

Canadian Pharmacy Practice Residencies: A Learning Needs Assessment

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ABSTRACT

Background: The residency program in hospital pharmacy practice (also known as the pharmacy practice residency) is currently the only accredited pharmacy residency program in Canada. Every 4 years the Canadian Hospital Pharmacy Residency Board (CHPRB) reviews the accreditation standards for the program to ensure that they reflect changes in the profession. However, the CHPRB has never formally received input from past graduates to determine if the program is meeting residents' needs.

Objective: To conduct a learning needs assessment of the pharmacy practice residency from the perspective of recent pharmacy residents, to determine if this program is meeting their needs.

Methods: A 57-item survey was mailed to the 162 graduates who completed a pharmacy practice residency between 1998 and 2000. The questions were based on the 1998 standards set by CHPRB for the pharmacy practice residency and addressed the focus and various components of this program.

Results: A total of 137 surveys were returned (84.6% response rate). The results indicated that, in general, the learning needs of past residents were met by the residency program. However, residents identified teaching skills as an area they wished to develop. Other suggestions for improvement included increased consistency among preceptors, clearer guidelines for the residency project, and reorganization of time spent in the program, with an increased number of clinical rotations and less time in drug distribution. Barriers to applying for a residency included poor salary and the perception that residents are treated poorly in some institutions.

Conclusions: On the basis of the survey results, recommendations to improve the pharmacy practice residency are suggested for 9 aspects of the program.

Key words: residency program, learning needs, mail survey

RÉSUMÉ

Historique : Le programme de résidence en pratique pharmaceutique hospitalière (aussi connu sous le nom de résidence en pratique pharmaceutique) est actuellement le seul programme de résidence en pharmacie qui est agréé au Canada. Tous les quatre ans, le Conseil canadien de résidence en pharmacie d'hôpital (CCRPH) révisé les normes d'agrément du programme, pour s'assurer qu'il colle bien à la réalité de la profession. En revanche, le CCRPH n'a jamais eu le point de vue officiel d'anciens résidents, qui lui aurait permis de vérifier si le programme répondait à leurs besoins.

Objectif : Mener une étude pour évaluer si la résidence en pratique pharmaceutique a répondu aux besoins d'apprentissage de pharmaciens frais émoulus du programme.

Méthodes : Un sondage comportant 57 questions a été posté à 162 pharmaciens ayant achevé une résidence en pratique pharmaceutique entre 1998 et 2000. Les questions étaient fondées sur les normes de la résidence en pratique pharmaceutique établies en 1998 par le CCRPH et s'articulaient autour du but et des divers autres aspects du programme.

Résultats : Au total, 137 questionnaires ont été retournés (taux de réponse de 84,6 %). Les résultats indiquent que, dans l'ensemble, le programme de résidence a répondu aux besoins d'apprentissage des anciens résidents. En revanche, les répondants ont signalé qu'ils souhaitaient perfectionner leurs compétences pédagogiques. Parmi les autres suggestions d'amélioration, on note le besoin de plus de cohérence entre les précepteurs, de directives plus claires relativement au projet de résidence et d'un réaménagement du temps consacré aux différentes activités, soit augmenter le nombre de stages cliniques et réduire les heures passées à la distribution des médicaments. Parmi les obstacles qui freinent les candidatures à la résidence, on note le maigre salaire et la perception d'un manque de considération pour les résidents dans certains milieux.

Conclusions : Les résultats du sondage ont permis de dégager des recommandations pour améliorer la résidence en pratique pharmaceutique sous neuf aspects.

Mots clés : programme de résidence, besoins d'apprentissage, sondage postal

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INTRODUCTION

In Canada there are 9 schools of pharmacy that together graduate approximately 900 new pharmacists (baccalaureate degree) each year. Various pharmacy residency programs are available in Canada. However, the residency program in hospital pharmacy practice (also known as the pharmacy practice residency) is the only one for which there is a voluntary, national accreditation process. The purpose of a pharmacy practice residency is to teach the skills required to provide exemplary patient care, to develop competent and progressive pharmacy practitioners, and to encourage future leaders in the profession.

As of 2001 there were 28 accredited sites for the residency program in hospital pharmacy practice in Canada, graduating up to 119 new pharmacy residents each year. Of the 119 residency graduates, 74 earned a residency certificate and 45 earned a residency certificate and a master's degree (the latter combination being offered in Quebec). Some programs do not fill all of their positions each year, and some residents do not complete their residencies. Thus, the number of graduates varies each year, but the maximum was 119 at the time of this study.

