Typologie des instructions aux patients sur les soins disponibles après les heures de bureau

Enquête téléphonique et analyse multifactorielle

Risa Bordman MD CCFP FCFP **Monica Bovett** RN **Neil Drummond** PhD **Eric J. Crighton** PhD
David Wheler MD CCFP **Rahim Moineddin** PhD **David White** MD CCFP FCFP

Pour le North Toronto Primary Care Research Network (Nortren)

RÉSUMÉ

OBJECTIF Élaborer une typologie des instructions sur les soins disponibles après les heures de bureau (SAH) et déterminer les caractéristiques des médecins et des établissements associées à chaque type d'instructions.

TYPE D'ÉTUDE Enquête téléphonique transversale. On a téléphoné aux bureaux des médecins les soirs et fins de semaine pour écouter leurs messages concernant les SAH. Tous les messages ont été classés par catégories. On a effectué une analyse thématique d'un sous-groupe de messages pour élaborer une typologie des instructions sur les SAH. On a utilisé une analyse de régression logistique pour établir les associations entre les caractéristiques des médecins et des établissements et les instructions destinées aux patients.

CONTEXTE Établissements de médecine familiale du Grand Toronto.

PARTICIPANTS Échantillon aléatoire stratifié de médecins de famille offrant des soins de première ligne en cabinet.

PRINCIPAUX PARAMÈTRES À L'ÉTUDE Forme de réponse (p. ex. répondeur), contenu des messages et caractéristiques des médecins et des établissements.

RÉSULTATS Sur 514 messages laissés par les bureaux des médecins de famille après les heures normales, 421 provenaient de répondeurs, 58 de services de réponse téléphonique, 23 n'avaient aucune réponse, 2 donnaient des numéros de téléavertisseurs et 10 donnaient d'autres réponses. Le contenu des messages allait de l'absence d'instructions sur les SAH à un avis détaillé; 54% des messages donnaient une seule instruction tandis que les autres en donnaient plusieurs. L'analyse de contenu a identifié 815 instructions ou types de réponses différents, qui ont été classés en 7 catégories; 302 conseillaient aux patients d'aller dans un service d'urgence; 122 permettaient un contact direct avec un médecin; 115 disaient au patient d'aller dans une clinique; 94 ne donnaient aucun conseil; 76 suggéraient d'appeler un service de visite à domicile; 45 suggéraient d'appeler Télésanté; et 61 suggéraient autre chose. Environ 22% des messages conseillaient seulement de visiter un service des urgences et 18% ne donnaient aucun conseil. Les femmes médecins qui avaient un diplôme canadien de médecine familiale, détenaient des privilèges de pratique hospitalière ou avaient étudié dans une faculté de médecine canadienne étaient plus susceptibles d'être directement accessibles à leurs patients.

CONCLUSION Les problèmes importants identifiés incluaient la recommandation de visiter un service d'urgence en tant que seule source de SAH, l'absence d'instruction spécifique par les établissements à leurs patients et le manque d'acceptation de Télésanté de la part des médecins. Afin d'améliorer les SAH, il faudrait innover à partir des systèmes existants et intégrer les changements voulus; de plus, il devrait exister divers types d'options de SAH tant pour les patients que pour les médecins.

POINTS DE REPÈRE DU RÉDACTEUR

- Les soins disponibles après les heures normales de bureau (SAH) constituent un élément important des soins de première ligne, et pourtant, peu d'études ont porté sur les instructions concernant les SAH que les médecins de famille donnent à leurs patients.
- Environ 40% des médecins de famille du Grand Toronto qui ont participé à cette enquête n'offraient aux patients gravement malades aucune instruction utile concernant les SAH. Près de 25% conseillaient seulement aux patients de visiter un service des urgences.
- Parmi les stratégies pour améliorer les SAH figurent une rémunération appropriée pour les conseils téléphoniques, une campagne de sensibilisation du public concernant l'utilisation adéquate des services d'urgence et l'élaboration de modèles de SAH conformes aux besoins des médecins et des patients.

