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Individual advocacy, collective responsibility. . . or both?

John Wootton, MD
Shawville Que.
Scientific editor, CJRM

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The Canadian experiment continues. Currently the focus is on primary care networks of various kinds, and one has the impression that it is simply by virtue of the weight of report after report that change will happen. Romanow¹ stated flatly that any new investment in the health care system must "buy change." What fundamental change must occur, and how will it happen?

Central to the thinking about primary care delivery is the idea that things will function more efficiently and effectively if groups of professionals accept responsibility for the care of defined groups of patients. The flip side of responsibility for the collective (a favourite, if somewhat misunderstood, expression in Quebec) is advocacy for the individual, the latter being one of the 5 principles of family medicine. Fundamentally a physician whose primary objective is to advocate for his or her patient may care little if he or she creates problems for the "collective" in the process.

Some physicians have always been better advocates than others. A direct call to a consultant, a particularly well written, persuasive consultation letter, a corridor buttonhole, an out-of-hours special visit — all these behaviours are examples of physicians going "beyond the call of duty" to advocate for their patients. In general, collective responsibility for groups of patients, particularly if it is shared across different professions, is unlikely to be able to provide the kind of personal service described above. Does it matter? Perhaps in our willingness to embrace networks of various sorts we are saying that it matters less than we have led ourselves to believe.

In rural areas this bullet has already been bitten in a number of important areas. Obstetrical care providers in many towns have abandoned the personal commitment to deliver "their" patients, in favour of a collective responsibility for a group of pregnant patients. The sky did not fall in! It turns out that while in labour women may be more focussed on what is happening than on who is there.

In fact, more than almost any group of professionals, rural physicians now and in the past have all along been delivering the kind of comprehensive population-based care that is being re-packaged as "new" in primary care networks. They have done so, by all accounts, without sacrificing the "personal touch," and even, in many regions, going beyond primary care and integrating it with secondary (and at times tertiary) care. For this they have received little recognition. However, given this history, it may be possible for rural groups to more fully embrace the philosophy and practice of current reforms, and show planners how it really ought to be done!

Correspondence to: Dr. John Wootton, Box 1086, Shawville QC J0X 2Y0

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Représentation individuelle, responsabilité collective... ou les deux?

John Wootton, MD
Shawville (Qué.)
Rédacteur scientifique, JCMR

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L'expérience canadienne se poursuit. L'attention converge actuellement sur les réseaux de soins primaires de divers types et on a l'impression que le changement émanera uniquement du poids des rapports qui se succèdent. M. Romanow¹ a déclaré clairement que tout nouvel investissement dans le système de santé doit servir à «financer le changement». Or, quel changement fondamental doit se produire et comment se produira-t-il?

La réflexion sur la prestation des soins primaires repose sur le concept selon lequel le système fonctionnera de façon plus efficiente et efficace si des groupes de professionnels acceptent de se charger de certains groupes de patients. L'envers de la responsabilité collective (expression populaire mais un peu mal comprise au Québec), c'est la représentation de la personne, qui constitue l'un des cinq principes de la médecine familiale. Essentiellement, un médecin cherchant avant tout à défendre son patient peut se préoccuper très peu de créer des problèmes pour la «collectivité».

Certains médecins ont toujours été de meilleurs défenseurs que d'autres. L'appel téléphonique direct à un consultant, une lettre de consultation persuasive particulièrement bien rédigée, une interpellation dans un couloir, une visite spéciale en dehors des heures normales — tous ces comportements sont des exemples de médecins qui «font plus que leur devoir» pour représenter leurs patients. En général, il est peu probable que la responsabilité collective à l'égard de groupes de patients, et en particulier si elle est partagée entre différentes professions, puisse fournir les services personnels décrits ci-dessus. Cela importe-t-il? Disposés que

nous sommes à adopter des réseaux de divers types, peut-être affirmons-nous que cela a moins d'importance que nous avons cherché à nous en convaincre.

Dans les régions rurales, on a déjà affronté ces obstacles dans de nombreux domaines importants. Dans beaucoup de villes, des prestataires de soins obstétricaux ont laissé tomber l'engagement personnel d'accoucher «leurs» patientes en faveur d'une responsabilité collective à l'égard d'un groupe de patientes enceintes. Le ciel ne leur est pas tombé sur la tête! Pendant le travail, les femmes se concentrent bien plus sur ce qui se passe que sur les personnes présentes.

En fait, plus que presque que n'importe quel autre groupe de professionnels, les médecins ruraux d'aujourd'hui et d'hier ont toujours dispensé des soins intégrés fondés sur la population, attitude que l'on présente comme «nouvelle» dans les réseaux de soins primaires. Tout compte fait, ils y sont parvenus sans sacrifier la «touche personnelle» et même, dans de nombreuses régions, en dépassant les soins primaires et en les intégrant aux soins secondaires (et parfois tertiaires). Ils en ont reçu peu de reconnaissance. Compte tenu de ces antécédents, il se peut toutefois que des groupes ruraux adoptent davantage les principes et la pratique des réformes en cours et montrent aux planificateurs comment il faut vraiment s'y prendre!

Correspondance : Dr John Wootton, CP 1086, Shawville QC J0X 2Y0

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President's message: Swamped by reports

Jill Konkin, MD
Jasper, Alta.

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In my last message¹ I was hopeful that the reports of both the Senate committee (Kirby)² and the Romanow Commission³ would spur the federal, provincial and territorial governments on to accepting that rural health care in this country has unique needs. There is now a third one — the report of the Ministerial Advisory Council on Rural Health (www.hc-sc.gc.ca/english/ruralhealth/advisory.html). It contains some specific recommendations regarding health care in rural/remote/northern communities in this country. Sadly, our federal and provincial governments have ignored these reports and have not made significant changes to their policies and funding for rural health care.

The territorial governments did finally manage to gain the ear of the federal government when they walked away from the table⁴ without signing on to the First Ministers' Accord on Health Care Renewal⁵ in February. They made the important point that per capita funding based on urban realities will not work for the north. There has finally been some movement by the federal government on this issue. However, it is time for both the federal government and provincial governments to acknowledge that the present per capita funding formulae do not work for residents of remote/rural/northern communities south of 60 either. There is much work to be done. The upcoming year promises to be as full and challenging as last year, and the Society of Rural Physicians of Canada (SRPC) is well placed to continue its advocacy for rural health care.

By the time you read this, our Annual Rural and Remote Conference in Kelowna, BC, will be in full swing. I expect that those of you who attend will enjoy the camaraderie of colleagues from across the country and will find the CME of a

superb calibre and relevant to your needs as a rural physician or nurse practitioner. If you don't make it to Kelowna, please consider planning to come next year to Quebec.

It is hard to believe my first year as your President is almost completed. Much has been accomplished this year, some of it detailed in the Winter issue of CJRM.¹ The work has been shared by many hands, and I thank all of you who found time in your busy lives to help. In particular, I thank the members of the SRPC Executive (David Butcher, Joshua Foley, David Howe, Peter Hutten-Czapski, Trina Larsen-Soles, Keith MacLellan, Alan Ruddiman, Joshua Tepper) and Lee Teperman, our administrative officer. Their hard work and dedication has made this past year much easier on their President. I also thank members of the SRPC Council and Committee Chairs for their contribution to the work of the organization. The Annual Meeting in April will see some new people moving onto the executive and other committees. The strength of an organization is not only in its present leadership but in the depth of commitment and talent within the membership as a whole. The SRPC is fortunate to have such a membership.

Correspondence to: Dr. Jill Konkin; jillk@telusplanet.net

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Message de la présidente : Des rapports à n'en plus finir

Jill Konkin, MD
Jasper (Alb.)

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Dans mon dernier message¹, j'espérais que les rapports, autant celui du Comité du Sénat (Kirby)² que celui de la Commission Romanow³, pousseraient les gouvernements fédéral, provinciaux et territoriaux à reconnaître les besoins spéciaux des soins de santé en milieu rural au Canada. Voici maintenant un troisième rapport — celui du Conseil consultatif ministériel sur la santé rurale (www.hc-sc.gc.ca/francais/santerurale/conseil.html). Le rapport contient des recommandations précises sur les soins de santé dans les communautés rurales, éloignées et du nord du Canada. Nos gouvernements provinciaux et fédéral n'ont malheureusement pas tenu compte de ces rapports et n'ont pas apporté de changements importants à leurs politiques sur les soins de santé ruraux, ni au financement qu'ils y consacrent.

Les gouvernements territoriaux ont fini par se faire entendre du gouvernement fédéral lorsqu'ils ont quitté la table⁴ sans signer l'Accord des premiers ministres sur le renouvellement des soins de santé⁵ en février. Ils ont fait valoir l'argument important selon lequel le financement par habitant fondé sur la réalité urbaine ne fonctionnera pas dans le Nord. Le gouvernement fédéral a fini par bouger un peu à cet égard. Il est toutefois temps que le fédéral et les provinces reconnaissent que les formules actuelles de financement par habitant ne fonctionnent pas non plus pour les populations des communautés éloignées, rurales ou du Nord situées au sud du 60^e parallèle. Il y a beaucoup à faire. La prochaine année promet d'être aussi active et stimulante que la dernière et la Société de la médecine rurale du Canada (SMRC) est bien placée pour poursuivre ses efforts de représentation en faveur des soins de santé ruraux.

Lorsque vous lirez ce message, notre Conférence annuelle sur la médecine en milieu rural et éloigné battra son plein à Kelowna (C.-B.). Ceux et celles d'entre vous qui y assisteront profiteront, j'en suis sûr, de la camaraderie de collègues de toutes les régions du Canada et constateront que les activités d'EMC sont d'un calibre superbe et pertinentes à leurs besoins de médecins ou d'infirmières praticiennes en milieu rural. Si vous ne pouvez vous rendre à Kelowna, songez à vous joindre à nous l'an prochain à Québec.

J'ai de la difficulté à croire que ma première année à la présidence tire à sa fin. Nos réalisations de cette année sont nombreuses et le numéro d'hiver du JCMR décrit en détail certaines de nos réussites¹. Nombre d'entre vous avez mis l'épaule à la roue et je vous remercie d'avoir trouvé le temps de nous aider en dépit de votre horaire chargé. Je remercie particulièrement les membres du Comité exécutif de la SMRC (David Butcher, Joshua Foley, David Howe, Peter Hutten-Czapski, Trina Larsen-Soles, Keith MacLellan, Alan Ruddiman, Joshua Tepper) et Lee Teperman, notre responsable administratif. Leurs efforts inlassables et leur dévouement ont rendu l'année écoulée beaucoup plus facile pour leur présidente. Je remercie aussi les membres du Conseil de la SMRC et les présidents des comités de leur contribution au travail de l'organisation. La direction et d'autres comités accueilleront du sang neuf au cours de l'Assemblée annuelle en avril. La force d'une organisation réside non seulement dans son leadership actuel, mais aussi dans la profondeur de l'engagement et le talent de tous ses membres. La SMRC est heureuse de compter sur de tels membres.

Correspondance : Dr Jill Konkin; jillk@telusplanet.net

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Impact of alternate payment plans on the practice patterns of fee-for-service physicians in the Northwest Territories

Maria Mathews, PhD

Andrew J. Lockhart, MPH

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[[résumé](#)]

Background: The objective of this study was to determine if the practice patterns of fee-for-service (FFS) general practitioners in the Inuvik Region of the Northwest Territories differed after the introduction of an alternate payment (salary) program for newly arriving physicians.

Methods: Three years (April 1993 to March 1996) of administrative billing data from the Northern Health Information Management System were used to compare 28 FFS physicians with 38 salaried physicians along 5 practice indicators (service intensity, billing intensity, propensity to recall, billings from recall, and the most frequently billed services) after an alternate payment plan had been introduced in the Region.

Results: The FFS physicians significantly increased the number of services provided during a visit, the amount billed per visit, and the proportion of recall visits of total visits. FFS physicians also increased the number of claims for "laboratory examination," a previously infrequently billed code.

Interpretation: FFS physicians changed their practice patterns after the introduction of an alternate payment program in the Inuvik Region. These changes may result from a redistribution of clinical responsibilities, efforts to sustain or elevate income levels, or the provision of additional preventive screening.

Contexte : Cette étude visait à déterminer si les tendances de pratique des omnipraticiens rémunérés à l'acte de la région d'Inuvik, dans les Territoires du Nord-Ouest, ont changé après le lancement d'un programme prévoyant un autre mode de rémunération (saliariat) pour les nouveaux médecins.

Méthodes : On a utilisé trois ans (avril 1993 à mars 1996) de données administratives de facturation tirées du système de gestion de l'information sur la

santé dans le Nord pour comparer 28 médecins rémunérés à l'acte à 38 médecins salariés selon cinq indicateurs de pratique (intensité du service, intensité de la facturation, tendance aux rappels, facturation à la suite des rappels et services facturés le plus fréquemment) après la mise en œuvre dans la région d'un autre mode de rémunération.

Résultats : Les médecins rémunérés à l'acte ont augmenté considérablement le nombre de services dispensés par consultation, le montant facturé par consultation et le ratio des consultations de rappel sur les consultations totales. Les médecins rémunérés à l'acte ont aussi augmenté le nombre de demandes de paiement pour des «examens de laboratoires», code de facturation peu utilisé auparavant.

Interprétation : Les médecins rémunérés à l'acte ont changé leurs tendances de pratique après la mise en œuvre d'un autre mode de rémunération dans la région d'Inuvik. Ces changements peuvent découler d'une redistribution de responsabilités cliniques, d'efforts visant à maintenir ou à hausser les niveaux de revenu, ou de la prestation de services supplémentaires de dépistage préventif.

Introduction

Increasingly, rural and northern regions are adopting alternate payment plans (such as payment by contract, salary or capitation) for general practitioners. Alternate payment plans are believed to reduce physician turnover and encourage participation in health promotion, preventive and administrative services that were under-remunerated or not remunerated under a traditional fee-for-service (FFS) payment plan.^{1,2} FFS reimburses physicians for each unit of service or procedure according to a negotiated fee schedule.³ It may provide physicians with financial incentives to choose procedure-oriented specialties or to overuse technical services and procedures.^{4,5} FFS may discourage physicians from participating in non-billable activities (e.g., quality assurance and health promotion programs) and from using potentially less expensive sources of care, such as nurse practitioners.¹

In many jurisdictions, alternate payment plans are being introduced incrementally as new physicians are recruited. A number of studies have compared the practice patterns and resource utilization of FFS and alternate payment plan physicians.⁵⁻¹¹ We were unable to find studies that examined the impact of the alternate payment plan on the practice patterns of existing FFS general practitioners in rural or remote areas. The purpose of this article is to examine practice patterns of FFS general practitioners after the introduction of a salary program for physicians new to the Inuvik Region of the Northwest Territories (NWT).

The Inuvik Region is located in the northwest corner of the NWT. During the study

period (April 1993 to March 1996), the Region extended from the south shore of Great Bear Lake to Banks Island in the Beaufort Sea and included 12 communities, ranging in size from 100 to 3200 people for a total population of 9300.¹² Health services were delivered through health centres located in each community and through the Inuvik Regional Hospital, located in Inuvik. The community health nurse, a nurse practitioner, was the primary care provider and "gatekeeper" in all communities except the town of Inuvik, where these roles were performed by physicians. Physician services were available throughout the year in the town of Inuvik. In all other communities, physicians were available every 4 to 6 weeks for a 2- to 4-day period.

Beginning in 1993, the Inuvik Regional Health and Social Services Board (IRHSSB) recruited salaried physicians in an incremental fashion to replace FFS physicians once they had left the region. In 1993, FFS physicians provided physician services to all communities in the Region and also provided hospital services. During the study period, salaried physicians took increasing responsibility for providing physician services to the outlying communities. By June 1995 (3 months into the last year of the study) FFS physicians primarily provided services to residents of 2 communities (Inuvik and Norman Wells, total pop. approximately 3800) and shared responsibility for hospital-based services.

During our study period, April 1993 to March 1996, both salaried and FFS general practitioners worked in the Inuvik Region. Since the salaried physicians were recruited to supplement existing FFS general practitioners, we hypothesized that the practice patterns of FFS physicians would not change as a result of the salary program.

Methods

Permission to conduct this study was obtained from the Government of the Northwest Territories (GNWT) Department of Health and Social Services and the IRHSSB. Data from the Medicare database of the Northern Health Information Management System were obtained from the GNWT Department of Health and Social Services for the 1993/94 through 1995/96 fiscal years for the Inuvik Region. The Medicare database includes billings submitted by FFS physicians as well as shadow billings (i.e., billings containing the same information as FFS billings, but not used for payment) submitted by salaried physicians. Patient Health Care Plan numbers, physician billing numbers, primary diagnosis, service codes, and dates of service and billings were obtained from the database. Because these variables are required for payment, all necessary data were present.¹³ The patient and physician

identification numbers were scrambled to protect the confidentiality of both the physician and the patient. The data were sorted by physician number, patient number, date and diagnostic code. The dollar values of the billings were adjusted to reflect fee changes between 1993 and 1996 and are presented in Apr. 1, 1993, Canadian dollars.

Five indicators were used to compare the practice patterns of the 2 groups:

1) Service Intensity — the total number of services provided per visit; 2) Billing Intensity — dollars billed per visit; 3) Propensity for Recall — proportion of total visits consisting of recall visits; 4) Billings from Recall — the proportion of total billings consisting of billing from recall visits; and 5) the 5 most frequently billed services. Because the data were not normally distributed, Mann-Whitney tests (a nonparametric test similar to the t test) were used to test for differences in the FFS physician practice patterns (service intensity, billing intensity, propensity for recall and billings from recall) before 1993/94 and after 1995/96, the introduction of the salary program. Frequencies were used to examine differences in most frequently billed services.

