**Partners in Research: Building Academic-Practice Partnerships to Educate and Mentor Advanced Practice Nurses**

**Authors:**

**Patricia (Patti) Harbman**, NP-PHC, MN, PhD

Nurse Scientist, Trillium Health Partners;

Affiliate Faculty, Canadian Centre for APN Research (CCAPNR), McMaster University.

Trillium Health Partners, Mississauga, ON, Canada.

**Denise Bryant-Lukosius**, RN, PhD

Associate Professor, School of Nursing and Dept of Oncology, Co-Director, Canadian Centre for Advanced Practice Nursing Research, McMaster University, Hamilton, ON, Canada.

**Ruth Martin-Misener**, DOPN, BScN, MN, PhD

Professor, Dalhousie University, School of Nursing, Halifax, NS, Canada.

**Nancy Carter**, RN, PhD

Assistant Professor, School of Nursing, McMaster University, Hamilton, ON, Canada.

**Christine L. Covell**, PhD

Assistant Professor, Faculty of Nursing, University of Alberta, Edmonton, AB, Canada.

**Faith Donald**, NP-PHC, PhD

Associate Professor, Ryerson University, Daphne Cockwell School of Nursing, Toronto, ON, Canada. Affiliate Faculty, Canadian Centre for APN Research (CCAPNR).

**Sharyn Gibbins**, NP, PhD

Director Professional Practice, Trillium Health Partners, Mississauga, ON, Canada.

**Kelley Kilpatrick**, RN, PhD

Assistant Professor, Faculty of Nursing, Université de Montréal, Montréal, QB, Canada.

**James McKinlay**

Senior Lead, Programs, McMaster Health Forum, McMaster University, Hamilton, ON, Canada.

**Krista Rawson**, RN, MN, NP

Senior Practice Consultant – Advanced Practice Nursing, Cancer Control – Provincial Practices, Alberta Health Services, AB, Canada.

**Diana Sherifali**, RN, CNS, CDE, PhD

Associate Professor, School of Nursing, McMaster University, Hamilton, ON, Canada.

**Joan Tranmer**, RN, BScN, MSc, PhD, Professor, School of Nursing, Queen's University, , Kingston, ON, Canada.

Email: tranmerj@queensu.ca

**Ruta Valaitis**, BScN, BA (Psychology), PhD

Associate Professor, School of Nursing, McMaster University, Hamilton, ON, Canada.

**Correspondence:** Patricia Harbman NP-PHC, MN, PhD

Nurse Scientist, Trillium Health Partners, 2200 Eglington Avenue West, Mississauga, ON, Canada.L5M 2N1.

Email: pharbman@sympatico.ca

**Running title:** Partners in Research

**Keywords:** advanced practice nursing, advance practice nurse, research, evidence-based practice, academic-practice partnership, quality improvement

## Abstract

**Rationale** Clinical practice is the primary focus of advanced practice nursing (APN) roles. However, with unprecedented needs for healthcare reform and quality improvement (QI), healthcare administrators are seeking new ways to utilize all dimensions of APN expertise, especially related to research and evidence-based practice. International studies reveal research as the most underdeveloped and underutilized aspect of these roles. **Aims:** To improve patient care by strengthening the capacity of advanced practice nurses to integrate research and evidence-based practice activities into their day-to-day practice. **Methods:** An academic-practice partnership was created among hospital-based advanced practice nurses, nurse administrators and APN researchers to create an innovative approach to educate and mentor advanced practice nurses in conducting point-of-care research, QI or evidence-based practice projects to improve patient, provider and/or system outcomes. A practice based research course was delivered to two cohorts of advanced practice nurses using a range of teaching strategies including one-to-one academic mentorship. All participants completed self-report surveys before and after course delivery. **Results:** Through participation in this initiative, advanced practice nurses enhanced their knowledge, skills and confidence in the design, implementation and/or evaluation of research, QI, as well as evidence-based practice activities. **Conclusion:** Evaluation of this initiative provides evidence of the acceptability and feasibility of academic-practice partnerships to educate and mentor point of care providers on how to lead, implement and integrate research, QI and evidence-based activities into their practices.

## Introduction

Clinical practice is the primary focus of advanced practice nursing (APN) roles (Canadian Nurses Association (CNA), 2010; International Council of Nurses (ICN), 2008). However, with unprecedented needs for healthcare reform and quality improvement (QI), healthcare administrators are seeking new ways to utilize other dimensions of APN expertise, especially related to research and evidence-based practice (CNA, 2012; Institute of Medicine (IOM), 2011). International studies have shown that research is the most underdeveloped and underutilized aspect of these roles (Bryant-Lukosius, DiCenso, Israr, & Charbonneau-Smith, 2013; Fink, Thompson, & Bonnes, 2005; Kilpatrick et al., 2013).

