

ORIGINAL RESEARCH

Medication Reconciliation Practices in Canadian Emergency Departments: A National Survey

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ABSTRACT

Background: As of 2015, Accreditation Canada's Qmentum program expects emergency departments (EDs) to initiate medication reconciliation for 2 groups of patients: (1) those with a decision to admit and (2) those without a decision to admit who meet the criteria of a risk-based, health care organization-defined selection process. Pharmacist-led best possible medication histories (BPMHs) obtained in the ED are considered more complete and accurate than BPMHs obtained by other ED providers, with pharmacy technicians obtaining BPMHs as effectively as do pharmacists. A current assessment of the role of pharmacy in BPMH processes in Canadian EDs is lacking.

Objectives: To identify and describe BPMH and medication reconciliation practices in Canadian EDs, including those performed by members of the ED pharmacy team.

Methods: All Canadian hospitals with an ED and at least 50 acute care beds were contacted to identify the presence of dedicated ED pharmacy services (defined as at least a 0.5 full-time equivalent position). Different electronic surveys were then distributed to ED pharmacy team members (where available) and ED managers (all hospitals).

Results: Survey responses were obtained from 60 (63%) of 95 ED pharmacy teams and 128 (53%) of 243 ED managers. Only 38 (30%) of the 128 ED managers believed that their current BPMH processes were adequate to obtain a BPMH for all admissions. Fifty-nine (98%) of the ED pharmacy personnel reported obtaining BPMHs (most commonly 6–10 per day), with priority given to admitted patients. Only 14 (23%) of the 60 ED pharmacy teams reported that their EDs had adequate staffing to comply with Accreditation Canada's requirements for obtaining BPMHs. This result is supported by the 104 (81%) out of 128 ED managers who reported that additional ED staffing would be needed to comply with the requirements. Numerous ED managers identified the need to expand ED pharmacy services and improve information technology support.

Conclusions: BPMH processes in Canadian EDs were variable and inadequately supported. Survey responses suggested that additional staff and significant improvements in structured processes would be required to meet Accreditation Canada standards.

Keywords: emergency department, medication reconciliation, pharmacist, pharmacy, survey

RÉSUMÉ

Contexte : À compter de 2015, le programme Qmentum d'Agrément Canada s'attend à ce que les services des urgences réalisent un bilan comparatif des médicaments pour deux groupes de patients : (1) ceux que l'on décide d'admettre et (2) ceux non admis qui présentent un risque d'événements indésirables liés aux médicaments selon des critères élaborés par l'organisme. Les meilleurs schémas thérapeutiques possibles (MSTP) obtenus au service des urgences grâce aux pharmaciens sont considérés comme étant plus complets et précis que ceux dressés par d'autres fournisseurs du service des urgences. De plus, ceux obtenus par les techniciens en pharmacie sont d'une qualité égale à ceux dressés par les pharmaciens. Enfin, il n'y a pas d'évaluation actuelle du rôle joué par le personnel de la pharmacie au sein des processus d'obtention des MSTP dans les services des urgences du Canada.

Objectifs : Recenser les pratiques de réalisation des MSTP et des bilans comparatifs des médicaments au sein des services des urgences canadiens, notamment celles des membres des équipes de pharmacie affectés aux services des urgences, et les décrire.

Méthodes : On a communiqué avec l'ensemble des hôpitaux canadiens disposant d'un service des urgences et d'au moins 50 lits de soins de courte durée afin de savoir s'ils profitaient de services de pharmacie consacrés au service des urgences (ce qui était défini comme au moins 0,5 d'un poste équivalent temps plein). Différents sondages électroniques ont ensuite été envoyés : un aux membres du personnel de pharmacie affectés aux services des urgences (le cas échéant); et un aux gestionnaires des services des urgences (de tous les hôpitaux).

