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We pursued this research because of growing evidence supporting the benefits of pharmacist intervention in chronic disease management (CDM), though this is not commonly seen in practice. This survey was developed to explore the issues, stimulate further discussion and raise awareness of the value of CDM in community pharmacies.

Nous avons poursuivi cette recherche en raison des indices de plus en plus nombreux montrant les avantages de l'intervention des pharmaciens dans la prise en charge des maladies chroniques, bien que ceux-ci ne soient généralement pas visibles dans la pratique. Cette enquête a été élaborée afin d'étudier les problèmes, de favoriser la discussion et d'augmenter la sensibilisation à l'importance de la prise en charge des maladies chroniques dans les pharmacies communautaires.

Study of Understanding Pharmacists' Perspectives On Remuneration and Transition toward Chronic Disease Management (SUPPORT-CDM): Results of an Alberta-wide survey of community pharmacists

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Abstract

Background: Strong evidence supports the benefits of pharmacist intervention and chronic disease management (CDM) for patients, yet most pharmacists are not providing such services. The purpose of this study was to better understand pharmacists' perceptions of CDM and potential remuneration models.

Methods: We developed and tested a web-based survey based on the issues identified in a series of focus groups involving pharmacists: current practice setting, education, remuneration models, current practice environment and implementation. An invitation to complete the survey was e-mailed to registered pharmacists and was included in a weekly newsletter to Alberta pharmacists in January 2008, with 3 subsequent reminders to complete the survey.

Results: Responses from 140 pharmacists were included. Pharmacists were most interested in providing CDM for diabetes (79%), although only 49% were presently comfortable with man-

aging diabetes. The top enablers for provision of CDM included pharmacists' desire to change their scope of practice, a supportive work environment and patient demand. The top barriers included a lack of time to engage in CDM, lack of remuneration and staffing issues. Interestingly, relatively few identified pharmacists' resistance to change and difficulty finding eligible patients (38% and 25%, respectively) as important barriers. The majority of pharmacists agreed that payment should be shared between the pharmacy and the pharmacist as a fee-for-service. The average amount pharmacists expected for this model was \$44.23/service.

Conclusions: Pharmacists showed interest but may lack the confidence to provide CDM services to patients. Many of the facilitators and barriers point toward the need for a sustainable remuneration model for pharmacists' clinical care. We plan to use these results to help develop such a model. *Can Pharm J* 2009;142:136-143.

Introduction

Chronic diseases are the leading causes of death and disability in Canada. In fact, they account for around 89% of all deaths in Canada.¹ Chronic disease management (CDM) is defined as proactively

addressing chronic conditions early in the disease cycle to prevent further disease progression and reduce potential health complications. For pharmacy practice, an example would include identifying suitable patients, engaging the patient in the

CDM program, patient assessment, patient education, referral to a physician, prescription of medications, ongoing follow-up or monitoring at regular intervals, and documentation and communication with other health care professionals.

Currently, Canada's health care system suffers from many built-in inefficiencies, leading to limited patient access to health care services and resulting in long wait times, delayed referrals and disparities between the accessibility of health care for rural versus urban populations, to name a few.²⁻⁴ All of these contribute to the burden on health care resources. For patients living with chronic diseases, many other factors contribute to suboptimal patient outcomes, including underutilization of evidence-based therapies by clinicians,⁵⁻⁸ preventable adverse drug reactions^{9,10} and poor patient adherence with prescribed medication regimens.¹¹⁻¹³ These factors, combined with the aforementioned inefficiencies, further strain health system resources.

Numerous investigations and systematic reviews support the idea that pharmacists' provision of clinical care services can improve medication use, reduce health service utilization and costs, and improve clinical outcomes in both ambulatory and hospitalized patients.¹⁴⁻¹⁸ Generally, these clinical care services include medication therapy management, disease management or other medication-related services. In a systematic review, it was concluded that pharmaceutical care services are not only effective in improving medication use, but also improve surrogate outcomes such as blood pressure, cholesterol levels and hemoglobin A1C.¹⁴ However, despite this mounting evidence, pharmacists' clinical expertise remains vastly underutilized in the community setting. As the health professional who has the most interaction with patients,¹⁹ the pharmacist has great potential to further enhance patient outcomes through the provision of CDM services.

