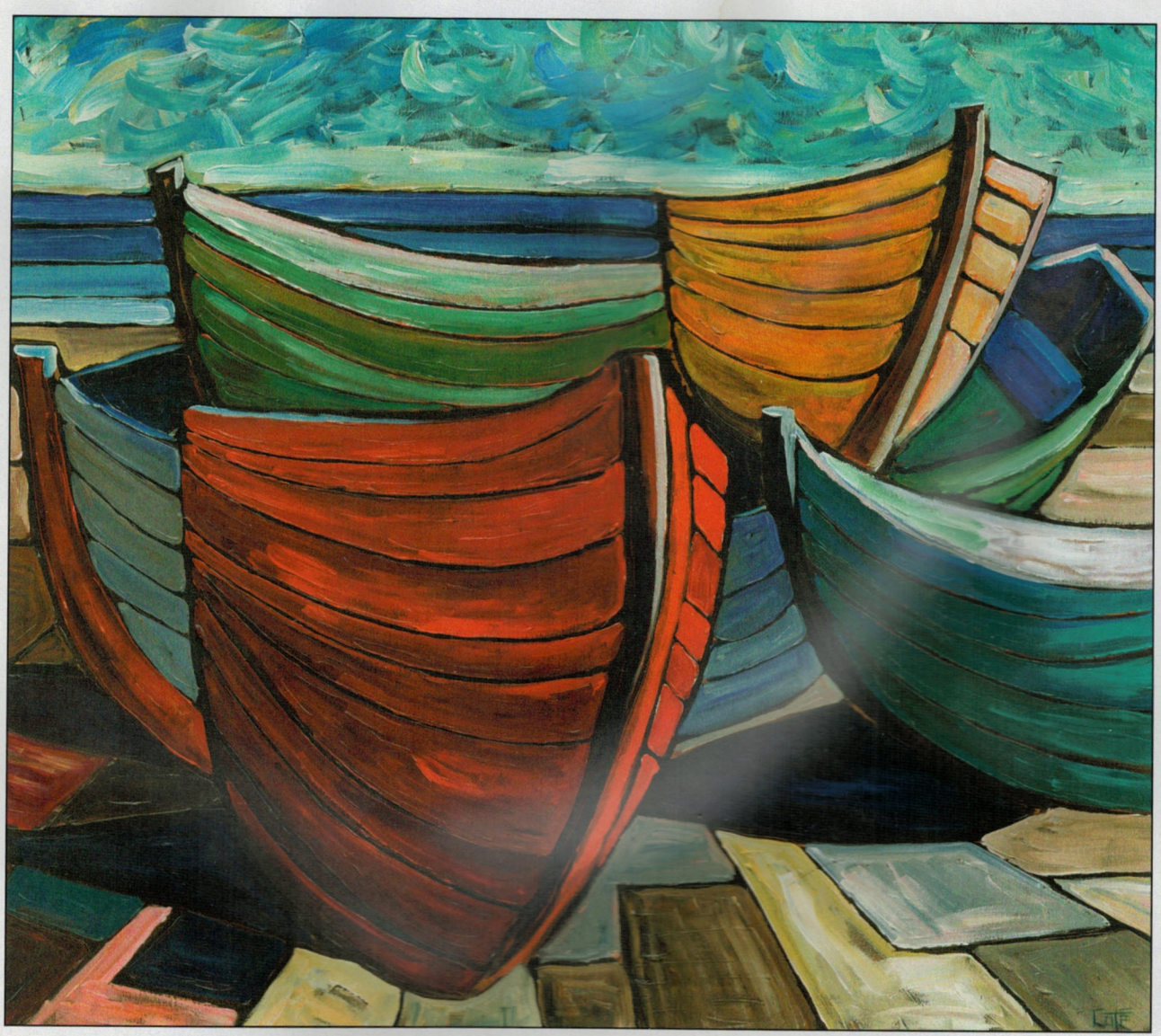
Canadian Journal of Rural Medicine

Journal canadien de la médecine rurale



The official journal of the Society of Rural Physicians of Canada

VOLUME 12, NO. 4, FALL 2007

Le journal officiel de la Société de la médecine rurale du Canada

VOLUME 12, N° 4, AUTOMNE 2007

IN THIS ISSUE

DANS CE NUMÉRO

Canadian Journal of Rural Medicine
Journal canadien de la médecine rurale

www.cma.ca/cjrm

Canadian Journal of Rural Medicine (*CJRM*) is owned by the Society of Rural Physicians of Canada (SRPC). It appears in Winter, Spring, Summer and Fall. It is printed by Dollco Printing, Ottawa.

Address all correspondence to: Editor, *CJRM*, Box 1086, Shawville QC J0X 2Y0; 819 647-2972, fax 819 647-9972, cjrm@lino.com

CJRM is indexed in *Index Medicus* and MEDLINE.