The integration of research, evidence-based practice, and other scholarly activities aimed at improving nursing practice, optimizing patient care and enhancing the delivery of healthcare services is part of what makes APN roles "advanced" (Bryant-Lukosius et al., 2005; CNA, 2010; Davies & Eng, 1995). These activities are cornerstones of high quality care (DiCenso et al., 2005; Mazurek Melnyk, Gallagher-Ford, Long, Fineout-Overholt, 2014) and enhance the reliability of healthcare by reducing variation in practices and costs (Melnyk, Fineout-Overholt, Gallagher-Ford & Kaplan, 2012). Advanced practice nurses, with their graduate level education, are assets for achieving the practice, QI and performance goals of organizations (DiCenso et al., 2010a, Finkleman, 2013; Gerrish et al., 2011; Ontario Ministry of Health and Long Term Care, 2014).

While APN roles were introduced in the US and Canada over 50 years ago, national strategies to fully integrate these roles into the Canadian health system have only occurred in the last 10 to 15 years (Kaasalainen et al., 2010) and focus mostly on clinical role responsibilities.

More recently, healthcare organizations are recognizing the need to optimize the non-clinical dimensions of APN roles, such as research, evidence-based practice, and QI, to realize the full benefits of the role for patients, organizations and health systems (Clarke, 2013). Although advanced practice nurses often report application of research findings into their practices, and helping others to use research findings, most advanced practice nurses do not themselves develop and lead research, evidence-based practice activities (Profetto-McGrath, Smith, Hugo, Taylor, & El-Hajj, 2007) or QI projects.

Many advanced practice nurses feel at a loss as to where to start the research process or lack the knowledge and skills to successfully integrate research activities into practice. Frequently, service demands and clinical responsibilities take precedence; therefore, engagement in nonclinical activities such as research remains an elusive goal for most advanced practice nurses. Commonly reported barriers to advanced practice nurse involvement in research or evidence-based practice activities include: 1) inadequate knowledge and skills, 2) time away from clinical responsibilities, 3) organizational cultures that do not support research activities, and, 4) lack of appropriate mentors and resources (Bryant-Lukosius, Israr & DiCenso, 2013; Gerrish, et al., 2012; Renaud Smith et al., 2009). Several integrative and scoping reviews on evidence-based practices among nurses found similar influential factors related to the individual (e.g., knowledge and skills), time and resources, leadership and organizational culture (Jun, Kovner, & Stimpfel, 2016; Saunders & Vehviiainen-Julkunen, 2016; Williams, Perillo & Brown, 2015). Strengthening advanced practice nurse competence and confidence in research and evidence-based practice is essential given their important role as knowledge brokers in promoting best practices among frontline nurses (Gerrish et al., 2011),

To address these barriers, an academic-practice partnership model was established to educate and mentor point-of-care clinical nurse specialists (CNSs) and nurse practitioners (NPs), the two most common types of advanced practice nurses (Schober, 2013). The aim was to support the integration of research activities into their daily practices. In this article, we describe the partnership development and the implementation and evaluation of the educational and mentorship components of the initiative and offer recommendations for future academic-practice partnerships with a similar aim.

## Methods and Materials

**Partnership model development and components.** Collaboration between an academic research team and a large community hospital began when a research team member conducted a PhD thesis study within the hospital. Subsequently, a Nurse Scientist role was developed for this community hospital with a directive to promote and develop APN research in partnership with the Canadian Centre for Advanced Practice Nursing Research (CCAPNR) at McMaster University. CCAPNR is a unique research unit in Canada, with a research, education, mentorship and knowledge translation mandate. An academic-practice partnership model was created involving the hospital administrators, advanced practice nurses, the Nurse Scientist, and CCAPNR members to offer a research course. CCAPNR members would provide ongoing mentorship for participants to conduct their research or QI projects developed during the course and hospital administrators enabled scheduling to be adjusted to allow participants time to attend the research course.

Shortly after the launch of this partnership and building on learning from its development, a similar course arrangement was initiated with a healthcare organization in a

different province. The first organization was a large community hospital, comprised of three hospital sites, servicing an urban population of 750,000, and employing 55 advanced practice nurses across specialties. The second organization was the single governing health authority for a province with a population of 4.2 million, servicing multiple urban and rural communities, employing 324 nurse practitioners, 22 in the participating oncology service. In both organizations, a linkage with a senior nursing executive and a CCAPNR faculty member facilitated the initial contact and resulting partnership agreements. Differences in course delivery are outlined in subsequent sections.

The purpose of the partnership in both organizations was to provide an innovative approach to educate and mentor advanced practice nurses in leading and conducting point-of-care research, QI or evidence-based projects. Eligible participants were advanced practice nurses or nurses in leadership or professional practice roles who had: 1) completed a Master's degree (or equivalent) with at least one research methods or statistics course; 2) identified a research question or QI or evidence-based issue to address; and 3) confirmed the support of their immediate supervisor to provide release time from work to take the course and complete assignments. Participation was limited to six to ten individuals to support effective peer interactions and collaborative learning, and justify costs. This number ensured mentor provision of intensive and individualized education and one-to-one mentorship to build research competencies. The course and mentorship components of the partnership model are described next.

**Course format and content.** The certificate course was adapted from a graduate level course designed specifically for advanced practice nurses and delivered nationally for ten years. The course was delivered on-site in the first organization and by both on-site and distance

modalities (e-mail, web and tele-conferencing) in the second organization. Steps in course development and components of the initiative can be found in Figure 1.

