

Enhancing the feasibility of interprofessional education: Lessons learned from sole precepting in a project-based practicum

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Abstract

Interprofessional education (IPE) is a cornerstone of pharmacy curricula, but many educational programs face practical challenges in implementing effective collaboration-based projects with preceptors in clinical settings. This study describes a four-week pilot rotation where pharmacy students were supervised by non-pharmacist health professionals (e.g., physicians, nurses, chiropractors, naturopathic physicians) in a project-based practicum aimed at enhancing interprofessional collaboration (IPC). Students designed projects aimed to enhance IPC at their chosen clinical site and were invited to participate in weekly online discussions with other students to facilitate learning and provide additional support to each other. Based on interview results, the practicum experience was well-received by both students and preceptors, with an increased appreciation for IPC and meaningful impact on interdisciplinary knowledge respectively. The practicum proved instrumental in helping students develop collaborative leadership skills and enhance their interprofessional communication, ultimately boosting their confidence in applying IPC in their future practice. Given its clear benefits, this type of experience could continue as an elective for pharmacy students seeking to reinforce these crucial skills, rather than being a mandatory component of the experiential curriculum. This report provides preliminary evidence for adopting an IPC-based learning curriculum with non-pharmacist preceptors as an effective method to support current IPE programs – with the potential to be adapted for remote learning. Future directives are provided to improve the quality and generalizability of IPC-based learning on a larger-scale.

Keywords: interprofessional, collaboration, practicum, pharmacy, preceptor

Description of the problem

It is well established that interprofessional education (IPE) is essential for health professional students to gain a well-rounded education and become effective care providers.¹ Allowing students to engage with IPE activities in experiential practicum placements is supported by existing health education literature. For example, informal observations of another profession undertaking patient consultation in real-world settings promotes students to reflect upon their role, others' roles, and the teamwork involved in patient-centered care.²

Currently, many IPE activities place students from multiple health programs together on simulated patient cases to build interprofessional collaboration (IPC) skills, which can be effective early in training, but practical challenges in real clinical settings often impede the quality of IPC. Not all placements offer equivalent interprofessional learning; placement quality varies widely, and students may be assigned by chance to teams that provide effective collaboration, even when sites meet accreditation standards.

Key infrastructure factors (e.g. the degree of team integration, the strength of interprofessional relationships, the availability of structured learning programs, institutional resources supporting team functioning, and the uniqueness of the clinical experience) strongly influence learning quality. Logistical complexities can further limit consistent IPC implementation, including coordinating schedules across professions, securing physical space, and ensuring adequate supervisory support - all within the demanding context of patient care and differing curricular priorities. As a result, students placed in less effective or poorly functioning teams may have substantially diminished learning experiences, and these collective constraints create significant barriers to developing the collaborative environments essential for effective interprofessional practice.

While activities that incorporate shadowing or shared precepting models exist across health disciplines, few studies have investigated the benefits of utilizing a cross-disciplinary sole preceptorship (i.e. primary precepting by a single health professional) in an IPE-based learning model.^{3,4} This report describes a four-week pilot project of an IPC practicum conducted at the University of British Columbia in Canada from October 2019, where pharmacy students were supervised by a single non-pharmacist preceptor and the experiences of participants were documented. The objective was to implement sole precepting across multiple clinical disciplines to enhance student learning outcomes. Sole preceptorship with a non-pharmacy practitioner creates a

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unique and intense learning environment that accelerates the development of core IPE competencies by forcing direct engagement, challenging disciplinary assumptions, and fostering independent problem-solving and communication across professional boundaries. Given the inability to mandate changes at clinical practice sites, this practicum aims to redress the practical issues with IPE implementation and provide students with an intensive, immersive learning experience. This pilot project focused on assessing the feasibility, logistics, and operationalization of this model, by gathering student feedback, to inform potential future implementation of this approach to interprofessional education.