The Canadian Hospital Pharmacy Residency Board (CHPRB) was established in 1962 to act on behalf of the Canadian Society of Hospital Pharmacists in overseeing the national standards associated with the pharmacy practice residency. The primary responsibility of the CHPRB is to establish and validate the standards and to accredit the various institutions offering the residency.¹ Every 4 years the accreditation standards are reviewed by the CHPRB and, if necessary, revised to reflect the changing needs of the profession.* Input from the various accredited sites is invaluable in making these revisions.

During the 1998 review of the standards, CHPRB members raised a number of issues related to the focus and structure of the pharmacy practice residency, including the content and length of the residency and the value and structure of the research component, as well as whether the pharmacy practice residency should have as its outcome a competent pharmacist (a pharmacist who could easily step into a staff hospital position) or a competent practitioner (a pharmacist with solid clinical skills who may require additional training with respect to site-specific operational skills). The CHPRB indicated that a learning needs assessment of residents who had completed accredited programs

would be useful in determining the future direction of the pharmacy practice residency.† This study was undertaken in response to that request.

METHODS

A literature review, including the International Pharmaceutical Abstracts database, the Education Resources Information Centre database, and MEDLINE, yielded no published needs assessment surveys of accredited pharmacy residency programs. After consultation with those involved in the accredited programs in Canada and with other stakeholders, a pilot retrospective survey was developed, with Salant and Gillman's publication² as a guide. The pilot survey was based on the 1998 CHPRB standards, which were in place when the residents to be surveyed undertook their residencies.

The pilot survey was sent to 8 Toronto-area pharmacy residents who had completed the pharmacy practice residency before 1998 and who were thus not part of the intended final pool of respondents. The purpose of the pilot survey was to identify questions or terminology that needed clarification and to identify any problems with the survey format. Six surveys were returned, and the first author (D.M.) met with each of the respondents to discuss their concerns and comments. The survey was revised on the basis of these discussions.

The final survey consisted of 55 multiple-choice questions, 2 questions requiring a written response, and a space for any additional comments. The survey addressed a variety of topics related to the standards for the pharmacy practice residency but was not limited to those standards. Topics covered included the program goals and the respondents' perception of having achieved those goals; the quality of preceptors; the respondents' personal goals in undertaking the program; program structure; the goals of each rotation and the respondents' perception of having achieved those goals; the research project; the respondents' personal, professional and educational growth; and the respondents' overall satisfaction with the program. As well, demographic data were requested (i.e., year of graduation, faculty attended, where and when the residency was completed, and current area of practice).

Members of the CHPRB assisted in compiling the names and mailing addresses of residents who had completed the program in 1998, 1999, and 2000. Graduates of Quebec programs were not included in this needs assessment because the Quebec programs

*Tom Paton, Past Chair, Canadian Hospital Pharmacy Residency Board. Personal communication, August 12, 2000.

†Nancy Roberts, Incoming Chair, Canadian Hospital Pharmacy Residency Board. Personal communication, August 13, 2000.



differ significantly from those in the rest of Canada in terms of both duration and format. A total of 162 eligible graduates of the residency program in hospital pharmacy practice were identified. Contact with the residents consisted of 3 mailings. The first mailing, sent to all 162 graduates on January 2, 2001, consisted of a personalized letter indicating that they had been selected for the survey, describing the purpose of the survey, and announcing that they would receive the survey within the next week. The second mailing was sent to the same 162 graduates 3 days later (on January 5, 2001); it included a cover letter with more details about the purpose of the survey, a letter of support from the CHPRB chair, the survey itself, and a stamped, self-addressed, return envelope. Four weeks later (on February 2, 2001) a final mailing with the same information as the second mailing was sent to all nonresponders. The third mailing also included a letter indicating that a response had not yet been received and that the graduate's input would be valuable to the results of the survey.

Statistical analysis of the results was descriptive. A χ^2 analysis (Pearson test) was used to determine if there were any statistically significant differences between groups. The *a priori* level of significance was $p < 0.05$.

RESULTS

The response rate for the pilot study was 75% (6/8). The respondents strongly suggested that a consistent response key be used throughout the survey to minimize confusion and to make the survey easier to fill out. Five questions were identified as needing rewording to ensure clarity. All major recommendations were implemented.