Publications Mail Agreement no. 41387051; Return undeliverable Canadian copies and address changes to: CMA Member Service Centre, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 3Y6; 888 855-2555, cmamsc@cma.ca. USPS #015-606. USPS periodical postage paid at Champlain, NY. Send US undeliverable copies to IMS of NY, 100 Walnut St., #1, Box 1518 Champlain NY 12919-1518.

ISSN 12037796

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Canadian Journal of Rural Medicine / Journal canadien de la médecine rurale

VOL. 12, NO. 4, FALL / AUTOMNE 2007

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ORIGINAL ARTICLES / ARTICLES ORIGINAUX

CASE REPORT / OBSERVATIONS DE CAS

Cloridorme
Acrylic on canvas, 36" × 40"
© Étienne Côté

"Cloridorme is a beautiful fishing village on the northern side of the Gaspé Peninsula. My painting was inspired by a time when there was cod in the sea. I used to work in hotels in that region as a summer job when I was a student. A lot of my work reflects those memories."

More of Étienne Côté's work can be seen at www.etiennecote.com.

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"My practice is full and I can't take any new patients"

John Wootton, MD
Shawville, Que.

Scientific editor, CJRM

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All across the country, this refrain is heard with dismay by patients seeking a primary care physician. Although the concept is debated, there is consensus that it is good for patient care that every person be able to access a primary care provider to assist him or her with both routine and urgent care.

Physicians are independent practitioners, no less when demand for their services is high than when it is low. They are free to decide to work more or less, part-time or full-time, and even, perish the thought, to take holidays or retire. Against this backdrop are increasingly forceful demands for social accountability, "populational responsibility" and other demands that limit a physician's ability to manage his or her own time.

It is therefore not surprising to me that in the one area over which physicians have absolute control — the patient–physician relationship — they push back.

I say this because although I am among those who instruct their secretaries to advise inquiring patients that my practice is "closed," I am not quite sure how I know this. Digging a bit deeper, I think I am saying "I have as much work as I want, and I prefer to continue to care for patients I know than to take on new challenges with patients I don't." This is not quite the same thing as saying that my existing patients would be harmed (by waiting longer to see me) if I took on others. Even if on occasion an afternoon office is particularly lightly booked, my reflex is not to fill the slot with a new patient, but rather to take a coffee break!

I don't feel too guilty about all this. As a rural physician, I work long enough hours as it is. Nevertheless, I would welcome some tools to help me identify when and how to take on new patients, rather than doing so on a whim or as a result of a particularly effective lobby from a colleague, a patient or family member.

What I would like to see would look something like this:

- The responsibility for accepting new patients in a community becomes a "group" responsibility of the physicians of that community, and mechanisms need to be found to fairly distribute the load.
- There should be "1 number to call" for patients seeking a physician.
- The acceptance of a new patient should be remunerated in recognition of the challenge that a "new" patient presents, compared with a patient well-known for many years.
- Patients should have in their possession a standardized medical history, which would allow priority to be given to those with greater medical need.

Perhaps this already exists in various forms. If so, there would be benefit to making this known to the larger community. Certainly physicians have their limits, and only they can define them, but patients have a right to have their access to care determined on an objective rather than ad hoc basis. This achieved, the pressure could more effectively be applied where it belongs: on those responsible for physician supply — governments, colleges and medical schools.

«Malheureusement, je n'accepte plus de nouveaux patients»

John Wootton, MD

Shawville (Qué.)

Rédacteur scientifique,
JCMR

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D'un bout à l'autre du Canada, les patients qui cherchent un médecin de première ligne sont découragés en entendant cette réponse. Même si le concept soulève des débats, on reconnaît qu'il est bon pour le soin des patients que chacun puisse avoir accès à un fournisseur de soins primaires qui l'aidera à la fois pour les soins de routine et pour les soins d'urgence.

Les médecins sont des professionnels indépendants, aussi bien lorsque leurs services sont très en demande que lorsqu'ils le sont moins. Ils sont libres de décider de travailler plus ou moins, à temps partiel ou à temps plein, et même, imaginez-vous, de prendre des vacances ou de prendre leur retraite. Le tout dans un contexte de pressions accrues de responsabilité sociale, de «responsabilité devant la population» et autres exigences qui limitent la capacité d'un médecin de gérer son propre temps.

Je ne m'étonne donc pas de voir les médecins réagir dans le seul domaine où ils ont le contrôle absolu – la relation patient–médecin.

