Canadian Experiential Education Project for Pharmacy

Priority 3: *Best practice in preceptor development to establish/augment best qualities/abilities in preceptors*

Part 2 of a 3-Part Series:

Evidence and theory influencing design and implementation of a national preceptor development program

Prepared by:
Katrina Mulherin, BSc Pharm, Pharm D
Craig Cox, Pharm D
Sheila Walter, BSc Pharm
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Co-Authors	PEP-C (Pharmacy Faculties/Schools/Colleges)	Steering Committee Members (Organisations)
	Wanda Spurrell (MUN)	Denise Carpenter (NPAC, formerly CACDS)
Katrina Mulherin (U of T, AFPC)	Harriet Davies (Dal)	Margot Priddle (NAPRA)
Craig Cox (Texas Tech, CanExEd Steering Committee)	Daniel Kirouac (Laval)	Ray Joubert (NAPRA)
Sheila Walter, (U of A)	Ema Ferreira (U de M)	Phil Emberley (CPhA)
	Andrea Cameron/ Annie Lee/ Doret Cheng/ Certina Ho (U of T)	Moira Wilson (CPRB)
Research Assistants	Samantha Yau/ Anthony Miller (U of W)	Amber-lee Carriere (CAPSI)
Nadine Ijaz, PhD Candidate, U of T	Kelly Brink (U of M)	Jason Howorko (CSHP)
Wilson Cheng, Pharm D Candidate, U of T	Shauna Gerwing (U of S)	Harold Lopatka (AFPC)
Alysha Prata, Pharm D Candidate, U of T	Ann Thompson/ Michelle MacDonald/ Cheryl Cox (U of A)	Chantal Pharand (Council of Deans)
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		Ann Thompson (PEP-C)
		Harriet Davies (PEP-C)

Executive Summary

Introduction: Preceptor development programs are and will be for the foreseeable future necessary to orchestrate a considered, organised and effective means to ensure well-prepared preceptors are teaching pharmacy students. The objective of this report is to:
1. determine the facilitators and barriers to successfully implementing a national preceptor development program (PDP)
2. provide evidence-based guidance for the design and implementation of a high-quality, cutting-edge PDP

Methods: Literature review simulation providers and educational experts were consulted in order to answer the research question. Searches for relevant literature from the last 10 years were conducted using established educational, science and health professions databases.

Results: One thousand and twenty-three (1023) article abstracts were initially identified via searching. Of these, 186 were deemed relevant to this priority. Preparation is required prior to developing and implementing a preceptor development program (PDP) to confer the best possible chance of success. Factors to be considered in advance include: guiding educational philosophy, PDP goals, preceptor characteristics and competencies, barriers to training in the workplace, accountability of the ExEd program and resources (human, financial and electronic) from Faculties of Pharmacy. Design and implementation considerations include: adult learning theory, content, media, mode and anticipated benefits of each.

Discussion: There is a large amount of evidence pertaining to the design, development and implementation of PDPs however the quality of the evidence is generally fair. research that is of good to excellent in quality employs pre and post comparisons and pre-defined endpoints measuring knowledge and/or self-efficacy impressions, preceptor integration in educational encounters in the learning environment or satisfaction levels of the preceptor participant. There are a myriad of content topics, media, and teaching and learning modalities reported in the literature and innumerable ways of combining them. The intermediate outcomes have generally been positive but the educationally significant outcomes that would be present in students of the trained preceptor have been mixed.

Conclusion: A well-designed PDP is predicated on adhering to a constructivist learning theory and the use of evidence-based media and teaching and learning content, media and modalities. To ensure the successful implementation of a national PDP, there are extrinsic facilitating forces that should be leveraged and preventing influences that must be addressed. The 3rd report in the series describes approaches for operationalization of best practice (evidence and theory) for a preceptor development program on a national scale.

