Medication Management: Perceptions and Opinions of Canadian Hospital Executives

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ABSTRACT

Background: Issues relating to access to new medications, medication safety, and the quality of medication use are important to many Canadian hospital executives and managers.

Objective: To obtain the opinions of hospital executives and managers about medication management issues.

Methods: A survey instrument was developed and pilot-tested with input from key informant interviews and the Canadian College of Health Service Executives (CCHSE). The survey was sent by e-mail and regular mail to a randomized stratified sample from the CCHSE membership of 250 middle managers and 250 executives at the CEO or vice-president level. The responses to the survey questions and underlying themes from respondents' comments were analyzed using multivariate statistical techniques and content analysis. The results of these analyses are reported in relation to respondents' demographic characteristics.

Results: In total, 272 (56.1%) of the 485 surveys delivered were completed and returned. The respondents reported that changes in physician prescribing habits constituted the most important factor influencing demand for pharmaceuticals. The pharmacy department of the respondent's organization was listed as the top source of information about medications, and clinical practice guidelines and disease management programs were chosen as the top 2 methods to optimize the use of pharmaceuticals. Respondents considered appropriateness of drug use, medication errors, and proper drug utilization as the drug-related issues with the highest perceived importance. About 58% of respondents felt that their organizations were getting value for the money spent on drugs.

Conclusions: This study provided insight into the perceptions of Canadian hospital executives and managers related to one of the most important issues that they face today—management of pharmaceuticals. There was remarkable consistency in responses across the demographic variables included in the survey. Further work is needed to determine the type of education related to medication management that executives and managers need, suitable methods for providing that education, and the career stages at which it is appropriate to do so.

Key words: medication management, hospital executives, hospital managers

RÉSUMÉ

Historique : Les problèmes liés à l'accès aux nouveaux médicaments, à l'innocuité des médicaments et à la qualité de l'emploi des médicaments sont importants aux yeux des dirigeants et des cadres d'hôpitaux canadiens.

Objectif : Obtenir l'opinion de dirigeants et de cadres d'hôpitaux sur les problèmes de gestion des médicaments.

Méthodes : Un outil de sondage a été mis au point et mis à l'essai par l'entrevue d'informateurs clés et auprès du Collège canadien des directeurs de services de santé (CCDSS). Le sondage a été envoyé par courriel et par la poste à un échantillon stratifié aléatoire des membres du CCDSS composé de 250 cadres intermédiaires et de 250 cadres supérieurs occupant un poste de directeur général ou de vice-président. Les réponses aux questions du sondage et les thèmes sous-jacents aux commentaires des répondants ont été analysés par des techniques statistiques multivariées et l'analyse de contenu. Les résultats de ces analyses sont présentés par rapport aux caractéristiques démographiques des répondants.

Résultats : En tout, 272 (56,1 %) des 485 sondages envoyés ont été remplis et retournés. Les répondants ont déclaré que les changements des habitudes de prescription des médecins constituaient le facteur le plus important qui influence la demande de médicaments. Les répondants ont mis « Le service de pharmacie de votre établissement » en tête de liste des sources d'information sur les médicaments, alors que les guides de pratique clinique et les programmes de gestion thérapeutique ont été choisis comme les deux principales méthodes pour optimiser l'utilisation des médicaments. Les répondants ont identifié la pertinence de l'utilisation des médicaments, les erreurs de médication et l'emploi rationnel des médicaments comme les problèmes liés à la pharmacothérapie ayant la plus haute importance perçue. Environ 58 % des répondants ont estimé que leur établissement obtenait un bon rapport coût des médicaments-efficience.

Conclusions : Cette étude a permis mettre en relief les perceptions des dirigeants et des cadres des établissements de santé canadiens relativement à l'un des enjeux les plus importants de leur milieu aujourd'hui, la gestion des médicaments. Les réponses étaient remarquablement homogènes pour toutes les variables démographiques utilisées.

D'autres travaux du genre sont nécessaires afin de déterminer le type de formation en gestion des médicaments nécessaire aux dirigeants et aux cadres, ainsi que les méthodes et le moment de la carrière le plus propice à la prestation de cette formation.