Je dis cela parce que même si je suis de ceux qui demandent à leur secrétaire de répondre aux patients que ma pratique est «fermée», je ne suis pas tout à fait sûr de savoir comment je le sais. En réfléchissant un peu plus, je pense que je me dis : «J'ai autant de travail que j'en veux et je préfère continuer de traiter les patients que je connais, plutôt que de relever de nouveaux défis posés par des patients que je ne connais pas.» Ce n'est pas tout à fait la même chose que dire que je ferais du tort à mes patients actuels (qui devraient attendre plus longtemps pour me voir) si j'en acceptais d'autres. Même s'il m'arrive de temps en temps d'avoir un après-midi particulièrement peu chargé, j'ai le réflexe de profiter du temps disponible non pas pour accueillir un nouveau patient, mais plutôt pour prendre une pause!

Je ne ressens guère de culpabilité à cet égard. Comme médecin rural, mes heures de travail sont bien assez longues, mais je serais heureux d'avoir des outils qui m'aideraient à déterminer quand et comment accepter de nouveaux patients au lieu de le faire impulsivement ou à la suite d'interventions particulièrement efficaces d'un collègue, d'un patient ou d'un membre de ma famille.

Ce que j'aimerais voir ressemblerait à ceci :

- La responsabilité d'accepter de nouveaux patients dans une communauté est une responsabilité «collective» des médecins de celle-ci et il faut trouver des moyens de répartir équitablement la charge de travail.
- Il devrait y avoir un seul numéro à composer pour les patients qui recherchent un médecin.
- Il faudrait rémunérer l'acceptation de nouveaux patients pour reconnaître le défi que pose un «nouveau» patient comparativement à un patient que le médecin connaît bien depuis des années.
- Les patients devraient avoir en leur possession un dossier normalisé de leurs antécédents médicaux, ce qui permettrait d'accorder la priorité à ceux dont le besoin médical est le plus grand.

Ces outils existent peut-être déjà sous diverses formes. Dans ce cas, il serait avantageux de les faire connaître davantage. Les médecins ont certes leurs limites et sont les seuls à pouvoir les définir, mais les patients ont le droit d'avoir accès aux soins en fonction de critères objectifs plutôt que ponctuels. Une fois cet objectif atteint, il serait possible ensuite d'exercer des pressions plus efficacement là où il le faut : sur les responsables de l'offre de médecins — les gouvernements, les ordres et les facultés de médecine.

President's message. Need for a national rural health strategy

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In his speech to the Canadian Medical Association (CMA) General Council on August 20, 2007, the Honourable Tony Clement highlighted the desire to address accessibility as enshrined in the Canada Health Act. It appears that the federal effort is focused on wait time guarantees that apply only to 5 highly specialized areas. The federal government is using the promise of wait time guarantees as a strategy to allay public concern about accessibility to medical service; however, the current focus on wait time guarantees is not addressing the needs of rural Canada.

If Canada is to be truly proud of its health care system, the benchmark on how well we are doing with health care in Canada must be how well we are doing in rural Canada. Rural Canadians have a higher burden of illness and a shorter life span. Rural Canada has 19% of the population and only 9.4% of the doctors.[1] The Honourable Tony Clement represents a rural riding and many of his Conservative colleagues are in parliament because of the rural vote. We need to remind our politicians in our rural ridings that Canadians are as concerned with health care as with the environment and that we need a national rural health strategy.

Recent rural statistics show marginal improvements in physician numbers in rural and remote communities, with 5214 physicians in 2007 compared with 5163 physicians in 2005. The population per rural general practitioner was 1130 in 2007 and 1214 in 2005. In 2007, rural Canada accounts for 19% of the population, 16% of the family physicians (FPs) or general practitioners (GPs), and 2% of non-FP/GP specialists.[1] We realize that small communities cannot sustain narrowly focused specialists. We need more generalists and more rural doctors with broad and enhanced skills.

Through our membership in the CMA GP Forum, the CMA National Medical Organizations (CNMO), and the Canadian Medical Forum and our seat on the CMA General Medical Council, the SRPC continues to work with other national medical organizations to address rural health issues. Our colleagues, GPs, FPs and other specialists, and other national medical organizations are supportive of our needs. This year, the CMA Board of Directors endorsed a resolution to take the lead with other national medical organizations to lobby the federal government for a national rural health strategy. In August 2007, the CMA General Council passed motions for the CMA to address the scarcity of generalist FP/GPs and generalist specialists and to improve access to enhanced skill sets training.

We can enhance political awareness and support for a national rural health strategy by bringing rural health care needs to the attention of our politicians. It is time for all rural doctors to speak to their members of parliament.

