

ADVANCED PHARMACIST PRACTITIONER

The Advanced Pharmacist Practitioner: A New Series in the *Canadian Journal of Hospital Pharmacy*

Stephen Shalansky

INTRODUCTION

Given the success of 2 previously published series in the *Canadian Journal of Hospital Pharmacy (CJHP)*—on research methodology and international pharmacy practice—the Journal’s Editorial Board began collecting ideas for a new series of articles based on a common theme thought to be of particular interest to hospital pharmacists. An online survey of *CJHP* readers, carried out in 2017, revealed a strong interest in the concept of the “advanced pharmacist practitioner”. The Editorial Board therefore selected this broad topic as the theme for the new series. Those responding to the survey suggested that there are many examples of established advanced pharmacist practices, as well as emerging roles with progressive approaches that are moving the profession forward in innovative and exciting ways. The new series will feature examples of cutting-edge pharmacy practice in various settings, teaching models, research, initiatives undertaken by pharmacy professional societies, and other concepts highlighting new directions in hospital pharmacist practice. We, the members of *CJHP*’s Editorial Board, hope that these articles will stimulate ideas for hospital pharmacists across Canada and beyond, to advance the profession and improve patient care.

BACKGROUND TO THE SERIES

Several pharmacy professional societies have published descriptions of advanced practice roles and future directions for advancing the profession. These descriptions have commonly referred to clinical pharmacists’ involvement in complex clinical cases, whereby they are moving their practice into new roles and taking increased responsibility for patient care outcomes. These advanced practice pharmacists take leadership roles and are often involved in clinical or practice-based research that provides evidence for new ways that pharmacists can contribute to patient

care. Many advanced practice pharmacists also take on innovative roles in teaching and preceptorship. As described below, specific responsibilities within advanced practices are also the focus of some pharmacy professional society initiatives, including pharmacist prescribing, physical examinations, research skills, and pharmacogenomics.

Pharmacist Prescribing

Perhaps no topic is more commonly associated with the concept of advanced practice than pharmacist prescribing, and there is considerable debate even within our own profession about how prescribing models should be implemented.¹ Regulations and practices differ considerably across Canada, and a recent comparison of prescribing practices highlighted these differences.² Alberta is generally considered to have the most comprehensive prescribing authorities, and has had in place specific requirements for full prescribing longer than any other province. However, other provinces have made considerable progress in recent years. Pharmacists are often considered to be underutilized in the health care system, so there is ample opportunity to expand pharmacists’ roles. Obtaining the authority to prescribe can be the “tipping point” for taking on broader roles and responsibilities in various hospital settings. Although clinical pharmacists working in inpatient settings have gradually taken on many aspects of prescribing (e.g., altering doses and continuing medications that were taken before admission), hospital pharmacists working in ambulatory settings often have more limited roles, particularly in situations where provincial regulations prevent community pharmacists from filling prescriptions written by hospital pharmacists. However, the granting of full prescribing privileges can allow clinical pharmacists to take on broader responsibilities and provide comprehensive care to ambulatory patients in a more cost-effective manner than physician-based models.³ Other key considerations for pharmacist prescribing include acquiring the ability to

independently order laboratory tests, scheduling coverage when the original pharmacist prescriber is away, obtaining remuneration where applicable, and teaching prescribing skills in Canadian pharmacy curriculums.²

Physical Examination by Pharmacists

Along with prescribing, physical examination is another key component of many existing and proposed advanced practice roles for pharmacists. By becoming proficient in physical examination, clinical pharmacists can become more independent practitioners, directly applying the findings of their physical assessments when they are selecting effective drug regimens. This topic was debated in recent correspondence published in *CJHP*,^{4,6} where Mohammed and Yeung⁵ described some skepticism on the part of nurses and physicians about pharmacists' physical examination skills. Although Mohammed and Yeung⁵ provided suggestions regarding how pharmacists could more effectively implement physical examination into their front-line practice, Turgeon⁶ also pointed out that thorough physical assessment training programs currently exist in which pharmacists are taught hands-on skills by qualified physicians and pharmacists. In preparation for new graduates taking on more advanced direct patient care roles, many faculties of pharmacy now include physical examination skills in their curriculums.