Priority 3: Best practice in preceptor development to establish/ augment best qualities/abilities in preceptors

INTRODUCTION

This is the second instalment of four addressing a single priority: Priority 3: **Best practice in preceptor development to establish/ augment best qualities/abilities in preceptors** within the Canadian Experiential Education (CanExEd) Project for Pharmacy. The CanExEd project commenced in the fall of 2014 and concludes in mid-2016. It is conducted under the auspices of the Association of Faculties of Pharmacy of Canada (AFPC). The project goal is to bring a national approach to experiential education (ExEd) in Canada. To date, the 10 Canadian Pharmacy ExEd programs have developed, implemented and evaluated their respective ExEd programs autonomously with ad hoc, informal sharing of components between Faculties. The Project is expected to promote discovery and adoption of best practices consistently across the country.
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 are examined alongside those of stakeholders (experiential education faculty, learners, preceptors and site educational/clinical administrators) to identify gaps between present practice and best practice. Prototypes are subsequently developed as a means of nationally advancing Canadian Pharmacy ExEd to a higher standard CanExEd reports for all 8 priorities are available at: http://afpc.info/content/canexed-reports.

A set of 4 reports were authored in order to address this particular priority:

Part 1: The current state of pharmacy preceptor development programs across Canada.
Part 2: What evidence and theory should influence the design and implementation of a national preceptor development program?
Part 3: Describe approaches for operationalization of best practice (evidence and theory) for a preceptor development program on a national scale.
Part 4: Select indicators (immediate vs. long-term, preceptor, organizational, student sources) that will show this new approach to be successful.

Preceptor development is a mandatory accreditation standard in Canada. Criterion 29.3 of the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) states, *"The Faculty must have established criteria and training for preceptors and preceptors must be committed to supporting the teaching process."* During accreditation, CCAAPP reviews the program's evidence of a preceptor orientation and education program for both novice and experienced preceptors. In addition, Criterion 29.5 provides guidance on the responsibilities and therefore the training of these clinical instructors, *"The model of supervision at each stage of the practice experience curriculum must ensure adequate oversight, coordination, guidance, instruction, and assessment of each student*. (1)
The Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards similarly insist, in standard 20, *"The college or school has a sufficient number of preceptors (practice faculty or external practitioners) to effectively deliver and evaluate students in the experiential component of the curriculum. Preceptors have professional credentials and expertise commensurate with their responsibilities to the professional program"* and further stipulate that:

- **20.1. Preceptor criteria** – The college or school makes available and applies quality criteria for preceptor recruitment, orientation, performance, and evaluation. The majority of preceptors for any given student are U.S. licensed pharmacists.
- **20.3. Preceptor education and development** – Preceptors are oriented to the program's mission, the specific learning expectations for the experience outlined in the syllabus, and effective performance evaluation techniques before accepting students. The college or school fosters the professional development of its preceptors commensurate with their educational responsibilities to the program. (2)

Preceptor development programs are and will be for the foreseeable future necessary to orchestrate a considered, organised and effective means to ensure well-prepared preceptors are teaching pharmacy students. The objective of this report is to:

3. determine the facilitators and barriers to successfully implementing a national preceptor development program (PDP)
4. provide evidence-based guidance for the design and implementation of a high-quality, cutting-edge PDP

METHODS

Data Sources: Literature review simulation providers and educational experts were consulted in order to answer the research question. Searches for relevant literature from the last 10 years were conducted using established educational, science and health professions databases. Appendix B ("CanExEd Priority 1-7 Appendices").provides specific search strategies employed to identify relevant citations. In addition to these searches, stakeholders (during interviews) were invited to provide citations germane to the development of a national approach to best practice in preceptor development to establish/augment best qualities/abilities in preceptors.
Pharmacists with PhDs in education were consulted to clarify and discuss various approaches to preceptor development in an effort to ensure completeness and relevancy. Simulation experts were engaged to explore practices not described in the academic literature but that may have application to preceptor development.

Data Analysis: Search-identified and stakeholder-referred article abstracts were reviewed for relevancy to Priority #3. Duplicate articles were removed. Articles were examined in detail and summarized (KM, SW and WC) using a structured data extraction guide (available in Appendix C of "CanExEd Priority 1-7 Appendices"). Categories of interest (content, medium, organisation and administration) were pre-determined in order to facilitate report generation. Articles could be assigned multiple categories. Completed summaries of the literature were subsequently reviewed by the authors (KM, SW and CC) to enumerate relevant best practice and yet-to-be-established as best practice that may be worth piloting and evaluating in Pharmacy ExEd.

