corresponding Author: Zubin Austin, PhD. Address: Leslie Dan Faculty of Pharmacy, University of Toronto, 19 Russell Street, Toronto, ON, M5S 1A1. Tel: 416-978-0186. Fax: 416-978-8511. E-mail: zubin.austin@utoronto.ca

which pharmacist's store, retrieve, access, and disseminate information is altered when carrying out the pharmacist role within an interprofessional group practice. To date, most clinical simulations reported in the pharmacy and medical literature have focused on the practitioner-patient relationship.[4] While such simulations may demonstrate a high degree of sophistication (for example, requiring practitioners to consult simulated charts or laboratory values), they tend to focus on the skills required for direct patient interaction only. This is of pivotal importance, since most models of patient care place that patient at the center of a constellation of health care providers. The possibility of incorporating other domains of professional practice within clinical simulations has not been extensively reported. Rather than simply simulating the patient-practitioner relationship, simulations may be expanded to the primary care setting as a whole.

DESIGN

Integrating Family Medicine and Pharmacy to Advance Primary Care Therapeutics (IMPACT) was initiated as a primary care demonstration project. The goal of IMPACT was to determine outcomes of placing pharmacists in family physicians' offices. Outcomes to be measured in this study include physicians' acceptance of pharmacists' recommendations, impact of pharmacists' recommendations on patients' quality of life, and pharmacoeconomic analysis of the practice's patients. Previous research and literature on pharmacists' involvement in physicians' offices have demonstrated outcomes ranging from inconclusive to marginally positive.[5,6] A unique element of IMPACT involved the recruitment, training, and placement of pharmacists already practicing in typical community or hospital pharmacy settings who were identified as having the potential to succeed based on predetermined criteria[7] but not necessarily advanced credentials and had not worked previously in a family practice setting. While the role of the PharmD graduate or trainee in family medicine has been previously described, this may not be as relevant to the Canadian context where the entry-level degree for pharmacy continues to be the BScPhm.

Funding for IMPACT would allow for the placement of up to 7 pharmacists within physicians' offices for an average of 2½ days per week over the course of 1 year. During this time, these pharmacists would be expected to focus on drug-related problems of patients in the practice, particularly as they related to previously identified high-risk disease states such as hypertension and diabetes. Typical activities of IMPACT pharmacists included conducting comprehensive patient chart reviews and patient face to face assessments to identify drug-related problems, meetings with patients and/or family members to provide education and counseling, in-service education of physicians and other staff members within the program, and medication prescribing consultations, as well as participating in other primary care pharmacist activities. Within the Ontario primary care context, such work in non-academic health care centers is relatively rare and unique.

To facilitate integration of community pharmacists into physicians' practices, the IMPACT project team identified a need for a transitional training program. Traditional experiential training programs may not have been sufficiently comprehensive to support the type of work pharmacists undertake in family physicians' offices. Qualitative and quantitative analysis of a previous study completed by some of the IMPACT investigators suggested that pharmacists working in primary care settings required additional training and support in both clinical and non-clinical skills enhancement.[5,6,8] Of particular relevance was the need to learn interprofessional collaboration skills. While many pharmacists have developed sophisticated patient care skills, few have had the opportunity to actually work on a daily basis, side by side with physicians, nurses, other health care professionals, and office staff members within a primary care setting. Although a clinical simulation that solely focused on patient-pharmacist interaction would be helpful, it likely would not provide these practitioners with the necessary initiation and formative experience for successful transition to primary care practice.

Instead, a new model of clinical simulation was developed, one that simulated primary care practice as a whole, rather than only the pharmacist-patient relationship. The Family Practice Simulator (FPS) was conceived to provide physicians, pharmacists, and nurses with opportunities to work together over the course of a 7.5-hour training day, meeting with simulated patients and others, within a real-world primary care context and setting.

In order to assess the value of the FPS, 2 surveys were developed and distributed to program participants: the first survey was distributed immediately upon completion of the FPS in order to assess participant's perceptions of the teaching methodology utilized and the quality of feedback received. The second survey was distributed approximately 1 month later in order to assess the long-term impact of the FPS on each pharmacist's daily practice. Both surveys consisted of a series of statements scored using a 7-point Likert scale.