Research Skills

Research skills are also a key component of many pharmacists' advanced practice roles. Several pharmacy professional societies promote research training and grant opportunities through their research arms, including the Canadian Society of Hospital Pharmacists (CSHP) Foundation,⁷ the American Society of Health-System Pharmacists (ASHP) Foundation,⁸ and the American College of Clinical Pharmacy (ACCP) Research Foundation.⁹ A survey of Canadian critical care pharmacists illustrated various degrees of clinical research participation, but the majority of respondents had taken research methodology courses and had a strong interest in pursuing research activities.¹⁰ Although many professional societies, including those mentioned above, include participation in research as a desirable activity, the results of this survey suggest that further support and recognition by hospital pharmacy administration is required.

Pharmacogenomics

As another example of the expanding skill set of advanced pharmacist practitioners, many pharmacists are working toward integrating pharmacogenomics into their patient care roles, and pharmacy faculties have begun to include pharmacogenomics courses in their curriculums.¹¹⁻¹³ There are undoubtedly many other specific activities that could be added to pharmacists' roles and responsibilities to increase their direct impact on patient care outcomes.

CURRENT STATE OF ADVANCED PHARMACIST PRACTICE

Specific Settings

Advanced pharmacist practice can be defined in many ways, so it is helpful to look at specific examples where pharmacists have taken on unique duties and responsibilities to push the boundaries of their traditional roles.

One of the earliest and most common examples of advanced practice pharmacists can be found in many intensive care units across North America, the United Kingdom, and Europe. Critical care pharmacists have taken on diverse roles and are considered by the Society of Critical Care Medicine as essential members of the multidisciplinary team.¹⁴ Their activities have been demonstrated to improve quality indicators, reduce errors, shorten the length of hospital stay, and decrease health care expenditures.^{14,15} Rather than focusing on specific target interventions, critical care pharmacists have taken on new and cutting-edge roles, including intervening with respect to a wide variety of medication classes and taking responsibility for non-medication interventions involving target end points for mechanical ventilation and prevention of ventilator-acquired pneumonia.¹⁵ Borthwick¹⁶ has described the role of the pharmacist in UK intensive care units, pointing out that a high proportion of critical care pharmacists are also prescribers. Advanced practice pharmacists have also taken on integral roles as members of cardiovascular teams, and cardiology was recently added as a new certification discipline by the Board of Pharmacy Specialties.¹⁷ Pharmacists have taken on expanded roles in other complex critical care settings, including emergency departments, where they participate in trauma rounds, procedural sedation, resuscitation, and intubation.¹⁸ Surgical wards also represent a practice setting well suited for independent pharmacist roles, given that surgeons are often not directly available for immediate patient care decisions.

There are numerous models of advanced pharmacist roles in settings other than specialized acute care wards. For example, antimicrobial stewardship roles, which are increasingly common, require a combination of advanced knowledge applied to the treatment of infectious disease and expertise in influencing prescribing behaviours. These roles are often multidisciplinary and have been officially supported by a range of pharmacy and infectious disease professional societies.¹⁹ Pharmacist-led opioid stewardship programs are also emerging, borrowing concepts from the established antimicrobial stewardship framework, reframing these concepts as required, and applying them to address the ongoing opioid crisis.^{20,21} Stewardship roles have emerged in other areas as well, including anticoagulation management.²² The concept of medication stewardship is an excellent example of clinical pharmacists applying advanced skills to move the pharmacist's role into new areas and to expand pharmacy's impact on clinical outcomes.

As mentioned above, ambulatory clinic settings are particularly well suited for advanced practice roles, particularly where pharmacists have independent prescribing authority.³ However, even without prescribing authority, clinical pharmacists in clinic settings can be directly involved in initial decisions about treatment regimens in a proactive, team-based manner, working in conjunction with a physician specialist or a nurse practitioner.²³ Research indicates that clinic nurses and physicians generally support advanced pharmacist roles, including collaborative practice agreements, physical assessment, and prescribing authorities.²⁴

Pharmacists in smaller community hospitals have implemented expanded scopes of practice, including applying various prescribing authorities (e.g., changing drugs within the same therapeutic class), independently titrating doses, and discontinuing medications.²⁵ Rural settings with limited access to comprehensive health care teams also offer many opportunities for pharmacists to step into more advanced clinical roles. For example, pharmacists can develop specialty practices in chronic disease management, present educational programs for a broad range of health care professionals, and participate in advanced cardiac life support.²⁶

Unique examples of advanced pharmacy practices can be found outside traditional hospital and ambulatory settings. For example, the Canadian military provides many opportunities for advanced practice and innovative problem-solving by virtue of its high demands, limited resources, and close-knit team environment.²⁷ Military pharmacists are involved in a wide range of practice areas, including outpatient clinics, inpatient wards, and intensive care units. Specialized and complex pain management skills are particularly pertinent.