Cet article a fait l'objet d'une révision par des pairs.
Le texte intégral est aussi accessible en anglais à **www.cfpc.ca/cfp**.
Can Fam Physician 2007;53:450-456

Typology of after-hours care instructions for patients

Telephone survey and multivariate analysis

Risa Bordman MD CCFP FCFP Monica Bovett RN Neil Drummond PhD Eric J. Crighton PhD
David Wheler MD CCFP Rahim Moineddin PhD David White MD CCFP FCFP

on behalf of the North Toronto Primary Care Research Network (Nortren)

ABSTRACT

OBJECTIVE To develop a typology of after-hours care (AHC) instructions and to examine physician and practice characteristics associated with each type of instruction.

DESIGN Cross-sectional telephone survey. Physicians' offices were called during evenings and weekends to listen to their messages regarding AHC. All messages were categorized. Thematic analysis of a subset of messages was conducted to develop a typology of AHC instructions. Logistic regression analysis was used to identify associations between physician and practice characteristics and the instructions left for patients.

SETTING Family practices in the greater Toronto area.

PARTICIPANTS Stratified random sample of family physicians providing office-based primary care.

MAIN OUTCOME MEASURES Form of response (eg, answering machine), content of message, and physician and practice characteristics.

RESULTS Of 514 after-hours messages from family physicians' offices, 421 were obtained from answering machines, 58 were obtained from answering services, 23 had no answer, 2 gave pager numbers, and 10 had other responses. Message content ranged from no AHC instructions to detailed advice; 54% of messages provided a single instruction, and the rest provided a combination of instructions. Content analysis identified 815 discrete instructions or types of response that were classified into 7 categories: 302 instructed patients to go to an emergency department; 122 provided direct contact with a physician; 115 told patients to go to a clinic; 94 left no directions; 76 suggested calling a housecall service; 45 suggested calling Telehealth; and 61 suggested other things. About 22% of messages only advised attending an emergency department, and 18% gave no advice at all. Physicians who were female, had Canadian certification in family medicine, held hospital privileges, or had attended a Canadian medical school were more likely to be directly available to their patients.

CONCLUSION Important issues identified included the recommendation to use an emergency department as the sole source of AHC, practices providing no specific AHC instructions to their patients, and physicians' lack of acceptance of Telehealth. To improve AHC, new initiatives should build upon the existing system, changes should be integrated, and there should be a range of AHC options for patients and physicians.

EDITOR'S KEY POINTS

- After-hours care (AHC) is a key facet of primary care, yet there has been little research into the AHC instructions family physicians give their patients.
- Around 40% of family physicians surveyed in the greater Toronto area provided no useful AHC instructions for those not critically ill. Almost 25% only advised patients to go to an emergency department.
- Strategies to improve AHC include proper remuneration for telephone advice, a public awareness campaign on appropriate use of emergency departments, and development of AHC models that meet the needs of both physicians and patients.

This article has been peer reviewed.
Full text is also available in English at **www.cfpc.ca/cfp**.
Can Fam Physician 2007;53:450-456

After-hours care (AHC) is an important aspect of primary care that falls directly into the domains of continuity and comprehensiveness. Changes in AHC have been taking place throughout the developed world for more than a decade, driven by such issues as cost containment, work force morale, patients' safety, and patients' access to care.[1-13]

In Canada, Patel et al[14] found that family physicians' availability for consultation about children's illnesses after hours in 4 major Canadian cities varied by location. (In Montreal, 28% were available; in Ottawa, 40%; in Toronto, 54%; and in Winnipeg, 87%.) An analysis of the 2001 National Family Physician Workforce Survey (NFPWS)[15] found that 62% of family physicians in Canada provided AHC. This number varied by province and ranged from 34% to 88%. Updated results of the NFPWS[16] indicated that at least 1 type of on-call service (eg, obstetric, emergency, inpatient) was provided by 74% of primary care physicians.

Studies have reported little evidence of differences in clinical outcomes associated with particular types of AHC, although patient satisfaction was lower in association with telephone consultations.[17] In 1 study, community preference for location of AHC for children with respiratory symptoms was the hospital emergency department.[18] No relationship appears to exist between cost of AHC and type or size of provider organization.[19]

In Toronto and surrounding area, there are several different types of AHC, such as housecall services (physicians visiting patients in their homes), walk-in clinics (no appointments, extended open hours), and after-hours clinics (open only after hours, including holidays, and usually staffed by doctors with regular practices). These new models, however, do not usually provide service after midnight, leaving emergency departments and doctors-on-call to fill the gap.

While the literature on AHC has been growing in recent years, we still do not understand enough about the types of AHC arrangements that exist and the factors that influence them. This study was designed to develop a formal typology of AHC in the context of family practice in Canada and to examine physician and practice characteristics associated with specific types of AHC instructions.