Several recent initiatives are facilitating the transition of pharmacists to the provision of enhanced clinical services. In the United States, the Medicare Prescription Drug Improvement and Modernization Act (MMA) of 2003 recognizes the potential value of medication therapy management, disease management and other medication-related services.²⁰ Furthermore, remuneration for the above services has also been implemented in the United Kingdom and Australia.¹⁶⁻¹⁸ In Canada, a Health Policy Framework emphasizes the importance of using health resources wisely to ensure sustainability of the health system; thus, there is an opportunity for greater usage of pharmacists' skills as primary care providers. In Alberta, for instance, several

initiatives, such as the electronic health record, the approval of a regulation under the Health Professions Act granting prescribing authority and the integration of pharmacists into primary care networks, are beginning to recognize pharmacists' potentially increased contribution to the health care system.

At this stage in the evolution of pharmacy practice, it is essential to articulate shared visions among pharmacists, thus enabling leaders to provide a guiding coalition that stimulates the profession to advance toward a new role for pharmacists.²¹ With any such change, there are often challenges, facilitators and barriers that need to be recognized and addressed with insight from community pharmacists. A qualitative study using focus groups conducted by our group gathered pertinent in-depth information on these issues.²² In order to complement the detailed qualitative data, the purpose of this current study was to capture the views of a greater number of pharmacists across Alberta regarding CDM and potential remuneration models.

Methods

A web-based survey was created based on the findings of a series of focus groups seeking community pharmacists' opinions on the challenges, facilitators and barriers regarding the provision of CDM to patients as well as a potential remuneration model. The survey itself was designed to take between 10 to 15 minutes to complete. The survey generally consisted of clearly worded, closed-ended questions, but also allowed respondents the option of providing additional input. There were also several open-ended questions at the end of the survey that allowed participants to provide information on aspects of their experience not covered by the survey. The survey questions are available from the corresponding author or online at www.epicore.ualberta.ca/supportcdm. The research protocol was approved through the local research ethics review board at the University of Alberta.

An invitation to fill out an anonymous web-based survey was e-mailed by the Alberta College of Pharmacists (ACP) to registered pharmacists and was included in the weekly newsletter of the Alberta Pharmacists' Association (RxA) in January 2008.

Key points

- Evidence supports the efficacy of pharmacist involvement in chronic disease management (CDM), but most pharmacists are not involved.
- This survey of Alberta pharmacists was conducted to explore the issues around CDM and remuneration.
- Enablers for CDM include pharmacists' desire to change their practice, a supportive work environment and patient demand. Barriers included lack of time, remuneration and staff.
- CDM programs need to first consider the work environment and an alternative remuneration program.

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Points clés

- Des indices montrent l'efficacité de l'intervention des pharmaciens dans la prise en charge des maladies chroniques, mais la plupart des pharmaciens n'y participent pas.
- Cette enquête menée auprès des pharmaciens de l'Alberta a été effectuée afin d'analyser les problèmes concernant la prise en charge des maladies chroniques et sa rémunération.
- Les facteurs favorables à cette prise en charge sont le désir des pharmaciens de modifier leurs pratiques, un environnement de travail propice et la demande des patients. Parmi les obstacles, on trouve le manque de temps, de rémunération et de personnel.
- Les programmes de prise en charge des maladies chroniques doivent d'abord prendre en considération l'environnement de travail et proposer une solution de rémunération.

Reminders were subsequently sent out on January 9 and 24 and February 6, 2008. The e-mail coordinator of the Faculty of Pharmacy and Pharmaceutical Sciences at the University of Alberta also agreed to forward the same e-mail announcement to the alumni e-mail addresses of current practising pharmacists in an effort to capture a greater number of respondents.

All surveys completed up to and including February 15, 2008, were considered for the analysis. Barriers and enablers were evaluated using a 5-point Likert scale, with responses ranging from "least important" to "most important." For the purposes of analysis, we combined the 2 least impor-

tant and 2 most important responses. We also examined differences between the responses of rural and urban pharmacists with a chi-square test. Responses were evaluated with descriptive statistics using SPSS 15.0 (SPSS Corp, Chicago, IL).