Other Countries

Hospital pharmacists in countries other than Canada have also had great success in advancing the profession of pharmacy, and they can provide unique perspectives. The *CJHP* series on pharmacists' roles in international health care systems, which concludes elsewhere in this issue,²⁸ offers numerous examples.

Penm and others²⁹ published an overview of the use of the International Pharmaceutical Federation's Basel Statements to assess and advance hospital pharmacy practice around the world. These statements provided the first unified global vision for hospital pharmacy practice, highlighting the need for skill development in diagnosis, physical assessments, and clinical decision-making, as well as the need for postgraduate prescribing courses for hospital pharmacists.

In his overview of the health care system in the United States, Scott described the governmental processes behind pharmacists being granted "provider status" in areas with shortages of health professionals.³⁰ For example, hospital pharmacists in several states have partial prescribing privileges, and some pharmacists working in federal Indian Health Service clinics have the role of primary care provider, and thus have prescribing privileges for both acute

and chronic disease states.³⁰ Clinical pharmacy specialists in US Department of Veterans Affairs (VA) hospitals have taken on advanced roles, including increasing patient access to care by way of a shift from physician to pharmacist appointments for medication management.³¹ Most VA hospitals utilize an advanced tool to document pharmacists' patient care activities, linking directly to patients' electronic medical records and providing valuable information on cost savings, quality, and patient outcomes. This information has been used for expanding the numbers of clinical pharmacy specialists and their roles.³¹

In the United Kingdom, the Royal Pharmaceutical Society Faculty provides the professional recognition program for advanced practice, which includes support networks, access to experts and mentors, opportunities for professional development, and portfolio development.³² Advanced Pharmacy Framework competencies must be met and a portfolio submitted for review to receive postnominal titles aligned to a stage of practice.³² Qualified independent pharmacist prescribers may prescribe autonomously for any condition within their clinical competence.³²

Australia has piloted and implemented a credentialing system for advanced pharmacist practitioners to ensure that pharmacists are improving patient care and advancing the profession.³³ Candidates submit a practice portfolio for evaluation by a credentialing evaluator panel.^{33,34} The 3 proposed levels for professional recognition are: L1 (Transition), L2 (Consolidation), and L3 (Advanced).^{33,34} The following 5 recently adopted competency standard domains are components of the advanced practice framework: (1) expert professional practice, (2) professionalism and ethics, (3) communication and collaboration, (4) leadership and management, and (5) education and research.³³ Numerous specific standards and competencies are detailed under each domain.

Consultant pharmacists have lead roles in specialty clinics in Saudi Arabia, including anticoagulation clinics, cardiology, HIV, oncology, pain, solid organ transplant, and ambulatory care.³⁵ Qualifications include postgraduate year 1 and year 2 residencies, plus at least 3 years of relevant experience.³⁵ Collaborative practice agreements with physicians give these pharmacists prescriptive authority and allow them to order laboratory tests.³⁵ Government-funded scholarship training is expected to increase the number of pharmacists with these skill sets.³⁵

Japan has a highly structured approach to credentialing and a board certification system with requirements in specialized knowledge, teaching, and research.³⁶ Although Japanese pharmacists cannot currently prescribe, they are involved in multidisciplinary teams in roles comparable to many advanced clinical roles in North American hospitals.³⁶

There are undoubtedly many other examples of advanced pharmacist practices in other countries that could be used to illustrate current approaches and to collectively develop strategies for further advancing the profession.

Advanced Approaches to Teaching and Preceptorship

The clinical pharmacist's role includes a consistently increasing teaching responsibility in most academic settings; thus, innovative approaches to preceptorships for students and residents have advanced pharmacy practice in unique ways. Some key themes to these advancements include starting experiential education earlier in the curriculum, adopting new standards for learner-to-preceptor ratios, and expecting students to take increased responsibility for patient care activities after appropriate experience has been gained.^{37,38} Not only have these changes required clinical pharmacists to adopt progressive approaches to advanced education, but they have also instilled fundamental skills that can be applied by new graduates as they work toward advanced practice roles.