During the actual survey, the third mailing was sent to 53 graduates who did not respond to the second mailing. The response rate for the actual survey was 84.6% (137/162). Every question was answered in full on every returned survey.

The demographic characteristics of the respondents and their current areas of practice are presented in Table 1. For comparison of responses from different program sites, the provinces were grouped according to CHPRB regions, to allow for determination of any regional differences.

In describing themselves at the completion of their residencies, 65 (47.4%) of the respondents strongly agreed with the description "competent practitioner", as defined in the survey. Only 41 (29.9%) strongly agreed with the description "competent pharmacist". However, for the combined responses of "strongly agree" and

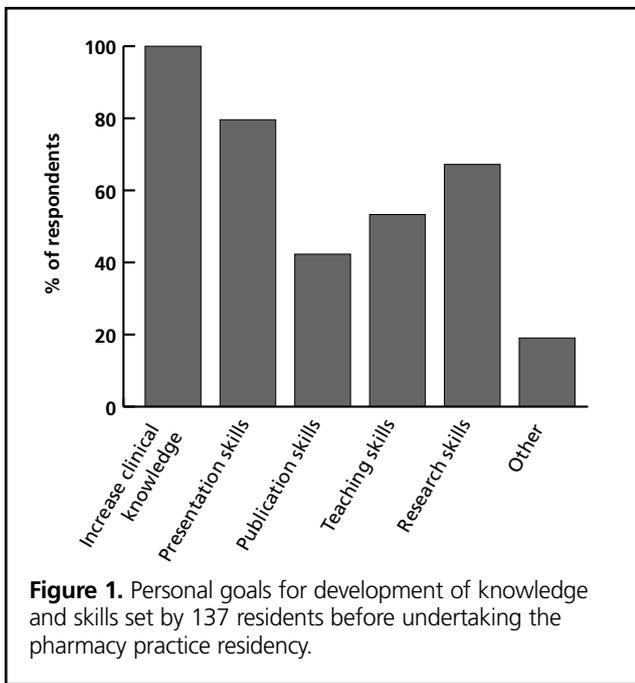
Table 1. Demographic Characteristics of 137 Respondents to a Survey of Pharmacists who Graduated from the Residency Program in Hospital Pharmacy Practice, 1998 to 2000

Characteristic	No. (and %) of Respondents (n = 137)	
Year of graduation from pharmacy program		
1999	40	(29.2)
1998	40	(29.2)
1997	35	(25.5)
1996	11	(8.0)
Before 1996	11	(8.0)
Year of completion of pharmacy residency		
2000	48	(35.0)
1999	47	(34.3)
1998	42	(30.7)
Location of residency		
British Columbia	27	(19.7)
Alberta	21	(15.3)
Saskatchewan	14	(10.2)
Manitoba	3	(2.2)
Ontario	63	(46.0)
Nova Scotia	6	(4.4)
New Brunswick	3	(2.2)
Current primary area of practice		
Community	3	(2.2)
Industry	2	(1.5)
Teaching hospital	101	(73.7)
Nonteaching hospital	21	(15.3)
Attending school	7	(5.1)
Other	3	(2.2)
Job description		
Clinical pharmacist	108	(78.8)
Pharmacist in clinic setting	4	(2.9)
Drug distribution pharmacist	7	(5.1)
Drug information–drug utilization and evaluation pharmacist	1	(0.7)
Clinical coordinator	1	(0.7)
Manager or director	1	(0.7)
Not in hospital practice	15	(10.9)

"somewhat agree", 124 (90.5%) of respondents saw themselves as competent practitioners and 110 (80.3%) described themselves as competent pharmacists.

To determine if the pharmacy practice residency met the needs of residents, respondents were asked to identify any personal goals that they had set for themselves before undertaking the program and to state whether they had realized their goals. All respondents had set personal goals (Figure 1). Overall, 123 (89.8%) of the respondents indicated that they had achieved all (44 respondents or 32.1%) or most (79 respondents or 57.7%) of their personal goals. As well, 133 (97.1%) of the respondents agreed (somewhat or strongly) that





both their problem-solving skills and their interpersonal skills had improved. More specifically, 121 (88.3%) felt strongly that the pharmacy practice residency had helped them to develop their presentation skills. Only 43 (31.4%) felt strongly that it had helped to develop their teaching skills.

