ORIGINAL RESEARCH

Evaluation of Physical Assessment Education for Practising Pharmacists: A Cross-Sectional Survey

Arden R Barry, Greg Egan, Ricky D Turgeon, and Marianna Leung

ABSTRACT

Background: Pharmacists are now seeking to incorporate physical assessment (PA) into their practices. This trend prompted the creation, by the British Columbia Branch of the Canadian Society of Hospital Pharmacists, of a 30-h course specifically designed for practising pharmacists.

Objective: To evaluate pharmacists' knowledge, skills, and confidence in performing PA after completing the course.

Methods: All course participants were invited to complete 2 anonymous online surveys, immediately and 6 months after course completion.

Results: Of the 218 participants, 82 (38%) responded to the survey administered immediately after the course, and 77 (35%) completed this survey in full. About half of the respondents (39/79 [49%]) reported use of PA on a real patient before taking the course. Lack of formal training and lack of comfort were the most frequently selected barriers to performing PA. All respondents (79/79) agreed that the course had improved their knowledge of PA, 96% (76/79) agreed that it had improved their skills, and 90% (71/79) agreed that it had improved their ability to care for patients. In addition, 61% (48/79) and 67% (53/79), respectively, agreed that they felt confident performing PA and intervening with regard to a patient's drug therapy on the basis of physical findings. Thirty-eight (17%) of the course participants completed the 6-month follow-up survey. In that survey, the most frequently selected barrier to performing PA was lack of time. Paired data, available for 23 respondents, showed a significant increase in use of PA on real patients over time ($p = 0.013$ by χ^2 test). However, there was no significant improvement in confidence in performing PA or intervening on a patient's drug therapy on the basis of physical findings ($p > 0.05$ by 2-sided t test). The primary limitation of this study was potential responder bias.

Conclusions: A PA course designed for pharmacists improved participants' self-reported knowledge and skills, as well as self-perceived ability to care for patients. Six months after the course, two-thirds of respondents had used PA in practice. However, there was no improvement in confidence in performing such assessments or using the findings to intervene on a patient's drug therapy.

Keywords: physical examination, pharmacists, surveys and questionnaires

RÉSUMÉ

Contexte : Les pharmaciens cherchent désormais à ajouter l'examen physique à leurs pratiques. Cette tendance a motivé la section britanno-colombienne de la Société canadienne des pharmaciens d'hôpitaux à créer un cours de 30 heures conçu spécialement pour les pharmaciens en exercice.

Objectif : Évaluer les connaissances, les compétences et le degré d'aisance des pharmaciens ayant suivi le cours portant sur la réalisation d'examens physiques.

Méthodes : Tous les participants au cours ont été invités à remplir deux sondages anonymes en ligne : l'un à la fin du cours et l'autre six mois après la fin du cours.

Résultats : Des 218 participants, 82 (38 %) ont répondu partiellement au sondage mené immédiatement à la fin du cours et 77 (35 %) y ont répondu en entier. Environ la moitié des répondants (39/79 [49 %]) ont indiqué avoir réalisé un examen physique en situation réelle avant d'avoir suivi le cours. Les facteurs les plus fréquents propres à dissuader le pharmacien de réaliser un examen physique étaient l'absence de formation officielle et le manque d'aisance. Tous les répondants ont indiqué que le cours avait accru leurs connaissances de l'examen physique, 96 % (76/79) ont affirmé qu'il avait amélioré leurs compétences et 90 % (71/79) ont déclaré qu'il avait amélioré leur capacité à soigner les patients. De plus, 61 % (48/79) et 67 % d'entre eux (53/79) ont indiqué respectivement qu'ils se sentaient à l'aise de réaliser des examens physiques et d'agir sur la pharmacothérapie du patient en fonction des résultats de l'examen. Trente-huit (17 %) participants ont répondu au sondage mené six mois après le cours. Ce sondage a révélé que le manque de temps était le facteur le plus souvent évoqué pour faire obstacle à la réalisation d'examens physiques. Des données appariées de 23 répondants ont montré une augmentation significative du recours à l'examen physique en situation réelle au fil du temps ($p = 0{,}013$ par test χ^2). Cependant, on n'a noté aucune amélioration significative de l'aisance à réaliser des examens physiques ou à agir sur la pharmacothérapie d'un patient en fonction des résultats d'un examen physique ($p > 0{,}05$ par un test t bilatéral). La principale limite de la présente étude était un biais potentiel dans les réponses.