Results

Between 1993/94 and 1995/96, 28 FFS and 35 salaried physicians worked in the Inuvik Region ([Table 1](#)). Because each physician worked in the Region for a varying period of time, we tabulated monthly full-time equivalents by dividing by 4 the total number of weeks FFS or salaried physicians spent in the region. At any given time there was a total complement of roughly 7 physicians in the region. None of the FFS physicians opted for the salary program.

Between 1993/94 and 1995/96 there was a decrease in the total number of claims (-7%), billings (-7.6%) and patient visits (-7.0%) ([Table 2](#)). During this 3-year period, the number of claims submitted by the FFS physicians fell from 97.7% to 65.2% of total claims. Billings submitted by the FFS physicians also decreased during this period, from 98.3% (1993/94) to 67.7% of the total billings. Patient visits to FFS physicians decreased from 97.5% (1993/94) to 62.0% (1995/96).

Between the 1st and 3rd years of the salary payment program, the service intensity, billing intensity, and propensity to recall of FFS physicians significantly increased ([Table 3](#)). The proportion of billings stemming from recall visits, however, did not significantly change. Recall visits are designated by specific service codes in the billing record and may have been either physician- or patient-induced. Most recalls

occurred within a 2- to 3-week period after the initial encounter.

Ranking of the 5 diagnostic codes most frequently submitted by FFS physicians also suggests that their practice behaviour changed over the 3-year period ([Table 4](#)). The most common service in 1995/96 was not present in the 2 preceding years: although there was no change in the fee schedule, 1544 laboratory examination claims were submitted in 1995/96, whereas hardly any were billed in the previous 2 years. Supervision of normal pregnancy, the most frequently billed service code in the first year of the study, sunk to 7th most frequently billed service code by the 3rd year (data not shown). In addition, the number of follow-up exams also increased in the 2nd and 3rd year of the study.

Discussion

The first 3 years of the salary program saw a general decrease in the total number of visits, claims and billings submitted by all physicians in the Inuvik Region. This decrease likely reflects the slight decrease in the population in the Inuvik Region, from 9300 in 1993/94 to 9016 in 1995/96.^{12,14} In addition, this decrease may also reflect the change in medical practice as salaried physicians, who are facing no financial disincentive of sharing patient treatment with other health professionals, may have referred patient visits to community and public health nurses. For example, as salaried physicians assumed a greater proportion of patients residing in the communities outside the town of Inuvik, the common practice was for community health nurses to carry out follow-up visits, minor procedures and preventive care. Additional analysis of the shadow billings of salaried physicians and the Community Health Management Information System database (which records services provided by nurse practitioners in the NWT) may verify changes to medical practice.

Although making up only a minority of the physicians in the Inuvik Region 2 years after the introduction of the salary payment program, FFS general practitioners continued to account for a greater number and proportion of total visits, claims and billings than salaried physicians. Because their remuneration depended upon the claims submitted, FFS physicians were more likely than salaried physicians to submit a more thorough account of services provided. However, the GNWT Department of Health and Social Services monitored the shadow billings submitted by salaried physicians to ensure that salary levels were justified, thereby providing salaried physicians with motivation to submit accurate shadow billings. Moreover, FFS physicians may have worked longer hours and worked "harder" (i.e., at a greater intensity) than salaried physicians.

Incentives to bill thoroughly and work "harder" than salaried physicians would not, however, explain the change in FFS practice patterns because these incentives were present before the salary program was introduced. Contrary to our hypothesis, this study suggests that FFS physicians changed their practice patterns after the implementation of a salary payment program in the Region. This change may stem from an effort to sustain or elevate revenue levels by providing additional services (or providing services previously performed by nurses or laboratory technicians), aggressively billing and recalling patients more often. Alternatively, it may have resulted from an effort to provide more preventive screening. As salaried physicians took over responsibility for services to the outlying communities, FFS physicians may have had more time to provide more preventive care.

The decrease in pregnancy monitoring likely results from the redistribution of duties between the 2 physician groups. During the study period salaried physicians were more likely to monitor pregnant women who resided in the outlying communities, and they also took over the hospital-based obstetrics and gynecology clinic.

Although this study provides a general overview of the changes in FFS practice patterns, further study is needed to illuminate how these changes have affected the quality of patient care. Future research using chart audits can determine whether these indicators reflect changes in billing practices or actual changes in patient care. Also, although the databases used in the project are similar to those used in other Canadian studies, independent confirmation of their reliability would strengthen the validity of these findings. In addition, more sophisticated scrambling methodologies than that used in the study would allow for linkage between individual patient records, therefore permitting more in-depth analytical methods, including adjustment for patient characteristics and case mix and direct comparison of similar episodes of care.

This study highlights the need to address concerns of existing medical providers when alternate payment plans are introduced. Although the Inuvik Region recruited salaried physicians to replace outgoing FFS physicians, this new payment program may have been perceived as a threat to the livelihood of existing physicians in the Region. It also suggests that evaluations of alternate payment plans should include assessments of the practice patterns of all health professionals who are either directly or indirectly affected by a new program.

Our study found that FFS general practitioners in the Inuvik Region changed their

practice patterns after the introduction of an alternate payment program. The increases in service intensity, billing intensity and propensity to recall patients as well as a change in the billing of laboratory examinations may stem from a redistribution of clinical responsibilities, efforts to sustain or elevate income levels, or the provision of additional preventive screening.

Maria Mathews, PhD, Memorial University of Newfoundland, St. John's, Nfld.;
Andrew J. Lockhart, MPH, Nor-Man Regional Health Authority, Flin Flon, Man.

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Correspondence to: Dr. Maria Mathews, Division of Community Health, Memorial University of Newfoundland, Health Science Centre, St. John's NF A1B 3V6.
[Reprints will not be available from the authors.]

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Table 1. No. of general practitioners (GPs) and no. of monthly full-time equivalents (FTEs) in the Inuvik Region, Northwest Territories, 1993–1996, by payment plan						
Type of payment plan	No. of GPs			No. of monthly FTEs		
	1993/94	1994/95	1995/96	1993/94	1994/95	1995/96
Fee-for-service	20	3	8	96	66	47
Salary	5	15	17	10	19	62
Total	25	28	25	106	115	109

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Table 2. Total no. of claims, billings and no. of visits for fee-for-service (FFS) and salaried GPs in the Inuvik Region, 1993–1996

Variable	FFS physicians	Salaried GPs	Total
Claims, no. (and % of total)			
1993/94	29 022 (97.7)	670 (2.3)	29 692
1994/95	22 570 (76.6)	6 896 (23.4)	29 466
1995/96	18 007 (65.2)	9 004 (34.8)	27 611
Billings, 1993 \$Can (and % of total)			
1993/94	1 270 587 (98.3)	21 981 (1.7)	1 292 596
1994/95	1 034 418 (82.6)	218 525 (17.4)	1 252 943
1995/96	807 844 (67.7)	386 180 (32.3)	1 194 024
Visits, no. (and % of total)			
1993/94	23 642 (97.5)	610 (2.5)	24 252
1994/95	17 040 (74.8)	5 745 (25.2)	22 785
1995/96	13 993 (62.0)	8 565 (38.0)	22 558

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Table 3. Change in practice pattern indicators of FFS general practitioners in 1993/94 and 1995/96			
Practice pattern indicators	1993/94	1995/96	<i>p</i> value
Service intensity, service/visit	1.23	1.29	0.012
Billing intensity, \$/visit	53.72	59.37	0.033
Propensity for recall, %	30.82	34.94	0.033
Billings from recall, %	36.37	37.42	0.347
FFS = fee-for-service			

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Table 4. Five most common services codes of FFS general practitioners, 1993/94 to 1995/96

Code	No. (and rank)		
	1993/94	1994/95	1995/96
Supervision of normal pregnancy	1 698 (1)	1 517 (1)	*
Acute respiratory infection	693 (2)	736 (2)	*
Otitis media	636 (3)	736 (2)	589 (3)
Counselling	517 (4)	*	*
Follow-up exam, unspecified	499 (5)	736 (2)	812 (2)
Screening for malignancy of cervix	*	610 (5)	*
Laboratory exam	*	*	1 544 (1)
Reason for consult unspecified	*	*	530 (4)
Injury	*	*	510 (5)

*Not among the most commonly billed service codes
FFS = fee-for-service

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Management of unstable angina in a rural hospital: quality-of-care assessment by explicit criteria

Gordon Brock, MD, CCFP
Vydas Gurekas, MD, CCFP
Nathanaelle Theriault, MD

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[[résumé](#)]

This study reviewed the quality of care given to 30 patients who had a diagnosis of unstable angina and who were admitted by family physicians to a 9-bed rural hospital during the period 1998 to 2000. The methodology of how to perform a "quality-of-care assessment by explicit criteria" in the rural environment is explained. The conclusion was that the management of the majority of patients admitted to a rural hospital by family physicians with a diagnosis of unstable angina met appropriate criteria for quality of care.

Cette étude a examiné la qualité des soins dispensés à 30 patients atteints d'angine de poitrine instable diagnostiquée et hospitalisés par des médecins de famille dans un hôpital rural de neuf lits entre 1998 et 2000. Les auteurs expliquent la méthode d'«évaluation de la qualité des soins par critères explicites» en milieu rural. Ils concluent que la prise en charge de la majorité des patients atteints d'angine instable diagnostiquée et hospitalisés dans un hôpital rural par des médecins de famille répondait aux critères pertinents.

Introduction

The Collège des médecins du Québec defines "quality" as "the characteristic of the medical act which alters the natural evolution of the state of health through application of scientific principles in response to the patient's expectations."¹ Rural-specific concerns about quality-of-care assessments include the following.^{2,3}

- A lack of rural-specific guidelines and standards of care. Additionally,

shortages of physicians may make it difficult, at times, to meet even such "rural" standards, should they be developed.

- Deciding which medical problem to study for an albeit expensive and time-consuming "quality-of-care assessment" may be problematic, due to the wide range of problems treated in most rural institutions.
- A smaller and therefore less anonymous medical staff makes a quality-of-care assessment appear more threatening to individual physicians.
- The smaller numbers typically seen in rural general practice make "evaluation by outcome measures" (e.g., mortality after myocardial infarction [MI], perinatal mortality) difficult to interpret.

"Unstable angina" comprises a group of diagnoses that form a spectrum "intermediate" in severity between chronic, stable angina and acute MI ([Table 14](#)). In 1995, a group of Canadian cardiologists⁵ estimated that there were 75 000 hospitalizations yearly in Canada for this condition, with principal complications including progression to MI, left ventricular failure, arrhythmia and sudden death. Risk of early death was stated to be 5%, compared with 1% for chronic stable angina and 23% for acute MI.⁵

Several studies have looked at quality of care for patients admitted to hospital with unstable angina, mostly from an urban hospital point of view. A Connecticut study⁶ reported that during 1993-94 an ECG had been obtained within 20 minutes of arrival at hospital for only 43% of patients with unstable angina, and a North Carolina study of 16 hospitals reported that 43% of patients with unstable angina had an initial ECG obtained within the first hour.⁷ Current treatment recommendations stress initial aggressive treatment with antiplatelet and anti-anginal medication and monitoring for complications. Angiographic assessment is recommended for refractory or complicated cases.^{4,8} Reported compliance rates for administration of aspirin (acetylsalicylic acid [ASA]), heparin and beta-blockers to patients admitted with a diagnosis of unstable angina have ranged from 82%-98%, 19%-86% and 19%-76% respectively.^{6,7,9-12}

There has been very little published data on quality of care in rural hospitals. We present our data both as an evaluation of rural quality of care and to acquaint rural physicians with the methodology of such evaluation studies.

Methods

We annually select one medical condition for "quality-of-care assessment by explicit criteria." For our 2000 study we evaluated patients admitted to hospital with a

diagnosis of "unstable angina."

Our 9-bed rural hospital, which has a 24-hour emergency department, serves a catchment area of 5000 people. Cardiac patients admitted to hospital are cared for and monitored on a general ward by general duty nurses. One-on-one nursing is available on physician request. Electrocardiography and serum troponin I are available 24/7.

The nearest hospital providing internist consultation and full cardiac care unit facilities is North Bay General Hospital, 70 km (45 minutes) away by road. The nearest hospital with a cardiology service is Sudbury General Hospital, 160 km distant. The province of Quebec funds a telecardiology service, whereby a cardiologist in Montreal is funded to provide a 24-hour telephone consultation service.

Methodology of "quality-of-care assessment by explicit criteria"

Quality-of-care assessment by explicit criteria assesses whether defined criteria believed to be indicative of "quality" were met during a patient's care, usually by chart review. This contrasts with "quality control by outcome measures," where information such as the mortality after thrombolysis or number of influenza cases after a vaccination campaign would be measured.

The criteria chosen should be reviewed with all members of the medical staff whose care will be evaluated, and, if possible, a consensus should be reached. We believe this is necessary to ensure acceptance of any recommendations.

A medical student (N.T.) was hired on a 7-week grant to conduct the study, and a Medical Evaluation Committee, which included the medical student and a senior physician (G.B.), was set up. From June 5-16, 2000, after reviewing the medical literature^{4,8} and consulting with the entire medical staff, inclusion and exclusion criteria, along with explicit quality-of-care criteria (Table 1 and [Table 2](#)), were elaborated. These criteria were chosen as the minimum necessary for high-quality care to have been given, and only "as [among] those having scientific recognition, on which there is a reasonable consensus of expert opinion."¹ Criteria were

- as objective as possible;
- rural-specific, taking into account the resources available locally, patient expectations and usual referral patterns; and

- could be reliably ascertained by chart review.

The charts of all patients admitted to our institution for more than 6 hours with a diagnosis of "unstable angina" between Jan. 1, 1998, and June 1, 2000, were obtained from the Medical Records Department. In addition, the emergency department logbook was reviewed for patients who presented with "chest pain" or "unstable angina" to ensure that any patient whose diagnosis was changed after admission was included in the review. Thirty-nine charts were chosen for assessment by the Medical Evaluation Committee.

Findings of the Committee were submitted to the medical staff and hospital board in the fall of 2000. It has been our policy not to break down the cases by treating physician in the final report to preclude physicians' concerns about being singled out or treated unfairly.

The quality-of-care study was followed by teaching a remedial action, as indicated, as an example of the effectiveness of this approach. In the case of unstable angina, Iliadis and coworkers¹⁰ found that "a Medical Grand Rounds to inform [physicians] of the AHCPR [Agency for Health Care Policy and Research] guidelines on unstable angina" and "a two-page reminder posted in the charts of all patients admitted with unstable angina produced objective improvements in care and outcome of patients admitted to their tertiary care urban medical center."

Results

Thirty-nine charts of patients admitted to our hospital with unstable angina between Jan. 1, 1998, and June 1, 2000, were reviewed retrospectively. Nine were excluded from further review for the following reasons: the criteria used for the diagnosis of "unstable angina" were not clearly stated in the physician's notes (2 patients); the patient was transferred after less than 6 hours in our institution (2); the time of arrival or of the diagnosis of unstable angina was not clearly stated (2); and advanced end-stage cardiac disease or significant comorbidity was present, and these patients were managed by pre-set criteria, usually "symptomatic care only" as elaborated by their physician and specialist (3).

Nineteen patients were admitted once, 1 patient was admitted twice and 3 patients were admitted 3 times each, for a total of 30 different admissions for unstable angina in 23 patients.

Patient demographics

Eleven patients were men (mean age 72, range 54-77 yr) and 12 were women (mean age 72, range 48-98 yr). Prior to admission (or the first admission for those patients admitted more than once), 18 of the patients were known to have had angina. Of these 18, 5 had already had an MI. Two other patients had had an MI but were without active angina since the MI. Thus, 20 of the 23 patients had established ischemic heart disease. Three patients were not known to have had ischemic heart disease prior to admission, although one had hypercholesterolemia and another had diabetes.

Two of the 23 patients were past smokers, 3/23 were current smokers and 5 were nonsmokers. There was no note regarding the patient's smoking status in the charts of the remaining 13 patients.

Presentation

Relating to the admissions of patients with unstable angina (Table 1), 25 admissions were for a worsening of pre-existent angina, so called "crescendo angina." Pre-hospital rest or decubitus attacks were noted in 9 of these patients. Three patients presented with new onset of angina to either Canadian Cardiovascular Society Level III (2 patients) or rest angina (1 patient). There were 2 other patients who had an MI 5 years and 1 year prior to the admission, but who had had no angina since their MI. In 1 of the 25 patients admitted with "crescendo angina" a non-Q-wave MI had developed by the second day of admission. (Non-Q-wave MI is classified as an "intermediate syndrome" because it is identical in presentation to unstable angina.⁵)

In-hospital course

Twenty-two (73%) of the patients were treated locally and discharged home. Six were transferred to a secondary care hospital — 5 during the first 24 hours, the sixth on the second day of admission. Two patients were transferred to a tertiary cardiology centre — 1 on the first day of admission, the second on the seventh day.

There were no deaths in our hospital. One patient, a 71-year-old woman with a positive troponin level, died after transfer to a secondary care hospital.

Compliance with the explicit criteria

Compliance with our explicit criteria is indicated in [Table 3](#). Overall, compliance rates ranged from 60%-100%.