All respondents had had the goal of increasing their clinical knowledge during their residency (Figure 1). Almost 80% of the respondents had spent 4 weeks in each clinical rotation. When asked if the time allotted to clinical rotations was appropriate, 58 (42.3%) strongly agreed, and another 65 (47.4%) agreed somewhat. Respondents who spent 4 weeks or more in clinical rotations were more likely to choose a positive response to this question (strongly agree or somewhat agree) than those who spent less than 4 weeks in each clinical rotation (i.e., those with shorter rotations were more likely to be dissatisfied) ($\chi^2 = 39.84$, $df = 6$, $p < 0.001$). Almost 75% (100 or 73.0%) indicated an interest in doing

a wider variety of clinical rotations if more time were allotted (i.e., time taken from other aspects of the residency).

Most respondents (118 or 86.1%) felt that the 12 months allotted to the program was sufficient to meet their learning needs. Eighty-one respondents (59.1%) were not interested in extending the length of the pharmacy practice residency to allow for more clinical rotations or to increase the length of time in clinical rotations. The remaining 56 respondents (40.9%) indicated an interest in extending the program by 2 months (29 or 21.2%), 4 months (13 or 9.5%), or 6 months or longer (14 or 10.2%).

Questions addressing the content of the pharmacy practice residency focused on the 4 core areas identified in the accreditation standards: direct patient care, drug distribution and IV admixtures, drug information, and practice management and drug use control. Respondents rated direct patient care as significantly more useful to them in practice than all other core areas ($\chi^2 = 74.63$, $df = 3$, $p < 0.001$) (Table 2).

Only 30 (21.9%) of respondents strongly agreed that the time spent in distribution rotations was appropriate, and over a third were neutral on this question or disagreed. The distribution rotations ranged from 2 weeks to more than 5 weeks, and 106 (77.4%) of respondents had spent 2 to 4 weeks in this area. There was no statistically significant relationship between respondents' belief that the time allotted to distribution was appropriate and the time they spent in this area ($\chi^2 = 15.50$, $df = 12$, $p = 0.21$).

Each accredited site for the pharmacy practice residency requires the resident to complete a research project. Two-thirds of respondents indicated that developing research skills was a personal goal in undertaking the program (Figure 1). Time spent in research varied considerably among the respondents: 22 (16.1%) spent 10 weeks, 50 (36.5%) spent 8 weeks, 21 (15.3%) spent 6 weeks, 19 (13.9%) spent 4 weeks, and the remaining respondents spent other periods of time. The time allocated to the research component was seen as appropriate by almost 60% of respondents. However, a

Table 2. Usefulness of Exposure to Core Rotations to Professional Practice after Completion of the Pharmacy Practice Residency

Core Area of the Residency Program	No. (and %) of Respondents (n = 137)		
	Strongly Agree	Somewhat Agree	Strongly and Somewhat Agree (Combined)
Direct patient care	125 (91.2)	10 (7.3)	135 (98.5)
Drug distribution and IV admixtures	61 (44.5)	55 (40.1)	116 (84.7)
Drug information	95 (69.3)	39 (28.5)	134 (97.8)
Practice management and drug use control	24 (17.5)	71 (51.8)	95 (69.3)



third (45 or 32.8%) indicated that the time was too short and that they should have been given the full 10 weeks allowed by the program standards. Only 8 (5.8%) felt that the time allotted to research should be more than 10 weeks. Respondents who had had a research period of 8 weeks or more were more satisfied with the allotted time than those with 7 weeks or less ($\chi^2 = 12.81$, $df = 4$, $p = 0.012$). Differences between regions were not statistically significant ($\chi^2 = 3.02$, $df = 1$, $p = 0.37$). Most respondents (124 or 90.5%) agreed that the research project was a useful learning experience. This result did not differ significantly by region ($\chi^2 = 3.02$, $df = 1$, $p = 0.36$). Two-thirds of respondents (90 or 65.7%) reported that they had learned the skills necessary to publish articles. However, only 45 (32.8%) had submitted their project report to a peer-reviewed journal, and the same number had actually published some of their work (residency project or other). This proportion was similar across all 3 years of graduation (12 or 29% of those who graduated in 1998, 17 or 36% of those who graduated in 1999, and 13 or 27% of those who graduated in 2000). When asked if they would like the project to be elective, 46 (33.6%) of the respondents said "yes".