Conclusions : Un cours sur l'examen physique conçu pour les pharmaciens a amélioré les connaissances et les compétences autodéclarées des participants ainsi que ce qu'ils croient être leurs capacités à soigner les patients. Six mois après le cours, deux tiers des répondants avaient réalisé un examen physique dans leur pratique. Cependant, on n'a noté aucune amélioration de l'aisance à réaliser de tels examens ou à en utiliser les résultats pour agir sur la pharmacothérapie du patient.

Mots clés : examen physique, pharmaciens, sondages et questionnaires

Can J Hosp Pharm. 2019;72(1):27-33

INTRODUCTION

The role of the pharmacist has advanced over the past several decades, from a dispenser of medications to an integral member of the multidisciplinary health care team. Along with this expanded role, pharmacists are now seeking to broaden their expertise to include patient care activities that are relevant to assessing and monitoring drug therapy but that have traditionally been performed by other members of the health care team, such as physical assessment (PA).[1-5] This form of assessment involves systematically evaluating the body and its functions and consists of 4 specific skills: inspection, palpation, percussion, and auscultation.[6] Although most pharmacists routinely perform inspection, they often have little experience with other PA skills. The concept of pharmacists using PA in their practice is not novel. In 1999, the American Society of Health-System Pharmacists released a position statement recommending that pharmacists in primary care broaden their skills to include PA as part of their role in collaborative drug therapy management.[1] In 2007, the *Canadian Journal of Hospital Pharmacy* featured a Point Counterpoint debate as to whether pharmacists should perform PA.[2,3] This debate highlighted the usefulness of performing PA when assessing the efficacy and safety of drug therapy and emphasized that many pharmacists already perform aspects of PA (e.g., inspection) in their practice, but also noted that it may be more prudent to focus on existing skills rather than "venturing into a turf battle" with colleagues on the health care team.[2,3] Recently, Schindel and others[7] surveyed practising pharmacists to identify professional learning needs to facilitate an expanded scope of practice, and PA was identified as 1 of 3 key areas of training. Advancement of pharmacists' adeptness with PA may lead to increased efficiency in patient assessment and medication monitoring, which may in turn aid in affirming the pharmacist's role as an integral member of the health care team.

Historically, most entry-to-practice pharmacy programs (including that of the University of British Columbia) have not provided comprehensive PA training. As a result, there has been increased demand among practising pharmacists to receive this training as part of their continuing professional development. Recently, a PA course specifically designed for practising pharmacists was developed by the British Columbia Branch of the Canadian Society of Hospital Pharmacists (CSHP). The purpose of the study reported here was to evaluate pharmacists' perceptions and integration of PA into their practice after completing this course. The specific objectives of the study were to assess participants' knowledge, skills, and confidence in performing PA immediately and 6 months after completing the course; to examine participants' integration of PA into their practice; and to evaluate the content and format of the course.

METHODS

This prospective, cross-sectional study involved participants in a PA course.

Description of the PA Course

The course was developed specifically for practising pharmacists through a partnership between the CSHP British Columbia Branch and Langara College, Vancouver, and was sponsored by the College of Pharmacists of British Columbia. Eligible course participants were registered pharmacists (including pharmacy practice residents) in any practice setting; student pharmacists were not eligible to take the course. The course was offered 11 times (with up to 20 participants per course) between September 2015 and June 2017 in 3 different cities in British Columbia. It consisted of 30 hours of instructional contact time, which was facilitated by instructors (physicians and nurses) from Langara College and pharmacists with formal PA training from the CSHP British Columbia Branch. For the first year, the course was offered 3 times and included 24 h of required instructional time with 6 additional, optional hours of practical application of PA principles specific to drug therapy; the optional section of the course was taught by pharmacists with formal PA training from the CSHP British Columbia Branch. After the first year, the course was expanded to 30 h (with no optional component) to incorporate practical application sessions as part of the course.