Results

A total of 141 surveys were collected, but 1 incomplete survey was excluded; therefore, the responses from 140 participants (about 5% of Alberta pharmacists) were included in the analysis. Of these participants, 31% self-identified as practising in a rural setting and 45% as practising in an independent pharmacy. Of the respondents, 24% were owners, 26% were managers and the remainder were staff pharmacists. Respondents had been practising pharmacy for an average of 17.8 years (SD 10.6).

Chronic disease management

Respondents viewed their primary role in CDM as a consultant (26%), primary care provider (22%), dispensing pharmacist (17%) or patient educator (24%).

As shown in Table 1, pharmacists were most interested in providing CDM for diabetes (79%), hypertension (66%) and asthma (63%). Areas for which pharmacists were less interested in providing CDM were obesity (30%), heart failure (32%) and chronic obstructive pulmonary disease (COPD; 32%). Other areas that pharmacists expressed interest in, but which were not included in the survey, included mental illnesses, arthritis,

Parkinson's disease, hormone replacement therapy, fibromyalgia, anaphylaxis, allergies, polycystic ovarian syndrome, inflammatory bowel disease, chronic renal failure, gout, epilepsy, anemia, dermatology and geriatrics.

When asked about their level of comfort in providing CDM, 56% were presently comfortable with asthma, 55% with hypertension and 49% with diabetes. Respondents were less comfortable with providing CDM for heart failure (12%), COPD (18%) and obesity (20%). Interestingly, 3.6% of respondents suggested that they were not comfortable with any of the choices provided (Table 1). A small number of respondents (3.6%) suggested other areas in which they were comfortable providing CDM, including depression, palliative care, hormone replacement therapy, anaphylaxis, polycystic ovarian syndrome, gout and epilepsy.

Based on the survey, 68% of respondents felt that they were currently providing some level of CDM, such as advising about medications, referring patients, promoting lifestyle changes, communicating with other health care professionals and conducting medication reviews. Specifically, these respondents assisted in smoking cessation, asthma, hypertension monitoring, warfarin dosing, insulin pump usage and diabetes management.

Education support

The majority of respondents (86%) felt that a workshop on practice guidelines would be most applicable to their practice. Thirty-five percent of respondents would be willing to take part in a combination of activities, including a workshop on practice guidelines, preceptorship program with expert pharmacists and ongoing support from an expert pharmacist. Attending only a workshop was preferred by 17% of respondents. Respondents were willing to spend a median of 48 hours (interquartile range 4.5–168.0) doing a continuing education or training program.

Alternate remuneration program

The majority of respondents (97%) felt that payment for clinical services should be independent of the dispensing fee. Most of the respondents (59%) felt that any payment should be shared between the pharmacy and the pharmacist. A high number (76%) supported the idea that remuneration should be in the form of a fee-for-service, as compared to a flat fee (17%) or other forms (6%). The other forms of remuneration suggested by respondents included annual capitated rate, salary based, payment per time interval, standard fee in addition to payment per hour and flat fee with a set number of visits. Pay-

ment for performance (in addition to a flat fee / fee-for-service) was supported by only 43% of respondents. Given the example of CDM for hypertension, individuals who chose fee-for-service would expect \$44.23 (SD \$23.90) per visit (Table 2).

Enablers/obstacles

The top 3 enablers for the provision of CDM included pharmacists' own desire to change their scope of practice (91%), a supportive work environment (88%) and patient demand for increased services from pharmacists (80%). Only 66% felt

that having prescriptive authority was important (Table 3). Other potential enablers suggested by respondents were the standardization of CDM, proper training, obtaining remuneration from the government, support from other health care professionals and authority to order lab tests.

The top identified barriers to the provision of CDM (Table 4) were the lack of time to engage in CDM (84%), lack of remuneration (84%) and staffing issues (77%). Interestingly, pharmacists' own resistance to change (38%) and difficulty finding eligible patients (25%) were not felt to be as

TABLE 1 Chronic diseases for which pharmacists are interested/comfortable in providing CDM*