*Insert Figure 1 here*

Two sequential cohorts participated from February to June over two consecutive years (2014-2015). Both cohorts started the course with a six-hour, on-site session to introduce course material and to facilitate networking and collaboration among participants. The first day focused on the value and importance of integrating research, QI and evidence-based activities into clinical practice as an essential aspect of APN roles. Barriers and strategies to maximize the successful integration of these activities into their roles were also explored. In subsequent alternate weeks, the groups met for 3-hour seminars, on a predetermined day and time suitable to participants. For the second cohort, these were delivered by teleconference. The last class for both cohorts brought participants together for a full day of research, QI, or evidence-based practice proposal presentations, peer review and course evaluation.

Faculty from CCAPNR used a wide range of teaching strategies including interactive small group activities, peer review, and one-to-one mentorship/consultation to develop participants' research competencies. CCAPNR faculty with specialized expertise led selected seminars. Course readings included publications on research methods, QI, evidence, and their application in practice.

Each participant developed a research proposal or QI/evidence-based project plan that was near ready for submission to an ethics board or funding agency, and/or implementation. The course format and learning activities were designed to cultivate participant competencies in proposal development from varied qualitative, quantitative, evidence-based and QI perspectives. The proposal development process was reinforced by short serial assignments providing

opportunities for peer, faculty and mentor feedback, and collaboration with clinical and organizational stakeholders. Proposals or project plans had to to be relevant to the participant's role and organizational or practice setting priorities for improving clinical care, professional practice or service delivery.

The course manual was developed by CCAPNR faculty and informed by baseline needs assessment results (i.e., participant survey and interviews). Priority goals and objectives of the course and individual sessions were identified. To address copyright requirements, a course web page was developed by librarians from each participating site, with PDF hyperlinks for required course readings. The course format integrated other evidence-informed learning strategies known to create a positive organizational climate for research, such as the Nurse Scientist role and the use of existing organizational resources (Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003). The Nurse Scientist role (PhD prepared nurse researcher) was integrated into course activities as the research champion and interface between CCAPNR, the organization and participants. Increased awareness and use of existing organizational resources that support research, QI and evidence-based activities were fostered through their integration in seminar activities (e.g., librarian services, decision-support staff, information management and QI services, research services). Interactive small and large group activities created opportunities for peer support and problem solving to address individual barriers to research. For example, one key issue was helping participants develop new attitudes and behaviors necessary for integration of research, QI and evidence-based activities into day-to-day practice activities. Through shared learning and problem solving, participants functioned as a community of practice that can continue to build research capacity and support for future research development following course completion.

At the end of the course all participants prepared and delivered a scholarly presentation outlining their proposal to faculty, clinical program directors and members of the executive leadership team. Peer feedback was provided throughout the course and during the scholarly presentation. These activities were designed to develop critical thinking about research, dissemination skills and confidence in obtaining stakeholder feedback, buy-in, and project support.

**Mentorship.** Mentorship is key to developing research competencies and capacity (Bryant-Lukosius, 2015, Bryant-Lukosius et al., 2013). Participants were paired with an academic mentor with similar research interests or expertise in the research methods to address participants' clinical questions, to support development of the research proposals or project plans. Mentorship was necessary for providing intensive and individualized guidance to achieve course objectives and develop research competencies in a very short period of time (i.e., 4 months). Mentors and participants interacted by email and met twice monthly (usually by telephone) during course delivery. Mentors facilitated participant learning, provided research methods and content expertise, and promoted problem-solving to overcome obstacles to proposal development. Post-course, mentor involvement in the study or project was negotiated between participant and mentor.

**Advanced Practice Nurse Participants and Projects**

There were a total of 20 participants enrolled across both cohorts. The majority were NPs (16) [NP-Adult (14) and NP Neonatal (2)], with CNSs (2) and professional practice managers (2). All were Master's prepared, with more than 20 years of nursing experience and over 7 mean years of experience as an advanced practice nurse. Most were female, working full time in their

current role. The majority worked in outpatient settings (10), followed by inpatient settings (5) and both inpatient and outpatient settings (5). One participant in the first cohort withdrew after the first session, due to workload issues associated with a new role. One participant from the second cohort withdrew mid-course due to a change in employment. Demographic characteristics for both cohorts are presented in Table 1.

*Insert Table 1 here*

Most participant projects were research studies, with an equal mix of quantitative and qualitative designs, one QI project in each cohort, and two projects using mixed methods. Examples of the types of projects developed during the course included: evaluation of program services using retrospective administrative data and prospective data; evaluation of an intervention; identifying unmet needs in specific patient populations; and identifying barriers to services.

**Course Evaluation - Data Collection and Analysis**

A formative evaluation approach was used to evaluate the impact of the course on individual (participant) outcomes and assess pre-determined elements of the course. To evaluate the impact of the course on individual outcomes, all participants were asked to complete a confidential self-report questionnaire before and after course delivery. Individual outcomes included participant knowledge, skills and confidence to lead research, QI, and/or evidence-based initiatives; awareness of and use of in-house expertise to support QI, evidence-based and/or research initiatives; job satisfaction; and comfort and satisfaction with interprofessional team work. The questionnaire was developed drawing on previous tools used to evaluate APN role implementation and involvement in research (Bryant-Lukosius, 2007) and job satisfaction (Misener & Cox, 2001).