Résultats : Au total, 60 (63 %) des 95 équipes de pharmacie affectées aux services des urgences ont répondu au sondage, et 128 (53 %) des 243 gestionnaires des services des urgences ont fait de même. Seulement 38 (30 %) gestionnaires des services des urgences croyaient que leurs processus actuels convenaient à l'obtention des MSTP pour tous les patients admis. Cinquante-neuf (98 %) équipes de pharmacie affectées aux services des urgences ont déclaré dresser des MSTP (normalement de 6 à 10 par jour), la priorité étant accordée aux patients admis. Seules 14 (23 %) des 60 équipes de pharmacie affectées aux services des urgences jugeaient que leur service des urgences était doté d'un personnel suffisant pour satisfaire aux exigences d'Agrément Canada en ce qui a trait à l'obtention des MSTP. Ce résultat était corroboré par le fait que 104 (81 %) des 128 gestionnaires des services des urgences ont souligné le besoin de personnel supplémentaire au service des urgences afin de pouvoir respecter les exigences. Un grand nombre de gestionnaires des services des urgences ont reconnu la nécessité d'accroître la prestation des services de pharmacie aux services des urgences ainsi que le besoin d'améliorer le

soutien par les technologies de l'information.

Conclusions : Les processus d'obtention des MSTP dans les services des urgences canadiens variaient et n'avaient pas un soutien adéquat. Les réponses aux sondages semblent indiquer que du personnel supplémentaire de même que d'importantes améliorations des processus structurés seraient nécessaires pour respecter les normes d'Agrément Canada.

Mots clés : service des urgences, bilan comparatif des médicaments, pharmacien, pharmacie, sondage

INTRODUCTION

The need to improve medication reconciliation practices, which include obtaining best possible medication histories (BPMHs), is well recognized. Errors in collecting medication histories at the time of admission to hospital are common,¹⁻⁵ and many of these errors lead to clinically significant harm.² The Institute for Safe Medication Practices Canada has defined a BPMH as “a history created using 1) a systematic process of interviewing the patient/family; and 2) a review of at least one other reliable source of information to obtain and verify all of a patient's medication use (prescribed and non-prescribed)”.⁶ Although obtaining BPMHs for admitted patients remains a challenge for hospitals, it is considered a cost-effective process.⁷ Improving BPMH practices is also associated with a reduction in potential adverse drug events.^{8,9} Medication-related adverse events account for 12%–28% of emergency department (ED) visits¹⁰ and are associated with longer stays in hospital and greater health care system costs.¹¹⁻¹⁶

Accreditation Canada, Safer Healthcare Now! and the Canadian Society of Hospital Pharmacists' CSHP 2015 initiative have all identified medication reconciliation as a priority for Canadian hospitals.¹⁷⁻¹⁹ A Required Organizational Practice (ROP) of Accreditation Canada outlines expectations for the reconciliation of medications for ED patients with a decision to admit. Although the process should be initiated in the ED, it may be completed in the receiving inpatient unit.¹⁷ For on-site accreditation surveys starting in 2015, the ROP will be expanded to include initiation of medication reconciliation for a target group of ED patients who are not to be admitted to hospital (according to their risk as defined by the ED).²⁰ CSHP 2015 objective 1.1 states that by 2015, 100% of hospital pharmacists will ensure that medication reconciliation occurs on admission¹⁹; however, there is no mention that BPMHs should be obtained in the ED.

Obtaining complete and accurate BPMHs in the ED has been a considerable challenge.²¹⁻²³ In the United States, the Joint Commission has recognized the numerous barriers to completing medication reconciliation in the ED and now requires only that medication reconciliation be completed by the receiving ward for the admitted patient, with completion of medication reconciliation in the ED only when deemed clinically necessary.²⁴ Regardless, obtaining BPMHs in the ED may provide an opportunity for early identification of medication-related events. Some

of the described challenges may be overcome with adequate staffing and standardization of BPMH processes.