RESULTS

Quantitative:
One thousand and twenty-three (1030) article abstracts were initially identified via searching. Of these, 170 were deemed relevant to this priority. Appendix D "CanExEd Priority 1-7 Appendices" lists the citations identified. One of the citations was a conference abstract and unavailable at time of writing.

Qualitative:
Pre-Development/Implementation
Preparation is required prior to developing and implementing a preceptor development program (PDP) to confer the best possible chance of success. Before embarking on renovation or development of a professional development program the following considerations should be addressed:

The literature suggests that ExEd Programs should consider **educational philosophies** of their university Faculties/Schools/Programs with an aim to express a similar guiding philosophy that applies to ExEd. This philosophy would remain a touchstone from which all program components can relate to or underpin. ExEd programs arguably have the same **mission** when it comes to the quality of preceptors or the quality of learning facilitated within the rotation environment-to provide an optimal student and preceptor experience so that the student will be well-prepared for the next stage of learning and so that preceptors feel fulfilled, challenged and motivated to continue to develop in their role as educator. Flowing out of the philosophy and mission statements are overarching **goals of a PDP**. These must stated clearly and meaningfully as it is from these statements that specific capabilities/ competencies and programmatic learning outcomes are determined.

To characterise the **role** a preceptor assumes in their relationships with students is vital in shaping a PDP. Nursing describes preceptors as protectors (of the student and clients), evaluators (of the student), socialisers (facilitating the enculturation and socialisation of the student), role models and educators. (3) These roles should be considered in the vetting of potential preceptors as well as in the development of a balanced and well-rounded preceptor development program.

The literature provided various constructs of **capabilities and competencies**. The most fully elucidated descriptions occurred in Medicine, Nursing and Pharmacy articles. Medical literature contains two constructs of competencies. Harris suggests 7 core competencies (leadership, administration, teaching, research, medical informatics, care management, multiculturalism) (4) while Srinivasan suggests 6 core competency categories (medical knowledge, learner-centeredness, interpersonal and communication skills, professionalism and role modelling, practice-based reflection and improvement, systems-based learning) and 4 specialised competency categories for educators with more programmatic roles (program

design and implementation, evaluation and scholarship, leadership and mentorship). (5) Harris' competencies veer into practice competencies while Srinivasan's maintain educationally focused competencies. Eleven competencies for Nurse Preceptors were identified within four categories: teaching and facilitation, role modelling, communication and maintaining standards. (6) Competencies for Pharmacy Preceptors include 44 attributes grouped within 6 Competencies: possess leadership and management skills, embodies practice philosophy, role model practitioner, commitment to excellence in scholarly teaching, effective communication skills, encourages self-directed learning. (7) An interprofessional set of 43 competencies were developed in Brazil that fit within 9 domains: teaching and learning, professional values, basic public health services, management, health care, teamwork, communication, community orientation, professional development.

It would be folly to develop and launch a preceptor development program without addressing barriers to eventual success. Medicine, nursing and pharmacy literature all identify factors that will incapacitate even the best-laid plans for preceptor development. There may be 3 main influences on preceptors transferring new educational knowledge, skills and attitudes (KSA) to their work with students. Training design is important (instructional technique, learning principles, self-management activities, relapse prevention, goal setting) as KSA must be attained before applied but 2 other equally important conditions must be present as well: **Learner characteristics** (cognitive ability, motivation, achievement, anxiety levels and self-efficacy beliefs) and **Work environment** (organisational learning culture, supervisory support and performance feedback).