Expected Outcomes

The primary goal of the FPS was to provide an opportunity for pharmacists entering family physicians'

offices to learn, practice, and receive feedback on their primary care practice skills. In order to achieve this goal, it was first necessary to identify what specific primary care practice skills were most relevant and important. In order to assemble this list of competencies and expectations, research was undertaken using previous studies,[5-8] and educational outcomes statements[9] developed by the Association of Faculties of Pharmacy of Canada (AFPC, the umbrella organization representing Canadian schools of pharmacy, similar in mandate to the American Association of Colleges of Pharmacy). While it was recognized that individual family physicians would have a broad range of expectations for pharmacists working in their practices, this was balanced against competency statements and the legal scope of practice limitations currently in effect.

Upon completion of the FPS, pharmacists would be expected to be able to demonstrate the following skills/competencies at a level appropriate for primary care:

- Comprehensive patient interviewing
- Patient medication assessment
- Patient education
- Patient monitoring and follow-up
- Documentation
- Critical appraisal of medical literature
- Drug information question-and-answer
- Pharmacist-physician interaction
- Pharmacist-physician-patient interaction
- Pharmacist-nurse interaction
- Pharmacist-office staff member interactions (primary care operations/management)
- Self-assessment and personal-learning plan development

These outcomes all required a high degree of communicative and interpersonal competency. Consequently, the decision was made to utilize a performance-based assessment model, the objective structured clinical examination (OSCE), as the primary vehicle for evaluation in the FHS, and for providing feedback to participants.

Importantly, the complexity of patient assessment by a pharmacist within a physician's office was identified as differing substantially from the traditional community pharmacy setting. Whereas community pharmacists may be accustomed to brief, episodic, task-focused telephone-based interactions with physicians and nurses, within the physician's office, such interactions would require significantly greater depth and specificity related to information available in the patient chart. Equally important, the accountability for performance and the responsibility for outcomes of patient management recommendations and decisions are qualitatively different within the physician's office environment, where delegated acts and team coordination of care for patients would be more prevalent. As a result, the level of expectations and range of competencies described above were somewhat higher and broader than in traditional community practice.

Thus, specific outcomes for pharmacists in the IMPACT transitional training program were identified in terms of clinical skills within a collaborative, primary care environment. While all participants in this training program would have basic skills in all areas identified above, the primary objective of the program would be to move these individuals from this basic level to a level commensurate with expectations in primary care. No new specific outcomes were identified; rather, the level and range of pharmacists' current abilities would be expanded.

Educational Environment

In order to optimize learning, the FPS was undertaken within a simulated family practice setting. Most community pharmacists have only limited exposure to the physical infrastructure of a family practice setting; consequently, simply becoming familiar with the topology or layout of a family practice would provide important learning.

The family practice setting identified for the FPS was a training facility used within medical student education at an academic health center. This setting consisted of 8 small examination rooms clustered around a central corridor, each with one-way mirrors to allow for direct but unobtrusive observation of an interaction. Additional rooms were available to serve as small-group meeting rooms, office space, a reception area, a nursing workstation, and other work spaces. One of the offices was equipped with a telephone for follow-up calls between pharmacists and standardized patients.

Andragogy and Content

The FPS was part of a 2-day weekend workshop provided to 9 pharmacists as part of the IMPACT project. Day 1 of the workshop included sessions focused on evidence-based practice, and involved paper-based simulated patient cases. In these cases, pharmacists reviewed simulated patient charts and identified possible or actual drug-related problems, then undertook a systematic evidence-based literature review to develop care plans. These chart reviews formed the basis of the simulated-patient interactions the pharmacists would encounter the

next day in the FPS itself; thus, pharmacists had an opportunity on day 1 of the workshop to review charts prior to meeting "live" standardized patients on day 2. In addition, a mock standardized patient interview was demonstrated as a vehicle for discussing comprehensive pharmaceutical care within the family physician's office. Also on day 1, a systematic patient) interviewing and documentation tutorial was provided to participants to prepare them for the FPS on the following day. The purpose of this day was not to address individual pharmacotherapeutic knowledge deficits, but to expose participants to the variety of information resources that are available to them in locating best available evidence for treatment decisions. As a result, participants spent much of the first day learning about various print and Internet-based resources that provide support to pharmacists and physicians in making treatment decisions. A case-based instructional method was used in which participants worked through simulated charts, identified potential and actual drug-related problems, then worked with a facilitator to identify how best to locate and retrieve resources necessary to address these problems. Thus, the focus was not on solving problems, but on developing a *process* for solving problems. Resources available to pharmacists included tertiary references, local prescribing guidelines, and Internet-based access to medical literature databases such as *MEDLINE* (including access to articles in journals).