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Message du président. Une stratégie nationale sur la santé rurale s'impose

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Dans son discours devant le Conseil général de l'Association médicale canadienne (AMC), le 20 août 2007, l'honorable Tony Clement a abordé la question de l'accessibilité telle qu'enchâssée dans la Loi canadienne sur la santé. Il semble que l'effort fédéral en matière de garanties sur les temps d'attente s'applique seulement à cinq domaines très spécialisés. Le gouvernement fédéral se sert de la promesse de garanties sur les temps d'attente comme stratégie pour dissiper les préoccupations soulevées dans la population par l'accès aux services médicaux, mais cette convergence sur les garanties ne répond pas aux besoins des régions rurales du Canada.

Si l'on veut que le Canada soit vraiment fier de son système de santé, c'est la situation dans les régions rurales du pays qui doit être le paramètre d'évaluation des soins de santé au Canada. Les Canadiens ruraux ont un fardeau morbide plus élevé et une espérance de vie plus courte. Le Canada rural compte 19 % de la population et 9,4 % seulement des médecins.[1] L'honorable Tony Clement représente une circonscription rurale et beaucoup de ses collègues conservateurs sont au Parlement à cause du vote rural. Il faut rappeler aux politiciens de nos circonscriptions rurales que les Canadiens sont aussi préoccupés par les soins de santé que par l'environnement et que nous avons besoin d'une stratégie nationale sur la santé en milieu rural.

Les statistiques récentes montrent des améliorations marginales des effectifs médicaux dans les communautés rurales et éloignées, qui comptent 5214 médecins en 2007 comparativement à 5163 en 2005. Le nombre d'habitants par omnipraticien rural s'établissait à 1130 en 2007 et à 1214 en 2005. En 2007, le Canada rural compte 19 % de la population, 16 % des médecins de famille (MF) ou omnipraticiens (OP) et 2 % des spécialistes non MF–OP[1]. Nous réalisons que les petites communautés ne peuvent subvenir aux besoins des médecins sous-spécialisés. Nous avons besoin d'un plus grand nombre de généralistes et de médecins ruraux aux compétences générales plus poussées.

Par sa participation aux travaux du Forum des OP de l'AMC, du Comité des organisations médicales nationales (COMN) de l'AMC, du Forum médical canadien et par l'intermédiaire de son représentant au Conseil général de l'AMC, la SMRC continue de collaborer avec d'autres organisations médicales nationales pour aborder les enjeux reliés à la santé rurale. Nous bénéficions de l'appui de nos collègues, qu'ils soient OP, MF ou autres spécialistes, ainsi que des autres organisations médicales nationales. Cette année, le Conseil d'administration de l'AMC a approuvé une résolution enjoignant l'Association à jouer un rôle de premier plan, en collaboration avec d'autres organisations médicales nationales, pour faire pression sur le gouvernement fédéral afin qu'il adopte une stratégie nationale sur la santé en milieu rural. En août 2007, le Conseil général de l'AMC a adopté des résolutions demandant à l'AMC de s'attaquer au problème de la pénurie d'OP–MF généralistes et de spécialistes généralistes et d'améliorer l'accès à la formation spécialisée avancée.

Il faut mieux sensibiliser les politiciens et les amener à appuyer une stratégie nationale sur la santé en milieu rural en soulignant les besoins des communautés rurales. Il est temps que tous les médecins ruraux parlent à leur député.

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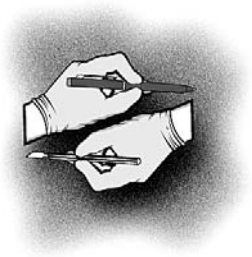

Nurse–Physician Collaborative Partnership: a rural model for the chronically ill

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This article has been peer reviewed.

Introduction: Accessibility and quality of primary health care services in rural areas are challenging issues, particularly for the elderly and those with chronic or complex medical conditions. The objective of the Nurse–Physician Collaborative Partnership was to implement and evaluate a collaborative partnership between homecare nurses and family physicians in the rural Trochu–Delburne–Elnora area of Alberta.
Methods: Overall, 37 patients were enrolled in a shared care plan, which included comprehensive biopsychosocial assessment, early intervention, health education and self-management. Patient and provider outcomes were assessed using quantitative and qualitative data collected at baseline, 6 months and 12 months.
Results: Results showed that patients made improvements in activities of daily living and robust cognitive status. In interviews, patients reported improvements in psychological well-being, knowledge of disease processes and confidence to manage health issues. Patients' use of acute health care services decreased, showing a 51% reduction in the number of days in hospital, a 32% reduction in emergency department visits and a 25% reduction in hospital admissions. Total acute service costs, excluding program costs, decreased by 40% from an average of $15 485 to $9313 per person ($p \leq 0.05$).
Conclusion: Based on these results, policy initiatives that incorporate the shared care model developed in this project may be considered. To our knowledge, this type of evaluation has not previously been conducted in a rural Canadian setting.