Selecting individuals who will be effective preceptors is fraught with difficulty as ExEd programs generally do not have personal knowledge of the **personal characteristics** brought to the educational setting however an attempt should be made to carefully screen individuals. (8) There is little evidence to improve **selection of preceptors** other than in the ACPE guidelines listing of preceptor role model behaviours, qualities and values (7) and in one study that determined residency-trained community pharmacy preceptors were shown to provide an enhanced student experience during advanced pharmacy practice experiences (APPE). The authors attributed this to the greater amount of time spent in direct patient care activities compared to the control group who spent more time dispensing. (9) Obverse qualities have also been determined in a medical study of what patient care, teaching and personal qualities constitute a negative role model. They are: Impatient, overly opinionated, quiet, reserved, overextended, difficulty remembering names and faces, self-serving, places undo emphasis on billing or length of hospital stay, demonstrates unethical behaviour, sexist, attitudes, nitpicking, one dimensional view, leaves learner feeling more knowledgeable than supervisor. (10) It is worth considering whether preceptor candidates who exhibit these qualities should be screened and excluded from precepting or if the program is willing and able to change these qualities in the professional.
There should be a component of any preceptor training initiative (at least at the basic/core/capability level) that focuses on the **affective domain** of learning so that the learner has an opportunity to determine how they feel about becoming a preceptor and the demands of the role.

Equally, there must be an exchange with the managers or clinical/educational coordinators in the **work environment** to determine whether there is clear support (in writing or actions) for the novice preceptor. (6,11) Community physician-preceptors in North Carolina strongly indicated the greatest value of all supports would be in providing relief to busy, often isolated community-based preceptors and that they appreciated contact with the university and that any material needed to be highly organised. Despite recognising that preceptor development was valuable and wanted, only 1/3 of preceptors participated. (12) This is a common theme throughout the literature. Professionals want to participate but other demands often preclude taking part.

An Australian study looking to identify supports that general practitioners required to teach medical students identified that medical **schools must take on accountability** for communications, acknowledgement of time and productivity through recognition and monetary displays, teaching resources, continuing professional development (CPD), administrative assistance. In particular, they cited the Calman report (UK) that made it possible for students to see ratings of medical schools' opportunities for staff training and development (which would include preceptors) and allow them to make a more informed decision with respect to applying to particular programs. This type of transparency could result in pressure on educational institutions to better resource preceptor supports. Including detailed job descriptions, clear expectations and salary support for physician preceptors improved resident and medical student experiences according to student ratings (as teachers, role models and quality of feedback and assessment) of these supervisors. There was no discernable difference with respect to OSCE results. Aligning remuneration, recognition and job expectations with the traditionally present verbal/informal support of institutions for practitioner as teachers appears to eliminate the potential for teaching to be viewed as secondary to other duties. (13)

There is excellent information pertaining to the **supports** Canadian hospital preceptors deem important for them to continue or increase their involvement with ExEd. In 2009/10, the Hospital Pharmacy in Canada Editorial Board's report

indicated the following ranking of proposed enablers (Figure 1) (14). In 2013/14, the survey included a greater number of items exploring the theme (Figure 2). (15)
Figure 1:

Proposed Enabler	Mean usefulness ranking (from most useful to least useful)
Fewer competing demands in the workplace (i.e., reduced workloads)	3.7
Funding to provide backfill for preceptors who are providing experiential education	4.2
No pharmacist or technician vacancies in areas where students are being precepted	4.3
More flexibility in timing or scheduling of rotations	5.6
Dedicated university/technical college faculty who would assist with precepting students	6.3
Adequate space and equipment (e.g. computer access) to facilitate experiential education	6.4
Simplified evaluation forms and processes	6.7
Better prepared students	7.4
New or expanded preceptor training programs	7.8
Rotation coordinators/supervisors from the faculties/ colleges that would be based at, or regularly visit, your facility	8.2
Access to electronic resources (e.g., library, journals)	8.5
Academic appointments for preceptors	8.8

Base: Respondents with complete ranking

Figure 2: Strategies for Enhancing Capacity of Structured Practical Experiential Programs as Perceived by Pharmacists.