Statement of innovation

In conventional primary preceptorships, a student is primarily supervised by a practitioner from their own discipline (e.g., a pharmacist preceptor for a pharmacy student), who may be supported by other interprofessional team members (e.g., a nurse, doctor, or dietician) within the same clinical environment. However, preceptorships with multiple healthcare stakeholders can be difficult to implement given the practical challenges of coordinating students with healthcare professionals and building consistent learning objectives across disciplines.⁵ For example, anecdotal evidence suggests that students from various disciplines infrequently have the chance to collaborate in formal IPC activities in clinical settings.

To address the need for intentional and structured IPE, a four-week project-based interprofessional collaboration practicum with sole preceptorship was developed (PHRM473). The innovation centers on the idea of “sole preceptorship,” where a pharmacy student is supervised entirely by a single non-pharmacy practitioner with no other clinicians involved in their oversight. In our study, for example, a pharmacy student was precepted solely by a chiropractor, with no pharmacist on site. This model intentionally departs from standard approaches by placing the student under the exclusive guidance of a practitioner from another discipline, requiring both the student and the non-pharmacist preceptor to engage in IPC in a direct, novel, and unmediated way.

Implementation of Innovation

The University of British Columbia (UBC) offers a four-year Entry-to-Practice PharmD program that is designed to prepare graduates for pharmacy practice in a multitude of healthcare settings. The interprofessional education (IPE) program, developed by Min & Leung, uses a constructivist approach as espoused by Dahmen et al.^{6,7} It draws on the six core competencies of the Canadian Interprofessional Health Collaborative (CIHC) in both didactic and practical learning environments.⁸ The CIHC framework guides the Office of Interprofessional Education (OIEP)'s curriculum. It outlines six core competency domains essential for collaborative practice, namely, relationship-focused care/services, team

communication, role clarification and negotiation, team functioning, team differences/disagreements, processing and collaborative leadership.⁹ These domains aim to develop and integrate the necessary attitudes, behaviors, values, and judgments for effective teamwork in healthcare.

Pharmacy students must complete a total of 3,360 hours of experiential practicum requirements, including 160 hours in a fourth-year elective entitled *PHRM473 Selected Advanced Pharmacy Practice Experience*. The timeline for development and evaluation of the practicum was 15-months and involved the following steps:

Recruitment of Clinical Sites

An environmental scan was initially conducted to identify potential outpatient sites with clinical practices that could support IPC with reasonable capacity of staff onsite and within a 1-hour geographic radius of the University of British Columbia. Through this process, four preceptors (i.e. trained professionals) were successfully onboarded: a family physician, registered nurse, chiropractor, and naturopathic doctor at their respective clinics (see Appendix 1C for site details). The participating clinical sites, with one exception, did not routinely include a pharmacist. The exception was the family physician's office, where the physician had prior experience collaborating with pharmacists. The other three sites represented novel environments for interprofessional collaboration, as none had previously engaged with a pharmacist at this level of integration. This initiative successfully established collaborative relationships with three non-pharmacy practitioners, a key novel aspect of this study.

Recruitment of Students

Students interested in the PHRM473 Interprofessional Collaboration practicum ranked it among their elective practicum preferences. Selections for all practicum electives, including PHRM473, were made using a computer-generated model. PHRM473 offers students opportunities to shadow professionals in diverse healthcare settings, such as patient care, research, health policy, and education. Four fourth-year students were selected and further randomized to be paired with one of the non-pharmacist preceptors.

Scope of Projects Carried Out in the Course

A course manual was developed by Min & Leung to outline the logistics and operation of the practicum in accordance with the six CIHC competencies (see Figure 1). Students were required to work collaboratively with each preceptor to determine a feasible project for the practicum. A project-based approach was chosen as the format for IPC as another health professional could not directly supervise a pharmacy student for pharmacy-related activities. This allowed students to develop competencies in IPC via non-direct patient care objectives. Projects had specific criteria they needed to meet and were grouped into thematic classifications for their focus (see Table 1). All projects were carried out simultaneously and

separately at each clinical site, with examples of projects provided in Table 2. Specific details on the projects were omitted from publication to respect confidentiality agreements with the clinical sites. The goal of the practicum was not to complete full fruition of the projects, rather, it was to develop an interprofessional collaboration environment which satisfies the CIHC competencies and evaluate the feasibility of implementing the practicum with a sole preceptor.

