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Implementation of a Pharmacy Clinical Instructor Model to Facilitate Experiential Learning in Saskatchewan's Entry-to-Practice Doctor of Pharmacy Program

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Abstract

In response to nationally endorsed changes in pharmacy curricula, the University of Saskatchewan College of Pharmacy and Nutrition (CoPN) sought to expand experiential learning for its pharmacy program. In 2010, Canada's faculties and deans of pharmacy committed to implementing entry-to-practice Doctor of Pharmacy (PharmD) programs in all schools by 2020. The expansion and change in credentialing of Canada's pharmacy training from baccalaureate programs was intended to ensure graduates possess the competencies required within the modern scope of pharmacy practice. To further this transition, the Canadian Council for Accreditation of Pharmacy Programs increased the required hours of students' experiential learning. In Saskatchewan, pre-existing operational and financial pressures on the CoPN, coinciding with the provincial health system's amalgamation from twelve regional health authorities to a single health authority, prompted a collaborative approach. To address the growing need for practical experience within the Saskatchewan Health Authority, the CoPN implemented clinical instructor positions within tertiary care centres in Saskatoon and Regina. This unique approach among PharmD programs provided financial stability and accountability to student learning, although early student feedback identified several challenges with this model. These findings about the clinical instructor model can guide the ongoing implementation of experiential learning within PharmD and other health care professional programs.

En réponse aux changements approuvés au niveau national dans les programmes d'études en pharmacie, le College of Pharmacy and Nutrition *(CoPN) de l'Université de Saskatchewan a entrepris de multiplier les expériences d'apprentissage de son programme d'études en pharmacie. En 2010, les facultés et les doyens des facultés de pharmacie du Canada se sont engagés à mettre en place des programmes de doctorat en pharmacie (PharmD) dans toutes les écoles à l'horizon 2020. L'expansion et la modification de l'accréditation de la formation en pharmacie au Canada à partir des programmes de baccalauréat visaient à garantir que les diplômés possèdent les compétences requises au regard du champ d'exercice renouvelé de la pharmacie. Pour faciliter cette transition, le conseil canadien pour l'accréditation des programmes de pharmacie a augmenté le nombre d'heures requises pour l'apprentissage par l'expérience des étudiants. Dans la province de Saskatchewan, les tensions opérationnelles et financières préexistantes sur le CoPN, jointes à l'opération de fusion des douze autorités sanitaires régionales du système de santé provincial en une seule autorité sanitaire, ont incité à une approche collaborative. Pour répondre au besoin croissant d'expérience pratique au sein de la Saskatchewan* Health Authority, *le CoPN a mis en place des postes d'instructeurs cliniques dans les centres de soins tertiaires de Saskatoon et Regina. Cette approche originale parmi les programmes de doctorat en pharmacie a assuré la stabilité financière de l'apprentissage des étudiants et a clairement identifié les responsabilités, même*

si les premiers retours d'expérience des étudiants ont mis en évidence plusieurs défis liés à ce modèle. Ces résultats concernant le modèle d'instructeur clinique peuvent guider la mise en œuvre continue de l'apprentissage par l'expérience au sein des programmes de doctorat en pharmacie et d'autres programmes professionnels de soins de santé.

Key Messages

- The evolution of the role of pharmacists in Canada's health care system and changes to required competencies of practice led the deans and faculties of Canada's ten pharmacy schools to commit to transitioning from baccalaureate to entry-to-practice PharmD programs between 2010 and 2020.
- Prior to PharmD implementation, experiential learning structures within the health regions of Saskatchewan provided pharmacy student experiences led by hospital-employed preceptors; however, inter-regional variability, suboptimal pharmacist-to-patient ratios, and the need to maintain a focus on patient care limited the ability to expand the existing experiential learning structure to meet accreditation standards.
- Amidst resource constraints and provincial health system amalgamation, the University of Saskatchewan College of Pharmacy and Nutrition and the incipient Saskatchewan Health Authority pursued an innovative collaboration to enhance student learning experiences – university-funded, hospital-based clinical instructor positions, which were guided by existing structures found in former Saskatchewan health regions, nursing, medicine, and American pharmacy programs.
- Early evaluations revealed the clinical instructor positions supported students' experiential learning, provided financial stability to the college, and promoted accountability to student learning, but also presented challenges in overseeing students and the quality of their experiential learning within Saskatchewan Health Authority facilities.
- These early lessons and ongoing evaluation of the educational, operational, and financial outcomes achieved by the clinical instructor positions can inform the University of Saskatchewan's and other health professional schools' ongoing efforts to use hospital-based learning experiences to produce competent graduates.

