Canadian Experiential Education Project for Pharmacy

Priority 2

Integration of the full spectrum of preceptoring models in experiential education

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List of Abbreviations

AACP-American Association of Colleges of Pharmacy
AFPC- Association of Faculties of Pharmacy of Canada
ELPD – Entry Level Doctor of Pharmacy Degree
CanExEd- Canadian Experiential Education Project for Pharmacy
CPhA-Canadian Pharmacists Association
CSHP-Canadian Society of Hospital Pharmacists
ExEd – Experiential Education
NAPRA-National Association of Pharmacy Regulatory Authorities
OEE – Office of Experiential Education
PEP-C – Pharmacy Experiential Programs of Canada
SC-Steering Committee
Universities:
- MUN – Memorial University of Newfoundland School of Pharmacy
- Dal – Dalhousie University College of Pharmacy
- U de M – Université de Montréal Faculté de Pharmacie
- U of T – University of Toronto Faculty of Pharmacy
- U of W – University of Waterloo School of Pharmacy
- U of M – University of Manitoba Faculty of Pharmacy
- U of S – University of Saskatchewan College of Pharmacy
- U of A – University of Alberta Faculty of Pharmacy
- UBC – University of British Columbia Faculty of Pharmaceutical Sciences

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I. Preamble

A. Project Context and Scope

The Canadian Experiential Education (CanExEd) Project for Pharmacy operationalizes the priorities identified in the "Project Detailed Plan to Enhance Pharmacy Experiential Education in Hospitals and Primary Care" (2013). This plan was the product of a 2012 multistakeholder workshop (1) convened by the Associations of Faculties of Pharmacy of Canada (AFPC) in response to the Canadian Blueprint for Pharmacy Initiative(2). The Canadian Blueprint for Pharmacy's mandate is to, "catalyze, coordinate and facilitate the changes required to align pharmacy practice with the health care needs of Canadians". Their vision for Pharmacy is described as, "Optimal drug therapy outcomes for Canadians through patient-centered care. The Blueprint for Pharmacy is a collaborative initiative, led by the Canadian Pharmacists Association (CPhA), to develop and achieve this vision for the future of pharmacy in Canada." The Blueprint identifies five key areas for action, one of which includes, "Education and continuing professional development" and sets out detailed statements concerning experiential education (ExEd):

- Ensure that core pharmacy curricula address the knowledge, skills and values required for future pharmacy practice
- Address challenges that affect the education, recruitment and retention of pharmacy educators and learning facilitators
- Increase the accessibility, quality, quantity and variety of ExEd learning opportunities

The CanExEd project is conducted under the auspices of AFPC. It maintains a national perspective in developing best practices with the aim of developing prototype initiatives facilitating the achievement of each priority. The project includes input and review by stakeholders in ExEd from each province and representatives from national advocacy bodies through the Steering Committee (SC) for the CanExEd Project (see Acknowledgements, page 2).

B. Project Objectives

The original priorities identified in the "Project Detailed Plan to Enhance Pharmacy Experiential Education in Hospitals and Primary Care" (2013) (1) were revisited in 2014 to ensure clarity and relevancy given the interval between authorship and the work commencing. The review was undertaken by the Project Manager and the members of Practical Education in Pharmacy in Canada (PEP-C), a special interest group of AFPC as well as the project's Steering Committee (SC) (see Acknowledgements). The Project Manager updated the priorities incorporating feedback from these consultations.

As a result of these consultations, two of the original priorities were removed. Priority #4: Integration of internship into experiential education program was felt to be out of date, as the majority of provinces had expressed commitment to integrate the internships into Faculty-administered ExEd programs. Priority #6 was considered to be of a jurisdictional rather than national issue. The remaining 8 were edited for relevancy and clarity. Table 1 provides comparison between the current iteration of the priorities and the original expression. The suggested order for addressing is included in the Original Priority column. The order of delivery for the second four priorities remains fluid at the time of writing.

Table 1: Priorities of the CanExEd Project

Current Priority	Original Priority
1. National approach to learning outcomes and corresponding assessments at each stage of experiential education	8. Development of a guide for year-by-year learning outcomes
2. Integration of the full spectrum of learner-preceptor models in experiential education	2. Development of models of experiential education
3. Best practice in preceptor development to establish/augment best qualities/abilities in preceptors	1. Development of a national preceptor development program
4. Description and promotion of the value learners add to host organisations and their mandate	7. Improved recruitment and retention of preceptors
Optimisation of preceptor recruitment and retention	3. Identification and promotion of how learners add value to host organizations
Promotion of experiential education to stakeholders (organisations, preceptors, colleges)	9. Promotion of experiential education and precepting

Technology utilization to enhance quality and capacity of learner placements	5. Enhance capacity and quality through technology
Characterisation of exceptional experiential education sites' best practices	10. Development of best practices for exceptional experiential education sites
Removed	4. Integration of internship into experiential education program
Removed	6. Improved funding for experiential education

C. Audience and Intended Use

Each of the 8 Priority Reports are reference documents for further development, implementation and evaluation of initiatives undertaken by all (individually or in national collaborations) Canadian university Faculties and Schools of Pharmacy and their stakeholders in ExEd. Canadian Faculties/Schools of pharmacy are at varying stages of implementing entry-level Doctor of Pharmacy (ELPD) degree programs. Those learning institutions already transitioned may place greater value on aspects of this report pertaining to measuring and benchmarking quality indicators and consultation on best practice as their programs evolve. Programs on the verge of initiating major changes to curricula may find value in the reports in their entirety.

Other professions and international pharmacy organisations may find instruction in the collaborative and research approaches employed in the project.

The reports are the centerpiece of the project. Further dissemination is expected in the form of research papers, conference presentations and multimedia products.

D. Previous and Upcoming Reports

This is the second in a series of reports to be delivered between 2014 and mid-2016. Each completed report is available at: http://afpc.info/content/canexed-reports

II. Introduction

A. Purpose of Priority Report #2

This report communicates the investigation and findings of the current state of ExEd in Canadian Pharmacy Faculties/Schools, best practices and recommendations to achieving best practice relating to CanExEd Priority #2:

Integration of the full spectrum of learner- preceptor models in experiential education

Context: Faculties of Pharmacy across the country are at various stages of transition from Baccalaureate of Science of Pharmacy (BSc Pharm) degree as the entry-to-practice degree to an entry level Doctor of Pharmacy (ELPD) degree. At time of writing, 4 schools had transitioned to the ELPD. The remaining 6 schools are expected shift to ELPD within the next 5 years. Implications of the transition are dramatic but pertinent to this report, include increased duration and number of ExEd placements per learner

The Canadian Council for Accreditation of Pharmacy Programs (CCAPP) stipulates the minimum standards for ExEd Programs across the country.

Table 2: CCAPP Criteria (3)

BSc Pharm Criteria	ELPD Criteria
Criterion 28.4a: The academic program leading to the Bachelor of Science in Pharmacy degree must include a total of 16 weeks (minimum) (640 hours) of practice experiences.	Criterion 28.4d: The academic program leading to the PharmD first professional degree must include a total of forty weeks (minimum) (1600 hours) of practice experiences.

Criterion 28.4b: For the Bachelor's degree, early and mid-program practice experiences must involve at least four weeks (160 hours) of learner placement in practice sites and may be supplemented with additional volunteer activities, service learning or other forms of community-engaged learning.	Criterion 28.4e: For the PharmD (first professional degree) program, early and mid- program practice experiences must involve at least eight weeks (320 hours) of learner placement in practice sites and may be supplemented with additional volunteer activities, service learning or other forms of community-engaged learning.
Criterion 28.4c: For the Bachelor's degree, a sustained period of required concluding practice experiences near the end of the program must involve at least twelve weeks (480 hours) of fulltime, learner placement in practice sites.	Criterion 28.4f: For the PharmD (first professional degree), a sustained period of required concluding practice experiences near the end of the program must involve at least twenty- four weeks (960 hours) of fulltime, learner placement in practice sites.