Compliance rates for diagnostic testing included an ECG obtained within 20 minutes of arrival in 70% of cases. Median delay for all cases was 16 minutes (mean 23.3 ± 28 min). The mean time for obtaining the second ECG was 4 hours 40 minutes after arrival at the hospital. In 86.7% of the cases a third ECG was obtained within 24 hours of admission, and 86% of the patients had a second set of cardiac enzymes measured within 24 hours of admission (mean time 16 h 29 min after arrival).

Serum troponin I was measured in only 60% of patients. In all but 1 case at least 6 hours had passed from the onset of the pain to the measurement. (In hindsight, this criterion should have been "Cardiac troponin I measured at least once, at least 6 hours after onset of the chest pain.")

In 19 of 30 cases there was a documented telephone consultation between the admitting physician and a specialist during the patient's hospital stay: in 12 cases, with the telecardiologist (6 of these within 24 hours of admission), and in 7 cases, with an internist at North Bay General Hospital. Six patients were transferred to North Bay General Hospital, all but 1 within the first 24 hours.

ASA was begun on admission in 23/30 patients. Reasons for ASA being withheld included allergy (2 patients) and taking H₂-blockers (2) or omeprazole (2). One patient was taking enteric-coated ASA prior to arrival, and this was apparently not given during the admission, for unknown reasons.

Heparin was started in 26/30 (86%) of the patients. Of the 4 patients in whom heparin was not administered, 1 was already on Coumadin. In the remaining 3 patients it was not clear why heparin was not started. In 2 of these patients, there was no documented telephone consultation with a specialist, leading us to assume that the decision not to begin heparin was solely that of the attending physician. Two of these 26 patients were transferred during the first 24 hours, but of the remaining 24 patients, 21 were kept on heparin for 2-5 days. There was 1 withdrawal of consent to give heparin, and 2 patients were kept on heparin for 7 and 11 days.

In our rural hospital all patients received on admission at least 1 anti-anginal drug from 1 of 3 classes (i.e., beta-blockers, calcium-channel blockers, long-acting nitrates). Fourteen of 28 were already on a beta-blocker at the time of admission, and a beta-blocker was given to 7 more, resulting in 21/30 (70%) of all patients receiving

a beta-blocker.

Discussion

Our rates of administration of heparin and beta-blockers compared well to the rates in published reports ([Table 4](#)). Our rate of ASA administration fell below that of other studies, however. We do stress that comparison between these studies may be difficult due to differences in patient profiles and degree of familiarity with now standard recommendations.

In our institution, potential areas for improvement included the following.

1. Prompt teleconsultations with a cardiologist during the first 24 hours should be done in a greater percentage of cases to confirm the diagnosis, aid in risk stratification, formulate a treatment plan and agree on guidelines for referral.^{4,5,8}
2. Troponins appear to have been underused, as they carry important short-term predictive value.^{8,13} (Part of this underuse might be explained by the fact that troponins were introduced here only in January 1998 and thus were a new technology for much of the study period.)
3. A clear risk stratification should be incorporated as part of the treatment plan.⁵
4. Our compliance with ASA administration must be improved. Consultation (as in #1) may be needed to determine the risk-benefit ratio of ASA for patients with gastrointestinal disease. As well, ticlopidine or Plavix (clopidogrel) should be considered when true contraindication to ASA exists.⁴
5. More attention should be paid to making daily medical progress notes on these potentially unstable patients.

Limitations

Weaknesses of this type of study include the retrospective nature of the data collection. Some admissions of patients with unstable angina may have been missed when the diagnosis was changed to unstable angina after admission for another problem and then coded as a third problem on discharge. No mortality or morbidity data are available on the (presumably sicker) patients who were transferred within 6 hours of arrival at our hospital. Furthermore, the design of the study makes it impossible to be sure of the accuracy of the admitting diagnosis of unstable angina: the possibility exists that some of the 30 patients might have had non-cardiac chest

pain.

As discussed previously, this was an analysis of the "quality of care," not of "outcome" or of the diagnostic acumen of the physicians. Therefore this study cannot be inferred to mean that treatment of unstable angina is "safe" in rural hospitals. We believe the results do indicate that physicians in a rural hospital can satisfactorily adhere to proper guidelines in the treatment of unstable angina.

Conclusions

The results show that the management of the majority of patients admitted by family physicians to a rural hospital for unstable angina met appropriate criteria for quality. Larger studies are needed to further investigate the safety of treatment of unstable angina in small rural hospitals.

Gordon Brock, MD, CCFP, Staff physician, Temiscaming Centre de Santé, Temiscaming, Que., Assistant Professor, Department of Family Medicine, and Lecturer, Department of Anaesthesia, McGill University, Montréal, Que.; Vydas Gurekas, MD, CCFP, Director of Professional Services, Temiscaming Centre de Santé, Temiscaming, Que., Lecturer, Department of Family Medicine, McGill University, Montréal, Que.; Nathanaelle Theriault, MD, Family medicine resident, University of Sherbrooke, Sherbrooke, Que.

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Correspondence to: Dr. Gordon Brock, Temiscaming Centre de Santé, CP 760, Temiscaming QC J0Z 3R0

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attack patients between metropolitan and regional hospitals in the Hunter Region of Australia. Aust N Z J Public Health 1999;23(1):61-6.

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Table 1. Inclusion / exclusion criteria chosen by Medical Evaluation Committee of study hospital
<p>Inclusion criteria</p> <p>All patients admitted to study hospital for at least 6 hours with a diagnosis of “unstable angina” between Jan. 1, 1998, and June 1, 2000</p>
<p>Definitions of unstable angina⁴</p> <ul style="list-style-type: none"> • Rest angina in the previous week, or • New-onset angina to Canadian Cardiovascular Society (CCS) Level III or IV in the last 2 months, or • Worsening of pre-existing angina to CCS Level III or IV “crescendo angina,” or • Prinzmetal’s variant angina, or • Non-Q-wave myocardial infarction (MI), or • Angina in the immediate post-MI period
<p>Exclusion criteria</p> <ol style="list-style-type: none"> 1. Attending physician’s diagnostic criteria for making the diagnosis of “unstable angina” was not clearly documented in the chart. 2. Exact time of arrival, or of diagnosis of unstable angina was not clearly recorded. 3. Patients with repeated admission for “unstable angina” but managed by pre-set or pre-agreed upon protocol with the patient’s cardiologist or internist. Serious co-morbidity or “end-stage” cardiac disease led to compromise of usual “aggressive” therapy.

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Table 2. Objective criteria of quality assessment for treatment of patients admitted during study period with unstable angina

1. Initial ECG performed < 20 minutes after patient's arrival in the emergency department (ED)
2. Follow-up ECG done within 6 hours of patient's arrival
3. Repeat ECG on the second day of admission
4. Cardiac enzymes measured at least twice within the first 24 hours of admission
5. Cardiac troponin I measured at least once
6. Telecardiology consultation or patient transferred to internist within first 24 hours
7. Treatment with ASA begun (or continued) on admission, unless allergic
8. Heparin begun on admission unless clearly contraindicated or advised against by specialist physician, and continued for 2–5 days
9. Anti-anginal medications from 1 of 3 classes (beta-blockers, calcium-channel blockers, long-acting nitrates) begun, continued or modified
10. Evidence of a treatment plan being made within 1 hour of arrival in the ED
11. Daily physician progress note in the chart

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Table 3. Compliance with the explicit criteria for 30 charts reviewed by the Medical Evaluation Committee of the study hospital

Criteria no.	Criterion	Conform to criteria, no. (and %)	Do not conform, no. (and %)	Other, no. (and %)
1.	ECG < 20 min after patient's arrival	21 (70.0)	9 (30.0)	
2.	Second ECG < 6 h after arrival	21 (70.0)	9 (30.0)	
3.	Repeat ECG on second day	26 (86.7)	2 (6.7)	2 (6.7)*
4.	Cardiac enzymes measured at least twice in first 24 hours	26 (86.7)	3 (10.0)	1 (3.3)†
5.	Cardiac troponin I measured at least once	18 (60.0)	12 (40.0)	
6.	Telecardiology consult or transfer to internist within 24 hours	12 (40.0)	18 (60.0)	
7.	ASA treatment begun	23 (76.7)	6 (20.0)‡	1 (3.3)§
8.	a) IV heparin begun	26 (86.7)¶	4 (13.0)	
	b) Continued 2–5 days	21 (86.0)**	3 (10.0)	
9.	a) Anti-anginal prescribed	30 (100.0)	9 (30.0)	
	b) Beta-blocker prescribed	21 (70.0)		
10.	Evidence of treatment plan made within 1 hour of arrival in ED	23 (76.7)	7 (23.3)	
11.	Daily physician progress note	18 (60.0)	12 (40.0)	

*One patient was transferred later on the day of arrival; the second was transferred at 8:30 am on the second day.
†This refers to the second patient above, who was transferred at 8:30 am on the second day.
‡Of the 6 patients, 2 were allergic to ASA and excluded. Four were not given ASA apparently because they were on H2 blockers (2 patients) or omeprazole (2).
§This patient was documented as on ASA on arrival, but this was apparently not continued during the hospitalization.
¶Three patients were given heparin on admission and a fourth was already taking Coumadin. Patients who were transferred after less than 2 days in the study hospital were excluded from analysis.
**Of the 26 patients started on heparin, 2 were transferred in less than 2 days and therefore excluded from analysis. Of the remaining 24 patients, 21 were kept on heparin for 2–5 days.

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Table 4. Comparative studies of compliance with explicit criteria for patients admitted to hospital with a diagnosis of unstable angina						
Study	Period of treatment	Setting	No. of patients	Medication prescribed, % of patients		
				ASA	Heparin	Beta-blocker
Present study	1998–2000	9-bed rural hospital	30	77	86	70
Wilkinson et al ¹¹	1996	New Zealand hospital managed by cardiologist	104	94	71	50
Krumholz et al ⁶	1995	3 Connecticut hospitals “staffed by cardiologists”	150*	82	32	
Fu et al ⁹	1995	Canadian tertiary care hospitals	225	98		76
Illiadis et al ¹⁰	1995–96	US tertiary care hospitals	181†	96	88	50
Reis et al ¹²	1995	US tertiary care hospitals cared for “by generalists”	185	71‡ 79§	20‡ 19§	9‡ 19§
Simpson et al ⁷	1993–94	Tertiary and community hospitals in North Carolina	88¶	76	43	44

* Age > 65; † Medium to high risk patients; ‡ Stratified as “low-risk”; § Stratified as “intermediate or high-risk”; ¶ Medicaid patients age > 65

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Potential urban-to-rural physician migration: the limited role of financial incentives

Jerome Yang, BA(Econ)

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[[résumé](#)]

Background: Rural/remote communities have persistent problems in recruiting and retaining physicians, despite the use of financial incentives. The objectives of this study were to investigate some factors influencing physician settlement in British Columbia and to explore potential policy recommendations for the future — specifically, policies to promote urban-to-rural practice relocation.

Methods: Between December 1999 and February 2000, surveys were faxed to 405 urban and 405 rural/remote physicians. Urban physicians were asked about the likelihood of their moving to a rural/remote location and their perceptions of such areas. Rural/remote physicians were asked about factors that affected their decision to practise in a rural/remote community.

Results: Surveys were returned by 311 (38.4%) of the 810 physicians. The response rates between urban and rural/remote physicians varied considerably (28.6% vs. 48.1% respectively). Most urban physicians (71.7%) would not move to rural/remote locations under any circumstances, and most of those who would consider it wanted a substantial increase (35.3%) in taxable income. Rural/remote physicians, when originally choosing the community they were practising in, were most attracted by the opportunity to acquire diverse medical experience. At the time of the survey, approximately 18% of these physicians were planning to relocate to urban areas, with on-call issues being the most influential factor. Most physicians in both groups believed that the quality of children's education in rural/remote areas is less than that in urban areas. The 2 groups differed in their perceptions of spousal employment opportunities in rural/remote areas.

Conclusions: This study illustrates the reluctance of physicians currently practising in an urban area to settle in rural/remote areas, despite financial incentives. These findings suggest the need to explore alternatives to financial incentives in addressing physician recruitment and retention in rural/remote areas.

Contexte : Les communautés des régions rurales et éloignées ont toujours de la difficulté à recruter et à garder des médecins, même en ayant recours à des incitations financières. Cette étude visait à analyser certains facteurs qui incitent des médecins à s'établir en Colombie-Britannique et à explorer des recommandations stratégiques possibles pour l'avenir — et plus précisément des politiques de promotion du déplacement d'une pratique d'un milieu urbain à une région rurale.

Méthodes : Entre décembre 1999 et février 2000, on a télécopié des questionnaires à 405 médecins urbains et 405 médecins de milieux ruraux ou éloignés. On a demandé aux médecins urbains d'indiquer la probabilité qu'ils déménagent en milieu rural ou éloigné et leur perception de ces régions, et aux médecins des régions rurales ou éloignées de préciser les facteurs qui ont joué sur leur décision de pratiquer dans une communauté rurale ou éloignée.

Résultats : Des 810 médecins, 311 (38,4 %) ont renvoyé leur questionnaire. Les taux de réponse ont varié considérablement entre les médecins des régions urbaines et leurs collègues des régions rurales ou éloignées (28,6 % c. 48,1 % respectivement). La plupart des médecins des régions urbaines (71,7 %) ne déménageraient pour aucune raison dans un endroit rural ou éloigné et la plupart de ceux qui envisageraient de le faire voudraient une augmentation importante (35,3 %) de leur revenu imposable. Lorsqu'ils ont choisi à l'origine la communauté où ils pratiquent, les médecins des régions rurales ou éloignées étaient attirés principalement par la possibilité d'acquérir une expérience médicale variée. Au moment du sondage, environ 18 % de ces médecins envisageaient de déménager en milieu urbain et les problèmes liés aux périodes de garde constituaient pour eux le facteur le plus important. La plupart des médecins des deux groupes étaient d'avis que dans les régions rurales ou éloignées, l'éducation des enfants est de moins bonne qualité qu'en milieu urbain. Les deux groupes différaient par leur perception des possibilités d'emploi pour le conjoint dans les régions rurales ou éloignées.

Conclusions : Cette étude démontre que les médecins qui pratiquent actuellement en milieu urbain ne veulent pas s'établir dans les régions rurales ou éloignées, en dépit d'incitations financières. Ces constatations indiquent qu'il faut explorer des solutions de rechange aux incitations financières pour s'attaquer aux problèmes de recrutement des médecins et de maintien des effectifs dans les régions rurales ou éloignées.

Physician recruitment and retention in rural/remote communities continue to be important issues in health care. The problem has existed for years.¹ With the majority of British Columbia's physicians setting up practice in urban centres such as Vancouver, remote communities often find themselves underserved. No scheme will completely solve the distribution problem, but steps can be taken to reduce it.

One potential rapidly deployable source might be the pool of physicians currently practising in urban centres. This study explores the potential of financial and other incentives for tapping into this pool.

Attempts at levelling the distribution of physicians in Canada have traditionally relied on financial incentives to encourage physicians to practise in rural/remote regions, or on financial disincentives to discourage them from practising in urban centres.²⁻⁵ But the issue is not merely a financial one. Physicians avoid or leave rural/remote regions for a variety of reasons. First, most medical students come from urban backgrounds, and until recently, all medical schools were located in major urban centres. Therefore, these future physicians tend to be biased toward urban life and know relatively little about rural life. Many who do choose rural/remote communities experience difficulty in finding locum relief for vacation or continuing medical education (CME). Stressful hours and, in particular, on-call schedules, also discourage physicians from practising in small communities. Furthermore, urban life tends to offer a greater variety of cultural, educational and recreational opportunities for physicians and their families.

There have been 2 key BC surveys in the past decade: one by the British Columbia Medical Association (BCMA)⁵ and one by researchers at UBC.⁶ The BCMA survey covered factors affecting satisfaction, recruitment and retention of physicians. The UBC survey addressed practice location decisions and spousal satisfaction.

In the current study, a shorter survey — "Physician Survey 2000: the Urban-Rural Split" — was developed to focus on specific financial and non-financial factors affecting practice decisions. Two versions were created for the purpose of comparing 2 groups of physicians: urban and rural/remote. The goal was to generate potential policy recommendations that will ease the distribution problem, particularly in the long run.

Methods

Between December 1999 and February 2000, 810 surveys were faxed to 405 urban and 405 rural/remote BC physicians. Fax numbers were obtained from the directory of the College of Physicians and Surgeons of British Columbia. Most of the urban physicians were located in Vancouver, Burnaby and Surrey, but some were selected from Victoria, Coquitlam and Port Coquitlam. Most of the rural/remote physicians were located in Northern and Isolation Allowance (NIA) communities. These are communities that the BCMA and the provincial government have agreed

upon as having sufficient professional isolation to warrant a premium on fee-for-service billings by physicians. However, because many faxes to the physicians in NIA communities were not transmitted successfully, some rural/remote physicians were selected from non-NIA communities (see [Appendix 1](#)) to maintain the sample size.

Urban survey

Urban physicians were asked whether they would consider moving their practice to a rural/remote location in BC, and how much more they would want to be paid if they relocated. The survey assessed the familiarity of the urban group with rural/remote schemes and the services of Health Match BC, a no-fee, health care recruitment service for the province of BC (www.healthmatchbc.org). They were also asked about their perceptions of spousal employment opportunities and of the quality of education for children in rural/remote communities.

Those who had previously practised in a rural/remote area were asked why they had left.