The standards and expectations of preceptors are outlined for accredited programs in the CHPRB standards. Only 32 (23.4%) of the respondents agreed that all of their preceptors were good role models (as defined by the standards), and 86 (62.8%) indicated that most of their preceptors were good role models. There were no regional differences in these responses ($\chi^2 = 15.25$, $df = 9$, $p = 0.08$). According to CHPRB standards, preceptors should have "experience and a desire and aptitude to teach". However, only 41 (29.9%) of the respondents felt that all of their preceptors met this definition; 78 (56.9%) agreed that most met this definition.

Two of the survey questions addressed the value of preceptor assessments and resident self-assessments. The majority of respondents (111 or 81.0%) agreed somewhat or strongly that preceptor assessments helped them to identify their strengths and weaknesses; the remainder (26 or 19.0%) were neutral on this question or indicated that the assessments were not useful. When asked about self-assessments, 83 (60.6%) of the respondents agreed somewhat or strongly that the self-assessments were useful; the remainder (54 or 39.4%) were neutral on this question or felt that they were not useful.

Questions related to the overall outcome of the pharmacy practice residency yielded positive feedback (Table 3). Almost half of the respondents (67 or 48.9%) were satisfied with the level of knowledge gained during the residency ("strongly agreed"); for combined responses of strongly and somewhat agree the number was 127 (92.7%). All of the respondents indicated that they would recommend the program to others.

One of the last questions on the survey (requesting a written response) asked respondents what they had had to learn on their own, once out in practice. The most common response was how to handle a full patient load along with distribution responsibilities. When asked "What would have made your residency experience more useful to you?" (also a written response) and when asked to make additional comments, respondents were deliberate and frank in their statements about topics covered in the survey and other issues. They commented that inconsistent expectations and inconsistent levels of knowledge among preceptors had a negative effect on their experience. They indicated that "scare tactics" used in some institutions hindered learning and discouraged the residents. With respect to the work component (working as a pharmacist) required by many of the

Table 3. Overall Assessment of Outcomes of the Pharmacy Practice Residency

Outcome	No. (and %) in Agreement* (n = 137)
Built on my prior clinical knowledge obtained in my undergraduate degree	134 (97.8)
Learned how to apply clinical knowledge obtained in my undergraduate degree	134 (97.8)
Gained a better understanding of the role of the pharmacist in a hospital setting	133 (97.1)
Gained working knowledge into how multidisciplinary teams function	133 (97.1)
Gained working knowledge into how a hospital functions	129 (94.2)
Determined my areas of interest in pharmacy practice	128 (93.4)
Saw various career paths available in the profession	108 (78.8)
Realized my strengths	133 (97.1)
Realized my areas of weakness	130 (94.9)
Became more motivated in continuing life-long learning	119 (86.9)

*Sum of "strongly agree" and "somewhat agree".



accredited programs, some respondents felt that it should be an option, not a requirement, to allow them the opportunity to maximize their clinical learning opportunities. Respondents who indicated that they would have preferred to work less did not indicate how much work would be acceptable. Low residency stipends were identified as a barrier to attracting potential residents, particularly given that undergraduate pharmacy students can make more money than residents.

DISCUSSION

The excellent response rate for the survey suggests that past residents are very interested in this topic. All CHPRB regions were represented, and the respondents were balanced across all 3 graduating years (Table 1), which means that the data can be used confidently by accredited residency programs. Bias due to poor response rate or item omission can be assumed to be negligible, given that the response rate was greater than 70%.^{2,3} On the basis of these survey results, some general conclusions have been drawn (Table 4).

The CHPRB was interested in several issues in particular. In terms of the desired overall outcome of the residency, the CHPRB's 1998 standards used the term "competent practitioner" rather than "competent pharmacist", as the former more accurately reflects the goals of the pharmacy practice residency. Respondents

generally felt that this outcome of the program was achieved (i.e., they considered themselves competent practitioners), although many indicated that they were also competent pharmacists, perhaps because all of the pharmacy practice residencies include a mandatory dispensing rotation.