Pharmacist-led BPMHs obtained in the ED are considered more complete and accurate than those obtained by other ED providers²⁵⁻³⁰ and are associated with a reduction in medication errors.^{31,32} In one Canadian study, over one-third of medication-related ED presentations identified by pharmacists were missed by ED physicians.¹⁰ Existing evidence supports the provision of medication reconciliation services by clinical pharmacy staff, but evidence-based recommendations and screening tools are needed to prioritize this service for patients who are at greater risk for adverse medication events.^{33,34} Pharmacists are also best suited to provide leadership for organizations that are developing medication reconciliation practices.³⁵⁻³⁷

The role of the pharmacy technician has expanded to encompass a variety of clinical activities, which include obtaining BPMHs.^{38,39} Pharmacy technicians obtain BPMHs just as effectively as pharmacists,⁴⁰⁻⁴² and national groups now recommend hiring pharmacy technicians to support medication reconciliation processes in hospitals.^{35,43,44}

Given the challenges of obtaining BPMHs and the recommendations that pharmacy staff be involved in medication reconciliation activities, an evaluation of current pharmacy-led BPMH and medication reconciliation services in Canadian EDs is of interest. The objectives of this study were to quantify and describe clinical pharmacy services that provide BPMH and medication reconciliation services in Canadian EDs and to describe ED managers' assessments of current BPMH and medication reconciliation processes in Canadian EDs.

METHODS

Canadian hospitals with at least 50 acute care beds and an ED were identified using provincial and territorial ministry of health reports. Internet searches and personal communications with specific hospitals and health care centres were used to identify hospitals in regions where such reports were not available (i.e., Manitoba, Yukon, Northwest Territories, and Nunavut). A minimum of 50 acute care beds was selected on the basis of feasibility, consistency with the *Hospital Pharmacy in Canada 2011/2012 Report*,⁴⁵ and a previous survey that did not identify any ED pharmacy services in 89 US hospitals with fewer than 50 acute care beds.⁴⁶ There were no exclusion criteria.

Hospitals that met the inclusion criteria were reached by telephone to obtain contact information for potential respondents. Charge nurses in the ED were asked whether the ED had a pharmacist or a pharmacy technician position of at least 0.5 full-time equivalent (FTE). The response to this question was verified by telephone with a pharmacist working in the pharmacy dispensary and/or the pharmacy manager at each hospital. In hospitals with more than 1 ED pharmacist, contact information was requested for the most senior ED pharmacist at that site or the ED pharmacist who provided the most hours of service to the ED.

Both English and French versions of two different electronic surveys were developed by 7 Canadian pharmacists (5 of whom were ED pharmacists) using FluidSurveys version 4.0 (2011) software (FluidSurveys, Ottawa, Ontario):

- The survey for ED managers was forwarded to ED managers at all hospitals. This survey took about 3 min to complete, with survey questions assessing current BPMH and medication reconciliation practices in the ED. Only one response to this survey was collected from each hospital.
- The survey for ED pharmacy staff was forwarded to ED pharmacists (or ED pharmacy technicians at hospitals with no ED pharmacist) working at least 0.5 FTE in the ED. This survey took about 5–15 min to complete (based on the nature of the responses), with survey questions describing BPMH and medication reconciliation practices performed by ED pharmacy team members and the availability of this service (hours and days per week). Only one response to this survey was collected from each hospital.

The surveys were tested for face validity, but no validated survey process on this topic was available for the research group

to utilize. Approval for the study was obtained from the Health Research Ethics Board of Island Health. One survey invitation and 2 reminders, all containing consent information, were sent by e-mail to each potential respondent. Consent was implied by responding to the survey. Responses to any questions in the survey were voluntary, and no compensation or other incentive was offered. Survey responses were collected between July and September 2013. Descriptive statistics were used to analyze the data. Data about other aspects of clinical pharmacy services in Canadian EDs collected in these 2 surveys are reported elsewhere in this issue.⁴⁷

RESULTS

This study identified 243 hospitals in Canada with at least 50 acute care beds and an ED. After the preliminary telephone survey, electronic surveys were distributed to 243 ED managers and 95 ED pharmacy staff, with variable response rates (Figure 1). For additional detail about the derivation of the study groups, see Figure 1 in the companion article.⁴⁷