Mots clés : gestion des médicaments, dirigeants d'hôpitaux, cadres d'hôpitaux

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INTRODUCTION

Ensuring value for money spent on drug therapy is one of the most challenging aspects of health care management. In Canada, pharmaceuticals continue to be the single fastest-increasing health care expenditure, representing 17.5% of the total in 2005, up from just 9.5% in 1985.[1] Moreover, total spending on drugs (both prescription and over-the-counter) in Canada is estimated to have reached $24.8 billion in 2005 or $770 for each Canadian.[1] As identified by Canada's National Pharmaceuticals Strategy,[2] the 3 key areas of concern regarding pharmaceuticals are (1) access; (2) safety, effectiveness, and appropriate use; and (3) system sustainability. The Health Council of Canada has also argued for the implementation of strategies to address these problems.[3]

Issues related to access to new medications, medication safety, and the quality of medication use are important to many health care managers. However, little is known about the perceptions of hospital executives and managers about these topics. Given that many of these individuals oversee the use and management of pharmaceuticals, knowledge of their opinions about these issues would be valuable. The purpose of this study, which was one component of a larger survey on management issues, was to obtain and analyze the opinions of Canadian hospital executives and managers about medication management issues.

METHODS

Survey Development

This study represented a partnership between the research team, which was funded by Health Canada, and the Canadian College of Health Service Executives (CCHSE). The CCHSE is a national, nonprofit, professional association dedicated to developing, promoting, advancing, and recognizing excellence in health care leadership. It has about 3000 individual members who work in all health sectors across Canada. A draft survey was created on the basis of a review of the CCHSE document *General Managerial Competencies*[4]; the research team interviewed key informants to develop additional questions related to survey's objectives. The draft survey was reviewed for face validity by CCHSE staff members and then pilot-tested by 7 health executives and managers (who were reached by e-mail). After incorporating changes suggested by the pilot group and the researchers, a second draft survey was circulated to the members of the research team. This gave the team members a final opportunity to provide feedback before the final version was sent to the survey sample.

The final survey had 3 sections. The first section asked respondents about the importance of a variety of managerial skills and their perceived level of attainment for 31 specific managerial skills. Results for this section of the survey were reported previously[5] and will not be explored in this paper.

The second section, which consisted of 5 questions, specifically assessed respondents' assessment of medication management. Its purpose was to determine the perceptions of Canadian health care executives and managers about issues related to improving the use of pharmaceuticals after these products are on the market. In particular, these questions asked respondents about the perceived importance of factors influencing the demand for pharmaceuticals, the frequency of their use of various sources of information about pharmaceuticals and pharmaceutical policy, the perceived level of importance of various methods to optimize the use of pharmaceuticals, and the perceived importance of various drug-related issues. This section also included 2 yes-or-no questions about the value of pharmaceuticals.

The third section of the survey requested respondents' demographic information, specifically sex, years of experience in a health care management

position, area of residence, type of work setting, educational background, and current job title. Respondents were also asked to specify if they held the Certified Health Executive (CHE) designation. Two questions allowed respondents to provide additional qualitative feedback on what they felt was the "value for money" spent on prescription drugs and their access to information systems that helped them to assess this "value for money". A blank page was provided at the end of the survey for comments. The final page of the survey consisted of a glossary of 15 terms used in the pharmaceutical questions.

Study Procedures

A national sample of 500 individuals, from the total of 2581 CCHSE members (2003 membership year), were selected to receive the survey. The computerized random selection was performed by CCHSE staff. Mail and e-mail addresses were provided by CCHSE, and the survey was administered in both English and French. The survey sample was stratified to include 250 middle management (supervisors, managers, and directors) and 250 senior management members (executives). Although Quebec represents 23% of the total population of Canada, persons from Quebec make up only about 5% of the CCHSE membership. To ensure a representative sample, all Quebec members of the CCHSE were included. In August 2003, the survey instrument was sent by regular mail and by e-mail to the identified recipients, along with a cover letter explaining the purpose of the study. A follow-up letter was mailed to nonrespondents after 3 weeks. A second follow-up letter and another copy of the survey instrument were mailed to those who had still not responded after an additional 3 weeks. In-kind support, including letterhead and signatures from CCHSE representatives, was used to help increase response rate. Survey design and methodology were derived from commonly used sources.[6,7]

Data Analysis

The responses from all completed surveys were analyzed using SAS version 8.2 software (SAS Institute, Cary, North Carolina). A one-way analysis of variance (ANOVA) was performed to compare average scores for the questions related to medication management competencies in relation to each demographic variable. For demographic variables with only 2 options, data were compared by *t* tests. Significance for all tests was set at $p = 0.05$. Post hoc tests were performed for significant ANOVA results using Tukey's HSD test; these post hoc comparisons were considered significant at $p = 0.05$. In addition, the respondents' responses to 3 open-ended questions were analyzed by generating common themes.[8] Similar responses were grouped together within a question, and these clusters were labelled by a member of the research team (C.J.M.).