Introduction : L'accessibilité et la qualité des services de soins primaires dans les régions rurales posent un défi, particulièrement dans le cas des personnes âgées et de celles qui sont atteintes de problèmes médicaux chroniques ou complexes. Le Nurse–Physician Collaborative Partnership avait pour objectif de mettre en œuvre et d'évaluer un partenariat de collaboration entre les infirmières en soins à domicile et les médecins de famille dans la région rurale de Trochu–Delburne–Elnora, en Alberta.
Méthodes : Au total, on a inscrit 37 patients à un régime de soins partagés qui comprenait une évaluation biopsychosociale détaillée, une intervention rapide, une formation en santé et l'autogestion. On a évalué les résultats pour les patients et les prestateurs à l'aide de données quantitatives et qualitatives recueillies au départ, puis 6 mois et 12 mois plus tard.
Résultats : Les résultats ont révélé chez les patients une amélioration des activités quotidiennes et un statut cognitif solide. Au cours d'entrevues, les patients ont signalé une amélioration de leur mieux-être psychologique, de leurs connaissances des processus morbides et de la confiance qu'ils avaient pour pouvoir gérer leurs problèmes de santé. L'utilisation par les patients des services de soins actifs a diminué : le nombre de jours d'hospitalisation a diminué de 51 %, le nombre de visites à l'urgence, de 32 %, et le nombre d'admissions à l'hôpital, de 25 %. Les coûts totaux des services de soins actifs, à l'exclusion des coûts de programme, ont diminué de 40 % pour passer en moyenne de 15 485 $ en moyenne à 9313 $ par personne ($p \leq 0,05$).
Conclusion : Compte tenu de ces résultats, on peut envisager des initiatives stratégiques incorporant le modèle de soins partagés mis au point dans le cadre de ce projet. Sauf erreur, on n'avait pas procédé auparavant à une telle évaluation en milieu rural au Canada.

Introduction

The challenge of maintaining both access to and quality of primary health care services in rural areas is well documented.[1] Rural residents face problems such as fewer health resources and distance or transportation issues.[2] In addition, rural residents are more likely to be elderly and in poorer health than urban dwellers.[3] Therefore, to be effective, primary health care services need to reflect the community in which they evolve[4] as well as be community based and community driven.[5]

Among the numerous issues facing rural residents, the need to coordinate the care of people with chronic illness is undisputed and gaining momentum. Recent studies show that chronic disease management accounts for a large proportion of health care funds.[6] Reid and colleagues[7] noted that "high users" bear an enormous burden of illness; they have multiple conditions — over 80% of "high users" have at least 6 different types of illness and 30% have 10 or more. Caregivers are often not well either. A recent study in the United Kingdom found that 40% of caregivers had illness or disability themselves and recommended that identifying and supporting caregivers is an essential part of primary care.[8,9] Successful interventions for people with chronic illness are complex and have many components. Although research is promising, demonstrating effectiveness in practice is limited.[10]

While current methods of care incorporate chronic disease management,[11] more comprehensive models that address the complexity and required coordination of care are emerging, for example the Chronic Illness Care Model[12] and others.[13,14] In a review of best practices in coordinated care, Chen and colleagues[14] identified 2 main approaches: disease-based and case management. While the latter provides coordinated care to smaller groups of complex medically or socially vulnerable "high risk" individuals, the former provides disease management to larger populations of chronically ill people under a banner of a single primary disease, such as diabetes.

The aim of our project was to improve both access to and quality of primary health care services in rural Alberta through development, implementation and evaluation of a collaborative partnership between homecare nurses and a family physician practice within the context of a primary health care model. We also sought to identify levels of staff satisfaction with a change in service delivery model. This paper outlines key quantitative and qualitative findings related to patient, system and provider outcomes. Such information has not, to our knowledge, been previously reported in Canada.

Study setting and history

The Trochu–Elnora–Delburne area is a large, rural geographic area in central Alberta that has limited primary health care services. Access to services and quality of services, in terms of choice of provider and scope of services, are lacking. This area has large numbers of patients who are elderly and who suffer chronic and complex medical conditions, or both. Like many other rural areas, there is an increasing demand for physician services with concurrent difficulties in the recruitment of physicians. This is intensified by the additional difficulties of recruiting and retaining nurse practitioners.

The history of our project dates back to 1995, when the Elnora Hospital was closed. In 1998, residents of the Elnora area became involved in the David Thompson Health Region's (DTHR) Healthy Communities Initiative. The DTHR received 2 years of health transition funding to develop a primary health care model consisting of a primary health care team that included a nurse practitioner as well as primary health care services and specific community action.[15] The project in turn led to further development of primary health care services, including increased collaboration and stronger primary care service links between the physician and the nurse practitioner. Funded by Alberta Health and Wellness health innovation funds, the physicians in Trochu then partnered with a nurse practitioner in an attempt to address the issue of accessibility to primary health care services. Following the resignation of the nurse practitioner and 9 months of intensive yet unsuccessful recruitment, a proposal was developed and accepted by Alberta Health and Wellness to continue the project described herein.