Figure 1. Interprofessional Competency Domains as Defined by the Canadian Interprofessional Health Collaborative (CIHC)



Aspect	Description	Source
		in one or more of the CIHC interprofessional competency domains.
	4. Student Learning Alignment	Tasks must align with the spirit of the practicum: to enhance and support student learning (e.g., through activities like shadowing).
Thematic Classification	1. Patient-Centered Care	Projects focused on improving patient experience or care processes.
	2. Clinician Skills & Knowledge (Interdisciplinary)	Projects focused on medication detailing, improving clinic practices, or increasing knowledge of Interprofessional Education (IPE).
	3. Social and Business	Projects focused on strengthening clinic partnerships, collaboration, or exploring business opportunities (like workflow changes for allied health).

Table 1. PHRM 473 Practicum Project Criteria and Thematic Classification

Aspect	Description	Source
Project Requirements (Criteria)	1. Start Date & Oversight	Must be jointly determined by the student and practice educator/preceptor within the first week of the practicum.
	2. Designated Supervisor	Must have a designated clinician (the practice educator or another staff member) who is regularly available to serve as the project point person for the student.
	3. Collaborative Focus	Must support collaborative health care and be rooted

Table 2. PHRM 473 Practicum Project Examples Table

Theme	Description	Deliverables
Medication and/or Health Products	Increase patient recall for follow-up by developing an automated system with clinic lead and IT support.	Partially or fully completed automated recall system, including supporting documents (e.g., workflow, patient consent forms, training materials).
Medication and/or Health Products	Promote patient understanding of medications or natural health products by researching commonly asked patient questions and creating	Written patient education handout(s) or presentation.

Theme	Description	Deliverables
	documentation to support education.	
Patient-centred Care Skills & Knowledge	Develop strategies to improve patient experience by surveying or interviewing patients regarding satisfaction following appointments.	Written report or oral presentation to the clinic team outlining themes to improve patient experience.
Patient-centred Care Skills & Knowledge	Develop strategies to improve clinic practices by completing data mining of clinic quality improvement projects (e.g., identifying patients lost to follow-up, disease-specific trends).	Written report or oral presentation to the clinic team outlining themes to improve clinic practices.
Clinical	Provide medication detailing service by conducting a literature review of a specific medication or class of medication, recent article, or guideline.	Educational handout or presentation to the clinic team.
Interprofessional Patient Care	Explore opportunities for implementing additional allied health providers in the clinic by constructing a hypothetical model of required workflow changes.	Partially or fully completed project plan, including supporting documents (e.g., workflow, professional role descriptions, budget).
Business & Social	Strengthen clinic partnerships and collaboration by collaborating with neighbouring health care providers, including community pharmacies, to identify shared patient care issues.	Map of neighbouring health care providers, summary of common issues, and report of ideas for improvement.

Evaluation of Practicum

A mixed-methods approach was used to assess the implementation and feasibility of the practicum on developing IPE skills. Surveys were deployed to both students and preceptors individually to capture background information, attitudes toward interprofessional practice, and feedback on practicum activities both pre- and post-practicum (see Table 3 and 4). Survey questions were adapted from previous IPE learning activities developed by Min & Leung and utilized a Likert scale to gauge the opinion of participants (see Appendix 2 & 3).⁶ In addition, weekly, semi-structured, online discussions (focus groups) between participating students were organized online, facilitated by a faculty member, transcribed and qualitatively analyzed. Topics discussed included shadowing experiences, preceptor interactions, project work, interprofessional communication, and pharmacy advocacy, with students reflecting on how their understanding of interprofessional collaboration evolved throughout the practicum. Thematic analysis of discussion responses was conducted using an inductive and a constant comparator method to ensure themes were data-driven. Analysis was conducted via a third-party researcher from the UBC Centre for Teaching, Learning and Technology (CTLT) who is a subject-matter expert in IPE and qualitative analysis. Ethics approval was obtained from the UBC Behavioural Research Ethics Board (H18-00728).