Messages-clés

- *L'évolution du rôle des pharmaciens dans le système de santé canadien et les changements apportés aux qualifications requises pour la pratique ont conduit les doyens et les facultés des dix écoles de pharmacie du Canada à s'engager à passer*

d'un programme de baccalauréat à un programme de doctorat en pharmacie pour l'accès à la pratique entre 2010 et 2020.

- *Avant la mise en œuvre du PharmD, les structures d'apprentissage par l'expérience au sein des régions sanitaires de la Saskatchewan permettaient aux étudiants en pharmacie de vivre des expériences dirigées par des précepteurs employés par les hôpitaux; toutefois, la variabilité interrégionale, les ratios pharmacien-patient sous-optimaux et la nécessité de maintenir l'accent sur les soins aux patients ne permettaient pas d'étendre la structure d'apprentissage par l'expérience existante afin de répondre aux normes d'accréditation.*
- *Pris dans les contraintes de ressources et de la fusion du système de santé provincial, le* College of Pharmacy and Nutrition *de l'Université de la Saskatchewan et la Saskatchewan Health Authority naissante ont poursuivi une collaboration innovante pour améliorer les expériences d'apprentissage des étudiants – des postes d'instructeurs cliniques en milieu hospitalier financés par l'université, qui ont été guidés par les structures existantes dans les anciennes régions sanitaires de la Saskatchewan, les programmes de soins infirmiers, de médecine et de pharmacie américaine.*
- *Les premières évaluations ont révélé que les postes d'instructeurs cliniques soutenaient l'apprentissage expérientiel des étudiants, assuraient la stabilité financière du collège et favorisaient la responsabilisation à l'égard de l'apprentissage des étudiants, mais présentaient également des défis en ce qui concerne la supervision des étudiants et la qualité de leur apprentissage expérientiel au sein des établissements de la* Saskatchewan Health Authority.
- *Ces premières leçons et l'évaluation continue des résultats pédagogiques, opérationnels et financiers obtenus grâce aux postes d'instructeurs cliniques peuvent éclairer les efforts continus de l'Université de la Saskatchewan et d'autres écoles de professionnels de la santé pour utiliser les expériences d'apprentissage en milieu hospitalier afin de former des diplômés compétents.*

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1 BRIEF DESCRIPTION OF THE HEALTH POLICY REFORM

The University of Saskatchewan College of Pharmacy and Nutrition (CoPN)'s first class of entry-to-practice Doctor of Pharmacy (PharmD) students convocated in 2021. The college replaced its baccalaureate program with the PharmD curriculum in 2017 to ensure the graduation of professionals who could use medication expertise to address the changing health needs of the Canadian population (NAPRA 2014; AFPC 2017; CoPN 2018). The new curriculum corresponded with the expanding role of pharmacists to include prescriptive authority to initiate and adjust medication therapy, to administer medications by injection, and to order and interpret laboratory tests (CPhA 2022). The reform was required to maintain accreditation status through the Canadian Council for Accreditation of Pharmacy Programs (CCAPP), which had committed to the evolution of the ten Canadian baccalaureate programs to PharmD programs by 2020 and to modernize requirements for Canadian pharmacy schools – including changes to students' experiential learning (EL).

To support students' learning and enhance standardization during practical experiences, the CoPN created clinical instructor (CI) positions to assume responsibility for implementing, overseeing, and continuously improving hospital-based EL within Saskatchewan's tertiary care centres of Saskatoon and Regina. Although other faculties of pharmacy in Canada (University of Alberta 2022; University of British Columbia 2020, 2022; University of Waterloo 2016, 2018) had implemented or enhanced models of EL to meet the new accreditation requirements, the University of Saskatchewan's CI model is unique in that instructors directly guide most patient care activities for the students they supervise. They are employed solely by the university to oversee student EL within the Saskatchewan Health Authority (SHA) facilities.