Survey of ED Managers

Just over half of the 128 responses from ED managers came from Ontario and Quebec hospitals, with small numbers of respondents from most other Canadian jurisdictions (Table 1). According to these survey responses, nurses, physicians, and paramedics conducted BPMH work at 108 (84%), 77 (60%), and 25 (20%) of the hospitals, respectively, and 88 (69%) of the hospitals had a standardized BPMH process. The ED manager at one hospital reported that patients completed their own

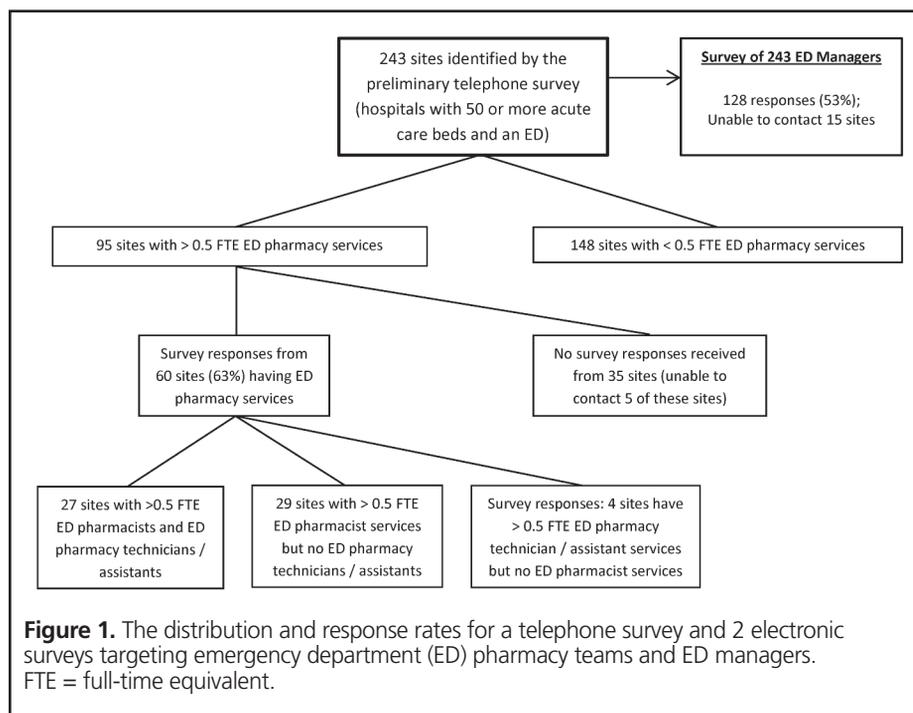


Table 1. Distribution of Responses to Survey of Emergency Department Managers

| Variable | No. (%) of Responses (n = 128) |
|--|-----------------------------------|
| Respondent's preferred language | |
| English | 96 (75) |
| French | 32 (25) |
| Province or territory | |
| Yukon | 0 (0) |
| Northwest Territories | 0 (0) |
| Nunavut | 1 (1) |
| British Columbia | 13 (10) |
| Alberta | 10 (8) |
| Saskatchewan | 8 (6) |
| Manitoba | 6 (5) |
| Ontario | 37 (29) |
| Quebec | 35 (27) |
| Newfoundland and Labrador | 2 (2) |
| Nova Scotia | 7 (5) |
| New Brunswick | 4 (3) |
| Prince Edward Island | 1 (1) |
| Not identified | 4 (3) |

BPMHs. One hundred and four (81%) of the ED managers expressed the need for additional staffing resources to support BPMH processes in the ED. Only 39 (30%) of the ED managers believed that the current BPMH system available at their institutions was adequate for all admissions.