Loewen and others³⁷ explored various models of preceptorship and found that grouping learners with one or more preceptors and including tiered learners were associated with several benefits for learners, including knowledge-sharing, social support, increased appreciation for teamwork, broader range of learning opportunities, and stronger independence. Preceptors reported decreased workload and reduced stress, as well as enhanced clinical and team management skills.³⁷ Hall and others³⁸ found that similar teaching models helped students to shift from their traditional roles as observers to more active roles as participants in patient care. This transformation included participation in patient care rounds with the constant supervision of a preceptor being replaced by daily supervision and tailored support. The approach allowed increased capacity for student learners. A review by Cameron and others³⁹ supported these conclusions and recommended peer-assisted and near-peer learning models as a way of promoting learning independence, thereby increasing motivation for teaching and facilitating targeted patient care activities into day-to-day student responsibilities. The University of British Columbia's Faculty of Pharmaceutical Sciences has implemented experiential education facilitator positions in part to promote nontraditional learner–preceptor models, with an emphasis on “student value”.⁴⁰ These positions are cofunded by the faculty and the local hospital pharmacy departments. The goal is to provide optimal experiential education opportunities while allowing clinical pharmacist preceptors to continue their full clinical patient care assignments and to more effectively include real case examples in their preceptor activities.

EVIDENCE SUPPORTING ADVANCED PHARMACIST PRACTITIONER ROLES

Although the concept of the advanced pharmacist practitioner is relatively new and still evolving, there is some published evidence that advanced practitioners can have a beneficial impact on both patient outcomes and health care costs. Most studies have evaluated certain aspects of the specific activities

outlined above, such as pharmacist prescribing or specific clinical roles; however, several studies have evaluated broader responsibilities. For example, the COLLABORATE study assessed the impact of a team-based pharmacist carrying out proactive clinical services, including medication history-taking, participation in multidisciplinary rounds, resolution of drug therapy issues, and discharge counselling.⁴¹ Implementation of this pharmacist role resulted in improved overall quality of medication use (according to several prespecified indicators), as well as reduced readmission rates. Gillespie and others⁴² evaluated comprehensive care provided by clinical pharmacists for patients over 80 years of age in a model that also included postdischarge follow-up. This approach resulted in reductions in overall health care costs, hospital visits, and drug-related readmissions. A study conducted in North Carolina evaluated a cohort of clinical pharmacist practitioners (CPPs) with prescribing authority to manage the care of referred patients.⁴³ These CPPs had undergone supplemental education and certification that included diagnosis and physical assessment training. Clinical efficacy and financial charges from referrals to the CPP were compared with cases managed by primary care providers (physicians, family nurse practitioners, and physician assistants),⁴³ with matching of patients by age, sex, and disease states. There were more outpatient visits but fewer emergency department visits (both of which were statistically significant differences) and a similar number of inpatient admissions in the CPP cohort relative to the primary care provider cohort. Patients with more complicated or refractory-to-standard-treatment conditions were more often referred to CPPs, which may have been a factor leading to the increase in outpatient visits. There was no difference in average daily medication costs or achievement of predetermined disease state goals. The authors concluded that CPPs provided comparable health care for patients with chronic conditions with respect to clinical efficacy and costs, and could relieve systemic pressures in areas with increased need for primary care practitioners. These are just a few examples of the evidence supporting the benefits of comprehensive care provided by clinical pharmacists in advanced practice settings.

FUTURE DIRECTIONS

A number of hospital pharmacy initiatives have been launched by professional societies to highlight and further develop pharmacy practices in a wide variety of settings. The CSHP “Excellence in Hospital Pharmacy” initiative aims to advance pharmacy practice through a 3-tiered approach focusing on patient engagement, best practice care plans, and effective collaboration.⁴⁴ The “Excellence Declaration” encourages pharmacists to implement “Excellence Initiatives”, advancing practice to improve health outcomes. It encourages the sharing of success stories so that others can evaluate the potential to adopt these concepts and expand their own practices. The initiative aims to increase the uptake of specific advanced practice roles defined

by clear benchmarks, including prescribing authority, physical examination, and the ordering of diagnostic tests, among others. Interestingly, in a recent CSHP survey concerning this initiative, 57% of respondents reported that they were currently working in advanced practice roles.⁴⁴ CSHP's website also summarizes the Canadian consensus on clinical key performance indicators (KPIs).⁴⁵ This broad-based initiative, currently being piloted at several Canadian sites, is designed to collectively advance clinical pharmacy practice through the measurement and promotion of clinical KPIs to ensure that clinical pharmacists are focusing on evidence-based priorities.⁴⁶ The "Blueprint for Pharmacy" of the Canadian Pharmacists Association also outlines advanced practice goals, including establishing nationally accepted definitions for prescribing and administering drugs.⁴⁷ The associated "Vision for Pharmacy" includes goals to establish the ability of pharmacists to initiate, modify, and continue drug therapy, as well as to order lab tests.