RESULTS

Of the 500 surveys distributed, 15 had the wrong address or could not be delivered for some other reason and were therefore omitted from the survey population. Overall, 272 (56.1%) of the 485 usable surveys were completed and returned. More than half of the respondents were women, almost two-thirds had at least 16 years of experience, and most had a master's degree (Table 1). About half of the respondents were at the executive level of management, and a similar proportion were working in the hospital setting (Table 1). The demographic characteristics of the respondents were very similar to those of the entire CCHSE membership, except that a greater proportion of the survey population had completed a master's program (72.0% versus 58.0%) (Ron Fraser, Coordinator, Information Systems, CCHSE; personal communication in writing; September 2003). The survey respondents were geographically dispersed across Canada, with Ontario accounting for the most respondents from any single area (almost 43% of the respondents). Fifty-six percent of the respondents had earned the Certified Health Executive designation, similar to the percentage of the total CCHSE membership with this designation. Men were significantly more likely than women to have earned this designation ($\chi^2 = 4.19$, $p = 0.04$).

Perceived Importance of Factors Influencing the Demand for Pharmaceuticals

Changes in physician prescribing habits, introduction of innovative therapies, and changes in the use of existing medications were perceived as the 3 most important factors influencing the demand for pharmaceuticals (Table 2). Use of drugs in lieu of nondrug treatment, academic (counter) detailing, and direct-to-consumer advertising were perceived as the 3 least important factors influencing such demand.

Information Sources

None of the 12 potential sources of information about pharmaceuticals and pharmaceutical policy listed in the survey were identified as "frequently used" by all

Table 1. Demographic Characteristics of Survey Respondents

Characteristic	No. (%) of Respondents*	
Sex (*n* = 272)		
Male	123	(45.2)
Female	149	(54.8)
Years of experience (*n* = 267)		
≤5	17	(6.4)
6–10	39	(14.6)
11–15	46	(17.2)
≥16	165	(61.8)
Residence (*n* = 267)		
British Columbia and Territories	38	(14.2)
Prairie provinces (Manitoba, Saskatchewan, Alberta)	47	(17.6)
Ontario	114	(42.7)
Quebec	30	(11.2)
Atlantic provinces (Newfoundland and Labrador, Nova Scotia, New Brunswick, Prince Edward Island)	38	(14.2)
Managerial position (*n* = 268)		
Supervisor	1	(<1)
Manager	33	(12.3)
Director	85	(31.7)
Executive	120	(44.8)
Other	29	(10.8)
Work setting† (*n* = 268)		
Community hospital	72	(26.9)
Tertiary hospital	42	(15.7)
Long-term care facility	49	(18.3)
Regional health authority	68	(25.5)
Public third-party payer	2	(<1)
Private third-party payer	1	(<1)
Other‡	75	(28.0)
Educational background† (*n* = 268)		
Bachelor's degree	124	(46.3)
Master's degree	193	(71.0)
MD	10	(3.7)
PhD	5	(1.9)
Other	40	(14.9)
Certified Health Executive (*n* = 266)		
Yes	149	(56.0)
No	117	(44.0)

*Percentages are based on the number of responses for each characteristic.
†Respondents could check any that apply.
‡The main types of work settings for those who answered "other" were academia, government, consultancy, and the military.

respondents; however, for 7 of the 12 sources the mean score was 2.0 or higher (on a scale of 1 to 3, where 1 = not used at all and 3 = frequently used) (Table 3). The sources with the highest mean scores (indicating most frequent use), included the pharmacy department in the respondent's organization, the Internet, and Health Canada. Voluntary health agencies, the Canadian Agency for Drugs and Technologies in Health, and the Cochrane Collaboration were used least frequently.

Perceived Importance of Methods to Optimize Pharmaceutical Use

From a list of 12 methods presented to respondents, clinical practice guidelines, disease management programs, and formulary management were perceived to be most important in optimizing the use of pharmaceuticals, whereas prior authorization, patient copayments, and tiered formularies were the least important (Table 4).