Dr Bordman *is an Assistant Professor in the Department of Family and Community Medicine at the University of Toronto in Ontario.* **Ms Bovett**, *Research Assistant, is a Public Health Nurse with the Region of Peel in Ontario.* **Dr Drummond** *is an Associate Professor in the Department of Family Medicine and the Departments of Family and Community Health Sciences at the University of Calgary in Alberta.* **Dr Crighton** *is an Assistant Professor in the Department of Geography at the University of Ottawa in Ontario.* **Dr Wheler** *is an Assistant Professor,* **Dr Moineddin** *is a researcher, and* **Dr White** *is an Associate Professor, all in the Department of Family and Community Medicine at the University of Toronto.*

METHODS

Between December 2002 and April 2003, we conducted a cross-sectional telephone survey of family physicians in the greater Toronto area. A comprehensive electronic database, the 2002 *Canadian Medical Directory* (non-specialist section), was used to generate an initial list of physicians and to provide demographic information on potential subjects (location, year and country of graduation, other degrees, sex, hospital affiliation, and whether they had College of Family Physicians of Canada [CFPC] Certification). Physicians who were identified as not providing general primary care or who worked part-time were removed and replaced with the next listed physician. Doctors were grouped by the first 3 digits of the postal code of their main practice address and then systematically randomized by selecting every seventh name. Based on the findings of Patel et al,[14] we calculated that a minimum sample size of 384 would be required to estimate with 95% confidence and a 5% margin of error the after-hours availability of family physicians in Toronto. To ensure this minimum sample was obtained, we oversampled to allow for the exclusion of those not providing general primary care.

The practices of eligible physicians were telephoned on weekday and weekend evenings between 8:00 PM and 10:30 PM. Form of response (eg, recorded message, "live" person), content of information given, use of language other than English, and office hours (if provided) were recorded. For calls answered in person, the respondent was asked, "If I were a patient calling at this time with a medical problem, what would you tell me?" To exclude the possibility that a "no answer" response was due to a technical problem or human error (eg, forgetting to turn on an answering machine), no-response sites were called at least twice on different evenings. All physicians were called during office hours to validate their after-hours messages, confirm regular hours, verify that they were family physicians working 3 days a week or more, and record the size of the practice.

To develop the typology, 20 after-hours messages were selected at random and subjected to inductive analysis of both content and form by 3 of the researchers independently in order to develop a thematic coding schema. The 20 messages, identified themes, and coding schema were then compared by the 3 researchers together to reach consensus on the final theme list and coding schema. The research assistant then applied this schema to the complete data set. Responses that could not be readily coded were brought to the whole research group for classification by consensus. During

this process, it became clear that analysis of form had less explanatory power than analysis of content, except when there was direct "voice-to-voice" contact with a physician, in which case the content of the message depended on the specific reason for the call.

Data analysis involved both univariate and multivariate logistic regression techniques. Variables that could determine choice of AHC were selected based on literature review, our pilot study, and a priori judgment. Variables that were associated with outcomes with a *P* value of ≤.20 in the univariate analysis were entered into multivariate logistic models. If a variable made the parameter estimates of the model unstable, it was dropped. All data manipulation and statistical analyses were carried out using SAS, version 8.2.

Ethics approval was obtained from the Research Ethics Boards of the Scarborough Hospital, Sunnybrook and Women's College Health Sciences Centre, and North York General Hospital.

RESULTS

It took 726 calls to achieve a sample of 514 family physicians. Characteristics of these physicians are shown in **Table 1**; the forms of their AHC responses are shown in **Table 2**. Message content ranged from no instructions for AHC to detailed advice. About 54% (277/514) of physicians' messages provided a single instruction. The remainder gave combinations of choices. In total, the 514 after-hours messages generated 815 separate instructions that could be classified into 7 categories (**Table 3**). Three physicians forwarded their office calls to their homes. No physicians provided AHC instructions using Web-based or e-mail technology. "Go to emergency" was the sole instruction provided by 22% (111/514) of doctors. Another 18% (94/514) provided no AHC directions at all.