Rural/remote survey

Rural/remote physicians were asked to rank the influence of 6 given factors on their original decision to practise in their community. The response scale ranged from 1 (most important) to 6 (least important). In addition, they were asked about spousal employment opportunities and quality of education for children in their communities.

Those who were planning to move to an urban setting were asked to rank the influence of 6 factors on their decision to relocate.

Results

As of Mar. 30, 2000, 311 out of 810 physicians had returned the survey, yielding an overall response rate of 38.4%. Of 405 urban physicians, 116 (28.6%) returned the survey by the aforementioned date, compared with 195/405 (48.1%) of the rural/remote physicians. Most responses were received within several weeks, by fax, mail and email. Three surveys were returned after the report was completed; therefore, their data were not included. Statistical calculations were performed using Shazam Econometric Software (<http://shazam.econ.ubc.ca/>).

Urban physicians

Urban physicians were asked if they would consider moving to a rural/remote location. Of 113 respondents, 81 (71.7%) stated "Under no circumstances," 23 (20.4%) stated "Depends on incentives" and 9 (8%) indicated "Yes, but I haven't been able to." Of those who replied "Depends on incentives" or "Yes, but I haven't been able to," 84.4% reported they would want to be paid more if they were to relocate to a rural/remote area. They wanted an average percentage increase in taxable income of 35.3% (95% confidence interval, 24.8-45.9).

Urban respondents (n = 115) were relatively unfamiliar with rural/remote programs other than the NIA ([Table 1](#)). And only 15/112 (13.4%) respondents were familiar with the services of Health Match BC.

Only 30/99 urban physicians believed their spouses would be able to find employment of first choice in a rural/remote setting, and just 18/100 believed that schools in rural/remote communities could offer their children a quality of education at least as high as that of urban schools.

Of 100 urban respondents, 57% believed their income would increase if they moved to a rural/remote setting.

Those who were previously established in a rural/remote setting (n = 32) gave various reasons for moving to an urban area. These included insufficient specialist back-up, insufficient locum support, onerous on-call schedule, desire for further training or specialization, proximity to family members, spousal employment and children's education.

Rural/remote physicians

Of the 6 factors influencing their original decision to practise in a smaller community, the following were ranked as the most important by 192 rural/remote physicians: opportunity to acquire diverse medical experience, have appropriate training/exposure to rural medicine, and desire to help underserved communities. Other factors such as spousal/family support, having been born or raised in a community similar in size, and lower living and recreational expenses were assigned lower rankings ([Table 2](#)).

Rural/remote physicians were asked about spousal employment opportunities; 115/170 (67.6%) reported that their spouses found employment of first choice in their community. When asked if they believed their children were receiving education of equal or greater quality than that offered in an urban setting, 60/145 (41.4%) responded Yes. Some reported sending their children to private/boarding schools for education beyond the elementary level.

Of 178 rural/remote respondents, 42.7% believed their incomes would decrease if they moved to an urban area, 27% believed their incomes would increase and the remaining physicians did not believe their incomes would change significantly.

Thirty-five of 195 (18%) rural/remote physicians indicated they were currently planning to relocate to an urban setting, and 33 of these 35 physicians ranked the influence of 6 factors on their decision to relocate. The most important factors were being on call too frequently and feeling dissatisfied with on-call reimbursement ([Table 3](#)).

Discussion

Northern and Isolation Allowance Program

As Barer and Stoddart^{7,8} pointed out, there is almost universal agreement among analysts that the problem of maldistribution of physicians is the most difficult to solve of all physician resource policy problems. Clearly, more money in the pockets of doctors is not the magic solution: at the time of the survey, the BC government was spending approximately \$9 million annually on the NIA alone, and problems still persist in the province. As one rural/remote respondent wrote: "Money won't bring or keep people in the north." This view is supported by the results of this study's survey: 57% of urban respondents believed their incomes would rise if they moved to a rural/remote setting, yet 72% would not consider moving to such a location under any circumstances.

On the other hand, one must not underestimate the importance of bonuses. Of the 33 rural/remote physicians planning to relocate to urban practice, the top 2 ranked reasons were related to frequency of call and poor or no reimbursement for call ([Table 3](#)). Hence, one might presume that many rural/remote physicians would not maintain the level of work they do if incentives were removed, and more of them would consider moving to urban centres. Furthermore, it would be very difficult to attract locums to smaller communities. For these reasons, financial incentives are

necessary in the short run.

To maintain fairness in the assignment of bonuses to rural/remote communities, the NIA program should undergo continuous review. Some rural/remote respondents pointed out potential flaws in the NIA formula for computing eligibility. As an example, one respondent stated that Kimberley is just a few kilometres too close to Cranbrook to qualify for NIA benefits, but nearby communities (Invermere, Creston and Fernie) receive the NIA despite having more physicians. The respondent also pointed out that Dobbin on-call remuneration and supplemental CME funds only apply to NIA communities. (The Dobbin Report's recommendations [www.srpc.ca/dobbin.txt] included bonuses for after-hours work and an increase in CME allotment.) Another issue is that some rural/remote physicians do not want additional physicians to enter their communities because it may ruin their eligibility for incentive benefits.⁷ Schemes like the NIA should be revised to minimize such adverse effects.

Other rural/remote programs and services

Urban physicians should be informed of the services of Health Match BC. Only 13% of the surveyed urban physicians knew of this organization and how it can help physicians settle in smaller communities. Furthermore, urban physicians should be better informed of rural/remote schemes other than the NIA.

Family issues

Any long-term strategy must address family issues. This survey questioned physicians about spousal employment and children's education. An interesting finding is the difference in views between urban and rural/remote physicians with respect to spousal employment. Whereas only 30.3% of urban respondents believed their spouses would be able to find employment of first choice in rural/remote areas, 67.6% of rural/remote respondents reported that their spouses had been successful in finding employment of first choice in their communities. While this may be explained by selection bias, it does suggest that a breaking down of misconceptions about rural/remote life is needed in order to increase the number of physicians who choose such a practice location. A job-matching service for spouses of physicians might still be useful, however. In general, such a service would make the transition of physicians from urban to smaller communities easier. The service may encourage more physicians (and potential physicians) to consider moving to, or staying in, more rural areas.

As for children's education, the government is responsible for ensuring that the standard of education in smaller communities is competitive with that in urban centres, especially at the high school and college/university levels. This message must then be actively promoted to the public and, in particular, physicians.

Medical students with a rural background

Given that many physicians come from urban backgrounds and tend to be biased toward urban life, additional research could explore the utility of expanding the pool of qualified medical school applicants coming from rural/remote backgrounds.

Optimism for the success of innovative initiatives might be found in such examples as the Med Quest program (www.med.mun.ca/medquest/) hosted by the Faculty of Medicine of Memorial University of Newfoundland. At a modest investment of approximately \$40 000 per year, this program shows significant promise in increasing the participation of rural/remote students in the medical field. Since these individuals are from rural/remote communities, they are more likely to serve in such communities as physicians than those who grew up in urban areas.⁹ This is supported by the results of the present survey: rural/remote physicians reported having grown up in smaller communities than did their urban counterparts.

Limitations of study

Limitations of this study include the relatively low response rate from urban physicians. Results may also not apply to subspecialists who rely on the population size of an urban centre for their practices.

Conclusions

This study demonstrates a limited role for financial incentives as a stand-alone policy in influencing the chronic shortage of physicians who choose or move to rural/remote practice locations. It highlights a number of other areas of potential policy influence, such as spousal employment and children's quality of education. It is likely that integrated policy development seeking to address some or all of these points of influence would prove more effective. Further research would be required to explore these and other factors both in isolation and as part of an integrated policy initiative.

Jerome Yang, BA(Econ), 3rd-year Medical Student, University of British Columbia, Vancouver, BC

This article has been peer reviewed.

Key words: physician recruitment and retention, rural/remote incentives, urban to rural migration.

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Correspondence to: Jerome Yang, 301-5525 West Blvd., Vancouver BC V6M 3W6

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Appendix 1. BC communities* from which rural/remote physicians were recruited as study participants to replace physicians residing in NIA communities who could not be reached

Cassidy, Chase, Chemainus, Cobble Hill, Cumberland, Enderby, Fruitvale, Gabriola Island, Harrison Hot Springs, Heriot Bay, Kimberley, Ladysmith, Lake Cowichan, Lantzville, Lazo, Lone Butte, Lumby, Mill Bay, Mt. Lehman, Naramata, and One Hundred Eight Mile Ranch.

NIA = Northern and Isolation Allowance; see Methods section for definition.

* Communities with a population of between 1116 and 6976, drawn from the College of Physicians and Surgeons of British Columbia alphabetical index of community practitioners. They are sufficiently close to larger centres to not fulfil the rather stringent criteria for NIA, but by customary definition in many rural studies would rank as rural/remote.

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Table 1. Urban physicians' familiarity with rural/remote programs (n = 115)		
Rank*	Rural/remote program	% of physicians familiar with program
1	Northern and Isolation Allowance	78.3
2	Northern and Isolation Travel Assistance Outreach Program	36.5
3	Northern and Rural Locum Program	23.5
4	Dobbin on-call remuneration	18.3
5	Physician Outreach Program	17.4
6	Additional CME reimbursement	14.8
* 1 = most familiar		

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Table 2. Influence of 6 factors on original decision by rural/remote physicians to practise in their community (n = 192)		
Rank*	Factor	Mean score (and SD)
1	Opportunity to acquire diverse medical experience	2.46 (1.34)
2	Have appropriate training/exposure to rural medicine	3.09 (1.38)
3	Desire to help underserved communities	3.56 (1.48)
4	Spousal/family support or encouragement	3.62 (1.40)
5	Was born or raised in community similar in size	4.00 (1.56)
6	Lower living/recreational expenses	4.27 (1.17)
* 1 = most important		

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Table 3. Influence of 6 factors on decisions by rural/remote physicians planning to relocate to an urban setting (n = 33)*

Rank†	Factor	Mean score (and SD)
1	On call too frequently	2.92 (1.68)
2	On-call reimbursement too low or absent	3.35 (1.59)
3	Spousal/family influence	3.38 (1.60)
4	Locum coverage poor or absent	3.38 (1.57)
5	Inability to obtain satisfactory CME	3.86 (1.23)
6	Unsatisfied with cultural/recreational opportunities	4.11 (1.42)

* Only those rural/remote physicians who responded Yes to "Are you currently planning to move your practice to an urban setting?" were asked to rank the above factors.

† 1 = most important

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Psychosocial oncology care, beyond the tertiary cancer centre

Pamela Otfinowski, BA, BScN

Susan M. Christian, MSc, CGC

Wendy D. Mackenzie, MHSA, BScN, RN

Michael Handman, PhD

Barry D. Bultz, PhD, CPsych

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[[résumé](#)]

A significant proportion of cancer patients require psychosocial care. Services to meet these needs are not easily accessible to many patients who live great distances from a tertiary cancer centre. A survey study was performed to determine the availability of psychosocial oncology care beyond the tertiary cancer centres in Alberta, Canada. Results showed that 95% of health care providers who responded to our survey felt that it was important for cancer patients to have access to psychosocial care. However, only 18% were satisfied with the support services available in their community. Recommendations were developed based on the results of the study, the principles of the Canadian health care system, and standards put forth by the Canadian Association of Psychosocial Oncology. These recommendations include identifying qualified psychosocial oncology providers, allocating more time for professionals to counsel cancer patients, linking psychosocial oncology professionals across the province and increasing awareness of psychosocial oncology services.

Un pourcentage important de patients atteints du cancer ont besoin de soins psychosociaux. Les services qui peuvent répondre à ces besoins ne sont pas faciles d'accès pour beaucoup de patients vivant loin d'un centre d'oncologie tertiaire. On a réalisé un sondage pour déterminer la disponibilité de soins psychosociaux en oncologie ailleurs que dans les centres d'oncologie tertiaires en Alberta, au Canada. Le sondage a montré que 95 % des répondants prestataires de soins étaient d'avis qu'il est important pour les patients atteints d'un cancer d'avoir accès à des soins psychosociaux. Seulement 18 % étaient toutefois satisfaits des services de soutien

disponibles dans leur communauté. On a formulé des recommandations fondées sur les résultats de l'étude, les principes du système de soins de santé du Canada et les normes mises de l'avant par l'Association canadienne d'oncologie psychosociale. Ces recommandations visent notamment à trouver des prestataires qualifiés de soins en oncologie psychosociale, à accorder plus de temps aux professionnels pour qu'ils conseillent leurs patients atteints du cancer, à établir un réseau de professionnels de l'oncologie psychosociale de la province et à faire mieux connaître les services d'oncologie psychosociale.

Introduction

It is well established that cancer not only affects the physical functioning of a patient but can be detrimental to an individual's psychological and social functioning.¹⁻⁴ The literature indicates that approximately 30% to 40% of all cancer patients will need specialized psychosocial oncology support at some point during their illness.¹⁻⁴ Although these needs are evident for patients living in both large cities and rural and remote areas, the services to address psychosocial oncology distress are not equally accessible.⁵⁻⁸

McGrath and colleagues^{9,10} have studied the needs of cancer patients living in rural communities. Results from a study assessing psychosocial support following treatment for hematological malignancies found that distance was one of the main barriers in accessing services. Other obstacles included lack of local services and lack of awareness of local services.¹⁰ This study also found that, upon returning to their community following treatment, 41% of patients felt the health and allied health professionals in their community did not have sufficient knowledge about their illness.

Alberta is geographically divided into 17 health regions with responsibility for health services for their residents. Many of these regions are sparsely populated: approximately 38% of Alberta's population resides outside the 2 main urban areas with tertiary cancer centres — Edmonton and Calgary.¹¹ Because patients often have to drive several hours to obtain services at a large centre, the provincial health authority for cancer programs, the Alberta Cancer Board, recently opened additional cancer centres around the province. This allows cancer patients to receive some services closer to home.

At the time of this survey, the support services available to cancer patients living outside of Edmonton and Calgary were informal and inconsistent, both between and within regions. Furthermore, family physicians (FPs), social workers,

psychologists and psychiatrists were providing care without training specific to the experience and needs of cancer patients.

To improve the provision of psychosocial oncology, in 1999 the Canadian Association of Psychosocial Oncology (CAPO) developed the "National Psychosocial Oncology Standards for Canada."¹² Psychosocial oncology is defined as "a professional sub-specialty in oncology" and includes "the formal study, understanding and treatment of the social, psychological, emotional, spiritual, quality of life and functional aspects of cancer as applied across the cancer trajectory from prevention through bereavement."¹² The CAPO Standards state that patients should have access to psychosocial services regardless of geographical location.

The Alberta Cancer Board hopes to improve access and awareness of psychosocial services in rural and remote areas of Alberta. In an effort to achieve this goal, an assessment of the status of available psychosocial services was needed.

The purpose of this study was four-fold:

1. to sample a group of rural health care professionals and determine what proportion of cancer patients they refer for psychosocial care;
2. to identify support services being offered to these patients;
3. to assess community health care professionals' satisfaction with available psychosocial oncology services; and
4. based on the results, to provide recommendations to improve access to services.

Materials and methods

As part of the Alberta Cancer Board's efforts to provide greater access to psychosocial services in rural Alberta, a cross-sectional survey was performed in December 1999. Questionnaires and self-addressed, postage-paid envelopes were mailed to health care professionals providing psychosocial care outside of the Edmonton and Calgary regions. The CAPO definition of psychosocial oncology¹² was included in an accompanying letter to further clarify the scope of services being assessed. The study population included all rural and remote health care social workers registered with the Alberta Association of Registered Social Workers (now known as the Alberta College of Social Workers), psychologists registered with the Psychologists' Association of Alberta, and psychiatrists registered with the College of Physicians and Surgeons of Alberta (CPSA). In

addition, 25% of Albertan FPs practising outside of Edmonton and Calgary and registered with the CPSA, were randomly sampled. A group represented by 25% of FPs was chosen for practical purposes and to equalize the study subgroups.

Participants were asked to complete 12 multiple-choice questions ([Appendix 1](#)) addressing their current practice and their satisfaction with psychosocial oncology care in their region. Space was also provided for comments. Chi-squared analysis was used where appropriate, although most of the data were descriptive in nature.

Results

Five hundred and forty-eight questionnaires were mailed out; 173 were returned. Of these, 15 were excluded from the study either because the health care professional had moved or the questionnaire was returned blank. Incomplete questionnaires were included. A total of 158 questionnaires were included in the study, giving a response rate of 30% (158/533). There was no significant difference in the response rate based on profession. In addition, each health care region in Alberta was represented.

Overall, 95% (144/151) of respondents reported that they felt it was important or very important for their cancer patients to have access to psychosocial support in their community. Eighty-four percent of professionals (129/153) felt that $\geq 50\%$ of their patients could benefit from accessing such services (10% [15/153] were unsure of the proportion that could benefit). There was no significant difference in responses based on profession.

FPs were also asked what proportion of their cancer patients they refer for psychosocial support. Twenty-five percent (17/68) stated that they do not refer any of their patients, 41% (28/68) refer less than 30% of their patients, and 31% (21/68) refer 30% or more.

Eighty-six percent (60/70) of FPs thought they were the primary source of support and counselling for their cancer patients and their families in the community. Peer support groups were reported as the second most common primary source of support and counselling (11%). Twenty-seven percent of respondents stated that they had referred patients to peer support services. Other support services referred to included social work, psychology, psychiatry, home care/palliative care, grief counsellor, support groups, nursing staff, Internet support and holistic health services.