Saskatchewan's implemented model was a collaborative solution for the CoPN and the SHA: the CoPN took operational responsibility for the delivery of EL to increase standardization and accountability to student learning, which allowed the SHA to focus on enhancing team-based care and improving alignment of services (SHA 2019). Under this new model, SHA pharmacists remained accountable for student patient care activities and providing shadowing opportunities, but direct student supervision became the responsibility of the CIs (SHA 2021). As a result, the PharmD students could learn to provide patient care under the auspices of both organizations.

2 HISTORY AND CONTEXT

The Canadian health care system has been continuously evolving to respond to the demands of an aging population, growing cultural and linguistic diversity, federal and provincial financial constraints, and the need to provide services across a vast geography (Martin et al. 2018). In addition, changes in health care delivery – to become more interprofessional,

to manage worsening levels of chronic disease, and to adapt to the increasing complexity of bio-technologic drug therapy – have led to enhancements in the scope of practice for pharmacy professionals (AFPC 2010). The public has been supportive of the change in pharmacists' roles (Lynas 2012) and continues to regard pharmacists highly within their new scope of practice (Coletto 2017).

Whereas pharmacists historically focused on the compounding, dispensing, and safe provision of medications prescribed by physicians, a national push for the expanded role of pharmacists was strategically implemented in 2008 (CPhA 2008). From 2007 onward, provincial regulatory expansions across Canada included prescriptive authority, adaptation of prescriptions, performance of medication reviews, administration of medications and vaccines, and the ordering and interpretation of lab tests (AFPC 2010; NAPRA 2021; CPhA 2022). Within Saskatchewan, the provincial registrar formed an interdisciplinary advisory committee on prescriptive authority, whose advocacy enabled pharmacists to prescribe for minor ailments and extend the refill of prescriptions (Taylor and Joubert 2016). By 2015, regulation for the administration of vaccines and ordering of lab tests was implemented within *The Pharmacy and Pharmacy Disciplines Act (2015)*, the statute governing the self-regulation of pharmacy professionals within Saskatchewan.

As Saskatchewan's regulations were changing, the University of Saskatchewan CoPN was replacing its baccalaureate of pharmacy curriculum with a new PharmD program. By 2017, the college had successfully accepted students into its PharmD program that was designed to address practice change and meet accreditation standards, including a requirement for 1,600 hours of EL (CoPN 2017; CCAPP 2018). The new PharmD program promoted increased acquisition of practical skills through 320 EL hours in the first three years of the program and 1,280 EL hours, of which a minimum of 320 hours would be in acute care, in the fourth year (CoPN 2017). This was a 67% increase from the baccalaureate curriculum, which had required classes throughout all four years of the program, providing a total of 960 hours of EL (Kobitz 2017).

3 THE POLICY-MAKING PROCESS

Although there was consensus among pharmacy groups for the need to update pharmacy curricula for the changes in pharmacists' scope of practice, there was debate within professional and academic groups as to the benefit of an entry-to-practice PharmD (Austin and Ensom 2008; CSHP 2002; Koleba et al. 2006). Many national representatives for students and pharmacists were opposed to the change due to a lack of evidence of a PharmD program being superior to existing programs. Data from the United States, which had undergone a similar transition in the preceding decades, comparing baccalaureate and PharmD programs failed to demonstrate a difference between pharmacist tasks or job satisfaction and did not assess for improvement in patient outcomes (Koleba et al. 2006). Additionally, there was concern that provincial governments would not accept a curriculum change and that

variability between previous baccalaureate and PharmD graduates would reduce national labour force mobility. Furthermore, provincial ministries of higher education indicated concern about the "credential creep" of entry-to-practice degrees in professional fields and the effect it would have on the health care workforce (Austin and Ensom 2008).

Nevertheless, with the support of the Canadian Pharmacists Association, the Association of Faculties of Pharmacy of Canada (AFPC) and the Association of Deans of Pharmacy of Canada committed to replacing baccalaureate curricula with entry-to-practice PharmD programs (AFPC 2010; CPhA 2011). This commitment addressed the need for curricula to focus on increasing the base competencies required of pharmacists at entry to practice. With this reform came the requirement to increase the "accessibility, quality, quantity, and variety of EL opportunities" (CPhA 2011). Except for the Université de Montréal – where an entry-to-practice PharmD program had already received provisional accreditation in 2008 (CCAPP 2008) – Canada's remaining faculties of pharmacy began transitioning their curricula to a PharmD. By 2017, the AFPC released a set of educational outcomes and a competency framework for pharmacy programs that could be applied in a baccalaureate or entry-to-practice PharmD program (AFPC 2017).