These changes to ExEd make it an opportune time to combine jurisdictional efforts to nationally determine how to best integrate novel or alternative learner-preceptor models in experiential education to meet the increased capacity demands of the curricula. (4)

B. Knowledge Translation Dissemination

1. Conferences and Meetings

Insert details

2. Multimedia

INSERT links once developed and available

3. Websites

Insert final report link on AFPC website

III. Priority 2: Integration of the full spectrum of learner-preceptor models in experiential education

A. Priority Description

The major goal of this Priority is to **optimise the number and quality of learner placements with preceptors at their practices using novel or alternative learner-preceptor models.**

There exists a wide range of learner-preceptor descriptions in experiential rotations. Some placement models may be appropriate for particular settings (e.g. institutional vs. community-based), whereas others more suitable for particular levels of learner training. Identification and characterization of the range of models are critical in helping educators to recruit and support preceptors and place learners appropriately according to their learning needs. Identification of various benefits and challenges associated with successful implementation of each learner-preceptor model will support these aims.
This priority focuses on the configuration of learner-preceptor (i.e. ratio and physical proximity) rather than characterising the emotional connection or ways learners can become extensions of the preceptor's practice through implementation of novel services. The discussion regarding learners adding value to a preceptor's practice is addressed in a future priority.

B. Research Questions

In order to address this priority, research was undertaken to determine current approaches, describe best practices and consider ways to achieve these best practices. The following questions were developed iteratively through the work of the project team and integration feedback from the PEP-C group and SC in order to address the goals of the priority.

1. What is the range of preceptor-learner models currently in use?
2. What are the best practices currently identified for such models, in terms of:
    A. Appropriate application (e.g. in institutional, community and primary care/ambulatory settings), and

   B. Skilled implementation
3. How may each of these models be best evaluated for effectiveness?
4. What kinds of novel preceptor-learner models (not currently in widespread usage) might benefit from greater inclusion within pharmacy experiential education?
5. What factors might impede or facilitate the use of such novel models of preceptor-learner partnering/grouping?

C. Methods

The CanExEd Project is a quality improvement initiative that uses systematic literature review and borrows methodology from the qualitative research realm. Findings from literature review (peer-reviewed and grey*) are integrated with combined deductive and inductive thematic analysis of stakeholder (ExEd faculty, learner, preceptor and site administrators) data.

1. Data Sources

- Peer-reviewed literature identified through database searches and interviewee referrals
- **Grey literature** from academia and policy-makers
- Semi-structured interviews with ExEd faculty at Canadian Faculties/Schools of Pharmacy and SC members
- Learner and preceptor focus groups
- Surveys to cross-section of Canadian ExEd preceptors and current learners
- Stakeholder feedback from advisory committees (SC and PEP-C) and end users of prototype products

2. Data Collection

Peer-reviewed literature
Searches for relevant literature from the last 20 years were conducted using established educational, science and health professions databases. Appendix A provides specific search strategies employed to identify relevant citations. Search terms used in the AGILE systematic review limited the results to institutional settings and searched individual health science professions literature. The CanExEd search was conducted approximately 2 years after AGILE and would have identified more recent articles on the subject snd used broader terms. AGILE did not search within the SCOPUS database and CanExEd did not search Google Scholar otherwise, the databases searched were identical. In addition to these searches, interviewees were invited to provide citations germane to the development of a national approach to learner learning outcomes and assessments.

Grey literature
Stakeholder referral and general internet search were used to identify pertinent documents.

Semi-structured interviews
The Interview protocol was developed to explore research questions related to Priority #2. The interview used semi-structured interview questions to guide discussion. Appendix B provides the complete interview guide. Interviews were iterative and emergent.
Interviews with key informants were conducted at the interviewee's convenience using audio and/or video capture technology. Informants were identified through AFPC's PEP-C group and the CanExEd steering committee. Interviewees consented to being recorded by signing, "Informed Consent for Interview Recording". Appendix C contains content of the consent form.

Learner and preceptor focus groups
Focus groups will be held at strategic points throughout the project. Results will be reported within this document as soon as they become available.

Surveys of learners and preceptors
The final report will include survey data from learners and preceptors on certain aspects of learner-preceptor models.

Stakeholder feedback
Draft versions of the report have been provided to the Project Steering Committee (SC) as well as the Practical Experiential Programs-Canada (PEP-C), a special interest group of AFPC and feedback and further findings have been integrated into the data and subsequent results of the final report for Priority #2.

Data Analysis

Peer-reviewed literature
Literature abstracts were reviewed for relevancy to Priority #2 and subsequently compared to the AGILE project's systematic literature review. Those citations included in the AGILE Project were not reviewed further as it would duplicate the existing work. Relevant articles not included in the AGILE Project were reviewed in detail and summarized using a structured data extraction guide (Appendix D). Articles referred to by interviewees were similarly reviewed and summarized by one of the research team.

Grey literature
Grey literature was analysed to identify relevant findings to this priority.

Semi-structured interviews
A single research assistant transcribed and two researchers reviewed the audio-visual interview data. Qualitative research techniques were used in the analysis. Specifically, interview transcripts were thematically analysed according to pre-determined subject areas to consolidate findings. Some new data-driven thematic areas were inductively identified as the analysis progressed. NVivo software (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 10, 2014) was used to organise and categorise segments of transcription.

Surveys of learners and preceptors
Will be conducted in late 2015.

Stakeholder feedback
Priority #2 report was presented to the PEP-C group on April 9th, 2015 and to the SC on April 16th, 2015. The meetings were recorded and accurate minutes produced and edits to the report have ensued.

Integrated Analysis of All Data
The research team met to examine data in its entirety with the overarching goal of answering the research questions (as per Section III B above).

D. Results

1. Process

Peer-reviewed literature
Five hundred and ninety-eight (598) abstracts were initially identified. Of these 70 were included in the AGILE Project and not reviewed. Remaining articles had duplicates removed and were then reviewed to determine relevancy to Priority #2. Appendix E lists the combined AGILE (70) and CanExEd (73) citations identified. Some of the citations were conference abstracts and unavailable at time of writing.

Grey literature
There was limited grey literature identified by stakeholders as important to this priority. The AGILE Project was recognised by multiple interviewees as particularly important and the Occupational Therapy Faculty at the University of Manitoba has a comprehensive set of guides for learners and preceptors undertaking various models of rotation (available at: http://umanitoba.ca/faculties/health_sciences/medrehab/ot/fwk_models.html). In addition, one interviewee was aware of a pairs model guidance document from Occupational Therapy at the University of Toronto that may inform the prototype section of the report.

Semi-structured interviews
Sixteen interviews were conducted between July and January 2015. Interviews were predominantly one-on-one with two exceptions where the interviewer interviewed 2 participants simultaneously.

- 13/16 interviews were with Canadian Academics (Dean =1, Experiential Educators =11, assessment expert =1) within Pharmacy Faculties. All Faculties were included with the exception of two.
- 1/16 was with a US ExEd expert (Texas Tech)
- 1/16 was a member of NAPRA
- 1/16 was with a learner

Interview duration ranged from 45 to 180 minutes. Long interviews were completed over 2-3 sessions. All interviews were conducted by the Project Manager and captured via audio and when possible, video.

Interviewees were very forthcoming in their conversations regarding ExEd and were keen to participate. None expressed concern or questions regarding informed consent for recording.

Learner and preceptor feedback via survey and focus group
Will be conducted in late winter of 2015 and will refer to findings in this report and to the prototype product

Stakeholder feedback
PEP-C meeting discussion was active especially regarding further direction on prototypes. All schools were represented with the exception of those East of Toronto. Faculties facing imminent changes were the most actively engaged in the discussion and U of T (having already transitioned) provided some insight into their recent experiences with implementing new models within the ELPD.