Both the ASHP and the ACCP have been active in developing practice standards that promote the development and implementation of advanced pharmacist practitioner roles.^{48,49} The ACCP states that its purpose "is to advance human health by extending the frontiers of clinical pharmacy".⁴⁸ It has outlined the fundamental clinical pharmacist competencies, including direct patient care, pharmacotherapy knowledge, systems-based care and population health, communication, professionalism, and continuing professional development.⁴⁸ The ASHP has also outlined various mechanisms for credentialing pharmacists, some of which promote expanded or enhanced practice competencies.⁵⁰ For many years, the Board of Pharmacy Specialties has offered specialty certification for pharmacists, with an increasing number of certifications now available, including pharmacotherapy, critical care, cardiology, infectious diseases, psychiatry, pediatrics, and ambulatory care.⁵¹ Certifications for solid organ transplant and emergency medicine are planned over the next 2 years. Board certification is designed specifically to assess each participating pharmacist's qualifications for contributing to patient care "at advanced practice levels".

Jacobi and others⁵² published a commentary in 2016 describing the goals of the ASHP Pharmacy Practice Model Initiative and its potential effect on future pharmacy practice. This initiative recommends that pharmacists be given prescribing authority as part of a collaborative practice team with the appropriate credentialing. It also recommends mandatory postgraduate training in direct patient care and expansion of the postgraduate year 2 residency program. However, although clinical specialists are necessary to advance practice, education, and research, the proposed model describes a pharmacy team of both generalists and specialists who share responsibility for delivering effective patient care. Future research is recommended to measure the impact of new practice models.

The ASHP Foundation's pharmacy forecast for 2018 included information to support hospital strategic planning in an

effort to advance pharmacy practice toward specific areas in health care that are forecasted to influence health-system pharmacy over the next 5 years.⁴⁹ This forecast included a call for pharmacists to become "precision medicine experts and leaders" as more novel molecular entities are approved for use in North America. Advances in information technology will facilitate the use of statistical predictive models to improve clinical decision-making. This report also predicted the expansion of ambulatory care services, including opioid stewardship, with advanced roles for pharmacy technicians also being a forecasted priority. The forecast recommended education and training activities to support population health efforts, including "innovation centres" to improve various aspects of pharmacy practice.

Several Canadian surveys have evaluated pharmacists' opinions on the future directions of advanced practice skills and credentialing. Results from a review published in 2015 indicated that a large proportion of respondents would incorporate routine prescribing into their practice if permitted to do so by regulatory bodies.⁵³ Respondents also strongly supported a national specialty accreditation program, and most reported that they would strongly consider pursuing speciality recognition if this were available.⁵³ A study by Penm and others⁵⁴ conducted in 2015 also showed that the vast majority of those surveyed would support formal certification for pharmacy specialization leading to advanced practice roles. However, the authors also pointed out that unique specialties are not necessary to be considered advanced practices, and that pharmacists specializing in general areas such as pharmacotherapy may be considered "advanced generalists". In another study, Canadian hospital pharmacy residents predicted expanded roles for pharmacists by 2025, including prescribing independently, ordering laboratory tests, and administering medications, along with the associated responsibilities for monitoring patient outcomes.⁵⁵

CONCLUSION

Many pharmacists are practising at advanced levels in a broad range of settings, and much is being written about future directions for our profession. The foregoing article is not an exhaustive review, and there are likely numerous other current and proposed roles that are good examples of pioneering work that further advances hospital pharmacy. There is clearly a need for further publications on this subject to provide more comprehensive information about the most recent practice examples and theories. The *CJHP* Editorial Board hopes that this new series on the Advanced Pharmacist Practitioner will provide relevant and applicable information to be shared and incorporated into the practices of all hospital pharmacists, including established clinicians, those just beginning their practice, and those currently studying to become hospital pharmacists. We anticipate that the series will run for about 2 years, with the next article focusing on advanced preceptorship concepts. Subsequent articles will

highlight specific examples of pharmacy practices, research innovations, applicable technological advances, pharmacist prescribing, and other yet-to-be-determined topics under this rapidly evolving theme. We encourage feedback, including your ideas for future publications within this series that will illustrate these concepts and provide background information to formulate new ideas for advanced practice initiatives.