Chronic disease	Interested					
	All (n = 140)		Rural (n = 43)		Urban (n = 97)	
	No.	%	No.	%	No.	%
Diabetes	110	78.6	34	79.1	76	78.4
Hypertension	93	66.4	27	62.8	66	68.0
Asthma	88	62.9	26	60.5	62	63.9
Osteoporosis	72	51.4	18	41.9	54	55.7
Anticoagulation	70	50.0	24	55.8	46	47.4
Dyslipidemia	69	49.3	23	53.5	46	47.4
Chronic pain	58	41.4	23	53.5	35	36.1
COPD	45	32.1	10	23.3	35	36.1
Heart failure	45	32.1	16	37.2	29	29.9
Obesity	72	30.0	13	30.2	29	29.9
Smoking cessation	57	40.7	18	41.9	39	40.2
Other	13	9.3	3	7.0	10	10.3
None	0	0	0	0	0	0
Chronic disease	Comfortable					
	All (n = 140)		Rural (n = 43)		Urban (n = 97)	
	No.	%	No.	%	No.	%
Asthma	78	55.7	23	53.5	55	56.7
Hypertension	77	55.0	18	41.9	59	60.8
Diabetes	69	49.3	22	51.2	47	48.5
Smoking cessation	69	49.3	21	48.8	48	49.5
Osteoporosis	60	42.9	16	37.2	44	45.4
Dyslipidemia	55	39.3	13	30.2	42	43.3
Anticoagulation	40	28.6	17	39.5	23	23.7
Chronic pain	32	22.9	14	32.6	18	18.6
Obesity	28	20.0	8	18.6	20	20.6
COPD	25	17.9	8	18.6	17	17.5
Heart failure	17	12.1	8	18.6	9	9.3
Other	5	3.6	2	4.7	3	3.1
None	5	3.6	2	4.7	3	3.1

*"Interested" refers to respondents' expressed interest in providing CDM in areas listed, and "comfortable" refers to respondents' current level of comfort in providing CDM services in areas listed.

important. Other potential obstacles suggested by respondents included increased liability, lack of supplemental software to assist CDM, current inability of pharmacy technicians to play a greater role in the dispensary and the corporate incentive programs that portray the wrong focus (i.e., points rewards systems that promote loyalty to the store rather than a focus on patient health).

When asked what pharmacists can do at the moment to promote CDM, respondents suggested increasing awareness, staffing and knowledge of the pharmacists' role. Pharmacists also identified having greater leadership from the Alberta College of Pharmacists and the Alberta Pharmacists' Association and demanding that the obstacles such as

those presented here by pharmacists be addressed by employers. Some suggested that if all pharmacists stand strong together, implementation of a CDM program can be accomplished.

Rural versus urban responses

Comparing the rural and urban practice setting, respondents commented that in the rural setting, patients tend to be more understanding and in less of a hurry. Rural pharmacists also stated that they seemed to have a better rapport with the physicians. However, rural pharmacies also suffered from a shortage of staff and, importantly, from the ability to attract new staff. Respondents felt that patients in rural settings are often referred for

TABLE 2 Amount of expected remuneration for CDM services

Type of remuneration	All*	Rural*	Urban*
Flat fee per month	50.42 (25.90)	55.56 (27.40)	47.33 (25.40)
Fee-for-service	44.23 (23.90)	35.24 (15.60)	48.24 (25.90)
Payment for performance	72.08 (134.30)	50.79 (59.80)	81.95 (157.20)

*Mean \$ (SD)

TABLE 3 Enablers related to the provision of CDM services

Enablers	Less important		Neutral		More important	
	No.	%	No.	%	No.	%
Supportive work environment						
Rural	1	2.4	3	7.3	37	90.2
Urban	6	6.2	6	6.2	85	87.6
All	7	5.1	9	6.5	122	88.4
Store resources						
Rural	5	12.5	5	12.5	30	75.0
Urban	16	16.5	5	5.2	76	78.4
All	21	15.3	10	7.3	106	77.4
Pharmacists' desire to change						
Rural	2	4.9	2	4.9	37	90.2
Urban	4	4.1	4	4.1	89	91.8
All	6	4.3	6	4.3	126	91.3
Patient demand for CDM service						
Rural	5	12.2	7	17.1	29	70.7
Urban	6	6.2	9	9.4	81	84.4
All	11	8.0	16	11.7	110	80.3
Demand from health care system						
Rural	10	24.4	7	17.1	24	58.5
Urban	9	9.4	9	9.4	78	81.2
All	19	13.9	16	11.7	102	74.5
Prescriptive authority						
Rural	10	24.4	7	17.1	24	58.5
Urban	8	8.2	22	22.7	67	69.1
All	18	13.0	29	21.0	91	65.9

CDM at a much later stage in their disease than those in an urban setting, meaning that they may receive less benefit from the intervention than those who obtain this kind of care earlier.