According to the ED managers, the following factors were used to prioritize BPMH work: admitted patients (102 [80%]), severity of illness based on Canadian Triage and Acuity Scale assessments (19 [15%]), age (11 [9%]), and specific diagnoses (11 [9%]). ED managers at 44 (34%) of the hospitals also reported using a triage tool to identify patients who required a BPMH. Nineteen (15%) of the ED managers reported that no BPMH prioritization process was in place.

Fifty-five of the ED managers shared comments about current or future BPMH processes in their departments. Thirty-three (60%) of these comments supported the expansion of pharmacy services in the ED to obtain BPMHs. Improvements in information technology to support BPMH processes were also recommended.

Survey of ED Pharmacy Team

Of the 243 Canadian hospitals screened, up to 95 (39%) had ED pharmacy services (90 with ED pharmacists and 5 with ED pharmacy technicians without pharmacists). However, because of incomplete survey responses, the absolute number of ED pharmacy services in Canada could not be confirmed in this study. The term “ED pharmacy services” is used here to refer to any ED with 0.5 FTE pharmacist and/or pharmacy technician dedicated to the ED. The survey of ED pharmacy staff collected information about the provision of pharmacy services in EDs

Table 2. Distribution of Responses to Survey of Emergency Department Pharmacists and Pharmacy Technicians

| Variable | No. (%) of Responses* (n = 60) |
|--|-----------------------------------|
| Respondent's preferred language | |
| English | 40 (67) |
| French | 20 (33) |
| Province or territory | |
| Yukon | 0 (0) |
| Northwest Territories | 0 (0) |
| Nunavut | 0 (0) |
| British Columbia | 5 (8) |
| Alberta | 4 (7) |
| Saskatchewan | 1 (2) |
| Manitoba | 7 (12) |
| Ontario | 16 (27) |
| Quebec | 18 (30) |
| Newfoundland and Labrador | 0 (0) |
| Nova Scotia | 2 (3) |
| New Brunswick | 4 (7) |
| Prince Edward Island | 0 (0) |
| Not identified | 3 (5) |
| No. of ED visits/day | |
| 0–49 | 10 (17) |
| 50–99 | 12 (20) |
| 100–149 | 11 (18) |
| 150–199 | 20 (33) |
| ≥ 200 | 5 (8) |
| Not identified | 2 (3) |
| No. of ED admissions/day | |
| 0–9 | 7 (12) |
| 10–19 | 23 (38) |
| 20–29 | 17 (28) |
| ≥ 30 | 11 (18) |
| Not identified | 2 (3) |

*Percentages for some variables do not sum to exactly 100% because of rounding.

(including BPMH processes) from 56 pharmacists and 4 pharmacy technicians, representing a total of 60 (63%) of the 95 hospitals with identified ED clinical pharmacy services. Geographic distribution and hospital-specific descriptors for these 60 respondents are presented in Table 2. As mentioned above, a more detailed description of clinical pharmacy services in Canadian EDs appears elsewhere in this issue.⁴⁷ Of the 55 ED pharmacist services that provided information about when the service was established, 44 (80%) had been established within the 10 years preceding the survey. Seven hospitals had 2 or more ED pharmacists, and 11 hospitals had 2 or more ED pharmacy technicians. Most of these hospitals reported the provision of evening and weekend coverage.

ED pharmacy technician services were offered in at least 31 Canadian hospitals, mostly in eastern Canada: Quebec (16), Ontario (7), New Brunswick (4), Nova Scotia (1), Alberta (1), and Saskatchewan (1); location was not reported for one site. Of

Table 3. Quantification of BPMH Activities by ED Pharmacy Services

| Admissions/day from ED (No. of Respondents) | No. of BPMHs/day; No. of Respondents | | | | | | No Response |
|--|--------------------------------------|-----|------|-------|-------|-----|----------------|
| | 0 | 1-5 | 6-10 | 11-15 | 16-20 | >20 | |
| 0-9 (<i>n</i> = 7) | 0 | 1 | 5 | 1 | 0 | 0 | 0 |
| 10-19 (<i>n</i> = 23) | 2 | 3 | 7 | 5 | 4 | 2 | 0 |
| 20-29 (<i>n</i> = 17) | 1 | 7 | 3 | 4 | 2 | 0 | 0 |
| > 29 (<i>n</i> = 11) | 4 | 2 | 2 | 0 | 1 | 1 | 1 |
| Unknown (<i>n</i> = 2) | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Total (<i>n</i> = 60) | 7 | 13 | 18 | 10 | 7 | 3 | 2 |