	(n=)	Very or extremely helpful	Somewhat or not helpful
Please rate how useful each of the following would be in enabling your facility to accommodate additional students in your experiential training program.			
1) Adequate space and equipment (e.g., computer access) to facilitate experiential education	(603)	509 **84%**	94 **16%**
2) Funding to provide backfill for preceptors who are providing experiential education	(601)	505 **84%**	96 **16%**
3) No pharmacist or technician vacancies in areas where students are being precepted.	(601)	488 **81%**	113 **19%**
4) Better prepared students	(604)	484 **80%**	120 **20%**
5) An experiential training program in which all students assigned to your hospital spent the first week together as a group, and were taught standardized process skills (e.g. how to locate information in the patient record, how to organize the information needed to conduct a medication reconciliation, etc.) so that when they started with their individual preceptors, they were better prepared to participate in the care delivery process.	(598)	482 **81%**	116 **19%**
6) Simplified evaluation forms and processes	(604)	496 **82%**	108 **18%**
7) The existence of a list of patient care activities, approved by your province's pharmacy regulatory authority and/or your hospital's Pharmacy and Therapeutics Committee (as required in your province) which pharmacy students could carry out with minimal supervision at different stages of their education (e.g. collecting chart data in year one of their program, interviewing patients in year two of their program, preparing medication reconciliation documents in year 3 of their program, communicating the results of a medication reconciliation to a physician in year 4 of their program, etc.).	(599)	418 **70%**	181 **30%**
8) More flexibility in timing or scheduling of rotations.	(600)	392 **65%**	208 **35%**
9) An experiential training model in which students in the experiential training component of their pharmacy program complete most of their experiential rotations at your hospital, negating the need for orientation of new students during each rotation, and creating a longer term relationship between the student and your hospital.	(600)	385 **64%**	215 **36%**
10) Dedicated university / technical college faculty who would assist with precepting students.	(603)	357 **59%**	246 **41%**
11) Academic appointments for preceptors.	(602)	339 **56%**	263 **44%**
12) Rotation coordinators / supervisors from the faculties / colleges that would be based at, or regularly visit, your facility.	(604)	298 **49%**	306 **51%**
13) An experiential training model in which students are active participants in the delivery of essential patient care services at your hospital, to the extent that if the students were not there, additional pharmacist staff would have to be hired to perform those essential services.	(599)	294 **49%**	305 **51%**

Base: All respondents

North American licensing organisations (colleges, societies, associations, boards) do not exhibit consistency in the requirement for preceptors to have received preceptor training prior to hosting a student on rotation. Inclusion of a standard or regulation requiring training would facilitate pharmacist training. There may be other opportunities for licensing bodies to partner with ExEd programs in situations where CPD is informed by the use of a learning portfolio.

Faculties must revisit support for a high-quality PDP as it requires a significant increase in resourcing (human, financial and electronic). The third report in this series includes specific design elements and resourcing estimates. In a qualitative study in the US, ExEd faculty identify resourcing as one of their top concerns (#2 of 8 identified themes) (16). A similar study has not been performed in Canada. A cutting-edge, high-quality PDP program would not be possible with the current model of funding of ExEd programs in North America.

Adult Learning Theory and PDP

There are multiple adult learning theories that apply to the design of an effective PDP. The table below contains these various theories, a brief description and teaching and learning modalities as well as potential knowledge, skills and attitudes that can be best learned through these modalities.

Table 1: Various Adult Learning Theories. (17)

Theory	Description	Associated Teaching & Learning Modality	Knowledge, Skill, Attitude to be Learned	Notes
Behavioural	Results in learning that promotes standardisation of the	Print guidelines, didactic lecture, role play, simulation	Policies and procedures of ExEd rotations	Academics are familiar with competencies so this approach is comfortable