Overall, the course consisted of five 6-h sessions delivered on the weekend over 5 or more weeks. The course material was delivered through a combination of lecture-based discussions and practice exercises. The course content included how to perform a general patient examination and measure vital signs, as well as how to perform PA techniques for various organ systems, including the nervous system, respiratory system, cardiovascular system, gastrointestinal system, and musculoskeletal system, as well as the head, eyes, ears, nose, and throat. Pharmacist instructors helped link these techniques back to the assessment and monitoring of drug therapy. Participants learned how to perform PA skills primarily on other participants, and used a simulator to learn how to identify abnormalities (e.g., adventitious lung and heart sounds, heart murmurs).

Development of the Survey Questionnaires

The study was based on 2 online voluntary, anonymous surveys. The questions were derivations of those used in a previous study by Barry and others,[5] evaluated for clarity and appropriateness by the research team. Because the questions were based on those in a previous study, they were not tested in a pilot survey. The survey administered immediately after the course (referred to hereafter as the postcourse survey) consisted of 25 questions (Appendix 1, available at https://www.cjhp-online.ca/index.php/cjhp/issue/view/188/showToc), The survey administered 6 months after course completion (referred to as the 6-month follow-up survey) consisted of 7 questions (Appendix 2, available at https://www.cjhp-online.ca/index.php/cjhp/issue/view/188/showToc).

Administration of the Survey Questionnaires

All pharmacists who completed the course were invited by e-mail to participate in the study. The e-mail addresses were obtained from course registration materials. There were no specific exclusion criteria; however, participants were required to have internet access and had to be proficient in English to complete the surveys. The first survey was distributed within a week after course completion and the second 6 months after course completion. The timing of the second survey was pragmatically selected for feasibility. Because of a lag between the start date of the course and approval of the study, the first and second cohorts (totalling 59 [27%] of the 218 participants overall) did not receive their first survey until 6 and 2 months, respectively, after completing the course. For both these cohorts, the 6-month follow-up survey was administered 6 months after course completion. The surveys were hosted by the University of British Columbia's survey tool (FluidSurveys) and distributed via e-mail by the CSHP British Columbia Branch, with one reminder e-mail 2 weeks after the initial invitation. Both surveys remained open from May 2016 to December 2017. Consent was implied for anyone who completed the survey. No incentives or remuneration were provided to course participants who responded to the surveys.

The study was approved by the Research Ethics Board at the University of British Columbia.

Analysis of Survey Responses

Descriptive statistics were used for analysis of survey responses. Identical questions regarding use of PA and confidence in performing PA were compared between the postcourse and 6-month follow-up surveys using a paired statistical comparison (paired 2-sided t test for Likert-scale questions and χ^2 test for dichotomous outcomes). For the Likert-scale questions, each response was assigned a numeric value (strongly agree = 5, agree = 4, neither agree or disagree = 3, disagree = 2, strongly disagree = 1), and a weighted mean value with standard deviation was calculated as the sum of the assigned numeric values of the responses divided by the total number of responses.

All statistical analyses were performed using IBM SPSS Statistics software (version 21, IBM Corporation, Armonk, New York). A p value of less than 0.05 was considered statistically significant.

RESULTS

A total of 218 pharmacists completed the PA course. Eighty-two pharmacists (38%) responded to the postcourse survey, and

Table 1. Characteristics of Survey Respondents

Characteristic	Survey Timing; No. (%) of Respondents	
	Immediately after Course (n = 77)*	6 Months after Course, Paired Sample (n = 23)†
Age (years)		
20–29	14 (18)	2 (9)
30–39	37 (48)	12 (52)
40–49	15 (19)	5 (22)
50–59	11 (14)	4 (17)
Sex, female	60 (78)	18 (78)
Time working as a pharmacist (years)		
≤ 5	20 (26)	2 (9)
6–10	24 (31)	10 (43)
≥ 11	33 (43)	11 (48)
Highest level of pharmacy education		
Accredited residency	31 (40)	6 (26)
Entry-to-practice degree	27 (35)	8 (35)
Graduate Doctor of Pharmacy	16 (21)	8 (35)
Master of Pharmacy	3 (4)	1 (4)
Primary practice setting		
Hospital inpatient setting	44 (57)	13 (57)
Ambulatory clinic	13 (17)	2 (9)
Community pharmacy	12 (16)	2 (9)
Family medicine or primary care	3 (4)	3 (13)
Academia	2 (3)	2 (9)
Other	3 (4)	1 (4)