Elements of the course were evaluated anonymously in two ways. First, participants' satisfaction with course content, learning resources, learning activities and faculty experts was assessed for each seminar. Secondly, participant *overall* satisfaction with course content, format, resources, faculty and mentorship was assessed at course completion. Three open-ended questions were included: 1) Would you recommend the course to colleagues? Why or why not?; 2) What were the best features of the course?; and 3) What features would you recommend changing?

Data from both cohorts were combined into one dataset and pre-course responses were compared to post-course responses. Non-parametric statistical tests were used due to the small number and non-normal distribution of the population. For questions related to frequency in performing or confidence in performing activities related to research, QI or evidence-based practice, the Wilcoxon Signed-Rank Test was used. For proportional questions related to self-rating skill levels in research, QI and evidence-based practice, the Chi-Square Test was used. The McNemar Test for Correlated Proportions was used to analyze factors identified as facilitating or limiting participants' involvement in research, QI or evidence-based activities. Narrative comments were analyzed using content analysis.

## Results

### Course Evaluation Results

Overall course evaluation mean scores were high (6.7/7), with no statistically significant differences between cohorts on individual items or overall course rating. For both cohorts, the highest mean scores related to *knowledge and expertise of faculty, usefulness of mentorship, course content, course meeting needs and expectations, and usefulness of the research proposal*. Knowledge and expertise of faculty received the highest rating for both cohorts (7/7). Seminar

evaluations, activities, usefulness of readings, and learning assignments received slightly lower mean scores, however only one score, usefulness of readings was below 6 (5.7) on a 1-7 point Likert scale. Course evaluations by site and totals are presented in Table 2.

*Insert Table 2 here*

**Pre and post course comparisons.**

***Activities.*** In 13 of 20 questions related to participation in specific research related *activities* in their day-to-day practices, there were improvements in post course scores. For 8 of 13 participants, there were statistically significant differences (improvement) in pre and post-course scores. Seven of these questions related to participants' confidence in finding, understanding, evaluating and implementing research evidence, and finding time and support to participate or implement research or QI improvements into practice. Pre and post comparisons for these activities are presented in Table 3.

*Insert Table 3 here*

***Skills.*** Table 4 summarizes the pre and post comparisons of 20 questions asking participants to rate their current *skills* related to research, evidence-based practice and QI. All increased in perceived skill. For 19/20 questions, mean scores increased significantly for items related to data collection and analysis in qualitative, quantitative, and mixed methods research designs; quality improvement; engaging and collaborating with key stakeholders, computer and internet technology; monitoring and reviewing practice; converting information needs into a research question; identifying gaps in their practices; sharing of information and ideas with

colleagues; time management; and negotiating time to participate in research related activities. One skill that was not significantly improved was the ability to evaluate their own practice.

*Insert Table 4 here*

When participants were asked to rate their overall competency in research skills by category (novice, advanced beginner, competent, proficient), 7/18 rated themselves as a novice pre-course, whereas only 1/18 did so post-course. Those rating themselves as advanced beginner increased by 20%, and those rating themselves as competent increased by 50%. No participants rated themselves as proficient pre or post course.

Using the same categories, participants' ratings on QI skills showed the majority rated themselves pre-course as advanced beginners (8/18) and competent (6/18), with only two participants changing their ratings post-course: two increased their self-rating from competent to proficient. Participant self-ratings pre and post course are presented in Table 5.

*Insert Table 5 here*

***Facilitators and barriers.*** To identify factors that facilitated or limited participant's involvement in research, QI or evidence-based practice pre and post course, participants were given nine options for facilitating or limiting factors. Access to a mentor was the only facilitating factor that increased significantly from pre to post course, and logically, lack of access to a research mentor was the only significant limiting factor identified.

All participants in both cohorts responded that they would recommend the course to colleagues. The strongest course features consistently reported in both cohorts included faculty expertise and support, the pace of the course, assignments that acted as building blocks for proposal development, and clear expectations about moving from proposal development to implementation. For participants in the second cohort, opportunities to improve the course

related to distance education modalities. Video rather than teleconferencing and a mid-course face-to-face meeting were recommended to strengthen engagement and peer interaction.

**Discussion**

The academic-practice partnerships described here were initiated and developed to provide research education and mentorship to point-of-care advanced practice nurses for the purpose of improving health outcomes and quality of care. These partnerships are founded on commitment to overcome barriers to integrating research activities and application of research findings into 'real world' practice. This commitment from all partners establishes an evidence-based culture of inquiry, innovation and systems improvement. Partnerships such as these are positioned to successfully support research activities because the most common barriers are multifaceted and require both educational and institutional support strategies. While insufficient clinician knowledge and skill can be addressed by academics through course delivery and mentorship, this barrier cannot be removed without administrative support in the provision of financial resources for course delivery, and staff release time for the course and assignments. Continuing release time is critically important for the application of these skills for future projects to maintain and build research competencies. Likewise, organizations that value research and want to promote greater research participation among providers and managers benefit from members of the administrative team collaborating with academics on knowledge translation activities. Research capacity building activities such as these can be seen both as a means to an end (research that informs practice and improves health outcomes) and an end in itself (creating structures and cultures that enable research to take place) (Cooke, 2005).