Logistic regression analysis (**Table 4**) revealed that physicians who were female, had hospital privileges, had CFPC Certification, or had graduated from a Canadian

Table 1. Characteristics of physicians in the study sample

CHARACTERISTIC	N (%)
Sex	
• Female	175 (34)
• Male	339 (66)
Canadian graduate	
• No	145 (28)
• Yes	369 (72)
Years in practice	
• <10	35 (7)
• 10-20	148 (29)
• 21-30	171 (33)
• >30	160 (31)
Type of practice	
• Solo	171 (33)
• 2-3 physicians	157 (31)
• ≥4 physicians	183 (36)
• Unknown	3 (<1)
CFPC Certification	
• No	297 (58)
• Yes	217 (42)
Hospital affiliation	
• No	174 (44)
• Yes	340 (66)

Table 2. Form of after-hours responses: *N = 514.*

FORM	N (%)
Answering machine	421 (81)
Answering service	58 (12)
No answer	23 (5)
Pager	2 (<1)
Other*	10 (2)

*Other included personal voice mail and garbled messages.

Table 3. Types of after-hours instructions provided by family physicians in the study sample

TYPE OF INSTRUCTION	NO. OF TIMES THIS INSTRUCTION WAS INCLUDED IN MESSAGES N = 815	% OF ALL INSTRUCTIONS GIVEN N = 815	% OF MESSAGES INCLUDING THIS INSTRUCTION N = 514
Go to emergency	302	37	59
Direct contact with a physician	122	15	24
Go to clinic*	115	14	22
No direction	94	12	18
Call a housecall service	76	9	15
Other†	61	7	12
Call Telehealth‡	45	6	9
TOTAL	815	100	>100§

*Clinic refers to a walk-in or after-hours clinic at a different location.
†Other includes special instructions for pediatric, palliative, obstetric, and psychiatric patients; answering machine checked frequently, and so on.
‡A provincially funded 24-hour advice line staffed by trained registered nurses who provide free confidential medical advice based on callers' symptoms using computerized clinical algorithms.
§Total adds to more than 100% because messages could provide more than 1 instruction.

Table 4. Results of multivariate logistic regression analysis indicating factors that were significantly (P <.05) associated with various after-hours care instructions

VARIABLE	DIRECT CONTACT WITH A PHYSICIAN N = 122 OR (95% CI)	GO TO CLINIC N = 115 OR (95% CI)	NO DIRECTION N = 94 OR (95% CI)	CALL A HOUSECALL SERVICE N = 76 OR (95% CI)	CALL TELEHEALTH N = 45 OR (95% CI)
Sex					
• Male	1.0				
• Female	1.80 (1.12-2.89)				
CFPC Certification					
• No	1.0				
• Yes	1.72 (1.08-2.78)				
Hospital affiliation					
• No	1.0		1.0		
• Yes	2.08 (1.23-3.45)		0.41 (0.24-0.71)		
Canadian graduate					
• No	1.0				
• Yes	1.89 (1.05-3.45)				
Office hours					
• Weekdays (Monday-Friday)		1.0		1.0	
• Weekdays and evenings		0.93 (0.53-1.63)		1.48 (0.75-2.80)	
• Weekdays and weekends		1.89 (0.97-3.70)		3.03 (1.34-6.85)	
• Weekdays, evenings, and weekends		2.16 (1.21-3.86)		4.95 (2.13-11.49)	
Size of practice					
• Solo					1.0
• 2-3 doctors					1.31 (0.44-3.90)
• >4 doctors					4.41 (1.74-11.19)
Other language spoken					
• No			1.0		
• Yes			3.19 (1.30-7.87)		

95% CI—95% confidence intervals, OR—odds ratios.

university were more likely to offer direct contact after hours. The association between physician availability and female sex could not be explained by more women practising in academic centres (where physicians are required to be available to support residents). No variables correlated significantly with the instruction "go to emergency." Variables that were not significant in the univariate analysis and were, therefore, not included in any of the regression models included "years since graduation" and "location" (city of Toronto versus the greater metropolitan area).

DISCUSSION

The 7 distinct content categories of AHC instructions demonstrate that a description of care is possible. The variety of options likely reflects physician preferences and the fact that the greater Toronto area is home to the largest concentration of physician[20] and patient populations in Canada.

Our study showed that most patients were left to determine the acuity of their illness on their own. Almost a quarter of the messages in our sample used "go to the emergency department" as their only AHC instruction. Overcrowding and visits to emergency rooms by nonurgent cases are long-standing problems in Toronto[21] that highlight the need for physician education and systemic support to encourage physicians to offer alternatives for AHC.