*Data are presented only for those who completed all questions in the survey administered immediately after course completion ("postcourse survey"). An additional 5 respondents answered some but not all of the questions.
†Data are presented only for the 23 respondents whose responses could be paired between the postcourse survey and the 6-month follow-up survey. An additional 15 respondents completed the 6-month follow-up survey, but the data could not be paired with their responses to the postcourse survey.

77 (35%) completed this survey in full. For reporting purposes, the number of participants who responded to each question is included as the denominator. Demographic characteristics of respondents to the postcourse survey are summarized in Table 1. Nearly half of respondents (39/79, 49%) stated that they had performed PA on a real patient before participating in the course, primarily fluid assessment, blood pressure measurement, and inspection of dermatological conditions. The 3 most frequently selected barriers to performing PA in practice before the course were lack of formal PA training or education (74/79, 94%), lack of comfort in performing PA (73/79, 92%), and lack of time to perform PA (66/79, 84%). The most frequently selected objective for taking the course was to improve skills and ability in performing PA (79/79, 100%). The postcourse survey results for the Likert-scale questions are summarized in Table 2. The most commonly stated strengths of the course were the mix of didactic and hands-on practice time (30/79, 38%), the expertise and quality of the instructors (22/79, 28%), and the small class size and instructor-to-participant ratio (5/79, 6%). The most common suggestions for course improvements were more hands-on practice time (31/79, 39%), more applicability to pharmacotherapy (18/79, 23%), and more instructional time (8/79, 10%).

Thirty-eight pharmacists (17%) responded to the 6-month follow-up survey, and all of these respondents completed the survey in full. Paired data were available for 23 (61%) of these 38 respondents. Demographic characteristics for the paired sample are summarized in Table 1. Six months after course completion, 66% of respondents (25/38) had performed PA on a real patient in practice. The 3 most frequently selected barriers to performing PA at the 6-month mark were lack of time to perform PA (31/38, 82%), lack of a need to perform PA because of access to information from other health care professionals (27/38, 71%), and lack of comfort with performing PA (26/38, 68%). When asked to identify the most beneficial aspect of using PA in practice, 55% of respondents (21/38) provided a response, which most frequently related to increased ability (6/21, 29%), confidence (5/21, 24%), and understanding (5/21, 24%). The 6-month follow-up survey results for the Likert-scale questions are also summarized in Table 2.

Table 2. Select Results of Follow-up Surveys

Statement	Response; % of Respondents				
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Immediately after course (*n* = 79)*					
The course improved my ability to care for my patients	30	60	9	1	0
The course improved my knowledge of PA	57	43	0	0	0
The course improved my skills and ability with performing PA	44	52	4	0	0
I feel confident with performing PA in my practice	15	46	32	8	0
I would intervene on a patient's drug therapy based on my PA findings	23	44	28	4	1
The course fulfilled my personal objective(s) for taking the course	28	58	9	5	0
The course provided a good connection between PA and pharmacotherapy	9	37	23	28	4
The length of the course was appropriate	18	51	16	15	0
The didactic content of the course was at an appropriate level	22	66	6	6	0
The amount of didactic instruction during the course was just right	19	56	10	14	1
The amount of hands-on practice time during the course was just right	14	39	11	30	5
6 months after course (*n* = 38)†					
I feel confident with performing PA in my practice	11	34	39	16	0
I would intervene on a patient's drug therapy based on my PA findings	21	61	18	0	0

PA = physical assessment.
*Data are presented for the 79 respondents who answered questions 6 to 16 of this survey (see Appendix 1, available at https://www.cjhp-online.ca/index.php/cjhp/issue/view/188/showToc).
†Data are presented for the 38 respondents who answered questions 4 and 5 of the 6-month survey (see Appendix 2, available at https://www.cjhp-online.ca/index.php/cjhp/issue/view/188/showToc).