References

- Mansell H, Hopf YM. Should hospital pharmacists prescribe? *Can J Hosp Pharm.* 2014;67(5):390-3.
- Bhatia S, Simpson SH, Burgard T. Provincial comparison of pharmacist prescribing in Canada using Alberta's model as the reference point. *Can J Hosp Pharm.* 2017;70(5):349-57.
- Yuksel N. Practice spotlight: pharmacist practice in an outpatient menopause clinic. *Can J Hosp Pharm.* 2012;65(1):43-4.
- Turgeon RD. Physical assessment by pharmacists: a valued component of care [letter]. *Can J Hosp Pharm.* 2017;70(3):250-1.
- Mohammed RSD, Yeung EYH. Physical examinations by pharmacists: practising the *right* thing makes perfect [letter]. *Can J Hosp Pharm.* 2017;70(6):468-9.
- Turgeon RD. Physical examinations by pharmacists: practising the *right* thing makes perfect [reply]. *Can J Hosp Pharm.* 2017;70(6):469.
- About the CSHP Foundation* [webpage]. Ottawa (ON): Canadian Society of Hospital Pharmacists; 2018 [cited 2018 Oct 15]. Available from: <http://cshpfoundation.ca/web/en/la/pa/E3762658AE61472ABE60A12C71D69FEE/template.asp/>
- About us: What is the ASHP foundation?* [webpage]. Bethesda (MD): American Society of Health-System Pharmacists (ASHP) Foundation; 2018 [cited 2018 Oct 15]. Available from: <http://ashpfoundation.org/MainMenuCategories/AboutUs/>
- The ACCP Foundation* [webpage]. Lenexa (KS): ACCP Foundation; 2019 [cited 2019 Jan 11]. Available from: <https://www.accpfoundation.org/about/index.aspx>
- Perreault MM, Thiboutot Z, Burry LD, Rose L, Kanji S, LeBlanc JM, et al. Canadian survey of critical care pharmacists' views and involvement in clinical research. *Ann Pharmacother.* 2012;46(9):1167-73.
- Johnson JA, Weitzel KW. Advancing pharmacogenomics as a component of precision medicine: how, where, and who? *Clin Pharmacol Ther.* 2016;99(2):154-6.
- Cohn I, Cohn RD, Ito S. Professional opportunity for pharmacists to integrate pharmacogenomics in medication therapy. *Can Pharm J (Ott).* 2018;151(3):167-9.
- Remsberg CM, Bray BS, Wright SK, Ashmore J, Kabasheche W, Wang S, et al. Design, implementation, and assessment approaches within a pharmacogenomics course. *Am J Pharm Educ.* 2017;81(1):11.
- Chant C. How critical are critical care pharmacists? *Can J Hosp Pharm.* 2012;65(1):5-6.
- Leguelinel-Blache G, Nguyen TL, Louart B, Pujol H, Lavigne JP, Roberts JA, et al. Impact of quality bundle enforcement by a critical care pharmacist on patient outcome and costs. *Crit Care Med.* 2018;46(2):199-207.
- Borthwick M. The role of the pharmacist in the intensive care unit. *J Intensive Care Soc.* 2018;0(0):1-5. Available from: <https://doi.org/10.1177/1751143718769043>
- Dixon DL, Salgado TM, Abbate A. Pharmacists as integral members of the cardiovascular team. *JAMA Cardiol.* 2017;2(11):1279-80.
- Wanbon R, Lyder C, Villeneuve E, Shalansky S, Manuel L, Harding M. Clinical pharmacy services in Canadian emergency departments: a national survey. *Can J Hosp Pharm.* 2015;68(3):191-201.
- Dellit TH, Owens RC, McGowan JE, Gerding DN, Weinstein RA, Burke JB, et al. Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America guidelines for developing an institutional program to enhance antimicrobial stewardship. *Clin Infect Dis.* 2007;44(2):159-77.
- Genrod C, Frost T, Eid D. Opioid exit plan: a pharmacist's role in managing acute postoperative pain. *J Am Pharm Assoc.* 2017;57(2S):S92-8.
- Ghafoor VL, Phelps P, Pastor J. Implementation of a pain medication stewardship program. *Am J Health Syst Pharm.* 2013;70(23):2070-5.
- Wychowski, MK, Ruscio CI, Kouides PA, Sham RL. The scope and value of an anticoagulation stewardship program at a community teaching hospital. *J Thromb Thrombolysis.* 2017;43(3):380-6.
- Shalansky S, Basi S, Yu C. Practice spotlight: pharmacists in a multidisciplinary atrial fibrillation clinic. *Can J Hosp Pharm.* 2011;64(5):370-1.