BPMH = best possible medication history, ED = emergency department.

these, 24 (77%) provided morning and afternoon service, and 10 (32%) provided service 6 or 7 days per week. ED pharmacy technicians obtained BPMHs in 26 (84%) of these 31 hospitals.

Fifty-nine (98%) of the 60 ED pharmacy services reported active involvement in collecting BPMHs, with a wide range in the daily number of BPMHs obtained (Table 3). Of the 10 (17%) ED pharmacy teams that reported obtaining more than 15 BPMHs each day, 7 represented hospitals with 2 or more pharmacy FTEs dedicated to the ED. Respondents from only 2 of these hospitals suggested that they had adequate staffing for BPMH work for all admitted patients in the ED. Overall, 46 (77%) of ED pharmacy teams stated that they had inadequate ED staffing for obtaining BPMHs for all admitted patients. According to the ED pharmacy respondents, only 11 (18%) of the hospitals had nonpharmacy staff completing BPMH work, and only 23 (38%) of EDs had a standard BPMH process for all staff to follow.

The factors most commonly used to prioritize the collection of BPMHs were admitted patients (47 [78%]), pharmacy consult requests (35 [58%]), and specific diagnoses (11 [18%]).

Use of a provincial database that tracks dispensed prescriptions was reported by 32 (53%) of ED pharmacy respondents, with such databases also being used by nonpharmacy ED staff in all but one of the hospitals. Respondents from most hospitals reported that BPMHs were collected both before and after medication orders were written, but 6 (10%) of the hospitals collected BPMHs exclusively before medication orders were written. Thirty-three (55%) of the hospitals used a BPMH form that also functioned as an order form.

DISCUSSION

There is no agreement in the literature on what constitutes an acceptable survey response rate, but the response rates for the 3 surveys in this study fell within the range of various minimally acceptable response rates that have been reported previously (50% to 75%).⁴⁸ Conducting this study during the summer months and not providing compensation or incentives may have adversely affected the response rates.

Numerous factors make the ED a difficult environment in which to obtain medication histories: large patient volumes, high patient – health care provider ratios, a large number of urgent or

critical distractions, and shorter durations of stay relative to other wards. Many patients presenting to the ED are acutely ill and may be poorly prepared to provide detailed information about their existing medication therapy. Furthermore, their community pharmacies, family physicians, and family members may be unavailable to provide valuable information at the time of presentation. Given that obtaining BPMHs is time-consuming and requires a structured process and appropriate resources, it is not surprising that several studies have reported that trying to obtain BPMHs in ED triage areas leads to inaccurate and incomplete medication lists.²¹⁻²³

The results of the current survey suggest that most Canadian EDs prioritize admitted patients for BPMH assessment, a practice that is consistent with the relevant Accreditation Canada ROP.¹⁷ However, evidence-based criteria to support this practice are lacking. Further research is needed to identify the most effective prioritization strategies for BPMH activities in the ED.

Obtaining a BPMH at the time of admission is both challenging and time-consuming, given that it must be obtained from multiple sources of information.⁵ Information in a BPMH is typically more accurate when a regional database identifying dispensed prescription medications is available⁴⁹; however, studies have also shown a considerable level of inaccuracy when medication lists are based solely on these databases.⁵⁰⁻⁵² British Columbia, Saskatchewan, Manitoba, and Prince Edward Island may have the most complete and up-to-date prescription databases available, but the remaining provinces do not yet capture complete information about dispensed prescriptions in a timely manner from all community pharmacies.