About 18% of physicians provided no specific AHC directions to patients. When this figure is combined with the "go to emergency only" group, 40% of the physicians surveyed could be described as providing no useful AHC instructions for patients without critical illnesses. This lack of direction can lead to confusion, overextension of limited resources, and delays in seeking treatment. One initiative that attempts to address deficiencies is the

provincial government's 24-hour help line, Telehealth. This service was the least popular source of referral for physicians. Possible explanations include a lack of awareness of the service, a mistrust of government initiatives, discomfort with nurse-run telephone advice services (which use clinical algorithms), or resentment because Telehealth staff were salaried while at the time physicians were unpaid for giving telephone advice in Ontario. Further research will be needed to understand why physicians do not recommend Telehealth.

In our study, the percentage of Toronto physicians directly available after hours was lower than in the 1997 study by Patel et al[14] (24% vs 54%). This might be explained by the fact that subjects in the study by Patel et al were all CFPC members, many of whom would have had Certification, a characteristic associated with being more directly available after hours in our study. It might also reflect real changes in service provision since 1997.

For offices where direct communication with a physician was available, physician characteristics (female sex, CFPC Certification, hospital affiliation, graduation from a Canadian medical school) had more influence on AHC instructions than practice characteristics (size, extended hours of operation, location). "Time since graduation," a substitute for age, which was not available to us, was not associated with this outcome. These findings might be explained by the fact that, in Canada, physicians have autonomy in their choice of after-hours arrangements. They also suggest that medical training has an influence on provision of AHC, an area that can be enhanced by curriculum initiatives. The lack of characteristics independently associated with the "go to emergency" instruction is likely a result of the many ways emergency referral is used (eg, "Go to emergency if you are having chest pain" or "The office is closed. Go to emergency") and the perceived medicolegal need to include a referral to emergency in any AHC message.

Limitations

This study has several limitations. First, because AHC provision has been found to vary by location,[14,15] our findings might not be generalizable to rural or remote areas. We believe, however, that our findings are relevant to other urban settings and that the concepts and methods developed for our study are generalizable to other such studies. Second, our study inferred family physicians' AHC arrangements from the content of their office after-hours telephone messages. This has the advantage of being a direct sample of what is available to patients who call, but some physicians provide additional instructions to their patients that we could not know about, for example, in practice brochures. Finally, this study does not address the issue of where patients actually go after hours, irrespective of the instructions they receive from their family physicians.

Conclusion

Strategies to improve AHC in Canada include appropriate remuneration for telephone advice and development of AHC service models that reflect the diversity of physicians and the communities they serve. Organizing physicians into group practices, strongly encouraged by government, will begin to address lifestyle issues affecting physicians and their decisions on providing AHC. A public awareness campaign is also needed to highlight proper use of emergency departments and identify local alternatives. This should take place along with attempts to reduce "unhelpful" AHC guidance from family physicians themselves. Examining the variability in AHC provision across the country would be useful in determining which jurisdictions have been most successful in addressing gaps in AHC and why.

Our study provides a template for examining AHC care and the factors (personal and systemic) that affect it. In the typology created, 4 physician characteristics were found to be associated with being directly available to patients after hours. It is of great concern that so many family physicians in our sample gave no useful guidance to patients who did not have serious illnesses. An initiative in primary care reform should build on the existing system, integrate changes, and continue to provide a range of AHC options for patients and physicians. Educating physicians to increase awareness of AHC options and systemic support from health authorities will contribute to effective and efficient changes in provision of AHC.

Acknowledgment

We thank **Mary Young** *for her assistance with the project. We also thank the members of the North Toronto Primary Care Research Network (Nortren) for their support. The study was funded by an operating grant from the Physicians' Services Incorporated Foundation.*

Contributors

Dr Bordman, **Ms Bovett**, **Dr Drummond**, **Dr Crighton**, **Dr Wheler**, **Dr Moineddin**, *and* **Dr White** *contributed to concept and design of the study, analysis and interpretation of data, and preparation of the article for submission.*

Competing interests

None declared

Correspondence to: **Dr Risa Bordman**, *North York General Hospital, 4001 Leslie St, 4 S, Toronto, ON M2K 1E1; e-mail* **rbordman@rogers.com**

References

1. O'Donnell CA, Drummond N, Ross S. Out of hours primary care: a critical review of current knowledge. *Health Bull* 1999;57:276-84.
2. Salisbury C. The demand for out of hours care from GPs: a review. *Fam Pract* 2000;17:340-7.