Hypertension was one disease state in particular for which there was a large discrepancy in pharmacists' comfort with providing CDM: 61% of urban pharmacists were comfortable, but only 42% of rural pharmacists were comfortable ($p = 0.037$; Table 1).

Ongoing support from an expert was preferred more by urban pharmacists (74% vs 56%; $p = 0.030$). Both rural and urban pharmacists were willing to invest a median of 48 hours in training

(interquartile range 1.5–252.0 for rural and 5.25–168.0 for urban). In terms of remuneration, generally urban pharmacists tended to expect more for fee-for-service and payment for performance, but not for flat fee per month (Table 2).

As seen in Table 5, the identification of enablers and obstacles was fairly consistent between rural and urban pharmacists, with the exception that demand from the health care system (59% vs 81%; $p = 0.017$) and prescriptive authority (59% vs 69%; $p = 0.036$) were viewed to be less important by rural than urban pharmacists, respectively. Rural pharmacists felt the following obstacles to be less

TABLE 4 Barriers related to the provision of CDM services

Barriers	Less important		Neutral		More important	
	No.	%	No.	%	No.	%
Support from owner/manager						
Rural	19	47.5	7	17.5	14	35.0
Urban	31	32.6	9	9.5	55	57.9
All	50	37.0	16	11.9	69	51.1
Time to engage						
Rural	1	2.4	5	11.9	36	85.7
Urban	8	8.2	8	8.2	81	83.5
All	9	6.5	13	9.4	117	84.2
Infrastructure						
Rural	7	16.7	8	19.0	27	64.3
Urban	10	10.5	21	22.1	64	67.4
All	17	12.4	29	21.2	91	66.4
Staffing issues						
Rural	5	12.2	5	12.2	31	75.6
Urban	7	7.2	15	15.5	75	77.3
All	12	8.7	20	14.5	106	76.8
Lack of reimbursement						
Rural	3	7.1	5	11.9	34	81.0
Urban	4	4.1	10	10.3	83	85.6
All	7	5.0	15	10.8	117	84.2
Pharmacists' own resistance						
Rural	23	54.8	7	16.7	12	28.6
Urban	30	31.2	25	26.0	41	42.7
All	53	38.4	32	23.2	53	38.4
Physician's opposing view						
Rural	7	16.7	6	14.3	29	69.0
Urban	10	10.4	21	21.9	65	67.7
All	17	12.3	27	19.6	94	68.1
Patient unaware of potential						
Rural	11	27.5	12	30.0	17	42.5
Urban	10	10.4	25	26.0	61	63.5
All	21	15.4	37	27.2	78	57.4
Difficulty finding eligible patient						
Rural	24	60.0	10	25.0	6	15.0
Urban	41	43.2	26	27.4	28	29.5
All	65	48.1	36	26.7	34	25.2

important than did urban pharmacists: support from store owner/manager (35% vs 58%; $p = 0.047$), pharmacists' own resistance to change (29% vs 43%; $p = 0.033$) and patient being unaware of potential benefit (43% vs 64%; $p = 0.022$).

Discussion

This web-based survey of Alberta pharmacists explored their perspectives on providing CDM services. Pharmacists showed interest in providing CDM, but may lack the confidence to do so. Thus, further educational support is needed before pharmacists can provide these clinical services to optimize patient care. The majority of respondents agreed that payment for clinical services should be separate from the dispensing fee and should be shared between the pharmacy and pharmacist in a fee-for-service model. In the scenario of management of hypertension, pharmacists would expect about \$44 per visit. Many of the facilitators and barriers point toward the need for a sustainable remuneration model for pharmacists' clinical care.