To evaluate the practice partnerships we evaluated process measures to understand the impact of course elements on individual skills and activities, and satisfaction with the process, as

well as progress with proposal development, implementation, and analysis of projects developed. Future efforts will focus on evaluating the impact of this initiative on the organization related to research capacity and other outcomes (e.g., innovation, quality of care, recruitment/retention).

All participants had similar experience as RNs and number of years as advanced practice nurses. All completed Master's degrees, which was deemed a necessary prerequisite for understanding the research methods and statistical concepts in writing proposals and conducting research or quality improvement projects (Campbell & Profetto-McGrath, 2013; Profetto-McGrath et al., 2007). Although the first two cohorts were graduate level prepared as advanced practice nurses, the redesigned course content is suitable for other nurses, allied healthcare providers, professional practice leaders, managers and physicians who have completed a master's degree. Piloting the course with advanced practice nurses was felt to be a good litmus test for the scalability of the course to other master's prepared health professionals. Future course offerings will welcome these other providers to enhance opportunities for interprofessional research, QI and evidence-base practice collaboration.

Across both cohorts, similar organizational characteristics that facilitated the partnership initiative included: a pre-existing relationship with a PhD prepared nurse researcher from CCAPNR; a member of the executive team championing the initiative; a large number of advanced practice nurses employed within their institutions from which to draw candidates; written expectations in APN role descriptions to participate in nonclinical activities, including research. These organizational characteristics are similar to those reported by Wilson and colleagues in a paper describing different approaches to increasing hospital-based nursing research (Wilson, Kelly, Reifsnider, Pip and Brumfield, 2013). Using exemplars to demonstrate different strategies to support nursing research, three out of four organizations identified the need

to *employ* doctorally prepared nurse researchers to support the development and implementation of nursing research in their institutions, including both university-affiliated and community hospitals, while one *consulted* with a PhD prepared RN. In all settings, administrators acknowledged the importance and value of nursing research and supported staff in their training and implementation of research at the point of care. Utilization of clinical experts, mainly nurses with master's degrees, was common across all approaches (Wilson et al., 2013).

The evaluation data from the two cohorts participating in this approach to research education and mentorship are encouraging. Although the numbers of project participants is small by design, the evaluation results have been consistent across both cohorts. Based on an overall course rating of 6.7 on a 1 (poor) to 7 (excellent) Likert scale, and a low attrition rate of 10% (n=2), the course, as delivered can be interpreted as both acceptable and feasible. Attrition rates for classes taught through distance education have been reported to be 10-20% higher when compared to courses taught face-to-face (Angelino, Williams & Natvig, 2007). This suggests that the strategy to combine face-to-face sessions with teleconference sessions may have contributed to minimizing attrition related to distance education. The low attrition may also be related to the respective organizations paying for the course expenses and participants' time to participate, which may have increased accountability for completing the course. Confirmed support from their immediate supervisor and interviewing of candidates prior to course start also likely contributed to low attrition.

Usefulness of seminar activities did not differ between cohorts, possibly because activities were adapted to address content delivery approaches. Although there were no significant differences in overall course outcomes or evaluations between the two cohorts, many in the distance group expressed a preference for video-conferencing over teleconferencing, and

for more face-to-face time. These results are similar to those reported by Wells and Dellinger (2011) who evaluated three learning environments on perceived learning among graduate nursing students taking a research course. They compared three delivery methods for course content: 1) internet only with asynchronous communication at location and time convenient for each student; 2) host-site face-to-face classes with videoconferencing with students at a distance location of choice; or 3) remote site videoconferencing between students and instructor at the host site with students in a distance classroom. No significant differences were reported in final course grades or perceived learning between students in the three groups. Students felt connected regardless of learning environment; however, the interaction between learner and instructor on perceived learning was significant. Wells and Dellinger's findings suggest that it is the quality of interaction with the instructor and instruction materials rather than mode of delivery that is important. Yet, the two groups of students who attended classroom sessions in person or via videoconferencing expressed a preference for immediate interaction and a feeling of connectedness, likely consistent with their reasons for selecting the learning modality. The need for visual contact with the instructor and other students is important for some learners to establish a feeling of connectedness. Further research is needed to better understand how students establish and maintain connectedness with an instructor and other students through different education delivery modalities, the contextual components that influence that connectedness, and how feelings of connectedness influence learning for various learning styles.

Comparisons between pre and post responses in the combined dataset evaluating the extent to which participants performed specific activities and skills in their day-to-day practices yielded similar results. The largest improvements in post-course scores were for items related to confidence: in finding research evidence to support or improve current practice; to understand

and evaluate the quality of research they read; to implement change based on research evidence in their practice; and to find the time to do research activities within their role. Participant mean scores also showed significant improvements in their confidence to find support or direction in implementing evidence-based improvements into their practice, both within and outside of their organization. These improvements in confidence may be related to the building block process of developing their research proposals over a period of months, with frequent peer and mentor feedback during this process. Each of the items related to participant confidence can be linked to course objectives spanning multiple sessions.