Along with this transition, the National Association of Pharmacy Regulatory Authorities updated its framework for *Professional Competencies for Canadian Pharmacists at Entry to Practice* (2014). The framework established the requirements for educational outcomes and guides program accreditation standards and competency assessment exams for provincial and territorial licensure.

In Saskatchewan, the CoPN had committed to changing to the PharmD program to graduate students who demonstrated the skills and attributes of pharmacy professionals in alignment with the national changes in practice (CoPN 2011, 2017); however, this raised concerns within the province because the existing baccalaureate program was highly regarded. Practicing pharmacists feared the new program would diminish their credentials, the Ministry of Health believed the change could disrupt the pharmacist workforce, and students were concerned about the proposed tuition increase. Significant work had to be done to alleviate these concerns (Kishor Wasan, web-conferencing interview, December 20, 2022).

To achieve accreditation, align with NAPRA and AFPC, and ensure students could practice at full scope upon entry-to-practice in Saskatchewan, the CoPN structured the curriculum to the AFPC competencies and increased the EL of students from 960 hours to 1,600 hours (CCAPP 2018; *Pharmacy and Pharmacy Disciplines Act*; SCPP 2022). The CCAPP required a balance between primary and acute care EL, 320 hours in direct patient care in early years, and 960 hours near the end of the program (CCAPP 2018). At the time the CoPN was reforming the curriculum, the University of Saskatchewan was facing a 5.6% funding reduction from the provincial government (University of Saskatchewan 2017); given this projected deficit, the CoPN needed to explore sustainable opportunities to implement the PharmD that would rely heavily on an increase in tuition (Kishor Wasan, web-conferencing interview, December 20, 2022).

As the University of Saskatchewan was transitioning to the PharmD program, the provincial government was coincidentally consolidating its 12 regional health authorities under a single health authority. The report of the provincially appointed advisory panel for the amalgamation cited increasing financial pressures and inefficiencies in ensuring timely and consistent access to care (Abrametz, Bragg, and Kendel 2016). By early 2017, legislation to create the new SHA was in place and operation began by December that same year (Ministry of Health 2018; SHA 2019). The SHA team was focused on enhancing care, breaking down barriers within the system, and developing an appropriate leadership structure (SHA 2019). Like the University of Saskatchewan, the inaugural SHA was under financial pressure as it pursued health system amalgamation and program standardization (SHA 2019). Notably, the SHA is needed for all acute care EL of the new program as it oversees all acute care facilities in Saskatchewan.

There was variability in preceptor skills and student EL expectations provincially that limited the CoPN from offering preceptor development and standardized EL. The previous model for EL in the respective regional pharmacy departments, which would later consolidate into a unified provincial department, required local pharmacy leadership to provide organizational oversight of students. In most Saskatchewan centres, former health region employed pharmacist preceptors were responsible for student learning. In Saskatoon and Regina tertiary centres, additional hospital-employed pharmacists, as part of their responsibilities, helped coordinate the oversight of multiple students during their hospital-based EL (see Table 1). Reimbursement for these additional positions was provided by the CoPN and the Ministry of Health, and there was concern this would not be sustainable in the future (Yvonne Shevchuk, in-person interview, August 27, 2022).

With the PharmD's increased EL requirements, the SHA pharmacy department anticipated limitations in infrastructure, resources, preceptors, and placement capacity in ways that other health care programs experienced (Loewen et al. 2017). With increased funding to align staffing with national benchmarked values, the SHA pharmacy department could have maintained patient care services along with the increase in EL; however, the expected cost was going to be too high to implement (Kishor Wasan, web-conferencing interview, December 20, 2022). Therefore, both the CoPN and SHA needed to develop a solution to expand hospital-based EL while keeping costs and student tuition comparable to other Canadian PharmD programs.