Few published studies using surveys have been targeted at understanding the perspectives of current practising pharmacists on providing CDM services. Similar findings were found in a telephone survey examining disease management in pharmacies of California and in the 2006 Trends & Insights survey of Canadian pharmacists.^{23,24} Both surveys reported similar chronic disease areas currently managed by pharmacists and perceived barriers to implementation of disease management by pharmacists. In addition, many of the facilitators and barriers raised are consistent with previous findings in other studies and in our series of focus groups.^{20,25,26} For example, the lack of remuneration consistently proves to be the greatest barrier identified by pharmacists to their involvement in CDM services.^{20,22,27}

It is our understanding that this is the first study

to evaluate the differences in professional attitudes toward practice between rural and urban pharmacists. From our findings, rural pharmacists tend to feel that they have more support from their store owner/manager, greater patient awareness of their potential and greater ability to recruit patients for CDM services compared to urban pharmacists. Since other health care professionals are absent or scarce in rural areas, pharmacists tend to be the most readily accessible health professional seen by patients.²⁸ Rural pharmacists serve as an untapped resource and may be a great target as the first group to implement a sustainable CDM program.

Our web-based survey effectively reached all the pharmacists of Alberta at a low cost and with a quick turnaround time.²⁹⁻³¹ However, our study has some limitations that should be noted. It is possible that only individuals who have some degree of interest in CDM would be inclined to fill out the survey, creating the potential for volunteer bias. In addition, despite numerous reminders, only 140 pharmacists completed the survey (there are about 3000 pharmacists in Alberta). Whether our results are generalizable to all Alberta pharmacists and to Canadian pharmacists in general is not known. Nevertheless, our findings were similar to those from our focus group study.²²

The findings of this survey show the need to generate a consensus for the ideal role of the pharmacist in the provision of CDM services. The identification of CDM areas of interest and the degree of comfort pharmacists have in those areas (i.e., diabetes, hypertension and asthma) can help determine which area should be first implemented in a future program. Knowing the form and average amount of educational support and payment expected by respondents will also assist in the development of such a program. The acknowledgement of current enablers and barriers aids in the ability to

TABLE 5 Statistically significant differences between rural and urban pharmacists' perceptions of enablers and barriers related to provision of CDM services

Enablers	Rural (%)	Urban (%)	<i>p</i> -value
Demand from health care system	58.5	81.2	0.02
Prescriptive authority	58.5	69.1	0.04
Barriers			
Support from store owner/manager	35.0	57.9	0.05
Patient unaware of potential benefit	42.5	63.5	0.02
Pharmacists' own resistance to change	28.6	42.7	0.03

create a CDM program by understanding areas that need to be improved before successful implementation of such a program. It is our intention to create a new model that will be the first in Canada supported by pharmacists, government payers and third-party payers. We hope that this model will be widely applicable outside of Alberta and may be used by pharmacists in other parts of the country to gain remuneration for CDM services.

Conclusions

Pharmacists were most interested in providing

CDM services for diabetes, hypertension and asthma, but potentially lack the necessary comfort level, suggesting the need for professional development programs aimed at pharmacist-directed CDM. Facilitators and barriers mostly point toward the need for a sustainable remuneration program. All of these factors will be taken into account when designing a CDM program for pharmacists. We hope this article will stimulate further discussion and awareness among pharmacy practitioners and researchers, further strengthening the evidence of the value of CDM in community pharmacies. ■