Pre and post course comparisons to evaluating skills were all significantly improved, with the exception of ability to evaluate their own practice. The consistency of these results may reflect the interactive and in-depth nature of the course, whereby most common research methods were incorporated and applied using clinical examples relevant to participants' roles, whenever possible. Exposure to and participation in each others' project development, as well as being present for the final presentations, with the expectation to provide peer feedback, may have also contributed to perceived skill improvements.

Much of the focus from the participants' perspective is on completion of the course. However, other crucial elements important to the success of this initiative include creating a culture that supports participants through this process and providing post-course support to facilitate implementation of the proposed research or evidence-based projects.

Impact on organizational culture is inferred by support for the initiative, rates of completed projects, sustainability of the projects, and continued support from managers and administrators in the form of protected time for completing projects. A follow-up survey of participants and their managers to assess the impact of the course will include: the number of

new processes implemented related to the research, QI or evidence-based projects developed during course; number of peer reviewed publications and presentations and organizational education sessions/teachable moments related to projects; number of interdisciplinary team members involved in research or QI projects; funding for research projects; number of research, QI or evidence-based projects that have led to additional initiatives; and number and type of research partnerships developed as a result of this initiative. Access to resources and professional development activities that support research, such as those offered through this academic-practice partnership may also promote the recruitment and retention of healthcare professionals in the organization who value and can operationalize research, QI and evidence-based competencies.

One outcome that was not measured was the impact of the partnership on APN role development, notably collaboration and networking. Based on seminar discussions and supports sought to develop the project proposals, participating in the course appeared to strengthen their relationships and peer support, benefits that will be important for project completion and future projects. The project development and presentation activities also heightened their profile and potential for impact in the participating organizations. These observations appeared very powerful in both cohorts and will be evaluated with future groups.

Overall, evaluation results of this initiative provide initial evidence of the acceptability and feasibility of partnerships such as these to educate and mentor point-of-care providers on how to lead, implement and integrate research and/or quality improvement activities into their day-to-day practices. Success of this academic-practice partnership is also reflected in new partnership agreements established between CCAPNR and the two participating organizations for ongoing research capacity building initiatives.

## Recommendations for Practice

Based on our experience and evaluation data to date, the essential components for a successful academic-practice partnership to increase research capacity include: a) organizational values that support creating a culture of inquiry b) organizational values that prioritize research; c) protected time for healthcare providers to participate in research activities; and d) provider access to PhD prepared researchers and mentors. Broadening initiatives such as described here to include other graduate-prepared healthcare professionals, and teams of healthcare members, can further increase research capacity and generate research that is both useful and feasible in improving health outcomes and quality of care.

## Strengths and Limitations

A strength of this initiative was the consistency of the implementation and evaluation results across two very different organizations located in different geographic regions. However, the small sample of participants and self-report evaluation methods may limit the generalizability of our findings and recommendations. To address this limitation we have provided an in-depth description of the context, settings, participants, and methods of delivery of this initiative.

## Conclusion

This academic-practice partnership approach, employing education and mentorship components, even when offered in a distance format, was a feasible and effective strategy for increasing advanced practice nurse knowledge, skills and confidence in participating in clinical research activities that impact patient care. The method of delivery and course content are suitable for other graduate prepared nurses, allied healthcare providers, professional practice leaders, managers and physicians in academic and community hospital settings. Evaluating how

partnerships such as these impact interprofessional team, patient, provider and system outcomes will be important in understanding the full potential and benefits of practice based research.

**Acknowledgements**

Trillium Health Partners - Patti Cochrane, Kathryn Hayward-Murray, Penka Stoyanova

Alberta Health Services – Brenda Hubley, Maria Tan

**References**


Angelino, L.M., Williams, F.K., Natvig, D. (2007). Strategies to engage on-line students and reduce attrition rates. *Journal of Educators Online*, *4*(2), 1-14.

Bryant-Lukosius, D. (2015). Mentorship: A navigation strategy for promoting oncology nurse engagement in research. *Canadian Oncology Nursing Journal*, 23(3), 1-4.

Bryant-Lukosius, D., DiCenso, A., Browne, G., & Pinelli, J. (2004). Advanced practice nursing roles: development, implementation, and evaluation. *Journal of Advanced Nursing,* 48(5), 519-529.

Bryant-Lukosius, D., Israr, S., & DiCenso, A. (2013). Resources to facilitate APN outcome research. Chapter in R. Kleinpell (ed.). *Outcome Assessment in Advanced Practice Nursing, (3rd ed).* New York: Springer Publishing Company.

Campbell, T.D. & Profetto-McGrath , J. (2013). Skills and attributes required by clinical nurse specialists to promote evidence-based practice. *Clinical Nurse Specialist,* 27(5), 245-54. doi: 10.1097/NUR.0b013e3182a0ba68.