The FPS was conceived as a "day in the life" of a typical, busy family practice office involving multiple physicians, nurses, and office staff members. Patient acuity and classification would be within typical parameters for family practice; however, specific attention would be focused on 5 key therapeutic areas previously identified as relevant to and critical for success in primary care: diabetes, asthma, hypertension, hyperlipidemia, and osteoporosis. These areas were selected based on previously published research indicating these were areas in which pharmacists could make a marked impact on health outcomes for patients.[5,6,8] The pharmacist's tasks were selected based on previous research that had identified the tasks most frequently reported by pharmacists working in family physicians' offices.[5,6]

A total of 8 activities (comprising 13 distinct stations, each ranging in length from 10-30 minutes) were developed for the FPS.

- Comprehensive patient interview (including patient assessment) followed by verbal recommendations for management of drug-related problems to a family physician
- Comprehensive patient interview, followed by written, evidence-based documentation and recommendations in the chart
- Comprehensive patient interview followed by verbal recommendations to family physician, followed by a planning/educational meeting that included pharmacist, patient, and physician
- Verbal interaction with a nurse to discuss patient management issues
- Telephone-based follow-up interview with patient to assess on-going medication management issues
- Response to a verbal drug information question from a family physician
- Chart review with a family physician to identify potential or actual drug-related problems
- In-service presentation to family practice office staff to address operational improvements to medication management systems within the practice

A bank of references (including standard textbooks, as well as relevant primary literature and prescribing guidelines) was available in each station. The goal of the FPS was not to test pharmacotherapeutic knowledge per se, but to assess interprofessional and patient-pharmacist interaction in the context of primary care.

A rotation schedule was developed for each participant. Since each activity was a standalone entity, no cueing effects were anticipated; all participants in the FPS completed all activities and all stations, though in a different sequence and order. The time required to complete all activities (including orientation, breaks/lunch, ongoing self-assessment, and a debriefing session) was 7.5 hours. Two practicing physicians with an interest in interprofessional education were recruited to participate in the FPS and were provided with an honorarium. Standardized patients were recruited and trained to portray patients in the FPS. Coincidentally, one of the standardized patients who participated was also a nurse and was assigned the role of the nurse in the FPS.

Assessment Methods

In its current state, the FPS was not intended to be used as a high-stakes qualification assessment, but rather as a formative training and feedback opportunity. Nonetheless, and mindful of potential future roles for the FPS, a rigorous assessment system was developed and implemented.

Traditional performance-based clinical simulation measurement incorporates both global (holistic) and analytical (checklist) items. Typically, global assessment involves criteria-based evaluation of such elements as

1) VERBAL EXPRESSION

1	2	3	4	5
Communicates in a manner that interferes and/or prevents understanding by audience		Exhibits sufficient control of expression to be understood by an active listener.		Exhibits command of expression (fluency, grammar, vocabulary, tone, volume and modulation of voice, rate of speech and pronunciation)

2) NON-VERBAL EXPRESSION

1	2	3	4	5
Fails to engage, or frustrates and antagonizes the patient		Exhibits enough control of nonverbal expression to engage a patient willing to overlook deficiencies such as passivity or self-consciousness		Exhibits finesse and command of nonverbal expression (eye contact, gesture, posture, use of silence)

3) RESPONSE TO PATIENT'S FEELINGS AND NEEDS

1	2	3	4	5
Does not respond to obvious patient cues		Responds to patient's cues but in a formulaic or ineffective manner.		Responds perceptively, genuinely, and appropriately.