When participants were asked if they were satisfied with the current psychosocial support services available in their community, 18% (27/149) reported they were satisfied, 54% (81/149) were not satisfied and 28% (41/149) were unsure. There was no difference in satisfaction with services based on profession.

When asked if they were interested in being educated to provide psychosocial oncology care, 67% (44/66) of FPs, 87% (26/30) of social workers, 88% (36/41) of psychologists and 82% (9/11) of psychiatrists reported that they were interested.

A significant difference was found between health care profession and whether or not individuals felt that they had adequate time to address the psychosocial needs of their cancer patients. Only 23% (16/69) of FPs and 29% (9/31) of social workers felt that they have adequate time to address these needs versus 43% (17/40) of psychologists and 58% (7/12) of psychiatrists ($p < 0.001$).

A significant difference was found between health care professionals who were interested or very interested in learning more about psychosocial oncology: 78% (52/67) of FPs stated that they were interested in learning more versus 100% (30/30) of social workers, 98% (40/41) of psychologists, and 100% (12/12) of psychiatrists ($p < 0.004$).

Many respondents provided comments addressing issues not directly asked in the questionnaire. The comments were classified into 4 categories: 1) rural isolation or lack of services ($n = 19$), 2) the need to increase awareness of services ($n = 11$), 3) lack of time or compensation ($n = 6$) and 4) other ($n = 20$). The category entitled "other" contained comments ranging from lack of experience with cancer patients to suggestions on improving services.

Discussion

Results of this survey reveal that, in December 1999, 95% of health care professionals practising outside of the regions of Edmonton and Calgary, felt that it was important for cancer patients to have access to psychosocial care. As previously stated, the literature suggests that 30% to 40% of all cancer patients will require professional psychosocial support.¹⁻⁴ However, results show that only 31% of Albertan FPs who responded were referring the appropriate proportion ($\geq 30\%$) of cancer patients for support. Respondents' comments suggest that the lower than expected rate of referrals is likely due to lack of services or lack of awareness of services in their community. Research has shown that physicians often have

difficulty recognizing when patients are experiencing psychosocial distress.¹³ Overall, in our study only 18% of health care professionals were satisfied with the support available in their community.

Our survey found that the FPs who completed the questionnaire felt they were the most accessed source of support for cancer patients. Interestingly, however, only 23% of FPs felt that they had adequate time to address their cancer patients' psychosocial needs.

The survey conducted is limited because the question set is small and the survey assesses community psychosocial oncology services through health care professionals. It would be valuable to assess awareness of, and satisfaction with, community psychosocial resources directly from individuals affected by cancer. This could be done through a questionnaire or focus groups involving cancer patients living in rural and remote areas of Alberta.

Recommendations

Recommendations to improve psychosocial oncology care throughout the province of Alberta are based on the results of this study, the principles of the Canadian health care system and the CAPO Standards.¹²

1. Health care professionals should be identified in each region and educated to provide psychosocial oncology care to patients living in their community. Regionally employed social workers and psychologists are likely the most practical individuals to provide professional support to cancer patients in their community because of their abundance in rural and remote areas and the fact that there is no charge to patients for their services. The CAPO Standards state that psychosocial oncology professionals will have a graduate degree in social work, psychology, psychiatry or at least 3 years' supervised experience in psychosocial oncology post-baccalaureate.¹² It should be noted that many communities of Alberta do not have professionals with education or experience to achieve this standard.

Overall, 87% and 88% of social workers and psychologists stated that they were interested in being educated to provide psychosocial oncology care, respectively.

2. Because only 29% of social workers and 43% of psychologists felt that they have

adequate time to address the psychosocial needs of cancer patients, the time allocated to counselling cancer patients should be re-assessed by the health regions.

3.

A network should be developed among psychosocial oncology health care professionals living in communities across the province to provide professional support and further improve patient care.

4.

An effort should be made to increase awareness of services available within each community. It would be helpful for health care professionals and peer support groups to collaborate and educate FPs, as the primary care providers, about their services.

McGrath and colleagues⁹ found that 9/11 (82%) breast cancer patients who were aware of the availability of a social worker in rural and remote Queensland, Australia, pursued psychosocial care. Their study suggests that a large obstacle for cancer patients receiving counselling is awareness of the availability of psychosocial oncology care providers.

McGrath and colleagues⁹ suggest that although many rural regions do have a range of existing services, many patients fall through the cracks and are not appropriately supported. The presence of social workers and psychologists in rural areas of Alberta suggests that this may also be true in Alberta. The development of a formal provincial psychosocial oncology program could work toward increasing awareness of services among health care professionals across Alberta.

The Alberta Cancer Board has recently funded a Psychosocial Oncology Initiative with the intention of developing a structured provincial program. The program will use the recommendations discussed in this paper to develop psychosocial oncology services in the province. The main goals will be to educate health care professionals providing psychosocial care to cancer patients beyond the tertiary centres, to directly link psychosocial oncology professionals at the tertiary cancer centres with professionals in the outlying regions, and to increase community awareness of all psychosocial services. The program will also include an evaluation component.

Affairs and Community Oncology, Alberta Cancer Board, Calgary, Alta.; Wendy D. Mackenzie, MHSA, BScN, RN, Medical Affairs and Community Oncology, Alberta Cancer Board, Edmonton, Alta.; Michael Handman, PhD, Department of Psychology, Cross Cancer Institute, Edmonton, Alta.; Barry D. Bultz, PhD, CPsych, Department of Psychosocial Resources, Tom Baker Cancer Centre, Calgary, Alta.

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Correspondence to: Susan Christian, Department of Medical Genetics, Alberta Children's Hospital, 1820 Richmond Rd., Calgary AB T2T 5C7

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Appendix 1. Survey of professionals: Identification of the Psychosocial Needs of Cancer Patients & Families

The following abbreviations will be used: AMH = Alberta Mental Health CCS = Canadian Cancer Society
CCC = Community Cancer Centre ACC = Association Cancer Centre

1. Do you feel that you have adequate time in your practice to address the psychosocial needs of your cancer patients (or cancer patients that are referred to you)?
Yes ____ No ____ Unsure ____
2. In your perception, how many of the cancer patients that you see in your practice would benefit if they could have access to psychosocial oncology services:
None ____ <50% ____ Approx. 50% ____ >50% ____ Unsure ____
3. The literature indicates that 1 in 3 cancer patients will have need of professional psychosocial support at sometime during the disease trajectory. **If you are a physician**, how many of your cancer patients do you refer for this kind of support?
None ____ <30% ____ Approx. 30% ____ >30% ____ Unsure ____
4. Please indicate your profession and the number of the health region that you work in:
Social Worker ____ Psychologist ____ (Do you work for AMH? Yes ____ No ____)
Psychiatrist ____ Family Physician ____ Regional Health Authority # ____
5. Please indicate the approximate # of cancer patients that you see in your practice in 1 year:
1-5 ____ 6-10 ____ 11-20 ____ 21-50 ____ 51-100 ____ >100 ____
6. In the past, what psychosocial services have you referred cancer patients or their family members to?
If more than one is applicable, please indicate primary (1), secondary (2), etc.
____ You, in your professional role are the primary source of support & counselling.
____ Peer support group (Associated with CCS? Yes ____ No ____ Unsure ____)
____ Social Worker Please circle one if associated with ACC? CCC? AMH?
____ Psychologist (Associated with AMH? Yes ____ No ____ or Private? Yes ____ No ____)
____ Psychiatrist (Private? Yes ____ No ____)
____ Pastoral Care
____ Other. Please describe _____.
7. Please indicate which gender you refer most to the above services and estimate what percentage of total referrals are for this gender:
____ (% of the total referrals ____) ____ (% of the total referrals ____) No difference ____ Unsure ____
8. In your perception, how many of the cancer patients and/or their family members that you see would be able to afford to pay for private psychosocial services?
<50% ____ Approx. 50% ____ >50% ____ Unsure ____
9. Please indicate your level of satisfaction with the current psychosocial support services for cancer patients and families in your community:
Not satisfied ____ Satisfied ____ Very satisfied ____ Unsure ____
10. Please indicate how important you feel it is (or would be) for your patients and their families to have access to professional psychosocial oncology support within your community:
Not important ____ Important ____ Very Important ____ Unsure ____
11. Please indicate your level of interest in exploring alternative strategies (e.g., telehealth or a "travelling psychosocial oncologist" visiting communities) to provide improved access to psychosocial oncology services for
a. patients and families: Not interested ____ Interested ____ Very interested ____ Unsure ____
b. education and consultation for primary health providers: Not interested ____ Interested ____ Very interested ____ Unsure ____
12. Please indicate your level of interest in
a. learning more about psychosocial oncology: Not interested ____ Interested ____ Very interested ____ Unsure ____
b. being educated to provide psychosocial oncology: Not interested ____ Interested ____ Very interested ____ Unsure ____
13. Please add any additional comments:

The occasional stress test

Peter Hutten-Czapski, MD
Haileybury, Ont.

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Introduction

Your patient, 50-year-old Mr. Smith, has just had an uncomplicated, inferior myocardial infarction (MI). He was not on any medications. At your community hospital you gave him thrombolytic agents and then placed him on heparin, aspirin, a beta-blocker, an ACE inhibitor, a statin, and other medications according to the ever-changing evidence. Now comes the difficult part: getting a timely appointment with the cardiologist. How soon does Mr. Smith need to be seen?

Another patient is a 40-year-old woman who experiences chest pain on exertion or when she eats, but the pain is relieved by antacids. Is this dyspepsia or ischemic heart disease?

These clinical questions can be answered by the rural practitioner through the use of an exercise stress test.

The post-MI patient

Post-MI patients have always been at risk of reinfarction. With the availability of thrombolysis in many rural hospitals,¹ many more patients who in the past would have died are now at risk of suffering a second stenosis. Hospitalized patients experiencing angina obviously need urgent referral. But what about the seemingly uncomplicated MI patient such as Mr. Smith?

These patients should either have a stress test before they are discharged from the hospital or as an outpatient within 3 weeks of their MI. Stress testing will risk-stratify post-MI patients into 2 groups: those who are high risk and should be seen urgently and have an angiographic assessment and those who are at low risk and can wait to see a specialist. Patients in the latter group may not need to see a specialist at all, because no additional investigation or treatment will be required.²

You already have a stethoscope, a blood pressure cuff, the ECG machine and the crash cart — and you know how to use them. All you need in additional equipment is an exercise machine. Once you have an exercise machine, you will also be able to use it to help you diagnose coronary artery disease (CAD). The benefits of diagnosis and risk stratification in the clinical setting rather than when the patient is shovelling snow at home are significant. Not only will this be a service to your community, an added bonus is that stress tests are done during the day.



Fig. 1. Stationary bicycle ergometer for exercise stress testing.

Many Europeans prefer the stationary bicycle ergometer for exercise stress testing. For under a few thousand dollars, you have an exercise machine that produces little movement artifact on the cardiogram, and it doesn't take up much floor space. An ergometer with a protocol that raised exertion by 25 watts every 3 minutes was the standard at my rural hospital for many years (Fig. 1).

The not insignificant advantages of using the more expensive treadmill in North America are that consultants are more familiar with it, and most patients prefer walking to bicycling. For the past 12 years our hospital has used a \$7000 electronically controlled model (Fig. 2).



Fig. 2. Electronically controlled treadmill

Recently the hospital bought a \$40 000 computerized treadmill model with integrated ECG analysis (Fig. 3).

Certain patients should be excluded from testing. It is dangerous to submit people with the following problems to stress testing: systolic murmurs of suspected aortic stenosis, hypertrophic cardiomyopathy, findings of suspected dissecting aneurysm, unstable angina, or ongoing ischemia at rest; they should be referred directly to a specialist.

Clinical conditions such as diabetes, thyrotoxicosis, myxedema, electrolyte abnormalities, severe hypertension, significant anemia, high degree atrioventricular block and pulmonary embolism, should first be controlled.



Fig. 3. Computerized treadmill model with integrated ECG analysis.

Nuclear imaging or chemical stress testing is suited for patients who are unable to exercise or who have ECG abnormalities such as left bundle branch block, Wolff-Parkinson-White syndrome, or digoxin-induced changes that mask ischemia-induced ST depression.

Testing for risk stratification

At our hospital we would have given Mr. Smith a stress test after discharge. Because he is at higher risk and we are testing for prognosis and an exercise and rehabilitation prescription, submaximal testing would be done, limited to 85% of his estimated maximal heart rate ($[220 - \text{age in years}] \times 85\% = 144$). Some physicians would repeat the test on a maximal basis at 4 or more weeks post-MI, when the heart has had a chance to heal.

At 1 week post-MI, Mr. Smith was only able to exercise up to 4 METS (metabolic equivalents [multiples of resting oxygen uptake]) with a heart rate of 110 beats/min before he experienced angina with 2mV ST-segment depression in inferior leads and a drop in blood pressure. The ST changes lasted 8 minutes in recovery. The cardiologist in the regional referral centre was contacted by phone, and angiography was performed the next day. The patient is back to work now, after undergoing coronary artery stenting and being put on a cardiac rehabilitation program.

If Mr. Smith had passed the stress test his risk would have been low ([Table 13](#)) and he would have needed only secondary prevention interventions. Those who have ST-segment depression but at high workloads may warrant elective referral to an internist.

Diagnostic testing

Patient selection is crucial to give meaningful results when performing a stress test to aid in diagnosis. The major consideration is the pre-test probability, based on age, sex and symptoms ([Table 24](#)). The stress test is most useful in evaluating patients at intermediate pre-test risk of coronary artery disease (CAD). Testing asymptomatic patients runs the risk of producing false-positive results because only about 6% of asymptomatic people with ECG changes have CAD diagnosed as a result of angiography. Testing someone with typical chest pain symptoms and risk factors runs the risk of a false-negative result because the pre-test risk is in the 90% range, but it is useful to estimate prognosis and to stratify for possible further testing and treatment.

The stress test achieves maximal sensitivity when testing occurs to actual maximum heart rate as limited by patient symptoms. This will be approximately 220 beats/min less the person's age in years ± 12 beats/min. By convention, 85% of the calculated maximum (i.e., submaximal testing) is considered an adequate test for diagnosis and in testing high-risk patients such as those who are less than 2 weeks post-MI.

Most stress tests are done with the Bruce Protocol,⁵ and this is the only protocol that has been programmed into the treadmill at my hospital. If the patient appears to be unfit we switch the treadmill to manual and advance more slowly. Other protocols may be superior but they exist mostly in the standard texts.^{6,7} A typical procedure is outlined in [Appendix 1](#), which cites Fig. 4.

A negative test is when a patient achieves 85% or greater of his or her maximum estimated heart rate without ST changes or chest pain and achieves a physiological increase in blood pressure. Failure to reach this target is not a negative test but

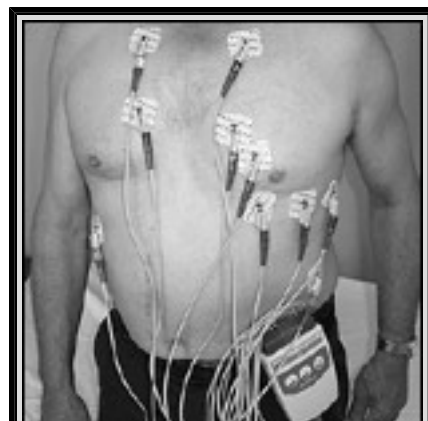


Fig. 4. Apply electrodes for ECG and cardiac monitor (see Step 6 of Appendix 1).

uninterpretable.

Positive test results occur when there is over 1mV horizontal or down-sloping ST-segment depression or over 2mV up-sloping depression. The prognosis is worse if many leads are involved, the ST depression is more marked, recovery is prolonged, there is marked ventricular ectopy in recovery,⁸ the blood pressure drops, or the ischemia occurs at low workload (< 5 METS).

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Correspondence to: Dr. Peter Hutten-Czapski; phc@srpc.ca

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Table 1. Post-MI prognosis by stress test result	
Post-MI stress test result	1 yr mortality
No ST depressions	0.6%
ST depressions	2.3%
Unable to exercise	9.3%

Adapted, with permission, from reference 3.

[\[Return to text\]](#)

Table 2. Pre-test probability of coronary artery disease by age, gender and symptoms				
Age, yr	Gender	Typical/definite angina pectoris	Atypical or probable angina pectoris*	Non-anginal chest pain
30–39	Male	Intermediate	Intermediate	Low
	Female	Intermediate	Low	Low
40–49	Male	High	Intermediate	Intermediate
	Female	Intermediate	Low	Low
50–59	Male	High	Intermediate	Intermediate
	Female	Intermediate	Intermediate	Low
60–69	Male	High	Intermediate	Intermediate
	Female	High	Intermediate	Intermediate

Note: High indicates over 90%; intermediate, 10%–90%; low, under 10% risk of hemodynamically significant coronary artery disease.
 *Two of: substernal location, exercise precipitation, prompt relief by rest or nitroglycerine
 Adapted, with permission, from reference 4.