Canadian Nurses Association (CNA). (2012). *A Nursing Call to Action. The Health of Our Nation, the Future of Our Health System*. National Expert Commission. Ottawa: CNA. Retrieved from https://www.cna-aiic.ca/~/media/cna/files/en/nec_report_e.pdf

Canadian Nurses Association (CNA). (2010). *Canadian Nurse Practitioner Core Competency Framework*. Ottawa: CNA. Retrieved from https://www.cna-aiic.ca/~/media/cna/files/en/competency_framework_2010_e.pdf

Clarke, S. (2013). Practice-academia collaboration in nursing: contexts and future directions. *Nursing Administration Quarterly*, *37*(3), 184-193.

DiCenso, A., Bryant-Lukosius, D., Bourgeault, I. Martin-Misener, R., Donald, F., Abelson, J., Kaasalainen, S., Kilpatrick, K., Kioke, S., Carter, N., & Harbman, P. (2010a). *Clinical Nurse Specialists and Nurse Practitioners in Canada: A Decision Support Synthesis.* Ottawa, ON: Canadian Health Services Research Foundation.

DiCenso, A., Bryant-Lukosius, Martin-Misener, R., Donald, F., Abelson, J., Bourgeault, I. … Harbman, P. (2010b). Factors enabling advanced practice nursing role integration in Canada. *Nursing Leadership, 23*(Special Issue), 211-238.

DiCenso, A., Guyatt, G. & Ciliska, D. (Eds). (2005). *Evidence-based nursing.* Philadelphia, PA: Elsevier Mosby.

Estabrooks, C.A., Floyd, J.A., Scott-Findlay, S., O'Leary. K.A., Gushta, M. (2003). Individual determinants of research utilization: A systematic review. *Journal of Advanced Nursing, 43*(5), 506-520.

Fink, R., Thompson, C., & Bonnes, D. (2005). Overcoming barriers and promoting the use of research in practice. *Journal of Nursing Administration, 35*(3), 121-129.

Finkelman, A. (2013). The clinical nurse specialist: Leadership in quality improvement. *Clinical Nurse Specialist*, Jan/Feb, 31-35.

Gerrish, K., McDonnell, A., Nolan, M., Guillaume, L., Kirshbaum, M., & Tod, A. (2011). The role of advanced practice nurses in knowledge brokering as a means of promoting evidence-based practice among clinical nurses. *Journal of Advanced Nursing*, 67(9), 2004-2014.

Gerrish, K., Nolan, M., McDonnell, A., Tod, A., Kirshbaum, M., & Guillaume, L. (2012). Factors influencing advanced practice nurses' ability to promote evidence-based practice among frontline nurses. *Worldviews on Evidence-Based Nursing*, 9(1), 30-9.

IOM (Institute of Medicine). 2011. *The Future of Nursing: Leading Change, Advancing Health.* Washington, DC: The National Academies Press.

Jun, J., Kovner, C.T., & Stimpfel, A.W. (2016). Barriers and facilitators of nurses' use of clinical practice guidelines: An integrative reivew. *International Journal of Nursing Studies*, 60, 54-68.

Kaasalainen, S., Martin-Misener, R., Kilpatrick, K., Harbman, P., Bryant-Lukosius, D., Donald, F., Carter, N., Kioke, S., DiCenso, A. (2010). An historical overview of the development of advanced practice nursing roles in Canada. *Canadian Journal of Nursing Leadership,* 23, 35-60

Kilpatrick K**.** (2013). Understanding acute care nurse practitioner communication and decision-making in healthcare teams. *Journal of Clinical Nursing, 22*(1-2), 168-79.B.M.,

Mazurek Melnyk, B., Gallagher-Ford, L., Long, L., Fineout-Overholt, E. (2014). The establishment of evidence-based practice competencies for registered nurses and advanced practice nurses in real-world clinical settings: Proficiencies to improve healthcare quality, reliability, patient outcomes and costs. *Worldviews on Evidence-Based Nursing, 11*(1), 5-15.

Melnyk, Fineout-Overholt, E., Gallagher-Ford, L & Kaplan, L. (2012). The state of evidence-based practice in US nurses: Critical implications for nurse leaders and educators. *Journal of Nursing Administration, 42*(9), 410-417.

Misener, T.R., & Cox, D.L. (2001). Development of the Misener Nurse Practitioner Job Satisfaction Scale. *Journal of Nursing Measurement*, 9(1), 91-108.

Ontario Ministry of Health and Long-Term Care MOHLTC. (2014). *Nurse Practitioners in Long-Term Care Homes.* Media release. http://www.news.ontario.ca/mohltc/en/2014/3/nurse-practitioners-in-long-term-care-homes.html

Profetto-McGrath, J., Smith, K. B., Hugo, K., Taylor, M., & El-Hajj, H. (2007). Clinical nurse specialists' use of evidence in practice: A pilot study. *Worldviews on Evidence-Based Nursing*, 4(2), 86-96

Saunders, H., & Vehvilainen-Julkunen, K. (2016). The state of readiness for evidence-based practice among nurses: An integrative review. *International Journal of Nursing Studies*, 56, 128-40.

Schober, M. (2013). Global perspectives on advanced nursing practice. In L. Joel (Ed), *Advanced Practice Nursing: Essentials for Role Development*, 3rd Edition, p 71-104. Philadelphia: F.A. Davis.