	outcome			although insufficiently learner-focused for preceptor training
Humanistic	Promote individual development and are learner-centered in order to induce self-actualisation, internal motivation and self-direction	Reflective Journaling Needs assessment quizzes Problem-based learning	Reflective abilities Self-assessment/evaluation Setting learning goals	Does not include a social aspect of learning. Some debate as to how achievable self-directed learning is.
Transformative	Disconcerting dilemma sparks a review of beliefs and perspectives	Problem-based learning Narrative sharing Role play	Role-modeling Interprofessional Skills Reflective abilities	Difficult to induce a 'shock' other than through a surprise or crisis. Can only achieve through real-life scenarios or other's stories
Social	Emphasises communities of practice in guiding and encouraging the learner. This is a type of constructivist theory.	Support groups Mentorship cells Sharing circles Balint Groups Educational journal club	Infinite learning potential Mentoring Dealing with challenging students and situations Reflective abilities	Important that this be available for preceptors to join in when possible or necessary. Individual preferences will dictate attendance.
Motivational	Importance of intrinsic motivation and the 3 things needed to sustain it: autonomy, competence and a feeling of belonging	Reflective journaling Support groups Small group workshops	Scholarly projects in education Dealing with challenging students and situations	Community is important as is a degree of competence so that the individual can go further.
Reflective	Reflection leads to action and then on to change. Deliberate practice induces feedback and reflection that results in autonomous learning	Direct observation of teaching techniques in the field Group narrative sessions	Feedback and assessment Role modeling Professionalism	Although other theories espouse reflection, it's the focus with this theory

Constructivist or Social theory may be most appropriate for informing the design of a PDP. (6,17,18)There are 4 aspects to this type of learning:

- learners determine the meaning
- new learning builds on prior knowledge
- learning is augmented through social interface
- meaningful learning is generated through authentic problems or tasks

Preceptors will not want to follow the ExEd's agenda start to finish, but instead, will prefer to decide what they need rather than what ExEd 'wants'. The preceptor must be able to relate to the material presented on some level. The use of problem-based learning that has some familiarity will better engage the learner. Didactic (live and web-based) have no social interface and while they can be used to convey information, the modality should be used sparingly as it is not terribly effective. Take care to ensure material is from actual practice and learning situations and that simulations are realistic.

Approaches to PDP

Literature revealed a variety of media and modes of delivery that were combined in variety of ways to deliver an array of content. The literature predominantly originates in Pharmacy, Medicine and Nursing. Table 2 contains an exhaustive listing.

Table 2: Content, Media, Delivery Mode/Teaching Technique used in the ExEd literature for preceptor development.

Content Theme	Media

• Orientation • Delivering feedback • Placement planning/scheduling • Program objectives/administration • Adult education theory • Learning styles • Teaching strategies • Performance assessment • Supervision • Precepting styles • Conflict resolution • Managing challenging students • Fostering critical thinking or clinical reasoning • Needs of ESL students • Induction of self-reflection • Developing learning objectives • Preceptor role & responsibilities • Preceptor Resources & Support • Assessing student's learning needs • Effective communication • Professionalism • Advancing educational initiatives through scholarship (such as developing a rural dedicated educational unit)	• Electronic (Web-based, CD rom, floppy disc, video tape, audio tape) • Face to face • Print Mode • Networking events • Small facilitated group discussions • Lectures • Print modules • Print articles • E-modules • Computer-mediated conferencing • Role play or Simulation • Workshop/seminar • Pod-casts • Case-based discussion (web-based video, readings) • Discussion board • List-serve • Mentorship • Coaching • Direct observation with peer feedback • Student feedback on performance • Developing research projects • Interactive theatre

Literature revealed a variety of media and modes of delivery that were combined in variety of ways to deliver an array of content (Table). Face-to-face workshops and on-line modules were the most frequent intervention. Mentorship and coaching was included in 2 programs. (20,21) A few PDPs used a blended approach where multiple media and modalities were combined in the same intervention. Not all program descriptions included program evaluations. There was no study that directly compared media or mode for achieving outcomes. Furthermore, review of the literature did not show a preference for specific content, media or mode to improve student-oriented educational outcomes. It appears that preceptors were generally satisfied with intervention regardless of content, media or mode. On-line delivery was well received, and preceptors placed value on flexibility & reduced time away from work. (22,23) Preceptors valued interacting and sharing ideas in face-to-face or interactive on-line programs. (22,24,25) Preceptors also appreciated the flexibility and accessibility of self-study programs. (25,26)

PDP delivered to an interdisciplinary group has been described in the literature to good effect. (18,19)