At 33 (55%) of the EDs represented by pharmacy team respondents, the forms used to collect the BPMH also served as order forms. Although such forms can provide a clearer comparison between home and hospital medications, integrating them into the medication order process can be challenging because the collection of BPMH data often occurs both before and after the medication orders are written. Electronic health records that incorporate an interface with central prescription databases may reduce these complications.

The survey did not request information about quality indicators to assess processes or outcomes. The importance of assessing this aspect of care may be highlighted by the differences

in responses between ED pharmacy team members and ED managers. For example, a greater proportion of ED managers reported having a standard BPMH process and involving non-pharmacy staff in collecting the BPMH. Such differences may be due to different perspectives on the processes required to obtain a full BPMH and may warrant further research.

Accreditation Canada reported a 64% compliance rate for initiating medication reconciliation in the ED among the 288 organizations that underwent an on-site accreditation survey in 2011.⁵³ It is curious that 70% of the 128 ED managers in this study reported that their respective EDs were not able to effectively complete all admission BPMHs. Furthermore, about 80% of ED pharmacy team members and ED managers expressed the need for additional staffing resources to support BPMH processes in the ED for admitted patients. Starting in 2015, Accreditation Canada will require that EDs also initiate medication reconciliation for a risk-based, institution-defined selection of patients who will not be admitted to hospital. This new requirement stands to further challenge EDs. BPMH processes in Canadian EDs would ideally be supported by adequate levels of ED-based pharmacy staff. Close examination of processes is also required to identify potential improvements in efficiencies and outcomes.

This study showed a greater presence of ED pharmacy services in Canada than what has been reported in previous US studies,^{46,54,55} but a lower percentage than documented in the *Hospital Pharmacy in Canada 2011/2012 Report*.⁴⁵ The current study's stringent definition of *dedicated* ED pharmacy services may explain the latter difference. Similar to previously published data,^{45,46} ED pharmacist services in Canada were more common in larger hospitals. Fortuitously, this survey identified one hospital with a particularly robust model for ED pharmacy staffing, which could be used as a benchmark for other hospitals. ED pharmacy services at the South Health Campus in Calgary, Alberta, are described in more detail in Box 1.

Of the 60 ED pharmacy team members who responded to the survey, all but one reported obtaining BPMHs as a role within their practice. However, there was considerable variation in the number of BPMHs obtained each day, perhaps because of variation in the type and extent of roles fulfilled by Canadian ED pharmacy teams, as reported in a companion article.⁴⁷ Also, the number of BPMHs obtained each day was measured with a sliding-scale survey question, with a default answer of zero. It is the authors' belief that this situation resulted in 6 respondents erroneously reporting that they obtained 0 BPMHs per day. This interpretation is based on other survey responses from the same 6 hospitals, which indicated that ED pharmacy staff collected BPMHs several times a day, using patient-specific factors for prioritization of this service. Further limitations were that survey data collected were based on subjective assessments, and the questions did not solicit data on the number of BPMHs obtained by other (nonpharmacy) ED staff.

Box 1. Description of 24-h, 7-day Pharmacy Service in the Emergency Department at South Health Campus, Calgary, Alberta

The South Health Campus is a recently opened 310-bed facility in Calgary, Alberta, with 170 presentations to the emergency department (ED) daily, of which 10.8% are admitted. This ED receives around-the-clock dedicated pharmacist coverage in the ED each day (365 days per year)—a service that is funded by the pharmacy department. The majority of this coverage is fulfilled by 3.8 full-time equivalent (FTE) pharmacists who work 8-h shifts in the ED. The remaining ED pharmacist coverage is provided as a weekend and night shift rotation by all pharmacists at this site. This approach was taken to minimize recruitment challenges for the ED pharmacist positions without unduly compromising the level of pharmacy services in the ED. There is typically only one pharmacist available in the ED at any time, and pharmacy technicians are not yet incorporated into the ED staffing model.