According to the paired data, there was a significant increase in use of PA on a real patient in practice between the postcourse and 6-month follow-up surveys (48% [11/23] versus 65% [15/23], $p = 0.013$). However, there was no statistically significant difference in confidence in performing PA (weighted mean value 3.52 ± 0.79 in postcourse survey versus 3.39 ± 0.89 in 6-month follow-up survey, $p = 0.33$) or intervening on a patient's drug therapy based on PA findings (weighted mean value 3.70 ± 0.88 in postcourse survey versus 4.00 ± 0.67 in 6-month follow-up survey, $p = 0.11$).

DISCUSSION

This study has shown that a course specifically designed to teach practising pharmacists how to perform PA improved participants' self-reported knowledge, skills, and ability. Furthermore, 90% of respondents agreed that the course improved their ability to care for their patients. After the course, most respondents agreed they felt confident in performing PA and would intervene on a patient's drug therapy on the basis of their PA findings. However, there was no significant increase in agreement with these statements between the postcourse and 6-month follow-up surveys.

According to data from all respondents, the use of PA on real patients increased from 49% before the course to 66% by 6 months after the course. Interestingly, roughly one-third of respondents had not attempted to use their PA skills in practice by the time of the follow-up survey. A timeframe of 6 months should have been sufficient to allow pharmacists to incorporate PA into their practice, as the skills developed during the course could be applied immediately. At 6 months after the course, numerically fewer respondents felt confident in performing PA than was the case immediately after course completion, but more were willing to use their PA findings to intervene on a patient's drug therapy (though neither difference was statistically significant). This was an unexpected finding, as it is incongruent with respondents' self-reported improvement in skills and ability in performing PA, as reported immediately after the course. One possible explanation is that course participants found it challenging to apply their PA skills on real patients in practice, which thereby diminished their overall confidence. As such, despite having increased knowledge, participants may have felt less confident in performing the technical aspects of PA over time. This may have been due to a lack of time to practise their PA skills, or a lack of comfort in translating their skills from the classroom to the bedside, both of which were identified as barriers in the 6-month follow-up survey. Conversely, their increased intention to intervene on a patient's drug therapy on the basis of their PA findings may reflect an increased ability with specific PA skills relevant to their particular practice settings, but less confidence in performing PA overall. Still, despite having 6 months to practice, more than half of the respondents still did not agree they felt confident in performing PA.

A previous study by Barry and others[5] demonstrated that a 2-hour PA session for practising pharmacists ($n = 34$) improved participants' confidence in performing PA, answering a patient's concerns about PA findings, and discussing their findings with a physician, relative to perceptions reported before the session. However, as with the present study, the training session in that earlier study did not improve participants' confidence in intervening on a patient's drug therapy according to their PA findings. In the study by Barry and others,[5] there was no increase in the use of PA in practice among respondents after 4 weeks, which may have been due to the relatively short follow-up period. In another study, Breault and others[8] evaluated the impact of a 2-day, 16-h workshop intended to teach institution-based pharmacists ($n = 86$) how to perform PA, which was specifically designed to address the issues identified in the study by Barry and others.[5] The workshop significantly improved participants' overall confidence in PA, managing drug therapy based on PA findings, and discussing PA findings from before to 6 months after the workshop. At 6 months, about half of the participants continued to incorporate PA into their practices. Barriers to incorporating PA in practice at 6 months were similar to those reported in the current study, including lack of need (i.e., ability to access to this information from other health care professionals), lack of training, "treading on the turf" of other health care professionals, lack of comfort with performing PA, and lack of time.