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References

1. World Health Organization. *Facing the facts: the impact of chronic disease in Canada*. Geneva (Switzerland): World Health Organization; 2005. Available: www.who.int/chp/chronic_disease_report/media/CANADA.pdf (accessed February 2008).
2. Stolberg HO. The Canadian health care system: past, present, and future. *J Am Coll Radiol* 2004;1(9):659-70.
3. Asanin J, Wilson K. "I spent nine years looking for a doctor": exploring access to health care among immigrants in Mississauga, Ontario, Canada. *Soc Sci Med* 2008;66(6):1271-83.
4. Lacaille D, Anis AH, Guh DP, Esdaile JM. Gaps in care for rheumatoid arthritis: a population study. *Arthritis Rheum* 2005;53(2):241-8.
5. Majumdar SR, Tsuyuki RT, McAlister FA. Impact of opinion leader-endorsed summaries on the quality of prescribing for patients with cardiovascular disease: a randomized control trial. *Am Heart J* 2007;153(1):22.
6. Stafford RS, Radely DC. The underutilization of cardiac medications of proven benefit, 1990-2002. *J Am Coll Cardiol* 2003;4(1):56-61.
7. Cleland JG, Cohen-Solal A, Aguilar JC, et al. Management of heart failure in primary care (the IMPROVEMENT of Heart Failure Programme): an international survey. *Lancet* 2002;360(9346):1631-9.
8. Cox JL, Ramer SA, Lee DS, et al. Pharmacological treatment of congestive heart failure in Canada: a description of care in five provinces. *Can J Cardiol* 2005;21(4):337-43.
9. Forster AJ, Murff HJ, Peterson JF, et al. The incidence and severity of adverse events affecting patients after discharge from hospital. *Ann Intern Med* 2003;138(3):161-7.
10. Forster AJ, Clark HD, Menard A, et al. Adverse events among medical patients after discharge from hospital. *CMAJ* 2004;170(3):345-9.
11. Blackburn DF, Dobson RT, Blackburn JL, Wilson TW. Cardiovascular morbidity associated with nonadherence to statin therapy. *Pharmacotherapy* 2005;25(8):1035-43.
12. Abughosh SM, Kogut SJ, Andrade SE, et al. Persistence with lipid-lowering therapy: influence of the type of lipid-lowering agent and drug benefit plan option in elderly patients. *J Manag Care Pharm* 2004;10(5):404-11.
13. Jackevicius CA, Mamdani M, Tu JV. Adherence with statin therapy in elderly patients with and without acute coronary syndromes. *JAMA* 2002;288(4):462-7.
14. Roughead E, Semple S, Vitry A. Pharmaceutical care services: a systematic review of published studies, 1990-2003, examining effectiveness in improving patient outcomes. *Int J Pharm Pract* 2005;13:53-70.
15. Beney J, Bero LA, Bond C. Expanding the roles of outpatient pharmacists: effects on health services utilization, costs and patient outcomes. *Cochrane Database Syst Rev* 2000;(3):CD000336.
16. Morrison A, Wertheimer AI. Evaluation of studies investigating the effectiveness of pharmacists' clinical services. *Am J Health Syst Pharm* 2001;58(7):569-77.
17. Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical pharmacists and inpatient medical care: a systematic review. *Arch Intern Med* 2006;166(9):955-64.
18. Urbis Keys Young. *Evaluation of the home medicines review program — pharmacy component*. Prepared for the Pharmacy Guild of Australia. June 2005. Available: www.guild.org.au/mmr/content.asp?id=406 (accessed March 20, 2009).
19. Shui J, Simpson S, Johnson JA, Tsuyuki RT. Quantifying opportunities to affect diabetes management in the community. *Can Pharm J* 2006;139(3):37-8.
20. Chan P, Grindrod K, Bougher D, et al. A systematic review of remuneration systems for clinical pharmacy care services. *Can Pharm J* 2008;141:102-12.
21. Tsuyuki RT, Schindel TJ. Changing pharmacy practice: the leadership challenge. *Can Pharm J* 2008;141:174-80.
22. Grindrod KA, Rosenthal M, Marra C, et al. Study of Under-

- standing Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT-CDM): methods to determine what pharmacists really think about CDM. Poster presented at the CPhA National Conference, Victoria, BC, June 1-3, 2008.
23. Law AV, Okamoto MP, Chang P. Prevalence and type of disease management programs in community pharmacies in California. *J Manag Care Pharm* 2005;11(6):505-12.
24. *Trends & Insights 2006*. Toronto (ON): Rogers Publishing; 2007.
25. Bell HM, McElnay JC, Hughes C, Woods A. A qualitative investigation of the attitudes and opinions of community pharmacists to pharmaceutical care. *J Soc Adm Pharm* 1998;15(4):284-95.
26. Armour C, Brilliant M, Ines K. Pharmacists' views on involvement in pharmacy practice research: strategies for facilitating participation. *Pharm Pract* 2007;5(2):59-66.
27. Kroger E, Moisan J, Gregoire J. Billing for cognitive services: understanding Quebec pharmacists' behavior. *Ann Pharmacother* 2000;34:309-16.
28. Lewin M, Altman S, editors. *America's health care safety net, intact but endangered*. Washington (DC): National Academy Press; 2000.
29. Burgess TF. *A general introduction to the design of questionnaires for survey research*. Leeds (UK): University of Leeds, Information System Services; 2001.
30. Schleyer T, Forrest JL. Methods for the design and administration of Web-based surveys. *J Am Med Inform Assoc* 2000;7:416-25.
31. Duffy ME. Methodological issues in Web-based research. *J Nurs Scholarsh* 2002;34(1):83-8.