The purpose of the Nurse–Physician Collaborative Partnership was to focus on the development of a broader primary health care team to improve the access to and quality of primary health care services to high needs patients who are elderly and who have chronic or complex medical problems. The specific objectives of the project included establishing an appropriate and affordable nurse–physician partnership and implementing a primary health care model to meet the expressed needs of the local community.

Methods

The project was implemented incrementally, building on identified learning from past local primary care projects and best practices in chronic illness care.[12] One physician and 2 community project nurses (and other allied health professionals on an "as required" basis) worked together to improve coordination of care for a select group of patients with chronic or complex medical problems. Between June and August 2002, 2 community nurses were recruited; additional computer hardware was purchased, programmed and tested; program admission criteria were developed; guidelines for nurses accessing patient records were developed; further development of "shared care guidelines" was initiated; and a privacy impact assessment by the primary physician and the DTHR was submitted.

The project became operational in September 2002, when the first patients were enrolled in shared care. During the start-up phase, the nurses completed initial computer training, enrolment criteria and a consent form, and a preliminary list of eligible patients was developed. A schedule was established to enroll patients in a graduated fashion, and procedures for long distance "dial up" were explored and implemented. In addition, existing guidelines for shared care were expanded to include:

1. defining the nurses' scope of practice;
2. clarifying roles and responsibilities;
3. clarifying accountability and liability issues;
4. developing guidelines; and
5. identifying and recommending policy changes.

Knowledge and skill gaps were also identified for the project nurses and professional development followed. In addition, the electronic patient health record system was modified to enable nurses to access patients' records and communicate with the physician remotely from the point of care. This communication was through the Electronic Medical Record's (EMR) internal email system. The system had an urgent message feature that could interrupt the physician when he was working at his workstation; however, this was rarely used.

Program planning and development was firmly based on interdisciplinary collaboration and the shared care model evolved through experience and dialogue. Throughout, realistic expectations were maintained and consultation with partners was the standard model of service delivery. Services included referral and admission; comprehensive biopsychosocial assessment; shared care plan development and modification determined by patient condition; and active patient management through monitoring, standard and advanced nursing interventions, consultation with other health care providers and linkage to community supports.

Patient recruitment

Patients were invited to participate based on the following criteria:

1. identification as eligible for shared care by either the physician or the nurse;
2. seeking health services at the medical clinic; and
3. provision of service based on assessed need, which could include 1 or more chronic disease states that are not controlled, 1 or more chronic disease states that are not currently being treated but could be, dosage regimen changing more than 4 times in the past 12 months, drug-related problem or potential for a drug-related problem, history of non-compliance and appointments with multiple health care providers, or a recent decline in health status.

Patients who agreed to participate were enrolled in the project after a discussion with the physician and signing an informed consent

About one-half of the patients was selected from the home care roster. The other half was patients from the physician's caseload who had chronic disease management issues but did not require home-care services. Once the patient was enrolled, the physician and nurse (and other allied health professionals, if indicated) developed, collaboratively, a shared care plan for each patient. The nurse put the plan into operation, which included comprehensive biopsychosoical assessment and monitoring, early intervention, health education and self-management to increase or maintain the patient's health status. Regular monthly meetings between the nurses and the physician were held to discuss and modify the care plans of those patients whose conditions were changing. The care plan was part of the EMR. The nurses and physicians entered their visit notes in the same part of the medical record. The discussion at the monthly care planning meeting with respect to each patient was entered as a progress note on that patient's electronic chart.

Evaluation

Design and data collection

The evaluation was a prospective mixed methods design, using patients as their own controls (pre and

post). To strengthen the validity, comparisons were also made with relevant peer reviewed literature, and changes in service delivery and policy were monitored and documented over the course of the project. Data collection took place over the course of the 18 months that services were provided to patients.

Quantitative methods

Patient data collection instruments were selected based on their use in similar studies, psychometric properties and relevance to the project. During a pilot phase, inadequacies were observed and the burden of response was noted with some instruments; thus, a decision was made to use the least burdensome instruments and triangulate with qualitative data from patients and caregivers as well as evaluator and provider observations. Data was entered into SPSS 10 (SPSS Inc., Chicago, Ill.), which was used to calculate descriptive statistics and to evaluate differences in mean values using 2 sample and paired *t* tests as appropriate.

Additionally, health system costs (i.e., direct payer) were examined for the 12 months pre- and post-enrolment. Comparisons were made between the standard service delivery model and the new service delivery model, which includes the nurse–physician partnership. This involved examining the incremental resource impact between the 2 models of service delivery, including the salaries of the nurses as well as differences in service use (physician visits, emergency department use, hospitalizations, referrals, and medications and equipment) due to changing practice patterns. A prospective service use form was developed and administered on patients to capture this information.