Table 3. Summary of Student Survey Questions

Survey Section	Focus Area	Topics Discussed
Pre-Survey	Background & Expectations	Years as a student, prior healthcare training/certification. Reasons for taking the IPC practicum (roles, communication, leadership).
	Interprofessional Practice Attitudes (Agreement Scale 1-5)	Pharmacists' expected collaboration, confidence in future IPC practice, learning more with a non-pharmacist educator, and preparedness from PharmD IPE content.
	Activity Interest (Interest Scale 1-5)	Interest in shadowing, working on a project, and participating in the online discussion forum.
	Open-Ended	Briefly describe one desired learning point/experience.
Post-Survey	Background & Evaluation of Practicum Experience	Years as a student, prior healthcare training/certification. Level of agreement on learning about roles, communication skills, and

Survey Section	Focus Area	Topics Discussed
		collaborative leadership gained from the practicum.
	Interprofessional Practice Attitudes (Agreement Scale 1-5)	Similar to pre-survey: pharmacists' collaboration, confidence in future IPC, learning more with non-pharmacist educator, and PharmD IPE preparedness.
	IPE Experiences Ranking	Ranking the value of past IPE experiences (e.g., PHRM 271, practice/skills lab, PBL, prior practicums, outside of school).
	Practice Components	Which CIHC competency (e.g., Role Clarification, Team Functioning) the student learned the most about (select and describe). Value of learning activities (shadowing, project, online forum) on a scale of 1-5.
	Practicum Project	Best category describing the project (Social/Business, Clinician Skills, Patient-centred care). Agreement (Scale 1-5) on how the project improved knowledge/skills in the six CIHC competency areas.
	Overall Experience	Briefly describe the most valuable learning point and one aspect to improve. Overall enjoyment and value of the practicum (Scale 1-5).

All students agreed that the implementation and use of weekly online chat discussions were an important aspect of support and learning throughout the practicum. This was the first project-based practicum in the program to include a routine check-up via weekly discussion, and it was found to be beneficial by all students, especially when facilitated by a faculty member to keep discussions on track. Topics included in the chat were largely driven by the students, and included moral support, sharing of experiences, and problem-solving issues related to their projects. The majority (75%) of student projects completed in the practicum aimed to better incorporate a pharmacist into each site and optimize their scope of practice. Feedback for improvement included the need to provide further education to the sites on the level of pharmacy student knowledge and skills, and activities within the legal and regulatory scope when supervised by a non-pharmacist.

Preceptors had varying experience levels and flexibility in supporting students. Most sites already had some IPC practices, which likely helped them adopt this practicum early. Three of four sites had no pharmacist on staff and benefited by learning more about pharmacy services. All preceptors felt well-informed about student goals, learning objectives, and their role in fostering collaboration. They reported that colleagues were prepared to welcome students, aligning with students' experiences of working with multiple team members. Preceptors agreed that student projects had a meaningful clinical impact by enhancing interdisciplinary knowledge or improving pharmacist integration. Half suggested a longer practicum than four weeks would be beneficial. All expressed enthusiasm for supervising future students.

A similar study by Moreau et al. demonstrated that an elective practicum in clinical practice with a physician as primary preceptor was positively perceived by both students and preceptors.¹⁰ This practicum with 8 pharmacy students consisted of a four-week rotation with one pharmacy faculty, followed by a four-week elective experience in a different outpatient care office with a physician serving as primary (sole) preceptor. Our study provides further evidence that a sole preceptorship model of pharmacy students with a non-pharmacist preceptor can be effective, even in a non-clinical project-based practicum.