2. Findings

Best Practice as Described in the Peer-Reviewed and Grey Literature

INSTITUTIONAL PRACTICE
The published literature originates predominantly from institutional settings. The research pertaining to tiered models originates predominantly from Medicine as this has long been the default decades ago when physicians were urgently needed after World War II. Pharmacy educational literature is now beginning to include examples of tiered learning but OT and PT have been earlier adopters. Other health care professions educational literature, particularly physiotherapy and occupational therapy frequently describe 2:1 or 3:1 ratios of same-level learners being supervised by a single preceptor. In reviewing this body of literature, it was determined that the Advancing experiential learninG In institutional pharmacy practicE (AGILE) Project at the Faculty of Pharmacy at UBC as a single component of their project, completed a comprehensive review of this subject in 2014. AGILE employed common methods to those used in the CanExEd Project but on a provincial basis and with a wider mandate than just learner-preceptor models. UBC had urgent need of more institutional rotations as class size increased and the ELPD transition was near. Despite this overriding motivation, it was recognised that learning should not be compromised by the implementation of new models. The rigour of the literature search and stakeholder engagement methods were compelling factors in the decision to heavily borrow from the work of Michael Legal and the team at UBC in authoring this report.

AGILE Background: In 2012 the Faculty of Pharmaceutical Sciences at UBC embarked on the AGILE Project. This project was designed to engage with institutional pharmacy stakeholders in order to identify the challenges and potential solutions associated with the increasing number of pharmacy learners requiring experiential placements. Significant capacity challenges are anticipated in the institutional setting. The Faculty of Pharmacy increased enrolment from 165 to 224 learners in the Baccalaureate of Science in Pharmacy Program in 2011. In addition, the transition to the ELPD in 2015 will create additional capacity challenges owing to a doubling of the number of weeks of ExEd required by this program.

AGILE Project Methods and Results
The AGILE Project included a **systematic literature review** on learner-preceptor models. Appendix F contains an overview of the systematic review. The scope of the project included **stakeholder engagement and feedback** and as such, well over 200 health authority pharmacists from all BC health authorities and 50 pharmacy learners (including undergraduate Entry to Practice (E2P) learners, pharmacy residents and post-graduate Doctor of Pharmacy learners). Four main approaches were used to ascertain participants' views and perspectives (in the context of the need to expand rotation capacity in the institutional setting): site visits, interviews and focus groups, and electronic surveys.
A **mixed methods research** approach was used to analyze and summarize the findings. The project report summarizes wide-ranging stakeholder feedback and provides a series of detailed recommendations: http://agile-pharmacy.sites.olt.ubc.ca/files/2014/01/AGILE_Final-Report_December-2013.pdf. The recommendations outline a multi-modal approach to solving the challenges identified. Novel learner-preceptor models are just one of these potential solutions. For the priority #2 report a brief synopsis of the AGILE report findings pertaining to models are outlined below.

Table 3: Synthesis of AGILE Systematic Review: Learner-Preceptor Models

Learner-Preceptor	Most Commonly Cited Advantages and Disadvantages	Disciplines that commonly

Model		employ
1:1 Traditional Model (16 articles)	✓ Improves clinical competence of learners (7/16) ✓ Allows sufficient one on one time with preceptor (6/16) ✓ Easier for preceptor to assess and provide meaningful feedback than multi-learner models (4/16) x Increases preceptor workload compared to no learner (9/16) x Lack of peer support for learners (4/16)	Pharmacy, Physiotherapy, Occupational Therapy, Nursing
2:1 Paired Model of two learners of same level with one preceptor (28 articles)	✓ Shared knowledge between learners (20/28) ✓ Peer support and decreased anxiety (18/28) ✓ Increased sense of teamwork (16/28) ✓ Increased independence from the preceptor (15/28) ✓ Less stress and workload for preceptor compared 1:1 (13/28) ✓ More opportunities for discussions and feedback (8/28) x Competition between learners can be an issue (13/28) x Difficult for preceptor to assess individual learners (12/28) x Learner may feel that they lacked one on one time with preceptor (10/28)	Occupational Therapy, Physiotherapy
3:1 (8 articles)	✓ Shared knowledge between learners (6/8) ✓ Peer support and decreased anxiety (6/8) ✓ Increased independence from the preceptor (5/8) x Increases preceptor workload & paperwork (5/8) x Physical space limitations compared to 1:1 or 2:1 (4/8) x Learner may feel that they lacked one on one time with preceptor (4/8)	Occupational Therapy, Physiotherapy
>3:1 Facilitated Practicum or “Mother Goose Model” (10 articles)	✓ Shared knowledge between learners (5/10) ✓ Peer support and decreased anxiety (4/10) x Insufficient individual time with preceptor (5/10) x Increases preceptor workload & paperwork (4/10) x Learner clinical/professional development may suffer (4/10)	Nursing
2+:2+ Collaborative Group (20 articles)	✓ Unique learning opportunities (15/20) ✓ Peer support and decreased anxiety (12/20) x Difficult for preceptor to assess individual learners (7/20) x Role confusion (6/20)	Nursing, Occupational Therapy
1:2+ Shared Precepting (3 articles)	✓ Unique learning opportunities (3/3) ✓ Lots of attention and support from preceptors (2/3) x Learner anxiety with several preceptors (2/3)	Nursing, Occupational Therapy, Physiotherapy
1:‘0’ Inter-professional Preceptor (5 articles)	✓ Unique learning opportunities (4/5) ✓ Increases learner autonomy and independence (4/5) x Preceptor may lack discipline-specific knowledge (4/5) x Increases workload/stress for preceptor (3/5)	Occupational Therapy, Physiotherapy
Tiered Learner-as-Preceptor (10 articles)	✓ Decreases anxiety for junior learner compared to 1:1 (9/10) ✓ Professional/teaching development for senior learner (6/10) ✓ More diverse learning experience compared to 1:1 (7/10) x Increases workload for senior learner (5/10) x Confusion regarding learner roles by staff at site (4/10)	Occupational Therapy, Physiotherapy, Medicine

AGILE Preceptor Survey Results Pertaining to Non-traditional Learner-Preceptor Models

The Pharmacist Survey was deployed to nearly all health authority pharmacists in BC. There were 233 responses that constituted a 23% response rate.

Models used by preceptors in BC

- 90% of preceptors routinely employ the traditional one-to-one (1:1) model
- 26% routinely employ multi-learner placements (pairs or tiers)

- 10% routinely employ a tiered model (senior learner + junior learner)

Preceptors' perspectives regarding non-traditional learner-preceptor models

Multi-learner precepting (pairs or tiers)
- 60% of preceptors have never used this model before (they have only used one-to-one)
- 50% would be willing to use this model
- Most-cited concern with this model was that there would not be enough workspace for multiple learners – 56% of respondents selected this response

Pairs as the default (it was proposed that learners always be placed in pairs)
- 24% would currently be willing to receive pairs of learners as the default, and 53% would be willing if they received adequate support (a total of 77% would be willing)
- The 23% that were unwilling cited concerns such as:
  - Increased workload associated with an additional learner
  - Not confident in their own skills – "if I can't guide 1, I certainly can't guide 2"
  - Insufficient time to precept two learners

Tiered learning (senior and junior learners)
- 75% of preceptors have never used this model
- 46% would be willing to precept using this model
  - Most cited concern was insufficient workspace – 46% of respondents
  - Additional comments provided by respondents were mixed – some stated that the focus of rotations should be solely on learning, whereas others stated that a teaching role would enhance the senior learner's experience