A literature review and direct communication with the faculties of the ten accredited pharmacy programs in Canada were utilized to explore alternate models for EL delivery among nursing, medicine, and pharmacy programs in the United States and Canada. Of the Canadian schools the University of Waterloo and the University of British Columbia had implemented additional university-appointed support for hospital-based EL (University of Waterloo 2022; University of British Columbia 2022). The University of Alberta was planning to implement a PharmD model within the single Alberta Health Services with hospital-employed preceptors who would oversee student learning; additionally, an individual joint-employed by the university and the health authority would support preceptor

Table 1: Comparison of hospital-based experiential learning between the University of Saskatchewan's BSc in Pharmacy degree to its implemented PharmD

	BSc in Pharmacy (1940s-2016)	**Entry-to-practice PharmD (2017-present)**
Tuition (CAD)	$9,700	$17,000
Student enrollment	90	90*
Program duration	4 years (1 year prerequisite)	4 years (2 years prerequisite)
EL	23 months	40 months**
- Hospital	4 weeks introductory 5 weeks advanced	4 weeks introductory 8 weeks advanced
- Elective***	5 weeks	8 weeks
Oversight of hospital-based EL		
Regina and Saskatoon	• Staff employed by former health regions support student learning	• CIs employed by university support and oversee student learning
Preceptor role (employed by hospitals)	• Oversee students' patient care activities • Provide continuous feedback • Communicate student concerns to former health region staff	• Sign off on patient care activities • Provide shadowing opportunities for students • Communicate student concerns to CIs
Other SHA hospitals and tertiary centre electives	• Staff employed by former health regions support and oversee students' EL • Additional former health region staff oversee students, provide feedback, and communicate concerns as required	• Staff employed by health region support and oversee students' EL • Additional health region staff oversee students, provide feedback, and communicate concerns as required

*In 2017, admission into the program only included 72 students. **Introductory EL occurs every 4 weeks over spring/summer. Advanced EL occurs every 8 weeks (excluding 3 weeks in December and one week in May). ***In-patient or outpatient.

education, develop models of preceptorship, and assist with struggling students (see Table 2), (University of Alberta 2022). A layered learning model, in which introductory learners report to senior learners with the oversight of an attending practitioner was also explored as it was shown to be effective in US PharmD programs and medical education (Loy et al. 2017). The direct transfer of any of the models to Saskatchewan was not possible because of financial constraints. The CoPN's environmental scan suggested that the existing baccalaureate or alternate models of student oversight might work, but as Saskatchewan's hospitals were operating below national benchmarks for pharmacist-to-bed ratios, there would be limitations to SHA preceptor oversight compared to other Canadian jurisdictions (Hospital Pharmacy in Canada Survey Board 2018). A change in operational oversight was proposed to enable increased standardization of teaching and enhancements to student learning.

An amalgamation of clinical training models that had worked for various health regions in Saskatchewan was developed. Hospitals outside of Saskatoon and Regina and elective tertiary site preceptors would largely retain their former baccalaureate EL model for oversight of second-year and elective EL. The CoPN would employ CI positions, like those utilized for training Canadian nursing colleagues (Melrose 2022), to oversee increased volumes of PharmD students in Saskatoon and Regina for second- and fourth-year hospital-based rotations (see Table 1). The proposal included a layered practice model like that used in US PharmD programs (Kishor Wasan, web-conferencing interview, December 20, 2022). The CIs would coordinate and oversee student patient care activity, but patient care would remain accountable to an SHA pharmacist. As university employees, the instructors would not report directly to the SHA. Similar CI positions already existed in the University of Saskatchewan faculty's collective bargaining agreement (USFA 2022), so there would be fewer barriers to their implementation; although delays posed by necessary approval from the Provost's office, timelines associated with posting positions and interviewing candidates, alongside the need for a qualified hospital pharmacist candidate created challenges in terms of recruitment (Jane Alcorn, web-conferencing interview, December 19, 2022). All parties committed to working towards provincial hospital-based EL standards, including access to in-patient information technology, integration of students into operational workflow, and integration of students into patient care teams (SHA 2021). This collaborative strategy was a creative solution to address the financial restrictions in both organizations, the evolved curriculum of the PharmD program, the need for standardization and accountability of learning experiences, and the needs of the SHA to improve patient-centred care.