- Chevalier B, Neville HL, Thompson K, Nodwell L, MacNeil M. Health care professionals' opinions and expectations of clinical pharmacy services on a surgical ward. *Can J Hosp Pharm.* 2016;69(6):439-48.
- Hwang S, Koleba T, Mabasa VH. Assessing the impact of an expanded scope of practice for pharmacists at a community hospital. *Can J Hosp Pharm.* 2013;66(5):304-9.
- McDermaid K. Practice spotlight: pharmacist practice in rural Saskatchewan. *Can J Hosp Pharm.* 2012;65(5):399-400.
- Edwards A. Practice spotlight: military pharmacists in Afghanistan. *Can J Hosp Pharm.* 2008;61(3):219-20.
- Ploylearmsang C, Kanjanasilp J, Kessomboon N, Suttajit S, Suwannaprom P, Sripa S, et al. Hospital pharmacy practice and the way forward for pharmacy education in Thailand. *Can J Hosp Pharm.* 2019;72(1):34-40.
- Penn J, Chaar B, Moles RJ. Use of the International Pharmaceutical Federation's Basel Statements to assess and advance hospital pharmacy practice: a scoping review. *Can J Hosp Pharm.* 2016;69(2):131-7.
- Scott DM. United States health care system: a pharmacy perspective. *Can J Hosp Pharm.* 2016;69(4):306-15.
- Clancy C. Optimization of clinical pharmacy specialists at Veterans Affairs facilities. *Am J Health Syst Pharm.* 2018;75(12):844.
- Great Britain (UK): professional recognition programme of advanced practice. In: Bruno A, editor. *Advanced practice and specialisation in pharmacy: global report.* The Hague (NL): International Pharmaceutical Federation; 2015 [cited 2018 Oct 15]. p. 29-31. Available from: https://www.fip.org/files/fip/PharmacyEducation/Adv_and_Spec_Survey/FIPEd_Advanced_2015_web_v2.pdf
- Moles RJ, Stehlik P. Pharmacy practice in Australia. *Can J Hosp Pharm.* 2015;68(5):418-26.
- Advancing practice: maximise your impact.* Australia: Pharmacy Development Australia; 2018 [cited 2018 Oct 15]. Available from: <https://advancingpractice.com.au/>
- Al-jedai A, Qaisi S, Al-meman A. Pharmacy practice and the health care system in Saudi Arabia. *Can J Hosp Pharm.* 2016;69(3):231-7.
- Nakagawa S, Kume N. Pharmacy practice in Japan. *Can J Hosp Pharm.* 2017;70(3):232-42.
- Loewen P, Legal M, Gamble A, Shah K, Tkachuk S, Zed P. Learner:preceptor ratios for practice-based learning across health disciplines: a systematic review. *Med Educ.* 2017;51(2):146-57.
- Hall K, Musing E, Miller DA, Tisdale JE. Experiential training for pharmacy students: time for a new approach. *Can J Hosp Pharm.* 2012;65(4):285-93.
- Cameron K, Fernandes O, Musing ELS, Raymond C. Increasing capacity for experiential rotations for pharmacy learners: lessons learned from a multisite teaching hospital. *Can J Hosp Pharm.* 2016;69(1):23-9.
- Legal M, project lead. *The AGILE project final report.* Vancouver (BC): The University of British Columbia, Pharmaceutical Sciences; 2013 [cited 2018 Oct 15]. Available from: http://agile.pharmacy.ubc.ca/files/2014/01/AGILE_Final-Report_December-2013.pdf
- Makowsky MJ, Koshman SL, Midodzi WK, Tsuyuki RT. Capturing outcomes of clinical activities performed by a rounding pharmacist practicing in a team environment: the COLLABORATE study [NCT00351676]. *Med Care.* 2009;47(6):642-50.
- Gillespie U, Alassaad A, Henrohn D, Garmo H, Hammarlund-Udenaes M, Toss H, et al. A comprehensive pharmacist intervention to reduce morbidity in patients 80 years or older: a randomized controlled trial. *Arch Intern Med.* 2009;169(9):894-900.
- Kislan MM, Bernstein AT, Fearington LR, Ives TJ. Advanced practice pharmacists: a retrospective evaluation of the efficacy and cost of clinical pharmacist practitioners managing ambulatory Medicare patients in North Carolina (APPLE-NC). *BMC Health Serv Res.* 2016;16:673.
- Excellence in hospital pharmacy* [webpage]. Ottawa (ON): Canadian Society of Hospital Pharmacists; 2018 [cited 2018 Oct 15]. Available from: <https://www.cshp.ca/excellence/>