[\[Return to text\]](#)

Appendix 1. Procedure for stress tests in a rural setting

1. History and physical and review of investigations.
2. Consent: The death rate for stress testing is up to 1:2500.
3. Medications: For diagnostic purposes taper and stop beta-blockers prior to testing. For post-MI patients the diagnosis is not in question and we test on medications without modification.
4. Determine target: Either true maximal testing or submaximal to 85% of estimated maximal heart rate.
5. Equipment check, including resuscitation equipment and supplies.
6. Prepare the skin by alcohol shaving and/or sandpaper and apply electrodes for ECG and cardiac monitor and perform resting ECG for reference (Fig. 4).
7. Review ECG for recent changes that would preclude testing (e.g., arrhythmia, resting ST changes).
8. Apply BP cuff and obtain baseline.
9. Instruct patient in exercise technique including upright posture and only a light touch on handlebars for balance.
10. Proceed with exercise, taking 12-lead ECG every minute and BP every 2 minutes.
11. Terminate the test if
 - onset of progressive angina or angina equivalent
 - decrease of systolic BP of greater than 20 mm Hg with increasing workload
 - serious dysrhythmia (e.g., ventricular tachycardia)
 - signs of poor perfusion (e.g., cyanosis or CNS symptoms)
 - failure of increasing heart rate with exertions
 - over 1mV horizontal or down-sloping ST depression or over 2mV up-sloping depression
 - ST segment elevation
 - patient request
 - target attained
 - technical problems
12. Lay the patient down for recovery and continue to take cardiograms and blood pressures until the BP, heart rate and ECG have returned to physiological levels (usually within 6 minutes)
13. Report your findings including indication, medication, protocol selected, BP, heart rate and exertion level attained (estimated in METS), reason for termination and ST changes if any.

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A primer on rural medical politics: 8. "We have met the enemy . . ."

Keith MacLellan, MD
Shawville, Que.

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The Joint Position Papers on Rural Maternity Care and on Advanced Maternity Skills and Cesarean Section^{1,2} represent an effort to improve the chances that a woman living in rural Canada can deliver her baby close to or in her own community. To do this, family practitioners must be trained, have the proper credentials and be supported on a national basis to function beyond the primary care level — not just in obstetrics, but in a wide variety of other fields. In previous primers³⁻⁹ I have discussed the obstacles to full implementation of such a policy in the governmental and university arenas, as well as the pressures brought by rural issues on the accrediting colleges, the Canadian Medical Association, the licensing bodies and the Medical Council of Canada. The Canadian Medical Forum does not have the structure or mandate to properly address rural issues.⁹ The provincial governments cannot, and (up to now) Health Canada will not, provide effective funding and direction to our national medical system to meet the challenges of rural health care locally.

Previous "Primers" have outlined the national political playing field.³⁻⁹ The Society of Rural Physicians of Canada (SRPC) has taken the view that the only way to assure adequate rural and remote health care in a such a "distance-dominated" geography as Canada's is to resist society's trend of specialization — a trend much celebrated in our medical system. What rural communities need is the true generalist who does comprehensive care and who augments those skills by skills in the specialty fields, which are supported nationally by credentialing, licensing and educational policies. For many jurisdictional reasons the provinces are unable to train this type of physician. Since our medical system relies entirely

on government funding for direction, the federal government must take a strong lead role in the form of a National Rural Health Strategy^{10,11} to help solve problems like this. Such a national strategy would see the federal government, in close cooperation with the provinces, provide direction (and money) to strategic points in our medical system.

It has been gratifying to see the Canadian Senate Kirby Committee¹² and the recent Romanow Commission¹³ support a National Rural Health Strategy. Indeed, both enquiries used much of the language and analyses of the SRPC. Romanow even put a number of \$1.5 billion of federal money to be spent over 2 years to kick-start the process. Happily, there is a report from the Ministerial Advisory Council on Rural Health (www.hc-sc.gc.ca/english/ruralhealth/advisory.html) now before the federal minister that shows how roughly the same sum of money could be spent, even while taking into account federal/provincial jurisdictions. Time will tell whether the federal and provincial governments are willing to take the plunge. If they do, there might be great but beneficial change in our entire Canadian medical system. Although it is difficult to anticipate the Ministerial Advisory Council's recommendations, one can immediately think of some uses for a National Rural Health Strategy:

1. GOVERNMENTS — encourage better federal/provincial cooperation specifically on rural health and health care delivery. Among many possibilities, this might take the form of

- an effective bureaucratic advisory committee to the combined federal/provincial/territorial ministers of health;
- a national means of facilitating and coordinating the various provincial rural health offices;
- aiding rural primary care reform to reflect the special nature of rural health care;
- a national rural workforce and labour mobility plans;
- plans for dedicated rural health research, including clinical, community-centred studies;
- promoting health information technology that supports, rather than replaces, the rural generalist;
- enabling work to define scope of practice benchmarks for non-traditional caregivers;
- measures to completely revamp Aboriginal health care.

2. MEDICAL SYSTEM — to provide a funded, specific focus on rural health care

challenges. Again, among many possibilities:

- funding a national "rural medical forum" where the major national medical players can treat rural health care challenges as distinct and solvable within their narrow mandates;
- provide major dedicated funding to universities for rural-specific training of generalists and specialists, particularly for the difficult transition to community-based education;
- help licensing authorities deal with evaluation of competency and methods of promoting maintenance of competence at a local level;
- allow the accrediting colleges to fund efforts to validate, on a national basis, the training of generalists functioning at the specialty level;
- provide models of care, based on rural population health care needs, that encompass physicians' roles as well as those of non-traditional caregivers.

3. COMMUNITIES — rural health is dependent on community type and location

- to set up and maintain a means for rural communities to determine their own health care priorities;
- to put rural communities in the driver's seat as far as national rural health research is concerned;
- to allow rural communities to be the driving force behind the training of health care generalists
- to facilitate true community input into the inevitable implementation of health information technology.

But is it realistic to expect a federally funded, national program to support broadly based generalists who work beyond the primary care level?

One source of doubt that a national, federal program is needed comes from certain provinces which, in the absence (and distrust) of federal initiative, don't think they have exhausted their rural options. New experiments in a different kind of medical training, such as the Northern Ontario Medical School (www.normed.ca) and the University of Northern British Columbia (www.unbc.ca), have raised hopes of producing the type of physician rural communities need. Certain established universities are also being encouraged into providing special skills or rurally centered community training. One can hope that these regional ventures will eventually have a cascade effect onto the national level. How much easier would this come about, though, in the presence of a strongly committed federal

government?

Another source of doubt comes from the observation that our training system is not producing enough true rural specialists. This is correct, and it should be quite feasible to turn out more of these rare birds if the will and the funding were available. A realistic concern expressed in certain quarters is that focus on producing a certain type of rural family physician might take away from the system's ability to turn out rural community specialists. What is lacking here are models of rural care — something a National Rural Health Strategy might help to create, as mentioned above — without which it becomes difficult to know how many and which specialists are needed. Rural health care is also very much community-centred, with the requirements of each community varying widely. One way to help with needs evaluation is a National Rural Health Strategy that could incorporate a means to evaluate the health needs of individual communities. Another function for a national strategy would be to help each rural community determine its own health care priorities, including what specialized services are needed.

But the greatest source of doubt is reflected within the ranks of the SRPC itself. I have mentioned the natural trend within general society to value specialization. Why should the rural physician be inured to this? Although most rural doctors perform a wider variety of tasks than their urban counterparts, the majority still do not do major surgery, administer anesthesia, handle complicated obstetric cases, do invasive intensive care and so on. Most rural physicians would be made nervous by the suggestion that they somehow should do these things, just for the sake of some vague principle of serving the community better. Indeed, because they are paid more for what they currently do, many rural doctors cut down their practice rather than assume more arduous responsibilities — they feel they have served, and will continue to serve, the community very well as it is (and they are right). Within the SRPC, the consistent efforts to elaborate and advocate national policies have tended to come from physicians who are themselves very broadly skilled, experienced and arguably "overachievers." This is natural for a new organization needing energy to sustain itself, but leaves open the observation that the policies of the organization reflect a minority's attempt at self-projection on the national stage. With rural physicians being the humble souls they really are, perhaps it is better to eschew unrealistic and unattainable new paradigms. Perhaps it is better instead to retreat to what we have always done best — grumble within a crumbling siege, while doing our best. In other words, since the rural health care system will continue to crumble, why not sit back for another decade, then, in Kipling's words, "limp up and explain it all over again"?

"We have met the enemy, and he is us," as Walt Kelly said. But the nature and art of politics — of causing change — involves adoption of some ideal, even if not immediately attainable or overtly espoused by all. We have seen in this series of "Primers" that change will not come from within our existing medical system, nor spontaneously from our governments. In the end, it must come from rural physicians themselves. As usual, we have to do it ourselves — just as we do in most of our practices. And the concept of a National Rural Health Strategy, the concept of supporting nationally the rural generalist with added skills on the secondary level and higher, politically has served well to date, very much strengthening the SRPC itself.

If we are to go beyond just publishing the Joint Position Papers on rural obstetrics^{1,2} and work to full implementation, the SRPC itself will have to go to get the funding for a National Rural Health Strategy and the committed, idealistic members to fight for it. We have already accomplished much politically in such a short period of time — some goals are now close at hand. Our individual members, whether by simply paying dues or by participating in the SRPC committees and exec, will be the ones assuring that rural women can give birth in their own communities.

And never forget, rural doctors: "You are the best in the country" — and that means in the nation.

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Correspondence to: Dr. Keith MacLellan, PO Box 609, Shawville QC J0X 2Y0

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A funny thing happened on the way to the delivery room

Anthony Dixon
2nd-year Medical Student
McMaster University
Hamilton, Ont.

CJRM 2003;8(2):122-3

Winner of the Society of Rural Physicians of Canada's Medical Student Rural Essay Contest is Anthony Dixon, 2nd-year medical student at McMaster University. He wins free registration and expenses to attend the SRPC Annual Rural and Remote Medicine Conference, to a value of \$1000. Prize money for this contest was raised from rural doctors at a charity auction.

A turning point, a defining moment, one incident to shape the course of a life's work — What could this monumental event be? Something profound one would think.

A year ago, I was 6 weeks into my first year of medicine at McMaster University. As is customary during the first year, I was completing a one-day-per-week Family Medicine elective in a small rural community an hour from Hamilton, Ont.

I had asked to attend a birth, and on this day I was called by my supervising physician and told to meet him at the hospital. I arrived at the hospital, found the labour and delivery area and my supervising physician. I was introduced to the mother-to-be and was told to go and put on "greens." I couldn't believe it; I was actually going to wear greens. Only a few of my classmates had got to wear greens. How exciting!

I found the greens and quickly got changed in the washroom. After admiring

myself in the mirror for a few moments (well, a few minutes really), I went to unlock the door. Nothing happened. The lock had jammed. I was stuck in the washroom! I fiddled and tried my best to fix the lock, but to no avail. What was I to do? I had my cell-phone with me, but I was in a dilemma. If I called the hospital switchboard and asked for help, I would be forever known as the medical student who locked himself in the toilet. My career would be over.

Ten minutes went by. Panic started to set in. I was sweating more than the soon-to-be mother. I started to dial the hospital number, already thinking about the years of ridicule ahead of me. One last time, before the call went through, I leaned on the handle and the lock popped open. Released from my captivity, I rushed to the delivery room.

The physician looked up at me, puzzled. It wasn't difficult to know what was going through his head. First, why had it taken me 20 minutes to get changed and second, why was I sweating like I had just run the Boston marathon? I ignored the strange looks and faced the next challenge.

"I'd like you to examine the baby's head," the physician stated. I thought to myself, "How can I do that when the head is still inside?" Then, like a bolt of lightning I realized what he wanted me to do. "Examine the head?" I asked, my voice climbing a few octaves. "Yes," he said "and go put on some gloves."

"What kind of gloves do you like?" asked the nurse. Somehow I knew that "mittens" wasn't the right answer, but what should I say? I stood there immobilized. "Get him a seven," came the voice from the other side of the room. The nurse opened a sealed package and placed them in front of me.

The first pack made it to the floor faster than the beads of sweat dripping from my forehead. Pack number two made it to the garbage as well because I didn't know I couldn't touch anything once I'd put them on. Third time lucky and there I was, in greens and sterile gloves; my mother would be so proud. With guidance, I examined the head of the baby.

To keep out of harm's way, I positioned myself behind the physician and intently followed the progress. "Can you tell me how many stages of labour there are?" came a question out of the blue. Of course I could not. Like an angel of mercy, the nurse mouthed the number to me. "Thirty-three!" I stated in a quiet voice. I immediately learned not to rely on my lip-reading skills! My angel had mouthed,

"there are three," and not "thirty-three." I'm not sure if he heard, but there was no comment.

After standing for a while, my feet began to ache. I crossed one leg over the other, folded my arms and tried to relax. A couple of seconds later I lost my balance. I attempted to uncross my legs, only to discover that the buckle on my dress shoes was caught in the hem of my greens. My legs were firmly locked together as I started to fall, quicker than a domino. To my rescue came my angel of mercy. She grabbed me as I was heading for the floor. My pride was saved. I regained my composure; the nurse said nothing. The physician turned to see what the fuss was all about, and there we both stood, like two innocent children, saying nothing.

Then came the moment. "I would like you to switch places with me and we'll deliver the baby together." At first I thought the words were for the soon-to-be father, but then I realized he meant me. I stood like a statue. "Did he really mean me?" My angel pushed me toward the bed!

Then the most wonderful and glorious thing happened. I delivered a baby. The most beautiful baby girl you have ever seen. The mother was crying, the father was crying and I was crying. What was so amazing was the physician (and to a lesser extent myself) was not only helping this new family, but was part of the family. He knew the grandparents; in fact, he knew everybody. It was a revelation. I realized his role was not only central to them, but to the continued health and well-being of the community.

This was the turning point. It was my turning point. The point at which the direction of my career became evident. Medicine is not just treating a patient. It involves a responsibility to the family and a contribution and devotion to the community in which one lives. I want that challenge, and as a result of a very strange day in October, I know where I can find the challenge.

Competing interests: None declared.

Correspondence to: Mr. Anthony Dixon; adixon3217@rogers.com

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Medical error in rural practice

CJRM 2003;8(2):124

To the Editor:

With regard to the excellent [article by Campbell and Croskerry](#),¹ I have the following comment. The authors mention "increased reliance on clinical judgement" as a possible source of error among rural physicians. Country doctors often have limited access to lab and x-ray data for making diagnoses.

Our urban colleagues may be subject to a similar source of error: reliance on lab data. These physicians may place too much stock in the laboratory just because it is available.

Both groups of physicians would benefit from a knowledge of what the literature says about tests and reliability. Familiarity with the evidence allows the rural doctors to be comfortable with clinical judgement alone, and encourages the urban physician to limit tests to those that add something to clinical impressions.

Experienced rural physicians have highly developed clinical acumen. It would be useful to have simple rapid access to an evidence-based guide designed to evaluate tests and utility, or lack of it, in enhancing clinical diagnoses. This would give rural physicians confidence both in treating patients without the lab, and in knowing when clinical impression is not enough.

Tia Renouf, MD, CCFP(EM)
St. John's, Nfld.

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1. Campbell SG, Croskerry PG. Medical error in rural practice. [Can J Rural Med 2003;8\(1\):33-7.](#)

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Medical error in rural practice

Samuel G. Campbell, MB BCh, CCFP(EM), Dip PEC(SA)

Patrick G. Croskerry, MD, PhD

CJRM 2003;8(1):33-7

See response from [T. Renouf](#)

The issue of error in medicine has attracted worldwide attention in the past few years. Initiatives to define the nature and full extent of the problem have failed, thus far, to address the issues particular to rural medicine. This article provides an overview of what is known about medical error in this setting and suggests strategies by which the rural medical community can approach this important subject.

La question des erreurs en médecine attire l'attention dans le monde entier depuis quelques années. Les initiatives visant à cerner la nature et l'ampleur du problème n'ont pas jusqu'ici abordé les enjeux particuliers à la médecine rurale. Cet article présente un aperçu de ce que l'on sait sur l'erreur médicale dans ce contexte et propose des stratégies qui permettraient aux milieux de la médecine rurale d'aborder cette question importante.

Introduction

In November 1999, the Institute of Medicine of the National Academies published a report¹ *To Err is Human: Building a Safer Health Care System* that suggested that up to 98 000 fatalities a year in the United States may occur as a result of medical error. (This is equivalent to a 747 aircraft crashing every 3 days.) There was significant public reaction, and the report attracted both congressional and presidential attention. A number of publications devoted to the topic followed,

including the entire Mar. 8, 2000, issue of BMJ and Academic Emergency Medicine's November 2000 issue. Canadian interest has been demonstrated with several articles in Canadian publications²⁻⁵ and medical error symposia held in Halifax in August 2001 and October 2002. These symposia focused on clinical error in frontline practice and were two of the first to be driven exclusively by clinicians. Landmark studies in the US^{6,7} and Australia⁸ and a preliminary study in the UK⁹ have all unearthed evidence of a significant incidence of preventable adverse events in health care systems. A similar study will commence shortly in Canada. An important question yet to be addressed is: "Where does rural medicine fit in all of this?"

The landmark studies⁶⁻⁸ were all performed using retrospective audits of hospital charts. Hospitals with less than 3000 admissions per year and psychiatric hospitals were excluded, essentially eliminating non-urban centres from consideration. In estimating the incidence of error in the US, the Institute of Medicine totally excluded error in outpatients from their analyses, acknowledging that "very little is known about the extent of adverse events in ambulatory care."¹ Error in family practice and in emergency medicine, the 2 disciplines where the majority of doctor-patient encounters occur, was also excluded from consideration in the major studies.