Peer interaction modalities receive a high amount of attention in recent literature, which intuitively follows the Constructivist theory that informs ExEd. Multiple formats have been described in the literature including narrative groups where a member of the small group comes to a meeting prepared to share an experience that they found interesting, challenging, disquieting or instructive and subsequently the narrator is questioned by members of the group for depth and clarity. This way the group can learn from the narrator and the associated discussion and other story sharing. Another interesting peer interaction modality is described in 2 articles (27) where a novice preceptor is assigned an experienced preceptor coach who checks in on a regular basis and in one reference may actually have opportunity to observe the novice in interaction with a student and provide feedback. (20)

Although rare, there is mention in the literature of preceptors initiating and participating in research on teaching and learning. This is an advanced form of preceptor development and one that should not be ignored as the frequency of its use may increase in the coming decade. One author suggests that Faculties should set up funds and awards for preceptors' research proposals. (28)

We identified 29 articles that assessed any **program outcomes**. The most frequent method for assessing the outcome of preceptor training was a post or pre & post course survey. Verbal participant feedback was sought in 3 articles (29-31)

The most frequently assessed endpoints were preceptor satisfaction with the program, effect on preceptor self-efficacy and perceived knowledge. Authors used perceived usefulness and applicability of the content and perceived mode effectiveness to measure satisfaction. A limited number of articles surveyed learning or implementation of the knowledge and skills. (32-36) A single article utilized direct observation to assess outcomes 6 months to 6 years after attending preceptor development workshops. (33) One publication used student evaluations of preceptor performance 2 years before and 2 years after the implementation of a new PDP as the primary endpoint. (34) The design of this trial is better than average as it included a control group (albeit non-equivalent). The obvious confounder to student surveys as a means for measuring outcome is that better-prepared preceptors could also have higher expectations. This could result in students assigning lower ratings to preceptors perceived as demanding. Regardless of the intervention, preceptor development programs were found to meet preceptor expectations and increase preceptor preparedness, confidence in preceptor role, teaching knowledge and perception of preceptor support at the end of the intervention. Validation of the preceptor role was an additional benefit seen in 1 program evaluation. (24)
One study indicated at 3 months post-preceptor training, knowledge levels had declined to baseline while self-efficacy ratings remained significantly elevated. (37) There are multiple studies in preceptors that show self-efficacy benefits (confidence in various roles and skills (26,38-43) however the impact on knowledge beyond an immediate increase as measured via post-testing remains uncorroborated. Another study in community-based physicians using direct observation of preceptor-student interactions post-training determined a high proportion of the knowledge and skills presented during preceptor development programming were not displayed in practice. (33) In the Vos article (that used a control group) sstudents reported they were more likely to receive a formal assessment of performance at mid-pint and final point of the rotation ($p<0.05$) and that the preceptor assessed them in a manner that was helpful to learning after the PDP had been implemented. (34) The effect size was small and required a large number of participants (total >5000) to show this result.

The application of a self-directed Continuous Professional Development (CPD) approach using a learning portfolio in preceptor development has been explored (44-46). ACPE developed 5 modules and a CPD tool support implementing the process into CPD. The authors found that uptake was very low, but those that engaged in the process found if very useful. Preceptors did not receive CE credit for time spent completing CPD portfolio. It is a different scenario in Canada as licensing bodies are transitioning to CPD portfolio approaches and self-directed learning. This Canadian trend may facilitate a CPD approach using portfolios for managing and individualizing preceptor development. Preceptors can use the CPD process to identify when new learning is required (reflection), find and use the required resources, evaluate the effectiveness of the new KSA and document the process and outcome as an 'artefact' in the portfolio. The CPD Process is a useful tool to support ongoing, individualized preceptor development. There may be challenges for preceptors in discovering what it is they really need and particular attention should be paid to techniques for manifesting this knowledge.