Qualitative methods

We conducted semi-structured interviews with the project staff (nurses, family physician, project coordinator and project director), the family physician's office administrative staff, and with patients and primary caregivers at 6 months and 12 months to describe and understand structures, processes and impacts of the partnership. Additional interviews were also conducted with health care providers who worked closely with the project team, including the other 2 physicians in the family practice, the office manager, a pharmacist and a laboratory technician. Further, throughout the study period, minutes from project team meetings, local newspapers and newsletters, and progress reports were collected, reviewed and analyzed for both chronological events and themes. Finally, one author attended project meetings as required and documented processes, interactions and dynamics within and between groups. Data was coded by hand and content was analyzed for major themes and sub themes.

Results

Overall, 37 patients were enrolled in the project, as shown in Figure 1. Table 1 shows the demographic profile of the patients. With attrition, a typical caseload was about 31 patients for 1 full-time equivalent; capacity was limited by geography, project and evaluation tasks, and by staff availability. The patient population was elderly and frail and their health was complicated by multiple problems and chronic illness. Many of the patients were living alone, some with very little support. A number of changes that affected participation in the project took place after enrolment, including 2 deaths, 4 patients' move to long-term care and one patient's move out of the area, which left 24 patients enrolled in the project after 12 months. Patient, caregiver and project staff data instruments are outlined in Table 2, as is the timeline of data collection for each instrument.

Patient and caregiver outcomes

We assessed quantitative outcomes data for 24 patients. With respect to health-related quality of life, results from the SF-8 Health Survey indicated that patients were physically frail, with baseline scores below age-related norms, but that mentally they were quite robust, with scores equivalent to

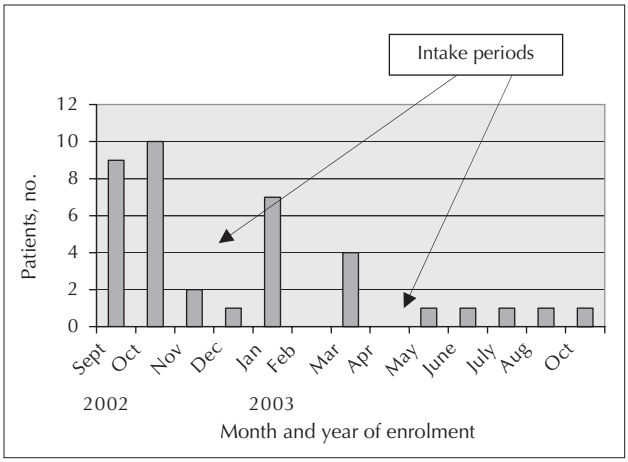

Fig. 1. Patient enrolment in the project between September 2002 and October 2003.

age-related norms (i.e., for patients aged 75 years and older, age-related norms are physical health scale = 45.46, mental health scale = 51.98). After 12 months of shared care, there was a slight decrease physically, but no change mentally. Differences in physical health and mental health were not significant (p = 0.314 and p = 0.968, respectively). When patients were asked to rate their health on the Euroquol (EQ5D) visual analogue scale, they indicated that they were "as good as they could be in the circumstances," with scores of 67% and 65% at baseline and 12 months, respectively. It appeared that patients rated their health more favourably than would have been expected, but this was often qualified with comments, such as "I'm good for my age" or "all things considered."

Table 1. Patient (n = 37) demographic profile at enrolment

Variable	No. (and %) of patients*
Sex	
Male	11 (29.7)
Female	26 (70.3)
Age, yr	
Mean (standard deviation)	80.3 (7.8)
Median (range)	82.5 (57–93)
Marital status	
Married	21 (56.8)
Divorced	2 (5.4)
Widowed	11 (29.7)
Single	3 (8.1)
Living arrangements	
Lives alone	15 (40.5)
Lives with spouse only	20 (54.1)
Lives with other family	2 (5.4)
Type of residence	
House or apartment	28 (75.7)
Housing with supports	7 (18.9)
Assisted living	2 (5.4)
Place of residence	
In town	27 (73.0)
Rural area or farm	10 (27.0)

*Unless otherwise indicated.

In other words, their expectations of health were commensurate with their age and condition. With respect to cognitive status, most of the patients who participated showed normal age-related cognitive impairment (Mini Mental State Examination [MMSE] range 20–30). There was no significant difference in cognitive status between baseline and 12 months (p = 0.32). Results on the Barthels Index indicated that although patients had some physical limitations, they were reasonably independent in their activities of daily living and improved slightly between enrolment and 12 months, particularly in terms of mobility.