The pharmacy team successfully completes 90% of best possible medication histories (BPMHs) for ED admissions, but its goal is to obtain BPMHs for all admitted ED patients. Patients are selected by convenience once they are admitted, and the receiving ward's nurses are expected to complete the BPMHs that are not completed in the ED. All hospital personnel who obtain BPMHs have received training in the form of a 15-min presentation. Although the South Health Campus uses computerized physician order entry, BPMHs are currently documented in the paper charts. For most patients admitted from the ED, this activity is performed before the ordering of home medications. ED pharmacists at the South Health Campus provide a number of other services which may prevent achievement of the 100% admission BPMH goal; some examples are laboratory culture-and-sensitivity assessments for discharged ED patients, patient education, drug information, code and trauma support, and assistance with drug distribution issues. The South Health Campus is planning to add pharmacy technicians for BPMH processes in the ED, thereby allowing pharmacists to provide more in-depth pharmaceutical care in the ED.

The initial telephone survey indicated that the EDs in at least 148 hospitals (61% of the 243 Canadian hospitals with at least 50 acute care beds and an ED) had less than 0.5 FTE ED pharmacy services. There may have been more sites without dedicated ED pharmacy services, given that some of the 35 sites that did not respond to the detailed survey of ED pharmacy services may also have had less than 0.5 FTE ED pharmacy services. Despite previous literature suggesting that pharmacy team members are best-suited to collect BPMHs, data from this study suggest that current levels of ED pharmacy services are inadequate to support obtaining BPMHs in Canadian EDs. Many ED managers specifically identified the need for additional ED pharmacy staff to obtain BPMHs. This result is not surprising, given that obtaining BPMHs is a time-consuming activity and may best be performed by staff members who focus solely on assessing each patient's medications.

Clinical pharmacy services are known to reduce adverse drug events, improve medication adherence and appropriateness, and shorten hospital stays with no worsening of clinical outcomes.^{56,57}

The cost-effectiveness of ED clinical pharmacy programs has also been demonstrated.^{58,59} Most importantly, clinical pharmacy services have been associated with reductions in hospital mortality rates, and obtaining BPMHs on admission has been identified as 1 of 7 key roles in this outcome.⁶⁰ Having a pharmacist obtain BPMHs may facilitate the provision of other clinical pharmacy services known to improve patient outcomes, including acting as a resource to other ED staff. To increase the number of BPMHs collected, pharmacy technicians should also be involved in this activity, preferably in coordination with the pharmacist. Given that pharmacy technicians obtain BPMHs just as well as pharmacists,⁴⁰⁻⁴² such a model could be a more resource-effective approach to obtaining BPMHs in Canada. In addition, having pharmacy technicians obtain BPMHs in the ED may give pharmacists, physicians, and other members of the health care team the opportunity to provide more advanced care assessments to a greater number of ED patients.

Half of the sites that responded to this survey of ED pharmacy services had at least 0.5 FTE ED pharmacy technician; however, this study did not identify when the provision of ED pharmacy technician services began. It was not possible to estimate the presence of ED pharmacy technician services for the 35 hospitals that did not respond to the ED pharmacy team survey, because the presence of ED pharmacy technicians was not specifically solicited during the preliminary telephone screening.

CONCLUSIONS

Overall, these survey results suggest that the large majority of EDs in Canada do not adequately obtain BPMHs for admitted patients. Accreditation Canada has revised the medication reconciliation ROP for on-site surveys conducted in 2015 and beyond to include the expectation that medication reconciliation activities will be completed for a target group of patients without a decision to admit. To meet these requirements in Canadian EDs, significant improvements in structured processes and staffing resources are required. Many ED managers have indicated the need for expansion of pharmacy services to provide these resources. Almost half of existing Canadian ED pharmacy services were established in the 4 years preceding the survey, but the majority of Canadian hospitals do not yet have dedicated pharmacy services.⁴⁷ Where such services are available, additional pharmacy staffing and improved information management processes are still required at most institutions.

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