PDP approaches to content, delivery and evaluation are varied. There are numerous articles that identify relevant content. There are several frequently recurring themes such as preceptor roles and responsibilities, feedback, assessment and evaluation, clinical teaching strategies, adult education and learning styles. In the absence of direct comparison, it is difficult to identify preferred content, media or mode. It has been suggested that having multiple approaches to preceptor development will satisfy the diverse learning need and styles present in preceptors (47)

Preceptor participation rates vary from modality to modality (but no direct comparison on which to determine superiority) with self-directed and non-mandatory modes and offerings running the risk of low uptake rates (46). There may be some motivation in the use of 2 levels of preceptor certification where a preceptor is designated a preceptor "in training" until the CPD plan confirms that they've undertaken some deeper learning. (48) Lectures and modules can be designated mandatory; however, these modalities generally promote surface learning. PDPs attempt to facilitate deep learning of educational techniques through the use of self-directed learning and socialization modes of delivery. By making these types of components mandatory within the PDP, the issue may appear solved however, if the preceptors feel as though the content or mode is not relevant or forced upon them, learning is compromised and even still, uptake may not significantly improve which then compromises the ability to place students as the practitioners would not be eligible to take the preceptor role. A balance must be struck where the PDP's demand on preceptors is reasonable and preceptors want to participate and the needed KSA transference occurs. Preceptors, according to the constructivist theory, will need to feel the content is relevant and that whatever the content is, it is NEEDED. The CPD approach facilitates this but to encourage the use of this approach, the use of online learning platforms that use game and socialization theory may play a role. These platforms are currently in use in the private and academic sectors. They use motivating design structures that provide curated content from various sources, opportunities for asynchronous (individuals post reflections and ideas) and synchronous (web-enabled meetings) discussions and importantly, a way for ExEd faculty to collect program evaluation

data and monitor the uptake and learning. These platforms would also enable research in the field of CPD within the educational sphere.

DISCUSSION/RECOMMENDATIONS

There is a large amount of evidence pertaining to the design, development and implementation of PDPs however the quality of the evidence is generally fair. Most research is of a narrative nature with little in the way of outcome data to support the intervention described. The body of research that is of good to excellent in quality employs pre and post comparisons and pre-defined endpoints measuring knowledge and/or self-efficacy impressions, preceptor integration in educational encounters in the learning environment or satisfaction levels of the preceptor participant. There are a myriad of content topics, media, and teaching and learning modalities reported in the literature and innumerable ways of combining them. The intermediate outcomes have generally been positive but the educationally significant outcomes that would be present in students of the trained preceptor have been mixed. (34,49) Beyond content, mode, modality considerations, other concerns must be taken into account such as competencies, learner characteristics, preceptor site supports, resourcing and educational theory that shape a high-level, cutting edge PDP. There is great variation across Canada and the US when it comes to PDP. For a more complete description of the Canadian picture, please refer to Report #1 in this series. In developing a prototype design for a high-quality, evidence-supported and feasible PDP, the influencing factors identified and discussed within this report must be considered, addressed and integrated. Report #3 in this series provides just such a prototype PDP for implementation on a national scale. Report #4 discusses the quality assurance outcome measures as well as program evaluation indicators used to monitor and improve such a PDP.

1. A Canadian set of preceptor competencies (and initial preceptor capabilities) should be developed iteratively upon which to build the national PDP.
2. A national PDP should be resourced and developed using:

- educational theory such as constructivist or social theory
- continuing professional development (CPD) approach of reflect, plan, act, evaluate
- a national central online web-based learning management system (LMS)
- engagement strategies to maximize continuous use

3. An online interactive preceptor self-assessment tool should be offered to preceptors as a tool for determining their learning plans in the realm of teaching and learning
4. The PDP should be independently evaluated for efficacy and efficiency
5. The PDP will require perpetual resourcing to curate content and monitor of social networks
6. The PDP should provide multiple options for attaining competency in each domain of education
7. The PDP should facilitate research and QI data collection, analysis and reporting
8. The PDP should enable preceptors to extract their preceptor CPD as an ‘artefact’ for inclusion in their provincial regulatory authorities’ proof of continuing competency for licensure

CONCLUSION

A well-designed PDP is predicated on adhering to a constructivist learning theory and the use of evidence-based media and teaching and learning content, media and modalities. To ensure the successful implementation of a PDP on a national level, there are extrinsic facilitating forces that should be leveraged and preventing influences that must be addressed.

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