Table 2. Mean Rank of Factors Influencing Demand for Pharmaceuticals (*n* = 272 Respondents)

Influencing Factor	Mean Rank* ± SD
Changes in physician prescribing habits	3.0±2.2
Innovative therapies	3.7±2.4
Changes in the use of existing medications	4.6±2.3
Changing health status of the population	5.2±2.9
Increasing patient knowledge	5.4±2.3
Drug (pharmaceutical) representatives	5.6±3.0
Presence of new diseases to be treated	5.8±2.6
Use of drugs in lieu of nondrug treatment	6.7±2.6
Academic (counter) detailing	6.8±2.8
Direct-to-consumer advertising	7.1±2.6

*Numeric ranking, where 1 = most important and 10 = least important.

Table 3. Mean Rank of Sources of Information for Pharmaceuticals and Pharmaceutical Policy (*n* = 272 Respondents)

Influencing Factor	Mean Score* ± SD
Your organization's pharmacy department	2.6±0.75
Internet	2.2±0.76
Health Canada	2.1±0.73
Media	2.1±0.79
Medical literature	2.1±0.78
Pharmaceutical industry	2.0±0.77
Provincial health department	2.0±0.77
Canadian Institute for Health Information	1.8±0.75
Benefit consultant or manager	1.5±0.65
Voluntary health agencies	1.5±0.64
Canadian Agency for Drugs and Technologies in Health	1.4±0.65
Cochrane Collaboration	1.4±0.66

*Scored by frequency of use, where 3 = frequently used and 1 = not used at all.

Table 4. Perceived Importance of Methods of Optimizing Use of Pharmaceuticals

Method of Optimizing Use	Mean* ± SD	No. of Responses
Clinical practice guidelines	4.4±0.71	225
Disease management programs	4.2±0.84	219
Formulary management	4.1±0.89	222
Generic substitution	4.0±0.96	222
Prospective drug utilization review	3.7±0.96	207
Retrospective drug utilization review	3.6±1.00	213
Pharmacoeconomic analysis	3.4±0.99	201
Wellness programs	3.2±1.20	208
Academic (counter) detailing	3.1±1.10	173
Prior (special) authorization	3.1±1.00	197
Patient copayments	2.9±1.10	209
Tiered formularies	2.9±1.00	163

*Scored by numeric importance, where 5 = very high importance and 1 = very low importance. Participants also had the option of a score of 6 (unable to assess), but these data were not included in the analysis.

Perceived Importance of Drug-Related Issues

Appropriateness of drug use, medication errors, and proper drug utilization were considered the drug-related issues with the highest perceived importance to respondents, whereas access to prescription drugs, breakthrough medications, and patent duration were the issues with the lowest perceived importance (Table 5).

Differences across the Country

For only one section in the entire survey did geographic region have a statistically significant effect on responses: perceived importance of prior authorization requirements as a method of optimizing the use of pharmaceuticals ($F = 3.21$, $p = 0.014$). Specifically, the perceived importance of prior authorization requirements was higher among Quebec respondents than among those from British Columbia or Ontario (mean scores 3.76/5 for Quebec, 2.70/5 for British Columbia, and 3.02/5 for Ontario, where 5 = very high importance and 1 = very low importance).

Qualitative Analysis

Respondents were asked 2 questions about value related to drug therapy: "In your opinion, do you feel your organization is getting value for the money spent on drugs?" and "Do you have access to information systems that help you to assess the value derived from drugs?" Fifty-eight percent of respondents (158/272) felt that their respective organizations were getting value for the money spent on drugs. These results did not appear to be influenced by respondents' demographic characteristics. One hundred and three respondents (37.9%) provided additional comments related to this question. These comments were analyzed and grouped into 6 themes (Table 6). In general, respondents stated that it was difficult to determine value (interpreted as improved patient outcomes) because of the lack of or the lack of use of available information sources (including pharmacists); they also stated that the place of costly innovative treatments and their benefits to patients is not known when the institution needs such information to stock the drug and treat patients. Among the 88 respondents who provided additional comments for the second question, 19 (22%) reported that they did not have access to information systems that would help them to assess value from drugs, 16 (18%) reported

Table 5. Perceived Importance of Drug-Related Issues

Drug-Related Issue	Mean* ± SD	No. of Responses
Appropriateness of drug use	4.5±0.65	232
Medication errors	4.5±0.79	234
Proper drug utilization	4.5±0.64	233
Effectiveness of drug use	4.4±0.68	228
Preventable drug-related morbidity	4.3±0.81	224
Adverse drug reactions	4.2±0.93	230
Drug compliance or adherence	4.2±0.81	227
Pharmaceutical costs	4.1±0.87	230
Access to prescription drugs	3.9±0.99	229
Breakthrough medications	3.7±1.00	220
Patent duration	3.3±1.10	216