45. Fernandes O, Toombs K, Pereira T, Lyder C, Bjelajac Mejia A, Shalansky S, et al. *Canadian consensus on clinical pharmacy key performance indicators: quick reference guide*. Ottawa (ON): Canadian Society of Hospital Pharmacists; 2015 [cited 2018 Oct 15]. Available from: https://www.cshp.ca/sites/default/files/files/publications/Official%20Publications/CPKPI/CSPH-Can-Concensus-cpKPI-QuickReferenceGuide_June_2017.pdf
46. Fernandes O, Gorman SK, Slavik RS, Semchuk WM, Shalansky S, Bussi eres JB, et al. Development of clinical pharmacy key performance indicators for hospital pharmacists using a modified Delphi approach. *Ann Pharmacother*. 2015;49(6):656-69.
47. Taskforce on a Blueprint for Pharmacy. *Blueprint for pharmacy: the vision for pharmacy. Optimal drug therapy outcomes for Canadians through patient-centred care*. Ottawa (ON): Canadian Pharmacists Association; 2008 [cited 2018 Oct 15]. Available from: https://www.pharmacists.ca/cpha-ca/assets/File/pharmacy-in-canada/blueprint/The%20Vision%20for%20%20Pharmacy_Apr%201%2009.pdf
48. Saseen JJ, Ripley TL, Bondi D, Burke JM, Cohen LJ, McBane S, et al. ACCP guideline: ACCP clinical pharmacist competencies. *Pharmacotherapy*. 2017;37(5):630-6.
49. ASHP Foundation pharmacy forecast 2018: strategic planning advice for pharmacy departments in hospitals and health systems. *Am J Health Syst Pharm*. 2018;75(2):23-54.
50. Council on Credentialing in Pharmacy. Credentialing and privileging of pharmacists: a resource paper from the Council on Credentialing in Pharmacy. *Am J Health Syst Pharm*. 2014;71:1891-900.
51. *What we do* [webpage]. Washington (DC): Board of Pharmacy Specialties; 2018 [cited 2018 Oct 15]. Available from: <https://www.bpsweb.org/about-bps/what-we-do/>
52. Jacobi J, Ray S, Danelich I, Doods Ashley E, Eckel S, Guharoy R, et al. Impact of the Pharmacy Practice Model Initiative on clinical pharmacy specialist practice. *Pharmacotherapy*. 2016;36(5):e40-9.
53. Hall KW, Bussi eres JF. Staff pharmacists' perspectives on contemporary pharmacy practice issues. *Can J Hosp Pharm*. 2015;68(2):154-60.
54. Penm J, MacKinnon NJ, Jorgenson D, Ying J, Smith J. Need for formal specialization in pharmacy in Canada: a survey of hospital pharmacists. *Can J Hosp Pharm*. 2016;69(5):356-66.
55. Guerin A, Bussi eres JF. Anticipated changes in pharmacy practice by 2025: a survey of hospital pharmacist residents. *Can J Hosp Pharm*. 2016; 69(5):388-93.

Stephen Shalansky, BSc(Pharm), ACPR, PharmD, FCSHP, is Clinical Coordinator with the Pharmacy Department, Providence Healthcare, Lower Mainland Pharmacy Services, and Clinical Professor with the Faculty of Pharmaceutical Sciences, The University of British Columbia, Vancouver, British Columbia. He is also the Editor of the *Canadian Journal of Hospital Pharmacy*.

Competing interests: None declared.

Address correspondence to:

Dr Stephen Shalansky
Pharmacy Department, Providence Healthcare
Lower Mainland Pharmacy Services
1081 Burrard Street
Vancouver BC V6Z1Y6

e-mail: sshalansky@providencehealth.bc.ca

Acknowledgement: The author wishes to thank Angela Mach, Research Consultant Pharmacist for Providence Healthcare, for her excellent work helping with literature searches and summarizing much of the literature cited in this manuscript.