4 IMPLEMENTATION AND EVALUATION

During the summer of 2018, the CoPN created two full-time CI and intermittent casual-coverage positions to oversee PharmD students throughout their introductory hospital-based EL, one in Saskatoon and one in Regina. The positions fit within the budget of the PharmD program due to increased tuition, approximately $17,000 annually (Kishor

Table 2: Comparison of selected Canadian PharmD programs

	University of British Columbia	**University of Alberta**	**University of Waterloo**
Year implemented*	2015	2018	2011
EL	42 weeks	40 weeks	72-78 weeks**
- Hospital	2 weeks introductory 8 weeks advanced	4 weeks introductory 8 weeks advanced	8 weeks
- Elective***	8 weeks	8 weeks	8 weeks
Model of instruction	• Health region staff (preceptors) facilitate student learning opportunities for course activities, provide guidance and supervision, and actively observe students. • Supported by joint-funded experiential education facilitators who organize student activities, assist with evaluations, support preceptors with resources, and provide support for struggling students.	• Health region staff (preceptors) provide instruction, training, supervision, and mentor students in the practice setting. • Supported by a joint-funded clinical assistant professor who supports planning and delivery of novel precepting models, supporting struggling students, and improving preceptor skills.	• Health region staff (preceptors) create learning environment, involve students in clinical decision-making, support learning objectives, and collaborate with the regional clinical coordinators to complete student assessments. • Regional clinical coordinators, employed by hospital and as adjunct clinical professors, help oversee practice sites and preceptors in a region, organize placements, train preceptors, and provide support to students and preceptors.

* The year identifies when each program received provisional accreditation. **Includes three co-op terms during which students work 16-18 weeks per term and receive financial reimbursement from the co-op site. ***In-patient or outpatient.

Wasan, web-conferencing interview, December 20, 2022). Ultimately, due to recruitment difficulties, only one of the instructor positions was directly employed by the University of Saskatchewan; the other was supported through a transfer of funding by the CoPN to the SHA for internal hiring.

Of the 90 first-year seats available in the CoPN, only 72 were filled. This limited the funding available for any additional CI positions. Of the 72 enrolled students in the second year of the PharmD program, 42 completed an introductory EL in Regina and Saskatoon; allocations aligned with the previous baccalaureate program (Angela Friesen, email communication, August 29, 2022). The SHA pharmacy supported students in drug distribution and accountability of students' patient care activity but maintained only needful involvement in student supervision during this time frame. The remaining students were able to complete their EL hours at alternate SHA sites. This enabled a focus on optimization and standardization of patient care in alignment with their strategic plan (SHA 2019).

The 42 student evaluations of their EL in Regina and Saskatoon (unpublished data) provided valuable insight into some initial limitations of the model: patient care was largely observed rather than practiced, students were separated from pharmacist activities, students had limited access to electronic patient care information, and the ratio of students to instructors — 6:1 up to 12:1 depending on casual coverage — exceeded CI capacity. This student feedback aligned with findings from a review of health training programs where individual preceptors have students in addition to patient care responsibilities, which suggested challenges when ratios increase above two students to one preceptor – although it is unclear how this translates to the CI model: students feel as though they have decreased one-on-one time and report dissatisfaction with their learning; preceptors report difficulty coordinating adequate patient interactions for students and difficulty providing students with adequate supervision (Loewen 2017).

Following the summer of 2018, funding increased for the number of CI positions to 1.4 full-time equivalents in Regina and 1.7 full-time equivalents in Saskatoon, enabling lower ratios of 5:1 to 8:1 students to instructor. However, the reasonable allotment for these positions is still unknown. Increased collaboration between the SHA and the CoPN, including quarterly meetings, development of student placement guidelines (SHA 2021), and standardization between tertiary and rural sites, has improved the limitations. Layered learning was not fully implemented with fourth-year students overseeing second-year students as was originally proposed; barriers related to EL timing as fourth-year students are present in Saskatoon and Regina year-round, whereas second-year students only have EL in the spring and summer (CoPN 2017).