*Scored by numeric importance, where 5 = very high importance and 1 = very low importance. Participants also had the option of a score of 6 (unable to assess), but these data were not included in the analysis.

that they did have access to such systems, and an additional 39 (44%) reported having access but qualified their response. Most of those who qualified their answers spoke to the limitations of current information systems, including having limited access to more complete systems and the need for improvement in accessing complete and integrated information from existing systems. Thirty-two respondents (11.8%) provided additional comments about medication management issues, which addressed such issues as developing and implementing standards of and education about management of pharmaceuticals, the need to understand different perspectives of value (for money), improving access to information about safe medication use, and implementing solutions to improve medication management.

DISCUSSION

There was consensus among the respondents that changes in physician prescribing habits was the most important factor influencing demand for pharmaceuticals. The ranking of this factor was not affected by demographic characteristics. Interestingly, the methods that were perceived to best optimize the use of pharmaceuticals (clinical practice guidelines, disease management programs, and formulary management) are all used, at least in part, to influence prescribing. Pharmaceutical manufacturers are major sponsors of clinical practice guidelines and disease management programs. Both hospital executives and the pharmaceutical industry try to influence prescribing and medication use within the context of their respective organizations' goals.

Strategies that focus on marketing or on the patient (or both) were perceived to be less important. For example, direct-to-consumer advertising, which has both a marketing and a patient focus, was perceived as the least important factor influencing demand for pharmaceuticals. Other marketing-related activities with a low ranking included drug (pharmaceutical) representatives and academic (counter) detailing. Patient-focused factors such as copayments and tiered formularies were perceived as the least valuable ways to optimize pharmaceutical use. This result may reflect the fact that the majority of respondents were working in institutional settings, where there is limited involvement of patients in their own care, especially with respect to payment for

Table 6. Themes from Qualitative Analysis of Responses to Question about Value for Money Spent on Drugs

In your opinion, do you feel your organization is getting value for the money spent on drugs?

Theme 1	Value for money spent on drugs needs to be determined; better information (evidence) about appropriate drug utilization will help in determining value (i.e., the effectiveness and safety of medications within the context of cost).
Theme 2	Value for money spent on drugs is difficult to determine or evaluate because the place of new, costly drugs in therapy is unknown.
Theme 3	The physician and his/her use of clinical practice guidelines have a role in ensuring the best and most appropriate use (which is equivalent to value).
Theme 4	There is a certain level of dependence on information technology or purchasing solutions to determine value.
Theme 5	The effect on the patient of drug decisions must be considered; for example, there is concern about the cost of new medications and who is going to pay (the patient or the hospital), especially for drugs initiated in the hospital setting but not covered by the patient's insurer once the patient is discharged.
Theme 6	General impressions: • Some (physicians) are committed to appropriate drug use, but others are not. • Patients' demand for drugs coupled with physicians' lack of sensitivity to cost results in overmedication and therefore decreased value. • Increases in cost do not appear to be balanced by improvements in health status.

pharmaceuticals. In contrast, the Health Council of Canada found that direct-to-consumer advertising does influence both physician prescribing behaviour and patient demand.[9] Although direct-to-consumer advertising is severely restricted in Canada, advertising of this type in the United States has a spillover or halo effect in Canada through print, broadcast, and electronic media. For example, in a study that evaluated the impact outside the United States of direct-to-consumer advertising in US media, 87.4% of consumers surveyed in Vancouver, British Columbia, had seen advertisements for prescription drugs.[10] Moreover, while the return on investment to the pharmaceutical industry from this type of advertising is hard to ascertain because of the proprietary nature of the business, trends in expenditures by the industry suggest that companies believe it is effective in influencing customer behaviour and physician prescribing in some therapeutic categories. In the United States, spending on direct-to-consumer advertising for prescription drugs tripled between 1996 and 2000, when it reached nearly US$2.5 billion[11]; by 2004, this figure exceeded US$4 billion.[12]