The research project was seen as a valuable component of the residency, and respondents thought that it should remain mandatory. However, they also indicated a desire for clearer guidelines about the project and more support in conducting the research. Many of the respondents indicated that the projects were unrealistic, given the time frame allotted and concurrent demands. However, they clearly indicated that spending more time in research would not meet their needs. Setting a minimum and maximum number of weeks (i.e., 8 to 10 weeks) rather than the 1998 standard of not more than 10 weeks might help to meet the residents' needs with respect to the project. An emphasis on projects that can realistically be accomplished within the time allowed, with appropriate support (from preceptors, administration, and secretarial staff) would be beneficial. Respondents did not support the suggestion that one of the goals of completing a research project is to allow residents the opportunity to publish. If publication of professional work is to continue as one of the stated goals of the residency, those involved in residency training need

Table 4. General Conclusions Derived from Survey Results and Recommendations

Aspect of Residency	Comments
Clinical knowledge	Increasing time spent in clinical rotations would be beneficial Spending less time in drug distribution might accommodate this need
Clinical rotations	Should be at least 4 weeks in length Emphasis should continue to be on clinical practice
Length of program	Appropriate; should not be increased
Core components (see Table 2)	Not perceived as equally useful Continued emphasis on direct patient care should be program priority Content of practice management and drug use control component (perceived as least useful) should be re-evaluated
Research project	Should remain a mandatory component of the residency program
Residency preceptors	Quality and consistency of clinical knowledge and teaching ability among preceptors should be addressed to enhance residents' learning experience
Teaching skills	Opportunities to develop clinical teaching skills would enhance residents' learning experience
Publication	Evaluate whether this should be a goal of the program; if so, provide support to ensure the goal is met
Barriers to the program	Low salary, misuse of residents' time, and perception that residents are not treated with respect* Positive learning environment should be the program's cornerstone to ensure ongoing interest
Suggested topics for workshops directed to preceptors	Overview and goals of the residency program Preceptor skills Teaching and learning styles How to develop a project How to publish How to incorporate a "teaching" component into a clinical rotation

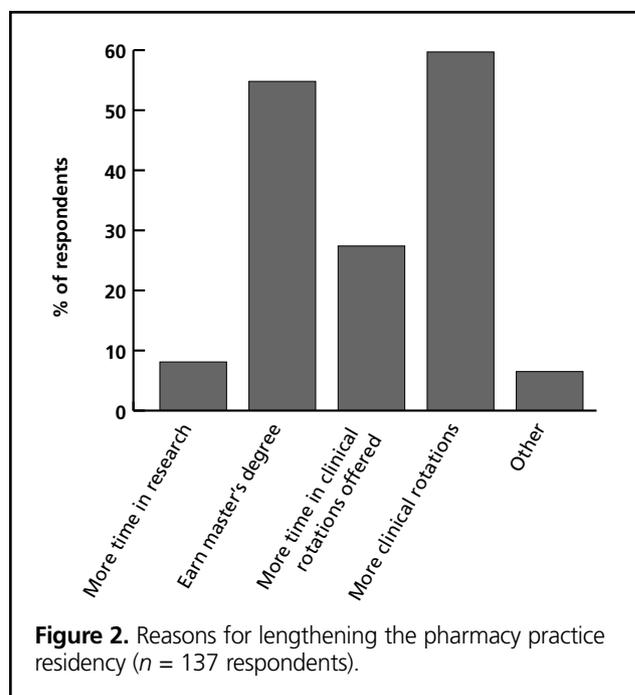
*This comment was relevant to only a few accredited sites.



to support residents and provide them with the necessary tools.

Respondents indicated that practice management and drug use control was the least important of the 4 core components of the residency ($p < 0.001$). This result is consistent with the reasons respondents gave for choosing to do a pharmacy practice residency. Given that the respondents had been in practice for less than 3 years and only one of them was working in a management role, surveying for interest in administrative positions might have been premature. The survey question on the 4 core components did not address the structure or content of this rotation, which might have provided insight into areas that would be of interest to residents. The results also support the current focus of the program on drug information. Most of the respondents (111 or 81.0%) felt that they had learned how to evaluate the literature; however, many took the opportunity in their written responses to indicate an interest in learning more. Areas of interest included learning the concepts of evidence-based medicine, reviewing landmark trials and being able to critically evaluate the literature. It would be beneficial for the CHPRB to look at the total time spent in all nonclinical rotations (including drug information and practice management) to determine if the current balance between clinical and nonclinical rotations reflects the stated priority of direct patient care.