KEY POINTS CHECKLIST

- ☐ Discusses patient's needs and concerns re: blood sugar levels
- ☐ Discusses treatment options for diabetes, providing risks/benefits
- ☐ Provides recommendation for insulin (including type, dose, frequency, monitoring)
- ☐ Discusses treatment options for GERD, providing risks/benefits
- ☐ Provides recommendation for PPI (eg omeprazole 20mg od x 8 weeks) incl education/monitoring plan

4) DEGREE OF FOCUS, LOGIC AND COHERENCE

1	2	3	4	5
No recognition of the problem and no plan or approach		Appropriate response to the context, but organizational approach is formulaic and minimally flexible		Superior judgment and organization, demonstrating both focus and flexibility with respect to the context

- ☐ Salutation, identification
- ☐ Permission to counsel, question
- ☐ Allergies
- ☐ Medications
- ☐ Medical Conditions
- ☐ Identify patient needs/concerns
- ☐ Education, recommendations
- ☐ Clarification
- ☐ Follow-up, closure

OVERALL PRESENTATION

1	2	3	4	5
Responds inappropriately and ineffectively to the task.		Responds with some logic and comprehension, but not applied consistently.		Responds precisely, logically and perceptively to the task, integrating all components

Figure 1. Global assessment instrument for the Family Practice Simulator.

verbal and nonverbal communication skills, or integration of knowledge and skills, and may be frequently transferable across a variety of different station types. Analytical assessment is most often case specific, and relates to a series of binary (yes/no) decisions regarding specific performance elements. Within the overall assessment, minimal performance levels may be articulated through a standard setting process wherein each element is rated along a criticality/difficulty matrix, and the sum of all elements forms the basis of a minimum score for pass/fail decisions.

Since the type of work that the pharmacists would be performing in the family physicians' offices would vary considerably (based on the unique needs of the practice site), there was a significant issue in establishing criticality/difficulty ratings for assessment, since there was no reliable and valid basis for establishing performance expectations a priori. The model of collaboration between family physicians and pharmacists that would emerge in each site would be practice-specific, reflecting unique needs of patients in the practice and the competencies of collaborating pharmacists and physicians. Consequently, global assessment was selected as the primary mode of measurement across all stations, with each domain equally weighted. In addition, for each case, 5 key points were defined, based on the consensus of a focus group panel consisting of 4 pharmacists and 4 family physicians. Overall assessment for each station, therefore, consisted of global assessment along 5 domains, and a 5-item, key points checklist (Figure 1).

Table 1. Post-FPS Survey Results (N=8)

Statement	Response* Median (Range)
Workshop objectives were clear to me	2 (1-3)
The workshop was well organized	1 (1-2)
Topics covered were relevant	2 (1-4)
Topics covered were new to me	2 (1-4)
Teaching methods used were effective	2 (1-4)
Feedback provided to me will help me to improve	2 (1-4)
The workshop will assist me as a pharmacist	2 (1-4)
The workshop is of benefit to (IMPACT) pharmacists	1 (1-2)

*Responses were based on 7-point Likert scale on which 1= strongly agree and 7 = strongly disagree.

Each participant involved in the FPS was assessed using multiple methods:

- Self-assessment by the IMPACT trainee for each station
- Peer assessment by another pharmacist in one interview station
- Standardized patient assessment (in stations involving patient interviews)
- Assessment by other health care professionals (in stations involving interactions with other health care professionals)

Thus, over the course of the day, each pharmacist was assessed by a variety of individuals; together, these assessments formed a portfolio that included self-assessments as well as assessments from other pharmacists, physicians, and standardized patients. In addition to this written documentation, informal verbal feedback was provided to pharmacists periodically during the day. Pharamacotherapeutic knowledge was not explicitly assessed; instead, the pharmacist's recommendations for addressing possible and actual drug-related problems were evaluated. However, since participants had access to a broad array of resources and references (and had received training the previous day in how to best use these resources), no candidates experienced significant difficulty in formulating recommendations related to drug therapy management. Instead, the major assessment issues related to interprofessional and pharmacist-patient communication (including documentation).

The assessment model developed for the FPS presumes no need for certification or other high-stakes needs. Since, in this context, the FPS was being used as a training and professional development opportunity (rather than as an accreditation of advanced practice skills), both formative and summative assessments were used. However, the assessment model may be modified depending upon the context of use for the FPS.