Renaud Smith, J., Donze, A., Sessions Cole, F., Johnston, J., & Giebe, J.M. (2009). Neonatal advanced practice nurses as key facilitators in implementing evidence-based practice. *Neonatal Network*, 28(3), 193-201.

Wells, M. I. & Dellinger, A. B. (2011). The effect of type of learning environment on perceived learning among graduate nursing students. *Nursing education perspectives*, 32(6), 406-410.

Williams, B., Perillo, S., Brown, T. (2015) What are the factors of organizational culture in health care settings that act as barriers to the implementation of evidence-based practice? A scoping review. *Nurse Education Today*, 35, e34-41.

Wilson, B., Kelly, L., Reifsnider, E., Pipe, T., & Brumfield, V. (2013). Creative approaches to increasing hospital-based nursing research. *Journal of Nursing Administration, 41*(2), 80-88.

## Tables

Table 1

*Participant Demographics*

| **Participant characteristics** | **Ontario Project n=11** | **Alberta Project n=9** |
|---|---|---|
| APN role title | NP - Adult (5)<br>NP Neonatal (2)<br>CNS (2)<br>Professional practice leader (2) | NP-Adult (8)<br>CNS (1) |
| Education | All master's prepared | All master's prepared |
| Mean number of years as RN | 23 | 21 |
| Mean number of years as an advanced practice nurse | 8.7 | 7.5 |
| Gender | All female | 8 female 1 male |
| Type of position<br>Full time<br>Part time position | <br>11<br>0 | <br>7<br>2 |

Table 2

*Course Evaluation*

| **Course elements (1=Poor to 7=Excellent)** | **Ontario Mean (Median)** | **Alberta Mean (Median)** |
|---|---|---|
| Clarity of course objectives | 6.5 (6.5) | 6.6 (7) |
| Course Content | 6.4 (7) | 6.7 (7) |
| Course met your needs and expectations | 6.6 (7) | 6.7 (7) |
| Usefulness of Readings | 6.5 (6.5) | 5.7 (5) |
| Usefulness of Learning assignments | 6.4 (6.5) | 6 (6) |
| Usefulness of Seminar activities | 6.1 (6) | 6 (6) |
| Usefulness of Research proposal | 6.8 (7) | 6.4 (7) |
| Usefulness of Mentorship | 6.8 (7) | 6.6 (7) |
| Knowledge and expertise of faculty | 7 (7) | 7 (7) |
| **Overall rating of course** | **6.6** | **6.7** |

Table 3

*Combined Pre-Post Course Comparison - Activities*

| **Activities (0 = 'not at all, 5 = 'very much so')** | **Pre course mean** | **Post course mean** | **P Value** |
|---|---|---|---|
| I use outreach strategies to engage / re-engage professionals in evidence-based practice | 2.16 | 3.1 | <.02 |
| Confident to Understand and evaluate the quality of research I read | 2.6 | 3.8 | <.001 |
| Confident that I can find research evidence to help me improve/support my current practice | 3.6 | 4.4 | <0.01 |
| Confident to Implement change based on research evidence in my practice and/or practice environment | 3.0 | 3.7 | <.01 |
| Confident to Find the time to do research activities within my role | 1.5 | 2.7 | <.01 |
| Confident to Find support or direction within my institution in implementing evidence-based improvements into my practice | 3.4 | 4.1 | <.05 |
| Confident to Find support or direction outside of my institution in implementing evidence-based improvements into my practice | 2.1 | 3.39 | <.01 |

Table 4

*Combined Pre-Post Course Comparison – Skills*

| **Skills (7-point scale from 1=Poor to 7=Best)** | **Pre course mean** | **Post course mean** | **P Value** |
|---|---|---|---|
| Qualitative research data collection and analysis | 2.5 | 3.9 | <.05 |
| Quantitative research data collection and analysis | 3.0 | 4.3 | <.01 |
| Mixed methods research | 1.9 | 3.9 | <..01 |
| Quality Improvement | 3.6 | 4.7 | <.05 |
| Computer and internet technology | 4.2 | 5.0 | <.05 |
| Knowledge of how to retrieve evidence | 4.3 | 5.6 | <.001 |
| Ability to analyze critically evidence against set standards | 3.4 | 5.0 | <.001 |
| Ability to determine how valid (close to the truth) the material is | 3.4 | 4.8 | <.01 |
| Ability to determine how useful (clinically applicable) the material is | 4.1 | 5.3 | <.01 |
| Ability to apply information to individual cases | 4.3 | 5.3 | <.05 |
| Negotiating time to participate in these activities | 4.0 | 4.9 | <.05 |
| Time management | 4.0 | 4.9 | <.05 |

Table 5

*Self-Rating Current Research Skills*

| **Level** | **Pre n** | **Pre %** | **Post n** | **Post %** |
|---|---|---|---|---|
| Novice | 7 | 38.9 | 1 | 5.6 |
| Advanced Beginner | 8 | 44.4 | 11 | 61.1 |
| Competent | 3 | 16.7 | 6 | 33.3 |
| Proficient | 0 | 0 | 0 | 0 |