Learners as extenders of service
- 70% of preceptors have never used this approach
- 34% would be willing to precept using this approach (least favoured non-traditional approach)
  - The most cited concerns were that respondents thought they (as preceptors) did not have the skills to participate in this approach (29%), and that learners did not have the skills to participate in this approach (26%)

AGILE Preceptor Focus Group Qualitative Results Pertaining to Non-traditional Learner-Preceptor Models

General Feedback that Affects Choice of Models
- There is a lack of space for teaching (e.g., where to have private discussions with learners)/counter space for learners; limited space for learners interferes with health care workers' duties (28)
- There is a lack of computers/terminals/Wi-Fi to access hospital/patient information (even when learners bring their own computers) (16)

Perceptions Pertaining to Specific Learner-Preceptor Models
- Multi-placements (pairs, tiers) are suitable models (10)
- Multi-placement models (pairs and tiers) could mean longer days for preceptors (8)
- Learners working in groups can support each other (8)
- Uncertainty about residents being able to teach/evaluate undergraduate learners without supervision (7)

Recommendations Pertaining to Specific Learner-Preceptor Models
- The tiered model of learning (i.e. teams with a resident, a post-graduate Pharm D and an undergraduate learner on rotation together) could be used (18)
- "Mother goose" model could be used for teaching basic skills/orientation to hospital work (14)
- Pair pharmacy residents with E2P learners, so resident teaches basic clinical skills/substitutes if preceptor is absent (12)
- Split rotation between multiple preceptors/team to teach (i.e. like nurses do) (6)
- Post-graduate PharmD learners must be able to teach residents and E2P learners (6)

- Teaching rotations should be incorporated into the curriculum of advanced learners (i.e. residents) (4)
- Two learners is optimal for multi-placements (3)

Feedback Pertaining to Program Design or Scheduling

- Longer rotations needed; optimal between 4 and 8 weeks for interested learners (20)
- Different models from other hospitals/programs/disciplines/provinces/countries (e.g., one year in a single hospital; rotations on second year; months at one institution) can inform local reforms (8)
- Staggering learners as learning model, well received particularly in small sites (2)

Learner Service and Extension of Patient Care

- Learners should provide some "labour" thus relieving workload from preceptors (22)
- PharmD learners should be able to take on preceptor's work (5)

AGILE Learner Focus Group Qualitative Results Pertaining to Non-traditional Learner-Preceptor Models and Peer-Learning

Perceptions about “peer learning” or “tiered learning”

- Peer learning viewed positively by learners (15)
- Working with peers is helpful/invaluable (i.e. promotes sharing of ideas) (11)
- Residents as preceptors, a well-received idea by undergraduate learners and residents (8) (opposite opinion 3)
- Learners of all levels are already being paired/grouped with other learners (7)
- Peer learning would lighten workload on preceptors (5)
- Tiered learning as a model is well-received (5)
- Post-graduate Pharm D learners and residents complement each other's learning (5)
- Post-graduate Pharm D learners as preceptors, a well-received idea by learners (5) (opposite opinion 2)
- Working with peers with different skills/strengths can be a meaningful learning experience (4)
- Tiered system could increase efficiency (e.g., first go to residents, then to the experienced preceptors) (3)
- Concerns about working with learners with different skill levels (e.g., discussion quality could be brought down) (3)
- Providing a fair assessment for individual efforts will be a challenge (3)
- Individual learning is still important to prepare for the workplace (3)

Recommendations about peer learning

- Pairs would need to be matched carefully (i.e. interests, styles) (4)
- The current assessment forms would need to be changed (2)
- Post-graduate Pharm D learners should act as preceptors for lower level learners (2)
- Preceptors will need to be trained on how to handle groups of learners (2)
- Implement tiered rotations in rural settings; learners could get expenses paid and work in pairs (2)

Other relevant feedback

- Longer rotations are needed (9)

Other Literature of Interest

Although not a preceptor-learner configuration, the use of Clinical Education Coordinators as a higher level of supervision has been studied in the Occupational Therapy (OT) literature. This layer of support for preceptors and students within a given institution and was found to have numerous benefits. Students experienced more flexibility on placement focus and timing, better preparation for practice, assistance for challenged students and increased supervision. The preceptors had better access to preceptor training, assured continual student presence (and therefore learner-learner handover so lessening orientation by preceptors), less responsibility for failing students and better access to Faculty-based experiential coordinators. (5) Interestingly, the 2009/2010 Hospital Pharmacy in Canada Report (n=134 respondents) ranked “Dedicated university/technical college faculty who would assist wit precepting students” as # 8 of 12 proposed enablers for expanding ExEd Programs in hospital. “Rotation coordinators/supervisors from faculties/colleges who would be based at, or regularly visit your facility” was ranked as #3 out of 12 (6).

Included within the body of literature describing configurations of learner to preceptor ratios is some description of staggering or overlapping of student rotations with the aim of more experienced students orienting and 'handing over' patient care to incoming learners. The overlap could be as short as days or as long as half the rotation (7) and could be used in traditional 1:1 models or in higher ratios of learner to preceptor.

There is some data within the medical literature that advocates for learners to be located within the same community of practice for multiple rotations in order to allow the learner to follow patients through every setting of care (from primary care through inpatient, rehabilitation, geriatric long-term care and palliative settings). Benefits to this longitudinal set of rotations include students exhibiting equal or better uptake of therapeutic knowledge and skills compared to learners that moved rotation locations, higher satisfaction with the learning environment, greater confidence in caring for patients as well as an augmented ability to provide patient-centered care. (8) The approach has been replicated within at least one pharmacy school and was found to be a viable model for students and preceptors as it simplified students' challenges of housing, commute and orientation. Maintaining the same group of learners and preceptors at the site facilitates collaborative learning, networking and professional relationships. Longer-term commitments to patients and research were evident with the onset of this new model. (9)
A call for innovation was made in 2012 by some leaders in Canadian hospital pharmacy practice that included the implementation of the longitudinal model of placements as well as peer and near-peer learning. These calls are reasonable given the supporting literature in existence (10).

Medical literature also indicates that senior learners (residents) are as important as attending staff supervisors in the learning of more junior (medical students) learners as indicated via questionnaires completed by medical students (11).

COMMUNITY and PRIMARY/AMBULATORY CARE PRACTICE

Published literature specific to non 1:1 models of supervision in community pharmacy practice is rare. What does exist provides some instruction for preceptors and their practices eager to implement new mutually beneficial learner-preceptor models.

Most of the literature describes the expansion of community pharmacy services into specific therapeutic domains such as geriatrics (12) or diabetes (13) and utilizing learners as extenders of service and ensuring the viability and sustainability of these patient care services. A future Priority report fully discusses mutually beneficial activities.

There is limited (one study w/o corroborating research) data that indicate remote collaborative model in long-term care facilities is as effective as having a pharmacist preceptor present (12). Interestingly, in this study, a community preceptor provides an institutional rotation.

The 3:1 model has been implemented where the goal was to use peer-assisted learning (PAL) in a community site in Calgary. Learners are carrying out the organisation's specialized patient care services however, results of this implementation have not been published. The purpose of the article was to highlight that collaboration with corporate community organisations results in beneficial alternative model implementation rather than to describe the model. (14)

The collaborative group model (2+:2+) was successfully implemented in community practice sites where learners operated a diabetes disease state management service 4 days/week and attended endocrine outpatient clinic 1/day per week. A different preceptor supervised each activity. (13)

A variation on the collaborative group model describes a dual preceptorship is described in 2 papers. The models consist of a community preceptor and faculty mentor. In the first design, the preceptor's role was to guide the learner and provide opportunities to practice pharmaceutical care while the faculty mentor conducted weekly discussion groups and monitored progress. (15) The default model in this Faculty was for the student to be on rotation the entire time with a faculty member so this was a lessening of faculty-learner contact. The success of this model was not described. In the second design, the faculty member was assigned a group of students. The students spent most of their time with their preceptor but would also meet as a large group with their faculty member for group activities and individually they would rotate through the faculty member's unique practice (16).