RESULTS

Curriculum Evaluation

In order to evaluate the impact of the FPS on participants' practice, 2 survey instruments were distributed: 1 was administered immediately upon completion of the FPS and the other was distributed approximately 1 month following completion of the FPS. Nine pharmacists participated in the FPS. Results from the first survey are presented in Table 1 and indicate a relatively high degree of satisfaction with the experience and a belief that the FPS was of personal benefit and provided a new learning opportunity. Comments from participants suggested that additional time was required in the FPS to allow participants greater opportunity to consolidate learning and discuss feedback with physicians, nurses, and/or standardized patients. In particular, participants expressed an interest in having greater opportunity to speak one-to-one with physicians involved in the FPS, as a way of understanding their expectations for the pharmacist in their setting.

Approximately 1 month following the FPS, a second survey instrument was distributed to participants. This was qualitative in nature, and asked participants to comment on specific ways in which the FPS experience contributed to their current practice. At the time of this second survey, none of the participants had been placed within the physicians' offices as part of the IMPACT project. The purpose of this evaluation was to determine the value of the FPS on pharmacists' traditional practices. To this end, participants were asked a series of open-ended questions related to the way in which learning from the FPS was carried forward into traditional community practice.

Analysis of participants' comments suggested strong support for the value of the FPS model of clinical skills education. Participants noted that, despite having worked with physicians for many years, the workshop allowed them to develop new skills and confidence in working collaboratively with physicians in a face-to-face setting as evidenced by the following comment: "Because of (the FPS) I now know how to actually speak with doctors, I know what they want, and how they want to hear me present certain things." Another participant commented: "Before, I would spend too much time presenting one alternative or another. Now, I know what they want to hear – the bottom line – so they can make their decision."

Participants also noted the value of the simulator in providing them with a context for understanding how physicians' perceive drug-related problems. Understanding

Table 2. Demographic Profile of Pharmacists Who Participated in a Family Practice Simulator (n=8)

Variable	No.
Practice sites worked at since graduation (most worked at more than 1)	
Community	9
Hospital	7
Nursing Home	2
Years since completing BSc Pharm	
<5	3
5-10	4
>10	2
Number of PharmD Graduates	1

the complexity of physicians' work with patients, and the fact that drug-related problems form a relatively small part of physician-patient interactions, heightened pharmacists' appreciation for their role: "I had no idea how much (physicians) really had to do, and how, if there was a pharmacist who could help with the drug-related problems, this would make such a big difference."

Pharmacists noted the value of the FPS in focusing on specific disease states for which evidence related to pharmacists' impact on patient care existed. In particular, knowing where to focus attention was identified as a significant learning need: "It was very helpful to learn about [treatment guidelines for hypertension] in the [FPS]. When faced with a complex patient, it's easy to get overwhelmed. This helped me to focus and do something I could manage, that would really make a difference."

Overall, participants strongly supported the value of the FPS, not only for its therapeutic/disease state content, but more importantly for providing a structured environment within which interprofessional collaboration could be practiced, and where they could receive feedback: "I've worked with physicians for years, but never do you have a chance to ask them, 'So how did I do today'? This is really the best part of the (FPS)"

All pharmacists indicated that they were able to apply learning from the FPS in their traditional pharmacy settings, and that this experience enhanced their awareness of physicians' needs and their confidence in addressing drug-related problems. They also believed that this experience would assist them in integrating into physicians' offices as part of the IMPACT project.

All participants indicated their desire to see the length of the FPS component increased significantly to allow for greater feedback (particularly from the physicians). While most found the day stressful due to the logistics and the duration of the simulator, they recognized the importance of the setup as a way of truly simulating real-life practice. Participants expressed a desire for a more structured and systematic debriefing session, one that would allow each participant to hear from standardized patients, physicians, and nurses about his or her performance. Several participants wished that they had been videotaped during the FHS so they could watch their own performance and self-assess. However, other participants were relieved that they had not been videotaped since they felt their performance would have been diminished had they known they were being taped.

In summary, participants expressed great satisfaction with the FPS, and believed it had a positive impact on their current, traditional practice. The opportunity to receive feedback from physicians regarding their performance was of particular value and significance, as was the opportunity to learn, practice, and apply principles of evidence-based medicine to patient care.