Key Issues

This study evaluated the experiences of pharmacy students and non-pharmacist preceptors in a pilot IPC practicum. Analysis of survey and weekly discussion data suggests that this type of learning is beneficial for both students and preceptors as it encourages higher collaboration and communication than previous IPE activities. Students were expected to primarily learn about interprofessional communication and conflict resolution in clinical settings; however, many adopted a critical role as advocates for their

Critical Analysis

Evidence from the survey and weekly discussions revealed that all students (N = 4) chose this elective practicum to gain leadership collaborative skills and develop communication with other health care professionals. Students believed that the practicum supported skill development and gave confidence that their future practice will involve IPC. Students reported a shift in their understanding of interprofessional practice, stating they felt more prepared to adopt IPC in practise after the practicum. This was also reflected during the final focus group, in which one student pointed out that the IPC practicum was the "type of learning you can't get from the IPE activities that we have...this was real life and you're adjusting your own behavior to the environment that you're in and so for that reason I felt that it was valuable."

profession by teaching healthcare professionals about the pharmacist's role. This led students to critically examine their future practice and careers options, leading to a higher desire to pursue IPC in future endeavours.

To address the fact that students were not expected to have had any prior experience working with non-pharmacist preceptors, a weekly online discussion group was implemented. Students agreed that this modality was beneficial in an otherwise isolated condition. Additionally, as this was the first time each site hosted a pharmacy student, significant guidance was necessary at site visits to preview the environment and brainstorm applicable project ideas. These aspects of practicum preparation could be completed virtually in the future.

Limitations

This study had a small sample size (N = 4 students, N = 4 preceptors), limiting generalizability. Although placements were randomized, students ranked practicums, introducing selection bias toward those already valuing IPE. Confidentiality agreements prevented formal documentation of student projects, restricting evaluation of long-term impact and specific learning outcomes. Additionally, regulatory limits on pharmacy student scope meant no direct patient care unless within the non-pharmacist preceptor's practice, which may have influenced project selection.

Next Steps

Our findings support the success of a sole-preceptor model of interprofessional collaboration learning between pharmacy students and non-pharmacist preceptors in a project-based non-direct patient care practicum. This is a novel and important method to further support interprofessional learning. To improve the quality and generalizability of sole preceptor interprofessional (IPC)-based learning on a larger academic scale, future directives include: diversifying and expanding clinical partnerships, developing standardized agreements and training for preceptors across these new sites, integrating virtual and in-person IPC training experiences via online case studies or telehealth-based IPC activities, and developing standardized and scalable assessments for IPC that can be consistently applied across all sites and modalities.

Conclusion

This pilot demonstrated that a sole preceptor IPC model for pharmacy students is feasible and beneficial. Project-based learning with non-pharmacist preceptors enhanced interprofessional communication, collaboration, and advocacy skills. Positive feedback and strong engagement suggest the model's potential as a scalable innovation in health professional education. Future work can expand on clinical partnerships, standardize preceptor training, and integrate virtual learning to strengthen interprofessional competency development.

Conflicts of Interest: None.

Funding/Support: None.

Disclaimer: The statements, opinions, and data contained in all publications are those of the authors.

Acknowledgements: We acknowledge that the UBC Vancouver campus is located on the traditional, ancestral, and unceded territory of the Musqueam people.

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Table 4. Summary of Practice Educator Survey Questions

Survey Section	Focus Area	Topics Discussed
Post-Survey	Background Information	Healthcare professional type. Years practicing. Number of students/residents previously supervised. Frequency of consulting/collaborating with other healthcare professionals.
	Practicum Experience	Average hours spent per week fulfilling practice educator expectations. Agreement (Scale 1-5) on preparedness regarding knowledge of student goals/duties and understanding of practicum objectives/activities. Agreement (Scale 1-5) on site preparedness (physical space and colleague welcome).
	Practicum Project	Opinion on whether the practicum project will contribute to meaningful change at the site (Yes/No, with brief explanation).
	Overall Experience	Agreement (Scale 1-5) on willingness to collaborate with pharmacists, learning more about IPC, and overall enjoyment/value of the practicum. Willingness to supervise future PharmD students (Yes/No, with brief explanation).
	Open-Ended	Describe the most valuable learning point and one aspect to improve. Any other information regarding the experience.