3. Hurwitz B. Out of hours. *BMJ* 1994;309:1693-4.
4. Heaney D, Gorman D, Porter M. Self-recorded stress levels for general practitioners before and after forming an out-of-hours primary care centre. *Br J Gen Pract* 1998;48:1077-8.
5. College of Family Physicians of Canada. *Primary care and family medicine in Canada. A prescription for renewal*. Mississauga, Ont: College of Family Physicians of Canada; 2000. Available from: **http://www.cfpc.ca/communications/prescription.asp**. Accessed 2006 January 29.
6. Charlton R, Charlton M. General practice in New Zealand. *Br J Gen Pract* 1993;43:531-3.
7. Olesen F, Jolleys JV. Out of hours service: the Danish solution examined. *BMJ* 1994;309:1624-6.
8. Christenson MB, Olesen F. Out of hours service in Denmark: evaluation five years after reform. *BMJ* 1998;316:1502-5.
9. Takala J, Vehvilhainen A, Erapohja A, Mustonen R, Korhonen H, Rasanen R. The list system can reduce the waiting time and number of consultations in a centralised primary care centre that provides out of hours medical care. *Scand J Prim Health Care* 1997;15:48-51.
10. Olafsson G, Sigurdsson JA. An observational study of accessibility, attitudes and quality standards among general practitioners in Iceland. *Scand J Prim Health Care* 2000;18:75-9.
11. Payne F, Jessopp L, Dale J. *Second national survey of GP co-operatives: a report*. London, Engl: Out of hours project, Department of General Practice and Primary Care, King's College School of Medicine and Dentistry; 1999.
12. Hallam L, Henthorne K. Co-operatives and their primary care emergency centres: organisation and impact. Combined report on seven case studies. *Health Technol Assess* 1999;3(7):iii-85.
13. Hallam L, Reynolds M. GP out of hours co-operatives. In: Salisbury C, Dale J, Hallam L, editors. *24-hour primary care*. Abingdon, Engl: Radcliffe Medical Press; 1999.
14. Patel H, MacArthur C, Feldman W. Where do children go? Comparing the after-hours availability of family physicians and primary care pediatricians in four Canadian cities. *Can Fam Physician* 1997;43:1235-9.
15. Crighton EJ, Bordman R, Wheler D, Franssen E, White D, Bovett M, Drummond N. After-hours care in Canada: an analysis of the 2001 National Family Physician Workforce Survey. *Can Fam Physician* 2005;51:1504-5. Available from: **http://www.cfpc.ca/cfp/2005/Nov/vol51-nov-research-2.asp**. Accessed 2006 August 8.
16. College of Family Physicians of Canada. *Updated data release of the 2001 National Family Physician Workforce Survey*. Mississauga, Ont: College of Family Physicians of Canada; 2002. Available from: **http://www.cfpc.ca/local/files/Programs/Janus%20project/NFPWS2001_Final_Data_Release_rev_en.pdf**. Accessed 2005 June 22.
17. Leibowitz R, Day S, Dunt D. A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction. *Fam Pract* 2003;20:311-7.
18. Scott A, Watson MS, Ross S. Eliciting preferences of the community for out of hours care provided by general practitioners: a stated preference discrete choice experiment. *Soc Sci Med* 2003;56(4):803-14.
19. Scott A, Simoens S, Heaney D, O'Donnell CA, Thomson H, Moffat KJ, et al. What does GP out of hours care cost? An analysis of different models of out of hours care in Scotland. *Scot Med J* 2003;49(2):61-6.
20. National Resources Canada. The atlas of Canada. Map of physician distribution, 1996. Ottawa, Ont: Natural Resources Canada; 1996. Available from: **http://atlas.gc.ca/site/english/maps/health/resources/physician/physicians_figure1.gif/image_view**. Accessed 2005 June 22.
21. Institute for Clinical Evaluative Sciences. *Emergency department services in Ontario 1993-2000*. Toronto, Ont: Institute for Clinical Evaluative Sciences; 2001. Available from: **http://www.ices.on.ca/file/Emergency_department_services_in_Ontario.pdf**. Accessed 2005 June 22.