One instance of a tiered learning model within a nephrology ambulatory care pharmacy practice has been recently described in the literature (17)where a Post-Bacc Pharm D, a resident, a co-op student and a final-year BSc Pharm student were all at the same practice simultaneously. While the model was complex, it was feasible in a very specialised nephrology environment. Medical literature contains more numerous accounts of successful implementation of novel models of experiential education within ambulatory care settings.

Currently in Canada

According to ExEd Faculty the default model of pharmacists providing clinical rotations for learners in Canada at the time of writing is 1:1 learner to preceptor ratio where learners work along-side a practicing pharmacist with the aim of meeting the learning objectives set out by the ExEd rotation while simultaneously amassing the knowledge and skills to eventually fulfill a current similar role to that of the preceptor. This model that has historically served learners and their preceptors is now under pressure with the advent of the ELPD across the country that requires greater number of learner placements over a longer duration. The minimum standard until now has been to provide a final-year learner with 2-3 different categories (community and institution along with a possible research or administration) of rotation over the span of 12-16 weeks. Standard for the ELPD is to provide a wide range of practice types over the span of 40 weeks in the final year of study. Table 2 (above) includes the CCAPP standards.

Interviews with ExEd academics (the PEP-C members) suggest implementation of novel or alternative preceptor-as-educator models are driven by distinct ExEd goals. **Institutional** settings are facing pressure to accommodate increasing number of learner placements from academic programs. **Community** pharmacies are challenged to ensure learners are provided opportunities to develop and refine the full-range of expanded scope of practice and to initiate new services that optimize patient health as well as the sustainability of new services. Finally, **primary** / **ambulatory care clinics** are currently, capacity-wise small but important practice setting where the challenges are expected to include both numbers of learners in the practice setting along with identifying practice-expanding strategies that thrive on learner presence in the site. As uptake of this practice setting increases across the country, potential for learner capacity will also expand.

Learners also drive integration of alternative models as they express the benefits to their wellbeing and learning of having other learners simultaneously present on rotation and the challenges of sufficient contact and time with their preceptor.

The PEP-C group interviews indicated that there was a familiarity in non-traditional/alternative learner-preceptor models. The table below details those models interviewees described during their individual interviews as either being used in their program or a program known to them.

ExEd faculty has rarely attempted evaluation of non-traditional/alternative models but interviewees had some knowledge of published literature exploring their effectiveness. When asked how they envisioned the quality evaluation occurring with these newer models, surveys were identified as being potential measurement tools. Interviewees did not identify focus groups or comparative assessments of learner performance across different learner-preceptor models as quality measurement tools.

Table 4: Synthesis of ExEd Faculty Learner-Preceptor Models

Learner-Preceptor Model	Description	Application Considerations
2:1 Paired Model	Two learners assigned to a single pharmacist preceptor to learn for the duration of the rotation. Variations on this model include: • Continuity or handing-over models where the outgoing learner spends some time with the incoming learner to hand-over the care of patients • One returning and one new learner model	Has potential in all types of clinical education settings and is most frequently used alternative model in the Faculties of Pharmacy across Canada. Variations result in learners with differential abilities working together, which in some instances can be challenging for a preceptor to administer and assess learner ability. It can also lead to discouragement of a less-familiar learner as comparisons in performance might occur.
>2:1	Multiple learners (4 learners but 3-5 could work) work together under the supervision of a pharmacist preceptor or two to initiate or maintain a pilot clinical service. The service may be related to expanding the pharmacists'	Community pharmacists in Canada may find this model particularly useful for achieving momentum for implementing new services and Faculties recognize the benefits to learner learning inherent in the immersion of learners in community practice fulfilling the full scope of

	scope of practice and may have research potential.	practice. The benefits of the paired model are present the pilot service. ExEd programs will be expected to provide adequate learner rotations to ensure the viability of the service year-round and may be asked to provide overlapping rotations to ensure continuity of care.
Mother Goose	Pharmacist preceptor supervises a group of learners with a limited set of learning objectives such as orientation to the site, basic patient assessment, organizational structure, medication distribution pathway, patient safety programs, etc. that require basic skill acquisition rather than advanced clinical thinking and judgment.	Best employed in EPE rather than APPE rotations and in settings where space allows. Community settings not likely conducive to this approach.
1:2+ Shared Precepting	Two pharmacist preceptors supervise a single learner.	Model is useful if a pharmacist is not full-time at a site or has distributory duties that preclude full-time clinical work. The challenges of sharing a learner such as variable expectations and inconsistent formal assessment must be considered and surmounted.
1:'0' Inter-professional Preceptor	To date, pharmacy learners have only rarely (generally post-Baccalaureate Pharm D) been assigned rotations with physician preceptors within the primary/ambulatory care settings. Learner-led rotation establishment where the learner actively recruits their own preceptor may be conducive to using this model.	Appropriate for advanced learners who have a special interest in the given area of practice. Could employ other HCP in carefully chosen scenarios.
Tiered Learner-as-Preceptor	Pharmacist preceptor supervises a senior learner (possibilities: 4th year APPE learner, post-graduate pharmacist such as a resident or post-graduate Pharm D or Masters learner) who in-turn provides guidance to junior learner(s). The senior learner interacts more directly with the junior learners than the pharmacist preceptor	Literature describes this model institutional settings but not community. Community and ambulatory care settings may have space issues that preclude implementation of this model. There is limited use of this model across Canada seemingly due to the logistical challenges with getting multiple levels of learners on site simultaneously. Appetite is present in ExEd programs it but only with willing (and highly experienced) preceptors. Duration and dates of rotations require careful consideration as the layering or staggering of placements must be coordinated.
Remote Collaborative	Learner is assigned to a site that does not have a pharmacist preceptor physically present. The model is described in Occupational Therapy (OT) literature and has been piloted in BC where learners were assigned to long-term care facilities (12). Specially trained community preceptors were responsible for guiding learners but while onsite, nurses and other HCPs would guide the learner to some extent.	Suitable for advanced learners (APPE, residents, Masters). Requires significant training of preceptors if new therapeutic area as well as to educate/train preceptors on the logistics and techniques required for a successful rotation. The model may be useful for establishing new community pharmacist services. Practically, categorization of rotation as institutional or community would require discussion

Considerations for Implementation of Novel/Alternative Learner-Preceptor Models

ExEd faculty cautioned against implementing more than one novel model simultaneously within a jurisdiction. Gradual implementation of one to two selected models allows for adaptation on the part of participants and smaller-scale testing before scaling up promotion and education efforts. Models should be selected based on the needs of the jurisdiction and Faculty, evidence and palatability.

According to the PEP-C group, implementation of the identified models must address some key considerations:

1. *Length of rotation:*

- Post-Bacc Pharm D delivered rotations of 4-5 weeks duration. This may be too brief for ELPD rotations but 12-week rotations result in less diversity of experience. The optimal duration appears to be between 6 and 10 weeks.
- Must balance the benefit of longer duration benefitting challenged learners or learners in challenging rotations who require more time to achieve the learning outcomes of the rotation with the detriment of exposure limitations on the number of different therapeutic areas and practice styles.
- Institutional sites want learners for longer rotations to maximize the opportunity for learners to contribute independently and meaningfully to patient care. Learners can achieve more patient follow-up in longer rotations.
- Performance assessment reliability is best achieved through multiple assessments using the same assessment tool. This means that a learner receiving a passing grade from 3 different assessors is more likely a true passing performance than a single preceptor assigning a passing grade. More rotations, learner assessments and assessors result in better reliability
- Administrative tasks such as police checks, immunization tracking, insurance, site agreements, confidentiality agreements, orientation sessions are required each time a learner changes rotation site. The use of rotation block scheduling allows learners to experience multiple therapeutic areas but also avoids the repeated administrative burden of learners frequently relocating to new sites.