In the current study, despite having 30 h of contact time, some respondents suggested that the course should have more instructional time and/or hands-on practice. However, more than two-thirds of respondents agreed that the length of the course was appropriate, and roughly three-quarters agreed that the amount of didactic instruction was just right. In contrast, only about half of respondents agreed that the amount of hands-on practice was just right. Therefore, if additional course time were to be added, it should focus solely on practical skill development. This study did not evaluate respondents' perception of the optimal amount of instructional time. As well, increasing the overall instructional time might deter some pharmacists from taking the course. One possible solution to improve participants' use of PA in practice without lengthening the course would be to hold informal in-person sessions where participants could share their successes and barriers with incorporating PA into their practice. This type of peer mentorship may promote engagement and motivation, and thus improve overall confidence in performing PA. One aspect not included in the course was the opportunity to perform PA on patients with pathologic findings, given that participants learned how to perform PA skills primarily on other participants or a simulator. Therefore, the opportunity to practise skills on actual patients in an instructional setting might further improve participants' skills and confidence. Finally, many respondents advocated for more applicability of course instruction to pharmacotherapy. As such, the course might have been improved through use of

additional pharmacist instructors with formal PA training who could provide more examples of how PA skills can be utilized to assess and monitor drug therapy.

For PA to become universally performed by pharmacists, one could hypothesize that it would need to be incorporated into entry-to-practice pharmacy programs, as well as postgraduate training programs such as residencies and fellowships. The *Accreditation Standards for the First Professional Degree in Pharmacy Programs*, developed by the Canadian Council for Accreditation of Pharmacy Programs, included PA as an example of a core clinical practice skill.[9] Although more than 200 pharmacists completed the PA course described in the current study, this sample represents a small percentage of the roughly 5800 pharmacists in British Columbia.[10] This number could be augmented by offering ongoing PA sessions for practising pharmacists as part of their continuing professional development. It might be surmised that most of the course participants were early adopters with a keen interest in incorporating PA into their practice, and thus not representative of most pharmacists practising in British Columbia. Further evidence for this supposition lies in the approximately 50% of respondents who had performed some type of PA on a real patient before the course. In the study by Barry and others,[5] only 38% of respondents had performed PA in their practice before taking the course. Thus, the results of the current study may overestimate the rate of utilization of PA in practice. However, demand for PA sessions for existing practitioners may escalate with a higher number of newly graduated pharmacists having these skills.

This study had limitations that warrant discussion. The primary limitation was the low response rate, particularly for the 6-month follow-up survey. However, baseline characteristics for those completing the 6-month follow-up survey (based on the paired data) were consistent with and representative of the overall postcourse survey respondents, although the paired sample may have been too small to detect any statistically significant differences between the 2 surveys. Both surveys had a risk of responder bias, as participants who are eager to utilize PA in practice may have been more likely to complete the surveys. Furthermore, the delay in inviting the first 2 cohorts to participate in the study may have introduced recall bias, whereby respondents may have incorrectly estimated their confidence in performing PA immediately after the course. Additionally, this study relied on respondents' self-reported understanding and behaviour, and did not objectively assess their PA knowledge or their ability to perform PA. As well, the study did not assess PA knowledge and skills before the course. Respondents were asked to create their own unique identifier (based on their licence number and year of graduation), yet only 61% (23/38) of respondents to the 6-month follow-up survey could be paired with their first survey. Finally, the results are primarily representative of pharmacists who have postgraduate training (given that only 35% of respondents had an entry-to-practice degree as their highest level of pharmacy education) and practice in a health authority setting, such as an inpatient hospital or ambulatory clinic (given that this category encompassed about 75% of respondents). Data on location of practice setting (e.g., urban versus rural) were not collected.

Future research should focus on ways to increase pharmacists' utilization of PA in practice, as only about two-thirds of respondents had used their PA skills in practice by 6 months after the course. A similar result was evident in the study by Breault and others,[8] in which only about half of respondents were using PA in practice by 6 months after a workshop. Future training programs should maximize opportunities for pharmacists to develop their practical PA skills through hands-on activities and should ensure that the material is relevant to pharmacotherapy. The optimal length of a PA course is debatable: the current study showed that despite 30 h of contact time, many pharmacists lacked confidence in performing PA in practice, yet longer courses may discourage participation.