Indicators of the quality of preventive or primary medical care popular in the US, such as regional admission rates for chronic diseases, may not be transferable to the rural arena, where reasons for admission frequently differ strongly from those in urban areas.¹⁰

Nature of rural medicine puts it at higher risk for error

Canadian rural physicians manage the vast majority of their patients without specialist support. Studies of rural emergency departments showed that over 97% of patients are managed without transfer to referral centres.¹¹⁻¹³ There are few comparative studies¹⁴ and although, for example, rural death rates for trauma are double those experienced in an urban environment, it is believed that rural physicians provide a standard of service comparable to that delivered in the cities.¹⁴⁻¹⁶ The paradigm of practice, however, differs significantly. Rural practitioners work in potentially error-prone environments, and clearly these settings have features qualitatively and quantitatively different from those of their urban counterparts ([Table 1](#)).

Continuing medical education opportunities are frequently limited by time and

distance. Specialist, and particularly subspecialist, backup is often sparse. The scope of a rural practitioner's duties is generally broader when compared with urban practice and is associated with a correspondingly higher risk. The relative isolation in which many rural physicians practise often means less opportunity to benchmark their practice against that of their peers, and the constructiveness of feedback from peers or consultants may be diminished by the closer personal and working relationships that develop between colleagues who work interdependently. Urban consultants, to whom rural patients may be referred, are often unfamiliar with the realities of rural living and medical practice, and their advice may not be appropriate in the rural setting. Decreased accessibility for rural doctors to technological and diagnostic support may create inertia against pursuing accepted practices in patient workups and may lead to more emphasis on clinical judgement than might occur in an urban setting. Reason¹⁷ has termed this "flesh and blood" decision-making, reflecting a greater reliance on clinical acumen in the face of less accessible technological support. An Australian study found that the association between lack of access to resources and incidents of error involving fatalities was particular to rural settings.¹⁸

Personal characteristics and expectations of rural patients often appear to differ from urban ones.¹⁴ Personal and anecdotal experience suggests that rural patients are frequently more stoical and their expectations are less rigid, which may mean that poor outcomes are accepted with more tolerance. Patients who live in economically disadvantaged and remote communities sometimes suffer from a lowered sense of self-worth; this can also affect their expectations. These factors may erode patient perception of what constitutes an adequate outcome.

Rural practitioners often have a higher status in the community than do physicians who practise in cities, and their isolation from the greater medical community tends to place them more under the scrutiny of their patients than their peers. This may lead to an increased use of defence mechanisms (denial, projection, blaming) in an effort to minimize personal stress, and to maintain the confidence necessary to practise in a relatively unsupported environment. While their increased familiarity with their patients carries advantages it may, nevertheless, compromise clinical decision-making in subtle ways.

The nature and extent of error in rural practice

Very little work has been done in the field of error in rural practice. Ely and colleagues¹⁹ conducted a survey of 70 physicians who practised in "rural areas and small cities" in the US to ascertain their perception of their most memorable error.

Interestingly, 10% declined to participate because they could not remember any error they had made, perhaps demonstrating the extent of denial amongst rural physicians. The 53 physicians who did complete the survey were asked to identify the contribution(s) to their error from a list of causes, divided into 4 categories. Physician stressors were identified as contributing factors by 91% of physicians, most commonly, haste, distraction and time of visit. Process of care factors, such as being too focused on one diagnosis, or not managing the case aggressively enough, were identified by 91% of physicians. Patient-related factors, such as normal blood tests or patient influence, were identified by 72%, and physician characteristics, such as ignorance of the medical aspects of the case or the physician reaching beyond his or her capabilities, by 62%. These findings yield only a preliminary picture of the demographics of error in rural practice. Nevertheless, awareness of, and insight into, when these processes are operating may help physicians modify their practice in order to minimize the risk of error.

There are limited data on how rural physicians are responding to an atmosphere in which the discovery of error is feared. Summerton surveyed 300 general practitioners in the UK, of which half practised in non-urban areas.²⁰ Although he did not compare changes in practice between rural and urban physicians, he did find that 98% of respondents claimed to have changed their practice as a result of the possibility of a patient complaining or of being sued. Over 50% "sometimes" and 30% "often" worried about being sued. Although changes were often felt to be positive in that they potentially improved the standard of care offered, negative changes, which entailed unnecessary interventions to patients and increased costs to the system, occurred more frequently.

In spite of the neglect of rural medicine in the literature, several assumptions can be made with reasonable comfort. It is likely that a significant source of error in rural medicine is missed or delayed diagnoses. The benchmark studies identified 3 areas in particular where such errors arise: family practice, emergency medicine and internal medicine.^{6,8} All 3 operate with different paradigms but all share the common feature of an increased uncertainty about diagnosis and, therefore, an increased reliance on clinical judgement that might not exist in other settings (e.g., orthopedics, general surgery, obstetrics/gynecology, oncology). In these specialties, the clinical diagnosis is usually better defined and the errors more closely associated with procedural problems than with diagnostic ones. Such data as there are in family practice clearly indicate that the majority of errors resulting in litigation arise from within the diagnostic process,²¹ and it is well accepted that these diagnostic errors largely derive from predictable cognitive errors.²²⁻²⁴ Given the intrinsic features of rural medicine described above, such cognitive errors

would be expected to be even more prevalent in the rural setting. The important point is that while cognitive errors are often associated with the most devastating outcomes, they are at the same time highly preventable. This is an area where significant gains can be made. Greater insights must be developed into the sources of cognitive error and efforts made to find the optimal strategies to prevent them.²³ The process should rightly start with medical undergraduate education²⁵ and with special training offered for those planning a career in rural medicine.

Another assumption that can be drawn from the literature is that rural physicians frequently suffer significantly as a result of recognizing their errors.^{17,26,27} Physicians are poorly trained in dealing with error, both at a personal level and in how they communicate the error to patients. One author²⁸ has stated that physicians are actually taught not to deal with our errors! In many cases, the defence mechanisms mentioned above are subconsciously perceived as the most efficient way of coping with the realization that someone is suffering as a result of our error. The only "positive" aspect of error — that it may serve to teach us how to avoid its repetition — is lost forever, and nagging doubts about our competency may linger for years.

Although there is a paucity of information on both the extent and cost of medical error to patients in rural practice, the starting points must be that all human behaviour is fallible and that error is inevitable. Identifying risks of error in rural practice is, therefore, an important goal and will lead to its minimization or avoidance. The medical error movement is gathering momentum, and it is likely that we will be exposed to an increasing number of strategies that have been designed to avoid error but have been developed in a non-rural environment. These may not always be appropriate, therefore, for rural practice. Rural physicians need to be active in examining the issue of error in their own practices.

What can be done?

Rural physicians need a forum at which accumulated knowledge on error in rural practice can be communicated and discussed with peers. A Web-based reporting system should be initiated, similar to that proposed for emergency medicine.² It might review cases or scenarios in which confidentiality is maintained and the physician is protected against discovery. These might reveal patterns of error that rural physicians could use to design standards and strategies for risk control that are most appropriate to rural practice and against which rural physicians might be fairly judged. Errors occurring in Canadian rural practice identified by the reporting system should be published regularly in this format. The forum should be open,

non-judgemental and forward-thinking. A reference statement similar to that proposed by the Royal Australian College of General Practitioners should outline the philosophy of dealing with error committed by rural physicians.²⁹

In order to close the decision-support gaps that currently exist between urban and rural practice, a number of initiatives will be required, such as the following:

- recognition that decreased accessibility to technological and diagnostic support may lead to more emphasis on clinical judgement than current medical standards of care dictate;
- improved communication from urban centres to the periphery¹⁶ to ensure a more efficient dissemination of evidence-based, decision support systems (clinical pathways, algorithms, other cognitive aids);
- standardized formats to guide ongoing care in patients referred home from urban treatment centres;³⁰ and
- greater use of telemedicine and more widespread availability of point-of-care testing.

Rural hospitals can effectively tailor risk management strategies developed for larger urban institutions. Introducing several different methods to identify adverse events that occur in their institutions will decrease recurrence rates by altering and improving the system that contributed to their cause.^{31,32}

Rural physicians would be well served by a means of support to assist them in dealing with their emotional responses to their error, as well as by ongoing education to find efficient ways to communicate their experiences to peers and patients. A physician workshop similar to that described by Couper²⁸ should be offered for the purposes of healing damaged emotions, learning from the mistakes of others, and providing think tanks of frontline rural physicians to further explore strategies that can be communicated to each other. Consideration should also be given to the introduction of these concepts into medical school curricula. Examples of suggestions derived from physician discussion at error workshops include those listed in [Table 2.28](#)

Error is inherent in virtually all man-made systems, and we should avoid the knee-jerk reflex to apportion blame when error occurs. Undoubtedly, we do need to be held accountable for our actions, but it is now well recognized that blaming a person perceived to be responsible for an adverse event does little to prevent the error happening again to other clinicians. No one can learn from unreported errors driven underground by fear of embarrassment or litigation. Reliable systems need

to be developed for monitoring and reporting medical error, and its etiology examined by systematic root cause analysis to determine its origin.

Like the public trust in the National Health Service in the UK,³³ the Canadian health care system, despite its flaws, is still regarded by Canadians as something that belongs to them. Perhaps this feeling is strongest in rural communities, where health care professionals are regarded with more affection and respect. Honest discussion with the public regarding physician limitations, as well as the limitations of the system in which they are obliged to operate, will go a long way in avoiding the litigious and defensive medical atmosphere that has developed in the US. The new science of error prevention in health care,³⁴ in which expertise is developed in the root causes of error, as well as the routine development of strategies to avoid it, will improve the quality of health care that can be delivered in rural medicine.

Conclusion

The issue of medical error in rural practice has been neglected, both in the literature and by the profession. The time has come for quantification and description of the scope of the problem.

The occurrence of error is as inevitable in medicine as it is in practically all forms of human behaviour. Managing and controlling the risk of error requires that we avoid the initial reflex to apportion blame when error occurs. Although physicians do need to be held accountable for their actions, identified errors should be recognized as valuable tools in adjusting systems to avoid the recurrence of the error by the physician or by others. Reliable systems need to be developed for the reporting, monitoring and discussion of medical error in the rural setting. Support systems should also be developed for rural physicians through which they might gain more insights into the impact of error on their own functioning and well-being.

Competing interests: None declared.

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Correspondence to: Dr. Samuel G. Campbell; samuel.campbell@cdha.nshealth.ca

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Table 1. Characteristic features of rural practice that may contribute to an increased risk of error

1. Broader scope of practice
2. Increased reliance on clinical judgement
3. Relative isolation
4. CME opportunity limitations
5. Decreased specialist availability
6. Variations in local admission criteria
7. Increased familiarity with patients
8. Inadequate feedback
9. Differing patient characteristics / expectations
10. Differing physician coping mechanisms

[\[Return to text\]](#)

Table 2. Workshop suggestions for the positive management of error

1. Take mistakes seriously — do not bury them
2. Use an evidence-based medicine approach to learn from them
3. Talk to trusted peers about mistakes
4. Talk to nonmedical friends about mistakes
5. Establish a forum where mistakes can be discussed, both emotionally and intellectually
6. Pay attention to self-care
7. Professional organization should develop “helplines” for doctors
8. Discuss mistakes with patients in a way that does not burden them but, nevertheless, still allows for apology and restitution

Table reproduced with permission from Couper.²⁸

[\[Return to text\]](#)

Epidural analgesia for labour and delivery

CJRM 2003;8(2):124

See response from: [D. Johnson](#)

To the Editor:

The article "[Use of epidural analgesia for labour and delivery in Alberta](#)"¹ found "stark" differences between urban, regional and rural obstetrical programs. In the absence of outcome and patient satisfaction data, the authors were unable to conclude which side of starkness is the good side.

They did, however, speculate that the reason 20% of rural Alberta women bypassed their local hospital to deliver in another centre was to obtain services that are not offered in their local facility. An equally appropriate speculation is that there is a perception of better quality in larger centres. Though unfounded, it is fostered by articles such as these.

These stark facts and speculation were not wasted on the media. The Calgary Herald was quick to pick this up and run a front page article² on how rural women were suffering needlessly. Letters to the editor, however ran 3 against and 1 in favour of more epidurals.³⁻⁶

The research was funded by Alberta Health. Alberta Health is in the early stages of reducing the numbers of regions. The inevitable consequence of that is more centralization of services. This can be made more palatable to rural people if evidence of improved quality can be offered. I think that the authors had a competing interest and that this should have been declared.

David O'Neil, MD, CCFP, FCFP

Trochu, Alta.

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Epidural analgesia for labour and delivery

CJRM 2003;8(2):124-5

In response to: [D. O'Neil](#)

In [our article](#) we described the variation in rates of epidural anesthesia for vaginal deliveries during the period Apr. 1, 1997, through to Mar. 31, 2000. The rate varied from 2.6% in the smallest facilities up to 45% in the larger urban facilities. The main premise for this study was to test the association between medical training (anesthesiologist or not) and use of epidural analgesia. Training was a factor associated with epidural analgesia rate as was the number of deliveries performed at the hospital even after controlling for the specialty of the physician.⁰

Thirty-nine percent of all rural Alberta women (defined as residing more than a 60-minute drive from an urban centre) bypassed their local rural hospital in order to deliver at a more distant hospital during the study time period. Sixty-eight percent of these bypass deliveries were to an urban centre. If the local rural hospital provided epidural analgesia for at least one vaginal delivery during the study period, the bypass rate was 31.8%. If epidural analgesia was not provided at the local rural hospital, the bypass rate was 49.8%.

Studies such as ours, using administrative data, test only for association — causality can not be determined. However, in their defence, in the absence of such studies no information would be readily available to stimulate such important questions as "Why are epidural analgesia rates so different? Is rural woman's access to health services equivalent to that of their urban neighbours? Do women bypass their local rural hospital in order to obtain services not locally available?". It is not acceptable to simply assume that access, efficiency and quality for delivered health services are automatically present, especially when large practice variation exists.

I conceptualized the precise question in this study, which was one component of a

larger study requested by a number of rural health regions in Alberta. As credited in the Acknowledgements ([page 270](#)) for our article,¹ the study was made possible through the Alberta Centre for Health Services Utilization Research, which had the mandate to promote understanding of health service utilization in Alberta and was funded by a grant from Alberta Health and Wellness, similar to other research agencies in Alberta. The Centre funded other studies that have also been promoted in the press. The analysis performed and opinions expressed in this study were not approved by the Minister of Health or his ministry, as was also noted in our article's Acknowledgement section. I felt that no competing interest existed, so none was declared.

David Johnson, MD
Edmonton, Alta.

Reference

1. Truman C, Jin Y, Johnson D. Use of epidural analgesia for labour and delivery in Alberta. [Can J Rural Med 2002;7\(4\):265-74.](#)

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Use of epidural analgesia for labour and delivery in Alberta

Corrine Truman, PhD

Yan Jin, MA

David Johnson, MD, SM MBA

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See responses from: [D. O'Neil](#); [D. Johnson](#)

Purpose: To describe the use of epidural analgesia during vaginal deliveries in urban and rural hospitals in Alberta between Apr. 1, 1997, and Mar. 31, 2000. The influence of hospital organizational factors (i.e., the training of the physician who administers the analgesia and the number of deliveries per year per hospital) on the use of epidural analgesia is also explored.

Methods: Using physician claims, hospital abstracts, vital statistics, birth registrations and the Alberta Health Care Insurance Plan registry, the pattern of epidural analgesia use in Alberta is explored.

Results: Use of epidural analgesia during labour for vaginal deliveries was 30% during the study period. In small, rural hospitals (up to 99 deliveries per year) the use was 3% to 4%. Use increased to 45% in specialized tertiary care hospitals in Edmonton and Calgary. The chance of receiving epidural analgesia during labour for vaginal delivery was 25 times greater in the largest versus smallest facilities, after controlling for previous live births, birthweight, prematurity, breech or cephalic presentation, and reproductive system comorbidity. Most epidural procedures for vaginal delivery provided by general practitioners (GPs) were in larger, rural hospitals (100 to 405 deliveries per year). Anesthetists provided most epidural procedures for vaginal deliveries in regional and Edmonton or Calgary area hospitals. The use of epidural analgesia in the larger, rural hospitals (9% of vaginal deliveries) and regional centres (10%) was similar despite any difference in

the training of the physician who administered the analgesia (i.e., anesthetist or GP).

Conclusion: There exists a stark rural/urban geographical division in the use of epidural analgesia in Alberta. The use of epidural analgesia in the larger, rural hospitals and regional centres was similar despite any difference in the training of the physician who administered the analgesia. We conclude that the training of the physician who administers the analgesia and the number of yearly deliveries per hospital are influential in determining the use of epidural analgesia during labour for vaginal delivery.

Objet : Décrire l'utilisation de l'analgésie péridurale pendant des accouchements par voie vaginale dans des hôpitaux urbains et ruraux de l'Alberta entre le 1er avril 1997 et le 31 mars 2000. On explore aussi l'effet des facteurs organisationnels de l'hôpital (c.-à-d. la formation du médecin qui administre l'analgésie et le nombre d'accouchements effectués par année dans l'hôpital) sur le recours à l'analgésie péridurale.

Méthodes : On étudie les tendances du recours à l'analgésie péridurale en Alberta en se fondant sur les demandes de paiement des médecins, des résumés d'hôpitaux, les statistiques démographiques, les naissances inscrites et le registre du régime d'assurance soins de santé de l'Alberta.