2. *Geographically remote rotations:*

- May pose challenges for learners who need to find accommodation and transportation. Pairing learners at a site may help learners manage the transition
- Conflict of interest in areas with low population density where learners may be inadvertently assigned to practices with family members in positions of authority

3. Demands on preceptors and their practice sites:

- Budgetary constraints result in limited pool of time for patient care and teaching in most sites
- Physical space (especially in community and ambulatory care/primary care sites) results in capped numbers of learner placements in highly desirable practices. The use of remote collaborative model may partially surmount this barrier.
- Infrastructure (computers, work surfaces) may be aging or non-existent but with financial assistance and expertise from Faculties, it may be possible to establish solutions to infrastructure limitations
- Dialogue at all levels of academia and practice administration is required to facilitate the willingness of all stakeholders to uptake alternative models and for the approach to not be perceived as forced or unreasonably demanding. The relationships between academia (specifically ExEd programs) and their preceptors/practice sites have been cultivated over the span of many years and these relationships should not be placed at risk by insisting these models be implemented.

4. *Regulatory Bylaws:*

- Some jurisdictional regulatory bodies stipulate pharmacists may supervise a single learner at a time
- Some regulatory bodies insist that pharmacy learners be supervised by a pharmacist preceptor and preclude other registered health care practitioners from the role

5. *Participant Guidance and Education:*

- Educational and promotional efforts delivered at the site would induce uptake of alternative models
- Written guides for learners and preceptors engaging in alternative models should provide evidence to support the given model, define the relationship and prescribe effective approaches to implementing the model.
- Quality assurance data should be provided to participants to assure them of effectiveness and safety of the model. It may be instructive to include learner and preceptor statements of the key factors to success were in their particular alternative model rotation.
- Learners should receive training and orientation to their respective role (senior vs. junior learners in the case of pyramidal or co-learner in the case of paired model) within the rotations
- Materials should provide education in preparation for, conducting (facilitating transitions between overlapping learners, feedback and assessment, strategies for overcoming associated challenges) and evaluating these rotations.
- Faculty presence at the practice site (either continually or at least regularly) ensures the quality of the rotations (no matter the model) and indicates a high level of investment and commitment on the part of the Faculty in ExEd and those responsible for teaching in the field.

6. *Sustainability:*

- American ExEd programs have been using some of these models for many years. Anecdotally, preceptors who were taught using alternative models exhibit high levels of willingness to precept their learners using these approaches. By introducing a generation of learners to alternative models in Canada, the use should be perpetuated, as learners become preceptors.
- Resources will be required to ensure continual measurement and communication of teaching and learning outcomes to stakeholders. Identified issues and solutions should be communicated to stakeholders so that the model remains viable.

Interviewees indicated implementation of new models was desirable before their respective curriculum transitioned to ELPD so that preceptors and sites could be introduced on a smaller scale to alternative configurations of rotations. The urgency was felt more so for institutional sites but a few participants mentioned the known benefits to learners in terms of peer-assisted learning as a compelling reason to also integrate new models into community and primary care settings. Participants saw this report as an instructional resource for:

1. Determining what models are in existence
2. Selecting models for implementation
3. Implementation process
4. Learner and preceptor orientation presentations and how-to guides for particular models
5. Measuring the quality outcomes of these new models (in comparison to traditional 1:1 models)

C. Discussion

1. Interpretation

The dominant learner-preceptor model in Canada is the 1:1 learner-preceptor model. It has been estimated that this model is used in the inpatient setting about 80% of the time. The reasons for the dominance of this model are multiple, including historically small numbers of learners involved, the evolution of the profession from a trade where the master-apprentice model is common and the lack of an existing culture of using different models. In community and primary care practices, space limitations often preclude having more than 1-2 learners simultaneously.

It has been proposed that adopting novel learner preceptor models may be useful to address some of the challenges related to capacity and increasing pressure on experiential education. Greater amounts of ExEd in ELPD are a major driving factor. Some programs have also increased enrolment.

Although the use of the 1:1 model remains commonplace there are several misperceptions about it. Some believe that it is the “gold standard” for providing maximal support for learners in the experiential setting. A systematic review of learner preceptor models in OT and PT concluded that in fact there was no evidence that one model was superior to another. In fact a major disadvantage of the 1:1 model is the lack of peer-assisted learning.

Evidence and experience using novel/alternative models in non-institutional settings is limited and the drive for use is weak. However, there may be important (similar to those seen in institutions) learner experience benefits to implementing non-traditional 1:1 models.

Effectiveness: The paired 2:1 model and tiered models have the best evidence (multiple accounts in peer-reviewed articles) to support their implementation within institutional settings based on literature originating in OT and PT (paired 2:1 model and tiered) and medicine (tiered model). If these models are promoted and adopted, it should be done so in conjunction with a comprehensive quality assurance measures and publication of the findings. A comparative study of the intervention group and control group will provide evidence that prior research on the models in other fields is applicable to institutional pharmacy. Comparisons between these 2 models have not been published. The Mother Goose model would not be expected to provide the same effectiveness as a lower ratio model especially to APPE students. It may be appropriate for EPE 1 and 2 students though. Other models have scant evidence (generally small cohorts or individual rotation accounts) for effectiveness due to the infrequency of their use.

Efficiency: The Mother Goose model would be the most efficient way of augmenting rotation numbers in an institution and would be advisable for EPE-1 or 2 students just coming into institutional practice for the first time however lack of effectiveness for advanced learners precludes its use in APPE rotations. The shared student model has the least benefit in terms of efficiency as it takes at least 2 preceptors to care for one student. The 2:1 paired and tiered models have approximately equal efficiencies in terms of student through-put however, the tiered model requires much more administrative time and effort to establish the presence of multiple levels of learner. As sites experience consistent presence of residents, post-graduate Pharm D's and APPE students alongside EPE 1 and 2 students, the use of the models may become commonplace and equally or more efficient (depending on the number of learners) compared as the 2:1 paired model. Community sites' only possible tiered configuration would be APPE students with EPE 1 and 2 students until community residencies are offered. In summary, at time of press, the 2:1 paired model appears to be the most efficient model available to participants and Faculties.

Challenges to wide-scale implementation of these attractive include uncertainty or misconceptions on the part of preceptors, learners and practice sites, and resources needed to implement the initiative. No model included in the report is absolutely contraindicated however, other alternative models such as the 2+:2+ (Collaborative Group), 1:2+ (Shared Precepting), 1:'0' (Inter-professional Preceptor) and Remote Collaborative are associated with unique factors that require further training for preceptors and monitoring on the part of ExEd and may only be desirable in particular and infrequent scenarios.

2. Limitations

The work encompassed here is applicable to the Canadian environment and weighted heavily toward British Columbia's experience with implementing the paired model as the default model for institutional rotations. Future stakeholder engagement in the form of focus groups and surveys on a national level will confirm or refute the applicability on a national scale. This report is delivered at a unique point in time when pharmacy practice and pharmacy education are evolving and the findings may not apply in a future time of stability. The published evidence, and anecdotal experience of the PEP-C group would indicate findings do not apply to non-institutional settings.