More than half of the respondents had a personal goal of developing teaching skills, but less than a third indicated that their residency had offered this opportunity. Teaching skills are not synonymous with presentation skills, as differentiated by the respondents and outlined in the CHPRB standards. Some respondents indicated that fewer presentations should be required, as the process became repetitive, with little skill-building; instead, they suggested that time be spent on preparing just a few presentations, with emphasis on quality, not quantity. Teaching skills require the ability to not only present information, but also to ensure that learning has occurred. This includes being able to restate information in a variety of ways should the learner indicate a lack of understanding. Furthermore, teaching should encourage 2-way dialogue, not simply question-and-answer sessions. Respondents wanted the opportunity to work with students, to be responsible for their learning, and to model how to handle pharmacy-related issues or situations (clinical or otherwise). Respondents felt that they had not been given such opportunities, yet were expected to take on responsibility for students once out in practice. Incorporating clinical teaching opportunities for residents during their residency year (i.e., working



with pharmacy interns, 4th-year students in their clinical practicum, and pharmacy students) would be beneficial from the respondents' perspective. This in turn might result in more effective preceptors for residency programs in the future.

When asked what would have made the residency experience more useful, the most common response was a wider variety of clinical rotations; this was the primary reason given for lengthening the residency program (Figure 2). However, most respondents indicated that these opportunities could be met within the current time frame allotted to the residency program by decreasing the amount of time spent in nonclinical rotations. Respondents clearly stated that because of the amount of knowledge to be synthesized, more opportunities were needed to integrate and learn information, rather than simply memorize it. The second most common suggestion for program improvement was to have more consistent and better-quality preceptors. One respondent suggested that preceptors be required to have at least 2 years of practice experience before taking on a preceptorship. Respondents indicated that the ability to teach and to provide good role modelling were important skills in providing a positive learning environment. Providing more education to preceptors about the purpose of the residency and how to complete rotational evaluations, as well as how to practice pharmaceutical care, would be beneficial in meeting the residents' needs.

Only 21.9% of respondents felt that the time allotted for drug distribution was appropriate. The results



from this question were difficult to interpret, as it encompassed all nonclinical rotations (drug information, practice management, drug distribution, etc.). In evaluating the responses, the combined time spent in drug distribution and IV admixtures was used. Although the survey did not ask whether the respondents would have preferred more or less time in this area, many respondents clarified this point in their written responses, indicating that they would prefer less time in drug distribution. However, they did not want to give up clinical time to learn how to balance a full patient load alongside distribution responsibilities. Respondents indicated that they had learned distribution skills easily once they were working and that they had undergone mandatory drug distribution training at their new jobs regardless of any previous training. Decreasing the time spent on drug distribution could allow for the additional clinical electives in which respondents were interested.

The residency program in hospital pharmacy practice requires preceptor assessments and resident self-assessments for each rotation. The usefulness of these assessments to the respondents varied. It is important to point out that the CHPRB implemented the self-assessment component of the evaluation in 1998 and that several improvements have been made since then to link the self-assessment to the rotation's specific goals and objectives. Therefore, responses from this survey do not reflect the evaluation system that is now in place.

Limitations of this type of study include the method of data collection, which relies heavily on an accurate mailing list.³ However, the high response rate indicates that this was not a problem here. Question structure and format can be a limiting factor in terms of clarity and comprehension. Pilot testing of the survey was undertaken to minimize this limitation. Given the excellent response rate, responder bias (commonly seen when the response rate is less than 70%) was not an issue.^{2,3} Responses were completely anonymous, so it was assumed that honest viewpoints were elicited.³ The active support of this project by the CHPRB (which has the authority to change the accreditation standards) indicated to past residents that their viewpoints had the potential to affect the future of the residency program.

Limitations specific to the survey questions were apparent once the results were analyzed. In retrospect, the questions designed to determine if graduates perceived themselves to be competent practitioners or competent pharmacists would have been more effective if they had asked the extent to which respondents achieved competency at each level. As well, a question on whether the program goal should be to prepare

competent practitioners or competent pharmacists might have been more meaningful. Questions designed to address time spent in nonclinical rotations (drug information, practice management, drug distribution, etc.) were, in hindsight, too broad. As such, it was difficult to interpret the responses to these questions. It would have been more beneficial to ask if respondents would have preferred more or less time in the individual areas.

There was a high level of satisfaction among respondents with respect to the residency program in hospital pharmacy practice, and all indicated that they would recommend the program to others. However, less than half strongly agreed that they were satisfied with the level of knowledge achieved during the program. Whether this lack of satisfaction translates into motivating residents to further their education or to learn more on the job is difficult to determine. Overall, for the period 1998 to 2000, the pharmacy practice residency program met the needs of its graduates. Key areas of concern (Table 4) should be addressed by the CHPRB to ensure that each residency program provides an excellent learning environment for residents.

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