The University of Saskatchewan PharmD was awarded full accreditation status in 2021, but the CCAPP noted there was need to report on "changes to financial resources available for program operation, changes in the academic staff, and quality improvement efforts associated with a number of specific standards" (CCAPP 2021, 9). Formal evaluation of the CI position and its effects on pharmacy student learning is required to meet accreditation requirements and to ensure the CoPN's graduates are continuing to meet regulatory

standards. The evaluation should examine whether the PharmD CIs have experienced challenges like those faced by CIs in nursing programs, including competing demands with students and administrative work, growing student to instructor ratios, increasing patient acuity, and possession of a task-focused approach rather than a patient-centred approach to care (Dahlke et al. 2012).

The role of the CI model in attaining student learning outcomes sequentially throughout the program should focus directly on the outputs and outcomes of the model (International Pharmaceutical Federation 2008). It will be difficult to determine the true effect of these positions with only the existing data such as: range and type of variation in student performance; feedback from recent graduates, employers, and the national board examinations; and implementation of plans to improve results (CCAPP 2018), as they lack direct comparison to other models and may be multifactorial in what impacts their outcomes. Therefore, feedback on the model's effectiveness should be sought from a broad range of internal and external stakeholders, including faculty, students, instructors, regulators, employers, preceptors, and patients. Performance within the program is already evaluated, but performance in practice should be sought from graduates trained in Regina and Saskatoon where this model exists (International Pharmaceutical Federation 2008). Patient-reported experience and outcome measures and students' successful completion of activities in alignment with the Canadian Consensus on Clinical Pharmacy Key Performance Indicators (Fernandes et al. 2015) can further demonstrate student outcomes and may better enable cross-jurisdictional comparison.

5 CONCLUSION

The need to implement a high-quality PharmD program with increased EL and accountability for student oversight in a resource-constrained environment enabled the creation of a novel structure for EL in Saskatchewan – a change from the hospital-employed preceptor EL models to university-supported CI positions in the province's two largest tertiary centres.

Implementation of CI instructors enabled students to complete their EL hours in the new PharmD curriculum, increased accountability of student learning to the CoPN, and supported the SHA pharmacy department to continue to provide patient care services while working towards provincial standardization of services. However, early implementation revealed uncertainty around the appropriate number of CI positions and student allotments per CI, limitations in integrating students into the patient care team, and uncertainties about the quality of EL. Increased funding to support an appropriate number of CI positions and increased collaboration with the SHA has been undertaken to address these issues, but their effect is yet unclear.

The CI model has been implemented successfully in nursing programs (Melrose 2022) but is unique amongst Canadian schools of pharmacy, and an ongoing evaluation of this model's

impact in pharmacy practice and student educational outcomes is needed. Depending on evaluation outcomes, there may be a need to expand positions, explore alternate models of EL delivery in Saskatchewan, or consider implementation within other faculties of pharmacy or health care professional schools if the model is successful.

6 STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Table 3: SWOT Analysis

Strengths	Weaknesses
• Responsibility for students remains with a small group of CIs, which allows for increased standardization of EL in the tertiary centres of Regina and Saskatoon. • Accountability for student learning under the CIs is with the College of Pharmacy and Nutrition, allowing for an educational focus. • The CI positions ensure a consistent point of contact for student activities within tertiary centres. • University-funded positions enable the SHA to maintain focus on patient care responsibilities.	• Accountability of the positions is outside the SHA and may not be patient-care focused. • Model variability between rural and tertiary sites may limit provincial standardization. • High student-to-CI ratios may limit student satisfaction with professional development, learning, and integration in the care team. • CI models may promote task-based approaches to care as opposed to patient-centred care. • CI models may impede student understanding of the role of a hospital pharmacist.

Opportunities	Threats
• Expansion of CI positions in Saskatchewan to support additional learning sites. • Development of a new model of EL that can be incorporated in faculties of pharmacy or other health care professional schools for oversight of multiple students. • Decreased financial responsibility enables SHA pharmacy department to make other investments, such as in patient care human resources.	• Inadequate outcome evaluation may negatively impact larger program outcomes such as feedback from employers and national board examinations. • Students' decisions to pursue hospital employment may be impacted if they receive ineffective education from the CI model. • Patient care and public safety may be impacted if ineffectual practical experiences are delivered. • High student-to-CI ratios are labour intensive and increase demand on these positions, which may lead to high position turnover.

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