3. Recommendations and Priority #2 Prototype

Major Recommendations:

1. Sites will have varying abilities and preferences for novel models of learner-preceptor models and therefore, conversations with each site are advisable to allow for informed decision-making on which models are most desirable in their practice settings
2. Champions for each novel model should be identified and engaged in development and delivery of promotional and educational tools for student, preceptor and education/professional practice coordinator audiences.
3. The **2:1 paired, tiered and 1:2 co-preceptorship (1 student: 2 preceptors)** should be the focus of early prototypes with the other models (such as overlapping students, remote collaborative, interprofessional preceptoring) being addressed at a later date (they will have less impact in terms of efficiency)
4. Robust quality assurance indicators must be established to measure the efficacy and efficiency of the models within institutions currently engaged in the 2:1 and tiered models.
5. Pilot projects are needed to research whether the benefits of these models also extend to community settings. Community pharmacy leaders through surveys and focus groups should be engaged in discussions surrounding how to best implement these research pilots in strategic nation-wide settings.
6. A comprehensive evaluation protocol will indicate whether the pilots are a success and whether the models should be expanded to other community sites.
7. To ensure the success of these pilots, resources such as preceptor support networks, change management specialists, model experts from OT, PT, Nursing and or Medicine, funding, community pharmacy researchers and program evaluation specialists should be identified, engaged and remunerated for their work.
8. A working group should be struck and charged with ensuring an annual cycle of quality improvement occurs on the front of learner-preceptor models (both institutional and community)
9. Primary/Ambulatory care practice leaders should be invited to discuss the potential for best practice to be similarly implemented in these settings as they are recognized as desirable learning environments that should benefit from having optimal numbers of students.

Decision support for selecting novel models

Three questions inform the approach to the integration of novel configurations of learner-preceptor models. Is the goal to:

1. *Increase rotations of a given type (usually institution or primary care)?*

The 2:1 paired model is the preferred model as it has evidence to support and any preceptor can implement it in the practice setting with some support from the ExEd program. Other models such as the tiered model can also be considered on an ad hoc basis where the preceptor is experienced and looking for a new challenge. Tiered set-up is only possible where a junior and senior learner is present simultaneously at the practice and therefore logistically is more difficult.

2. *Implement best practice with respect to learner-preceptor models?*

The 2:1 paired model is gaining ground in the literature and reality as providing benefit to the learner and the preceptor as compared to the traditional 1:1 within institutional settings. Implementation in community settings should be embraced but accompanied by careful outcome measurement with respect to benefits and detriments to the participants. Tiered model use would be expected to convey similar peer-assisted learner benefits to as compared with the paired model however with the hierarchy of learning, there is likely a greater potential for the senior learner to be seen as a mentor by the junior learner (11). Implementation of some training or support for senior learners in a mentoring capacity would be advisable.

3. *Gain/maintain/expand access to a cutting edge/high quality preceptor/practice setting that precludes a traditional 1:1 model?*

Consider any of the models described paying particular attention to the individual preceptor needs and learner abilities and needs. The geographic location of the preceptor may require remote supervision or non-pharmacist supervision. The employment status may require shared precepting.

Implementation Plan

ExEd Programs (with the support of their Faculty) should identify at least 2 years in advance what strategies they are interested in using to increase capacity and/or implement best practice with respect to learner preceptor configurations. The early start is required if a gradual expansion is required given that the last of the BSc Pharm rotations end in for example, April, 2016 and APPE rotations start in May, 2016. Regardless of the model being promoted, the following flow chart provides an overview of the steps and timeline to achieve the implementation and sustain the model. The chart works on the premise that the program is aiming to begin using a given model during the final year of the BSc Pharm degree (January, 2016) and expand the use of it in the first APPEs (May 2016) within the new ELPD curriculum.

Table 5: Timeline of Steps for Wide Implementation of Novel/Alternative Model

Date	Step	Description	Notes
September, 2015	Decide	Select single novel learner-preceptor model for piloting Determine quality outcome measurement strategies	With the input of faculty members, estimates of Expected Benefit: Anticipated Risks: Resources required:
October-December, 2015	Prepare	Develop (if not already): • Promotional materials: live and recorded sessions outlining the model, research to support, challenges to implementation and invitations to participate • Educational materials: live presentations and written preceptor and student guides on 'how-to' use the model in practice • Quality outcome measurement protocol and tools Promote:	Adoption may be a gradual process that begins with conversation and progresses to negotiation before a facilitated initiation. As more sites and preceptors implement a given model, a critical mass is achieved and champions emerge that increase further uptake.

		Conferences, webcast, site visits to gain commitment from key participants Invest: Practice sites require expertise (such as faculty facilitators on site) or infrastructure to implement novel models	
January-April, 2016	Implement	In the penultimate BSc Pharm rotations Collect quality outcome data	
May-July 2016	Measure	Analyse quality outcome data to evaluate (ideally in comparison to traditional model): • Learner learning outcomes • Learner experience • Preceptor experience • Site administrator feedback • ExEd faculty experience	Can be achieved using survey items and small focus groups
September 2016	Integrate Improvements	Make adjustments to the process for expansion in the final year of BSc Pharm rotations and the first year of APPE (ELPD) rotations	
October 2016	Share	Bring findings to the PEP-C group and publish research completed	
October-December 2016	Prepare	Promote: Conferences, webcast, site visits to gain commitment from more sites. Present the findings from the pilot implementation. Educate: Learners and preceptors through preceptor training sessions and inclusion of written guides (or links to) in syllabus Invest: Practice sites require expertise (such as faculty facilitators on site) or infrastructure to implement novel models.	
January-April 2017	Implement	In the final BSc Pharm rotations	
May 2016 – April 2017	Implement	In the inaugural APPE (ELPD) rotations. Collect quality outcome data from APPE rotations	
September 2016	Measure	Analyse quality outcome data to evaluate (ideally in comparison to traditional 1:1 model): • Learner learning • Learner experience • Preceptor experience • Site administrator feedback • ExEd faculty experience	Can be achieved using survey items and small focus groups
October 2016	Integrate Improvements	Make adjustments to the process for expansion to more APPE (ELPD) rotations	If institutional placements uptake is good, consider focus on community placements uptake
November 2016	Share	Bring findings to the PEP-C group and publish any research	
January-April 2017	Prepare	Promote: Conferences, webcast, site visits to gain commitment from more sites. Present the findings from the pilot implementation. May wish to include a statement on rotation request forms suggesting that a given configuration of learner: preceptor is encouraged based on educational research and experience within	

		the program Educate: Learners and preceptors through preceptor training sessions and inclusion of written guides (or links to) in syllabus Invest: Practice sites require expertise (such as faculty facilitators on site) or infrastructure to implement novel models.	
May 2017-April 2018	Implement	In the 2nd iteration of APPE (ELPD) rotations. Collect quality outcome data from APPE rotations	

Promotional strategies aimed at preceptors and education/professional practice coordinators

Based on the experiences of OEE coordinators across Canada, a considered, personal and conversational approach to preceptors and their administrative support (education coordinators in institution, professional practice leads in pharmacy conglomerates, owners and managers of independent pharmacies and team leaders within primary care/ambulatory care clinics) is required to derive buy-in of sites to using novel models of experiential education. ExEd leadership should prepare for opening dialog by familiarising themselves with the literature (as contained in this report) and speaking with champions of various models in their own jurisdiction.

Initial conversations with administrators should be undertaken with the following objectives in mind:

1. The receptiveness of the site to implementing certain novel models
2. Establishing opportunities to meet with preceptors who would potentially implement the model
3. Type of training might be preferable to prepare preceptors and their support staff
4. Determine what other support might be needed such as new staff positions, infrastructure, expertise
5. Timeline for implementation
6. Willingness to measure quality outcomes and contribute to publishing findings

Subsequent meetings with preceptors should be undertaken with the following objectives in mind:

1. Receptiveness of preceptors to moving to a new model of preceptor-learner configuration
2. Illustrating general benefits and challenges to the given model/s
3. Receiving general feedback regarding ExEd.
4. Type of training preceptors might prefer on this front. If some developed, perhaps preview the material here
5. Discussion about quality outcome measurement
6. Establishing commitment and timeline for further contact, training/information and commencement of the model

Learner and preceptor how-to guides, presentations and discussion groups

Once buy-in is established, how-to guides for students and preceptors should be deployed. ExEd programs must provide participants with appropriate curated content pertaining to the model currently being implemented in written form and in live/recorded presentations. Presentations and discussion guides offer an opportunity to gain participant commitment through two-way dialog between presenter and audience and through a dissemination of research and experience with the models.