Résultats : Le recours à l'analgésie péridurale pendant le travail préparatoire à un accouchement par voie vaginale s'est établi à 30 % pendant la période d'étude. Dans les petits hôpitaux ruraux (jusqu'à 99 accouchements par année), l'utilisation a atteint 3 à 4 %. Elle a grimpé à 45 % dans les hôpitaux de soins tertiaires spécialisés d'Edmonton et de Calgary. Une patiente avait 25 fois plus de chances de recevoir une analgésie péridurale pendant le travail préparatoire à un accouchement par voie vaginale dans les gros établissements que dans les petits, compte tenu du contrôle des naissances vivantes antérieures, du poids à la naissance, de la prématurité, de la présentation par le siège ou le crâne et d'une comorbidité de l'appareil reproducteur. La plupart des injections péridurales administrées par des omnipraticiens (OP) en vue d'un accouchement par voie vaginale ont été administrées dans les grands hôpitaux ruraux (100 à 405 accouchements par année). Des anesthésistes ont administré la plupart des injections péridurales en vue d'un accouchement par voie vaginale dans les hôpitaux régionaux et ceux de la région d'Edmonton et de Calgary. Le recours à l'analgésie péridurale dans les grands hôpitaux ruraux (9 % des accouchements par voie vaginale) et les centres

régionaux (10 %) était semblable en dépit de toute différence au niveau de la formation du médecin qui a administré l'analgésie (c.-à-d. anesthésiste ou OP).

Conclusion : Il existe un clivage géographique frappant entre les milieux ruraux et urbains en ce qui concerne le recours à l'analgésie péridurale en Alberta. Le recours à cette technique dans les grands hôpitaux ruraux et les centres régionaux se ressemblait en dépit de toute différence au niveau de la formation du médecin qui a administré l'analgésie. Nous concluons que la formation du médecin qui administre l'analgésie et le nombre d'accouchements annuels pratiqués dans l'hôpital ont un effet sur l'administration d'une analgésie péridurale pendant le travail préparatoire à un accouchement par voie vaginale.

Introduction

Pain relief for labour may be provided effectively using a variety of techniques.¹⁻³ The published medical literature supports using a local anesthetic delivered by epidural in order to provide greater quality of pain relief compared to parenteral narcotics.¹ If appropriate physician and nursing staff are available, epidural analgesia should be one of the analgesic options offered by every hospital providing delivery services.¹

The selected pain relief technique depends in part on patient-centred factors including patient/physician preferences, the medical status of the patient, and the progress of labour. Hospital organizational factors may also play a significant role in obstetrical pain relief. Over the last decade, obstetrical services have become more concentrated, with fewer small, rural hospitals providing care.⁴ Some studies note that the use of epidural analgesia increased with the number of births occurring at the specific hospital site.^{5,6} The influence of physician training (anesthesia specialist versus general practice) upon the use of epidural analgesia is not well described.

In this study the use of epidural analgesia for obstetrical labour in Alberta during the years 1997 to 2000 is described using administrative databases. The influence of the specialty of the physician who is providing the service and the number of yearly deliveries per hospital upon the use of epidural analgesia is explored.

Methods

Four administrative health service databases were used, and the analysis was done

within the protected environment of Alberta Health and Wellness governed by provincial legislative guidelines on the confidentiality of health information:

- Canadian Institute for Health Information (CIHI) inpatient Discharge Abstract Database (DAD) for the province of Alberta for 1997/98 to 1999/00;
- Alberta Claims Assessment System Database for 1997/98 to 1999/00;
- Alberta Vital Statistics (VS) Birth Registry Database for 1997-1999; and
- Alberta Health Care Insurance Plan (AHCIP) Registry Database for 1997 to 2000.

Maternal deliveries were identified using the CIHI DAD. Ninety-nine point seven percent of births that occur in Alberta every year take place in acute care facilities. The obstetrics main patient service field for all hospital discharges from 1997/98, 1998/99 and 1999/00 were extracted and encompassed the last available 3 fiscal years. The decision to combine 3 years of data was made because the volume of deliveries in some facilities was small. No stillbirths were included. The use of forceps or vacuum for delivery (International Classification of Diseases [ICD-9-CM] 720, 721, 722x, 723x, 724, 725x, 726, 7271, 7279, 733) was extracted from any of the 10 CIHI DAD procedural codes fields. Medical or surgical induction (ICD-9-CM 734, 7301, 7309) was extracted from any of the 10 CIHI DAD procedural codes fields.

In order to obtain neonatal data (sex, birthweight, date and time of birth), the newborn main patient service field was extracted from CIHI DAD for 1997/98, 1998/99 and 1999/00. Using the AHCIP registry, we matched each neonate to each delivering mother. Average length of stay after delivery for the mothers was calculated using the neonatal admission time and date and the maternal discharge time and date.

Birth records for each delivery were obtained. Vital statistic birth records contain questions to be completed by the mother and family physician or pediatrician within 24 hours of delivery. Because the VS Birth Registry Database does not record a patient's unique AHCIP registry number, a linkage to maternal records for each of the 3 years was done by matching to neonatal birth date (365 unique values), birth weight (3007 unique values), delivery site (87 facilities), neonatal sex, and maternal age (39 unique values). Records from vital statistics are collated by calendar year, whereas all other administrative data are collated by fiscal year (April 1 to March 31). Vital statistics data from Jan. 1 to Mar. 31, 2000, were unavailable. Variables unique to vital statistics incorporated into this study were

number of total maternal live births, breech or cephalic presentation, neonatal Apgar at 1, 5 and 10 min, and gestational weeks.

Physician claims were extracted from physician claims for identified maternal deliveries file using the Canadian Classification of Procedures (CCP) code.⁷ The anonymous maternal identifier for delivery hospital separations was used to identify specific billing records for these same mothers from physician claims. To account for time between the service date and a claim for reimbursement, all physician claims for at least 6 months after the delivery date were queried. These billing records included a range of anesthesia services, including epidural (CCP code 16.91C) for obstetrical procedures, the role of the provider (anesthesia), and the specialty of the provider (anesthesiology, general practice). The absence of an anesthetic claim for a vaginal delivery was verified using the in-hospital CIHI record in which the anesthetic type (none, epidural/spinal, general) was linked to the ICD-9-CM procedural code for vaginal delivery.

Defining facility size and service region

Facilities providing maternal delivery services were categorized by the average number of deliveries each had, per year, over the 3-year study period: size 1 (1-49 deliveries); size 2 (50-99 deliveries); size 3 (100-405 deliveries); size 4 (631-1691 deliveries); size 5 (any hospital located in the metropolitan health regions of Edmonton or Calgary); size 6 (hospital with a Level 3 [highest intensity of care] neonatal intensive care unit) (there was one size 6 hospital in each of Edmonton and Calgary health regions).

Statistics

Statistical modelling was done by forward stepwise logistic regression. The order of factor entry into the model was used to rank the magnitude of factor influence. The number of cases included in the models varied because data for each factor influencing outcomes were not available for all deliveries. Significance was defined as $p < 0.05$.

The model included the following factors influencing outcomes.

- Dependent variable: use of epidural (yes, no) for vaginal delivery
- Facility size, as defined above
- Preterm (less than 37 weeks)

- Low birthweight (less than 2500 grams)
- Breech or cephalic delivery
- Previous live births
- Any maternal comorbidity (any maternal reproductive system coexisting diagnosis associated with pregnancy, including multiple pregnancy, malposition or malpresentation, abnormalities of cervix or uterus, and cephalopelvic disproportion abstracted in any of the 15 CIHI DAD diagnosis codes [ICD-9-CM 651 to 654] or CIHI designation as previous cesarean sections 602, 603, 608, 610).

Results

There were 90 991 vaginal deliveries in Alberta between Apr. 1, 1997, and Mar. 31, 2000. Data from vital statistics were unavailable for the period Jan. 1, 2000, to Mar. 31, 2000; therefore, 7197 deliveries were not available for matching. Of the remaining 83 794 deliveries 67 181 (80%) were matched to the VS Birth Registry Database and were available for modelling using variables obtained from this source.

[Table 1](#) illustrates the relationship between facility size (i.e., number of deliveries performed at the hospital site) and the use of epidural analgesia during labour for vaginal delivery. As shown in [Table 2](#) these epidurals were performed by a large number of anesthetists and general practitioners (GPs). All physicians who submitted a claim for at least 1 epidural anesthetic during a vaginal delivery at any time during the 3-year period were included (Table 2) The median number of claims for epidurals is 10-fold greater for anesthetists compared to GPs. The median number of epidural procedures for vaginal delivery claimed by GPs is less than 4 per annum, and the corresponding number for anesthetists is 33.

Table 2 also illustrates the relationship between facility size and the type of physician submitting a claim for an epidural analgesia during vaginal delivery. Most epidural procedures for vaginal delivery are provided by GPs in facility sizes 1 to 3 (i.e., hospitals that performed up to 405 deliveries during the 3-year period). Anesthetists provide most epidural procedures for vaginal deliveries in regional and Edmonton or Calgary area hospitals (facility sizes 4 to 6). The epidural rate for vaginal deliveries is similar in facility sizes 3 and 4 (9% and 10% respectively) despite the fact that the majority of procedures are performed by GPs (93%) in facility size 3 and by anesthetists in facility size 4 (72%). The median number of epidural procedures claimed by individual GPs by facility size type is greater than that for individual anesthetists in facility sizes 1 to 4. Only in facility sizes 5 and 6

do individual anesthetists perform a higher number of epidurals for vaginal delivery.

[Table 3](#) illustrates the effect of facility size upon the use of epidural analgesia for vaginal delivery after controlling for other factors influencing outcomes. The odds of receiving an epidural during labour for vaginal delivery increases from 3 times to 25 times as the size of the facility increases. The order of entry into the model and the listing of variables indicate the relative strength of the factors influencing outcomes. Again, facility size has the greatest influence when compared to other maternal factors such as first live birth or reproductive system comorbidity. Category totals in Tables 1 to 3 vary due to a variation in database source and completeness.

Discussion

We found that the overall provincial use of epidural analgesia during labour for vaginal delivery was 30% in this retrospective study for the time period Apr. 1, 1997, to Mar. 31, 2000. The epidural rate for Alberta was similar to that from other industrialized countries.^{5,8} However, within Alberta, there was a stark geographical division in the use of epidurals. The high rate of epidural use was predominately found in hospitals located in the 2 metropolitan health regions (Edmonton and Calgary), with decreasing frequencies in both designated regional hospitals and the lowest use in small, rural hospitals. The importance of hospital geographic location was greater than the patient factors influencing outcomes that were available from administrative databases. As well, the use of epidural analgesia in the larger rural hospitals and regional centres was similar despite the difference in the type of physician that predominantly performs the service (anesthetist or GP). We conclude that the organizational factors of physician specialty providing the service and the number of yearly deliveries per hospital are influential in determining the use of epidural analgesia for vaginal delivery.

The availability of choice concerning labour analgesia and an increased demand for epidural analgesia in urban centres has resulted in an inequitable distribution in the province. Since the introduction of epidural analgesia 30 years ago there is now a greater demand for this procedure. This could be due to improvements with the procedure and could also be due to the fact that physicians and health organizations are being lobbied by a population that now has higher expectations for pain relief and an increased familiarity with the procedure.⁹ In studies published in the early 90s, the rate of epidural analgesia was shown to be lower in rural hospitals.^{5,10} For example, the rate of epidurals during labour for vaginal deliveries in a rural

Saskatchewan hospital with 1224 deliveries between 1984 to 1988 was 4.6%.¹⁰ We attempted to simultaneously assess the effect of patient factors that may alter the use of epidurals along with the facility size. We found that previous births, reproductive system comorbidity, prematurity and low birthweight were less influential than small facility size in influencing the use of epidurals.

A high epidural rate may be considered beneficial because it affords superior obstetrical pain relief.¹¹ Opposing the desirability of a greater epidural rate is the generally unwanted connotation that childbirth is being medicalized. As well, epidurals may have risks.¹²⁻¹⁸ If increasing the use of epidural analgesia is the desired goal, then a number of factors must be considered. Continuous infusion of low-dose epidural analgesia negates the need for physicians to stay and watch. Physician reimbursement for epidural procedures has been demonstrated to be one factor in determining use.¹¹ In the US,¹⁹ insurance companies have tried to deny epidural analgesia on the basis of increased costs. The number of rural Ontario hospitals providing epidural analgesia decreased between 1988 and 1995;⁴ this is similar to the US trend of fewer small, rural hospitals performing deliveries.²⁰ In the absence of an enabling organization, the resources required to facilitate epidural analgesia are unlikely to be provided. As a result, patients may choose to give birth in a hospital other than the one closest to their home. Metropolitan hospitals are within a few hours travelling time for the majority of Albertans. Twenty percent of mothers who are carrying only one child (which is known to weigh at least 2500 g) and who plan to have a vaginal delivery, bypass the nearest facility that performs deliveries.²¹ The reasons are unknown, but we can speculate that patients may desire services not locally available.

In smaller hospitals, the number of epidurals per facility performed by GPs was greater than for anesthetists. In the largest rural hospitals, GPs provided epidural analgesia as frequently as anesthetists working in regional hospitals. We provide no new data on the advantages or disadvantages of epidurals performed by specialists versus nonspecialists. Nor do we make any inferences from our data concerning outcomes by high- or low-volume epidural providers. However, any organization attempting to increase its use of epidurals does not need to be constrained in only considering anesthetists nor assume that a high rate for the procedure is ensured by the mere presence of anesthesia specialists.

Our analysis divided hospitals into categories according to the number of deliveries per year for each. However, within hospitals with similar delivery volumes, variation in the use of epidurals still existed. Most striking is that one of the highest uses of epidurals is in a medium-sized rural hospital²² staffed by 2 GP/anesthetists.

This high rate was compared to other similar-sized hospitals and to the largest metropolitan hospitals with a dedicated epidural service. A survey of Alberta hospitals that provided delivery services in 1994 reported that maternity units with high epidural rates had developed a consensus among all clinicians that epidural analgesia was an important and helpful method of pain relief.²² In maternity units with lower epidural rates this consensus did not exist. These lower-rate maternity units also reported that their patients would not take advantage of the epidural service. However, both patients and physicians stated that pain issues were only discussed in relation to direct patient questions.²²

Limitations

Population-based administrative database research is highly generalizable although limited in clinical detail. We were able to verify both deliveries and performance of epidurals by comparing 2 independent databases. However, category totals (by provider type or facility size) vary due to this variation in data source and completeness (Tables 1 to 3). We are reliant on those completing other data fields for non-verifiable data. Anesthetist or GP identification relate to the College of Physicians and Surgeons of Alberta (CPSA) classification. GPs may have specialist training not recognized by the CPSA. The link to the VS Birth Registry Database captured 80% of cases. We did not detect a systematic bias between matched and non-matched cases; however, this possibility exists.

Conclusion

In Alberta between Apr. 1, 1997, and Mar. 31, 2000, the use of epidural analgesia was highest in the 2 metropolitan health regions (Edmonton and Calgary), with decreasing frequencies in regional hospitals and the lowest use being in small, rural hospitals. The use of epidural analgesia in the larger rural hospitals and regional centres was similar despite the difference in the specialist physician that predominantly performs the service.

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Corrine Truman, PhD, Yan Jin, MA Alberta Centre for Health Services Utilization Research, Alberta Ministry of Health and Wellness, Edmonton, Alta. David Johnson, MD, SM MBA Department of Critical Care Medicine, University of Alberta, Edmonton, Alta.

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Correspondence to: Dr. David Johnson, Department of Critical Care Medicine, Faculty of Medicine, University of Alberta, Edmonton AB T6G 2B7

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Table 1. Number of deliveries in which the patient received epidural analgesia, by facility size

Facility size* (no. of sites)	Total no. of deliveries	No. of epidural procedures (% of total no. of deliveries)
1 (12)	1 761	45 (2.6)
2 (12)	2 319	92 (4.0)
3 (30)	14 007	1 285 (9.0)
4 (5)	14 308	1 474 (10.0)
5 (5)	37 667	14 875 (39.0)
6 (2)	20 929	9 363 (45.0)
Total	90 991	27 134 (30.0)

* Size defined as follows: size 1 (1–49 deliveries); size 2 (50–99); size 3 (100–405); size 4 (631–1691); size 5 (any hospital in the metropolitan health regions of Edmonton or Calgary); size 6 (hospital with a highest intensity of neonatal intensive care unit).

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Table 2. Type and number of physicians providing epidural analgesia during the study period

Facility size*	No. of epidural procedures, by physician training	
	Anesthetist (<i>n</i> = 188)	General practitioner (<i>n</i> = 95)
1	8	44
2	12	81
3	92	1 208
4	1 056	411
5	13 285	1 604
6	9 268	15
Total	23 719	3 363

* See Table 1 for definitions of size.

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Table 3. Modeling the use of epidural analgesia during labour for vaginal delivery by facility size, controlling for other factors influencing outcomes

Factors influencing outcomes (Model $n = 67\ 539$)	No. for each factor influencing outcomes	Odds ratio (and 95% CI)
Facility size 3	11 086	3.01 (2.22–4.08)
Facility size 4	11 779	3.19 (2.36–4.31)
First live birth	26 613	3.01 (2.90–3.12)
Maternal reproductive system comorbidity	6 261	2.33 (2.19–2.48)
Facility size 6	17 248	25.64 (19.05–34.51)
Facility size 5	24 232	21.25 (15.79–28.58)
Gestation < 37 wk	3 718	0.79 (0.72–0.86)
Birthweight < 2500 g	2 694	0.77 (0.70–0.86)
Breech delivery	631	0.79 (0.65–0.95)

Note: rank order listing of factors influencing outcomes indicates relative strength.

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