CONCLUSION

As the scope of pharmacy practice continues to expand, there will likely be increased demand for professional development training programs aimed at developing clinical skills, such as performing PA. A course specifically designed to teach pharmacists how to perform PA improved participants' self-reported knowledge and skills in performing PA, and improved their self-perceived ability to provide care to their patients. Six months after the course, most respondents had used their PA skills on a real patient in their practice. Compared with immediately after the course, fewer respondents felt confident in performing PA, but their willingness to intervene on a patient's drug therapy on the basis of their PA findings increased, although neither comparison was statistically significant. Future PA training programs should optimize hands-on practice time and relevance to pharmacotherapy, and should focus on methods to increase pharmacists' utilization of and confidence in performing PA in practice.

References

1. American Society of Health-System Pharmacists. ASHP statement on the pharmacist's role in primary care. *Am J Health Syst Pharm.* 1999;56(16):1665-7.
2. Simpson SH. Should pharmacists perform physical assessments? The "pro" side. *Can J Hosp Pharm*. 2007;60(4):271-2.
3. Wilson B. Should pharmacists perform physical assessments? The "con" side. *Can J Hosp Pharm*. 2007;60(4):272-3.
4. Nabzdyk K. Hospital pharmacists' use of physical assessment: attitudes and frequency. *Can J Hosp Pharm.* 1997;50(4):177-81.
5. Barry AR, McCarthy L, Nelson CL, Pearson GJ. An evaluation of teaching physical examination to pharmacists. *Can Pharm J* (*Ott*). 2012;145(4):174-9.
6. Bickley LS. Overview: Physical examination and history taking. In: *Bates' guide to physical examination and history taking.* 10th ed. Philadelphia (PA): Wolters Kluwer Health / Lippincott Williams & Wilkins; 2009. p. 3-23.
7. Schindel TJ, Yuksel N, Breault R, Daniels J, Varnhagen S, Hughes CA. Pharmacists' learning needs in the era of expanding scopes of practice: evolving practices and changing needs. *Res Social Adm Pharm.* 2018 Jun 18. DOI 0.1016/j.sapharm.2018.06.013 [Epub ahead of print].

8. Breault RR, Korn DE, George-Phillips KL. Evaluation of the impact of a physical assessment course on the practice of institutional pharmacists. *Pharmacy (Basel).* 2014;2(3):248-59.
9. *Accreditation standards for the first professional degree in pharmacy programs*. Toronto (ON): Canadian Council for Accreditation of Pharmacy Programs; [effective 2013 Jan; revised 2014 Jul; cited 2018 Sep 27]. Available from: http://ccapp-accredit.ca/wp-content/uploads/2016/01/CCAPP_accred_standards_degree_2014.pdf
10. *2016/17 annual report: 125 years of quality pharmacy*. Vancouver (BC): College of Pharmacists of British Columbia; [cited 2018 Apr 27]. Available from: http://annualreport.bcpharmacists.org/ar2017

Arden R Barry, BSc, BSc(Pharm), PharmD, ACPR, is with Chilliwack General Hospital, Lower Mainland Pharmacy Services, Chilliwack, British Columbia, and the Faculty of Pharmaceutical Sciences, The University of British Columbia, Vancouver, British Columbia.

Greg Egan, BSc(Pharm), PharmD, ACPR, is with Vancouver General Hospital, Lower Mainland Pharmacy Services, Vancouver, British Columbia.

Ricky D Turgeon, BSc(Pharm), PharmD, ACPR, was, at the time of writing, with the Division of Cardiology, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta. He is now with Vancouver General Hospital, Lower Mainland Pharmacy Services, Vancouver, British Columbia.

Marianna Leung, BSc(Pharm), PharmD, BCPS, FCSHP, is with St Paul's Hospital, Lower Mainland Pharmacy Services, Vancouver, British Columbia.

Competing interests: None declared.

Address correspondence to:
Dr Arden Barry
Faculty of Pharmaceutical Sciences
The University of British Columbia
2405 Wesbrook Mall
Vancouver BC V6T 1Z3

e-mail: arden.barry@ubc.ca

Funding: None received.

Acknowledgements: The authors thank Herb Wong, Communication Officer for the Canadian Society of Hospital Pharmacists British Columbia Branch, for his assistance with distributing the surveys, and the Canadian Society of Hospital Pharmacists British Columbia Branch and the College of Pharmacists of British Columbia for their support of the physical assessment course.