A resource that is internal to respondents' practice setting, the organization's pharmacy department, was cited as the most frequently used source of information about pharmaceuticals and pharmaceutical policy. Conversely, with the exception of Health Canada, none of the national sources of information listed in the survey, such as the Canadian Institute for Health Information or the Canadian Agency for Drugs and Technologies in Health, were cited as frequent sources of this type of information. One might conclude that these responses were driven by the hospital-based respondents, who may rely on their institution's own pharmacists. However, statistical analysis showed that the mean scores for sources of information were not significantly affected by any of the demographic characteristics. The fact that the Internet and the media were cited as frequently used may be worrisome, given concerns about the accuracy of pharmaceutical information from these sources. Despite all of the talk in health care circles about the value of evidence-based medicine, the Cochrane Collaboration was one of the two least used resources. Given that most of the survey respondents were not providers of direct patient care, it is perhaps unsurprising that they seem to rely on "lay" information sources. Hospital pharmacists can be encouraged that these executives rely on their staff (primarily their pharmacy departments) to become fully informed with respect to appropriate medication use.

Of the 3 key areas of concern identified by the National Pharmaceuticals Strategy, respondents thought that the second one, comprising issues of safety, effectiveness and appropriate use, was the most critical. Given that the study population consisted of executives and managers, it may be surprising that "pharmaceutical costs" was not cited as the most important issue. However, there was little distinction in perceived importance among the 11 factors listed in the survey (range 3.3 to 4.5 on a 5-point scale).

The lack of variation in responses across the various regions of Canada was surprising. The only statistically significant difference in responses by geographic region was the higher average scores in Quebec than in British Columbia and Ontario for perceived importance of prior authorization requirements as a method to optimize the use of pharmaceuticals. This difference may be explained, in part, by Quebec's *Public Heath Act* and related regulations requiring that heads of hospitals and pharmacy departments follow drug utilization rules, which can include a prior authorization mechanism (i.e., a drug can be prescribed and dispensed once approved by an infectious disease specialist, a pharmacist, or other health care professional).

The qualitative findings presented here identify individual opinions about "value for money" in terms of pharmaceuticals and an indication of access to information sources to determine this value. However, the opinions and experiences of respondents who answered the open-ended survey questions are not necessarily typical or widespread; as such, the findings are not generalizable and do not provide an estimate of the prevalence of certain opinions.

Interestingly, there was remarkable consistency in responses in relation to the demographic variables. Other than the few cases highlighted previously, the responses did not differ by region, job title, sex, or other variables. This is somewhat surprising, given differences in drug policies across Canada and differences in the expected level of medication management competencies of individuals at different stages of their careers (supervisors or CEOs) or in different health care settings (hospitals or long-term care).

The results of this study also suggest directions for future research in this area. First, further work is needed to determine the types of education related to medication management that executives and managers need, suitable methods for providing that education, and the career stages at which it is appropriate to do so. Second, the perceptions identified in this survey regarding the methods most important to optimize

pharmaceutical use should be compared with the scientific evidence. Although respondents believed that clinical practice guidelines represent the best method to optimize the use of pharmaceuticals, the effectiveness and cost-effectiveness of such guidelines relative to other methods such as tiered formularies (identified as the least important method of optimizing the use of pharmaceuticals) must be determined and communicated.

This study had some limitations. First, nonresponders were not surveyed to determine why they were unwilling to complete the survey. However, the similarity in demographic characteristics between the general membership of CCHSE and the respondents suggests that the results reported here are generalizable to other health care managers and executives. Second, some respondents might not have been knowledgeable about issues related to pharmaceuticals. Presumably, those with no interest or expertise in pharmaceuticals would not have responded to the survey, but this cannot be known for certain. Third, there may have been some confusion over the terms used in the survey (e.g., patient copayments, tiered formularies), although the inclusion of a glossary of terms in the survey instrument was intended to minimize any potential confusion of this type. Fourth, we did not validate the responses provided with the actions of respondents; as such, it is possible that respondents simply told us what they thought we wanted to hear or what they perceived as "politically correct" answers. Finally, certain health care executives and managers in the private sector (e.g., community pharmacy managers, private drug plan managers) are unlikely to be CCHSE members and hence would have been underrepresented in the survey population. Nevertheless, the CCHSE membership of approximately 3000 captures a significant proportion of the approximately 5000 senior health care managers in Canada.[13] The results of this survey should therefore be generalizable to other Canadian health care managers.

This study has provided insight into the perceptions of Canadian hospital executives and managers about one of the most important issues facing them today—medication management. Interestingly, there was remarkable consistency in the responses across all demographic variables in the survey. Further work is needed to determine the educational needs of executives and managers related to medication management, to ensure the implementation of appropriate strategies to optimize the cost-effectiveness of drug utilization and to reduce the burden imposed by inappropriate use.

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