Presentation and discussion guide content is being developed for this priority. The work of Ladyshewsky (18) regarding collaborative learning will be informative in the necessary step of establishing administrative support and training of learners and preceptors

The AGILE Project has generously allowed the inclusion of the Paired Placement in Experiential Education: A guidebook for Practice Educators (Appendix F) within this report. The format and content of this document may be used to structure similar guidance for other practice models. A student version of the guidebook is currently being developed. The structure

for each of these documents could be used as a template for developing guidebooks for the other two models of high-priority over the coming months. Due to their length, guidebooks would probably not be included entirely within syllabi but would be referred to within presentations and syllabi of each experiential course.

In addition, Texas Tech School of Pharmacy has supplied a document, 'Innovative Teaching Model for Hospital Rotations' that operationalizes a model of 2 EPE and 2 APPE students completing their ExEd rotations at the same location. The schedule (Appendix G) may not be reflective of the focus for Canadian rotations but it serves as a possible template for illustrating how different levels of students could be accommodated and the junctures where near peer teaching can be expected.

The short guides developed by the University of Manitoba's faculty of Physiotherapy are alternative documents that could inform the development of similar guides for pharmacy participants.

Quality outcome measurement

Macroscopically, measuring indicators of graduates' competency is necessary for licensing bodies charged with protecting the public, governments, employers and the profession of Pharmacy. Mesoscopically, learning institutions interest in quality measurement for a myriad of reasons not least of all, funding of programs and competition for learners and research grants. While the literature pertaining to quality is geared to macro and meso levels of quality measurement, it is instructive to consider principles that might apply to the microscopic level of ExEd.

Identifying and selecting quality indicators at this ExEd level should focus on effectiveness (19) (a combination of efficiency and quality) rather than simply efficiency. To this end, quantitative information regarding the number of novel model placements obtained will have limited use in isolation but is valuable in conjunction with information on how well the new rotation model served learners, staff/faculty members, preceptors and the organisations and patients they work for and with. Quality indicators aligned with the learning institutions' mission facilitate discernment of measures that matter (19). There may be benefit to distilling a mission statement for ExEd on a national level to ensure wise selection of indicators.

Quality indicators can be categorised in two different ways:
A. Indicators may be learner (satisfaction levels, employability, cognitive development), faculty/preceptor (assessment validity and reliability, teaching effectiveness, publications) or staff/faculty (placement matching, monitoring of performance)-related (19).
B. Indicators can be input (numbers of learners, staff/faculty, preceptors, electronic platforms to deliver the ExEd program), output (number of rotations completed, assessments filled out, number of return preceptors and number of learners who take on a precepting role) or teaching/learning as it effects cognitive development (breadth and frequency of learner exposures to therapeutic areas, tracking change in learners' patient volume and complexity from EPE 1 to the final APPE rotation, determinations preceptors' teaching abilities and conduciveness to learning at rotation sites) in nature (20). It is this final category of performance indicator that is arguably the most telling and least well-defined (21) Pharmacy is advantaged to this end by having a well-developed national set of educational outcomes and professional competencies that are the foundation for measuring whether programs actually produce practitioners that fulfill these abilities and competencies held as requisite for the profession.

According to the association of Universities and Colleges of Canada (22), true performance indicators meet 7 criteria. In selecting short-term performance indicators from the table below, these 7 criteria should be considered. It is not necessary to implement measuring of all indicators rather a select one or two should be implemented and periodically reviewed to determine whether the measure continues to provide useful instruction, is feasible and valid. Collecting and examining outcomes over time allows for identification of trends and/or understand whether changes to the program have had meaningful implications to participants. Measuring a few core indicators in each jurisdiction allows for comparison between programs. These comparisons should be confidential and only shared within the OEE as a means for improvement. There may be mechanisms for providing blinded benchmarking so that each OEE receives their data highlighted against other anonymised OEE results.

1. Goal or result oriented (related to mission statements)
2. Include a reference point (a target, performance over time or comparison across institutions)
3. Provide strategic information about the condition or functioning of an institution
4. Evaluate (assessing and judging)
5. Are strategic, specific, policy-oriented and issue-driven
6. Connect outcomes to structure and process, taking inputs into account

7. Purposed for improvement, enhancement and positive reform

The table below provides a selection of indicators and measurement tools that may be utilised for this Prototype (and possibly others) during the pilot and larger scale implementation stages. Once selected, changes to the tools should only occur after careful deliberation as changes weaken the ability to compare over multiple years and between multiple programs. Further research and engagement of experts regarding best practice for program evaluation of ExEd is imminently required.

Table 2: Short-Term Performance Indicators for ExEd (23)

Indicator	Measurement Tool	Possible Item Applicable to this Priority	Focus
Differences in achievement levels during rotations where new model is used vs traditional 1:1 model	Final Learner Assessment	As per the final assessment form domains	**Learner**
Impressions of educational experience within rotations	End of rotation learner evaluation of ExEd Program, preceptor teaching and site conduciveness to learning	Evaluation survey will require a question to discern which learners and preceptors were using a novel model and those using traditional 1:1 model so that the groups can be compared.	**Learner OEE Preceptor Learning Site**
“ “ “ “	Midpoint and final rotations point learner focus group and preceptor/practice support focus group	Discern early (at midpoint) and eventual improvements could be made to the models in terms of preparing and functioning within the model	**Learner and preceptor and site**
Contribution to developing and sharing best experiential education practices	Number of publications and presentations		**OEE (perhaps in conjunction with Preceptor/ Learning Site)**
Impressions teaching in ExEd rotations	Rate of preceptors re-engaging in novel model use annually	Are return rates significantly different for preceptors using the traditional model vs. novel model?	**OEE**
Capacity Ratios (24)	Records of number of placements established divided by number of placements needed for each ExEd course and for each type of rotation (community, institution, ambulatory, research, administrative etc.)	n/a	**OEE**

Table 3: Long-Term Performance Indicators for ExEd

Indicator	Measurement Tool	Possible Item	Focus
Former learners support ExEd	Rate of former learners using alternative models		**OEE**

D. Conclusion

Novel models of learner-preceptor configurations are infrequently employed across the country at this time. Rare instances of higher ratio (2-4 student :1 preceptor) are seen in community and institutional practice. Tiered models are even rarer and occur only in institutional settings. The traditional model of 1:1 learner-preceptor ratio while time-tested and common in Canada, should be challenged by the practice of multiple learner: 1 preceptor ratio models. The paired model is of particular interest as it conceivably doubles the number of learners present at a site (capacity generating), reduces the amount of time investment in terms of supervising by the preceptor, may improve learner and preceptor experience and is able to be used by experienced and novice (with support) preceptors. There may be variable ability to implement certain models of rotations. For instance, in ambulatory care, there may be physical space issues that impede multiple student presence. Ambulatory care pharmacists should be engaged to try and surmount these types of barriers. The broad implementation of this (or any) novel requires one to two years of preparation in advance of ELPD APPE rotations and careful promotion, communication, implementation and quality assurance strategies. Effectiveness indicators should include comparative statistics examining student performance levels, student and preceptor satisfaction levels tools developed and numbers of preceptors and former students that repeat usage of these models.

Upcoming work will focus on developing suites of promotion, education and quality assurance tools to increase uptake and effectiveness of the 2:1 (or 3:1) paired model, and tiered model. Co-preceptorship model although not novel and certainly not viewed as ideal, will receive attention in terms of improving effectiveness for learner and preceptor.

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