Learner Evaluation

The main purpose of the FPS was to provide transitional training support for pharmacists entering physicians' offices as part of the IMPACT project. Thus, the value of the FPS and its impact on pharmacists working in physicians' offices will be evaluated as part of the overall IMPACT project evaluation (Table 2).

Some participants felt the FPS, while valuable, was still only a simulation, and consequently could never truly emulate real-world primary care practice. While these individuals felt the FPS provided a useful bootstrap and introduction to primary care, its efficacy was limited in that all participants knew it was only a simulation. The real-world urgencies and pressures that characterize primary care practice were absent from the FPS, and it is precisely these urgencies and pressures that complicate interprofessional relationships.

Most participants, however, felt the FPS provided an exceptional learning opportunity and was of great value in facilitating and supporting the transition to the physicians' offices. In particular, feedback provided by physicians regarding the pharmacist's role allowed individuals an opportunity to more clearly meet the needs of doctors in the practice. During this feedback session, one of the physicians remarked that, in general, the pharmacists he had worked with during the FPS reminded him of 3rd year medical students: filled with a lot of facts and armed with a lot of information, but somewhat uncertain about how this relates to the specific needs of the patient and somewhat unwilling to really "take a stand" on patient management decisions. Several pharmacists commented on the value of this comment and how reflecting upon this helped them to more clearly understand the needs of physicians in primary care.

All participants supported ongoing use of the FPS as an educational intervention, particularly for pharmacists entering primary care. Many suggested that the FPS ought to be structured over 2 days to allow 1 entire day for feedback, debriefing, and discussion, though they recognized the logistical difficulty in doing so.

DISCUSSION

The Family Practice Simulator represents a unique teaching and learning environment with specific applicability to the interprofessional context of primary care. There appears to be educational value to simulating not only a person-to-person interaction, but also an environment within which this interaction occurs. However, as described by participants, the impact of this learning is circumscribed by the fact that it still is a simulation. Nonetheless, the FPS may have applicability to pharmacy and health professions education in domains outside primary care where collaborative practice is increasingly expected. The logistics and cost of implementing the FPS are significant since all health professional participants received an honorarium for their attendance and all standardized patients were paid. Additional costs also included standard-setting workshops, case development, and organization/logistics. In total, the FPS cost approximately $15,000 (CAN) to operate for 1 day. However, should the FPS operate in the future, certain costs (such as case development, assessment/standard setting) will be considerably reduced. The applicability of this model to other settings or to undergraduate health professions education needs to be evaluated further. The context for the FPS described here was specific to the needs of experienced pharmacists entering family physicians' offices without previous experience in this environment. While the concept of interprofessional environment-based clinical simulation may be broadly applicable to many contexts, the particular structure described here may not be transferable.

A significant limitation of this report is the unique primary care context upon which the FPS was based. Many jurisdictions in North America are currently undertaking primary care reform. This reform varies considerably depending upon local social, economic, and political circumstances. While the specific simulations developed for the FPS described in this paper are reflective of specific trends in the Ontario health care system, they may or may not be applicable to other areas. Another limitation relates to the relatively small number of participants involved. The FPS described in this paper was a pilot of a concept and a way of establishing the feasibility of such a simulation. Thus, the results described in this paper are perhaps best interpreted as supporting the notion that the FPS is a viable educational tool that may be applicable in different settings.

Despite the cost and organizational complexity of the FPS, feedback from participants indicates this educational approach has been of value for both pharmacists in traditional community practice and those entering primary care practices where there will be collaboration with physicians, nurses, and others. As a vehicle for teaching, learning, and assessing critical skills and competencies required for interprofessional, patient-centred care, the FPS offers unique advantages. Though still a simulation, the opportunity to learn with and from one's peers and colleagues from other professions provides important insights into professional practice.

CONCLUSIONS

The experience with the Family Practice Simulator has been positive, both for pharmacists and other health care professionals involved in the process; as a result, the training program for the IMPACT project will continue to develop and refine this model of clinical simulation training for pharmacists entering primary care settings. Of importance, this model provides additional opportunities for research into interprofessional collaboration and communication amongst health care professionals.

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