Qualitative data showed that caregivers appreciated the improved access and quality of services afforded by the project. They reported decreased anxiety and improved ability to cope as a result of the support and availability of the team, the information and knowledge related to disease processes and use of the health system, and the 3 Rs — repeat, reinforce and reassure. Patients reported periods of improved health, which in the interim lifted their spirits and reduced their anxiety. They felt well cared for, which in turn appeared to free up some of their energy to manage their health and engage more fully in life. They were particularly impressed with the nurse–physician partnership, the holistic approach, the early intervention, the technological capabilities and the connections to other health care providers.

Provider outcomes

The Collaborative Practice Scales measure collaboration based on the 2 general factors of assertiveness and cooperation. A high degree on each produces what the scale authors term a "synergistic interaction." One of the 2 nurses and the core team physician had high scores at the outset because they had a pre-existing working relationship; scores increased to some degree over time, suggesting that

Table 2. Quantitative measures and timeline

Data instrument	Domain	Time of data collection		
		Baseline	6 mo	12 mo
SF-8 Health Survey[20]	Health-related quality of life	X	X	X
EQ5D[21]	Utilities; self-reported health	X		X
MMSE[22]	Cognitive status	X		X
Barthel Index[23]	Independent activities of daily living	X		X
Collaborative Practice Scales[24]	Physician–nurse collaboration	X	X	X
Physician Work Life Survey[25]	Physician worklife satisfaction	X	X	X
Index of Work Satisfaction[26]	Nurse job satisfaction	X	X	X

EQ5D = Euroquol visual analogue scale; MMSE = Mini Mental State Examination.

synergy was enhanced between them. The other nurse, however, began with lower scores, but as the relationship developed, she ended up with very similar scores, compared with the first nurse, at 12 months. The nurses' and physicians' scores were well above norms when the project started and improvements over time were noted in several areas.

According to the Index of Work Satisfaction, nurse job satisfaction appeared to decrease very slightly between baseline and 12 months, but the difference is unremarkable. In addition, the nurses' scores at all times considerably exceeded norms. Closer inspection reveals that, across time, weighted scores increased for task requirements and professional status; decreased for interaction, organizational policies, and autonomy; and stayed about the same for pay. The Physician Work Life Survey reported little change in overall job satisfaction between baseline and 12 months. However, there was a slight improvement in the total career satisfaction in the same timeframe as a result of improved satisfaction with career specialty.

Interviews with other health care providers who worked closely with the core team indicated that the partnership improved accessibility and availability, provided continuity of care through consistent providers working closely together and provided effective case management through an identified health provider being "in charge" of a patient's health. As a result, patients' and caregivers' anxiety about their health decreased and a reduction in unnecessary emergency room and physician visits as well as a reduction in hospital admissions was noted.

Pharmaceutical knowledge and interpretation of laboratory tests were the 2 major areas of additional learning for the nurses. The pharmacist reported that she frequently interacted with the nurses on the phone to answer questions, problem solve and provide information about medications. While other health care providers recognized the benefits of the project to patients, they also acknowledged the logistical and personnel challenges that such a change would involve. However, the value of distinct components of the project, such as collaboration and communication, were acknowledged. Finally, access to the EMR system from patients' homes used dial-up internet connections. As high speed connections become more available, this method of communication should become easier and more efficient.

System outcomes

System data were available for 24 patients who received a full 12 months of shared care between September 2002 and February 2004. Comparing data for 12 months pre-enrolment to data for 12 months post enrolment revealed a 25% reduction in hospital admissions, a 50% reduction in days spent in the hospital, a 32% reduction in emergency room visits, a 28% reduction in visits for diagnostic tests and a 15% reduction in ambulatory care visits. Service use in the community was not captured (and is

Table 3. Health service use and cost for 12 months pre- and post-enrolment (n = 24)

	Pre-enrolment		Post-enrolment		
Variable	No. of services or total cost	Mean (and SD)	No. of services or total cost	Mean (and SD)	p value
Service					
Inpatient admission	47	1.95 (1.90)	35	1.45 (2.02)	0.31*
Days in the hospital	517	21.54 (28.95)	252	10.50 (14.61)	0.067*
ER visits	50	2.08 (3.30)	34	1.42 (1.84)	0.295*
Diagnostics	25	1.04 (0.95)	18	0.75 (1.11)	0.245*
Ambulatory care	19	0.79 (1.44)	16	0.67 (1.24)	0.740*
Cost					
Inpatient cost	$379 770	$15 824	$180 824	$7537	≤ 0.047
ER cost	$10 926	$455	$8754	$365	0.478*
Diagnostics cost	$3814	$159	$6319	$263	0.222*
Ambulatory cost	$2319	$97	$2260	$94	0.969*
Physician cost	$27 108	$1130	$25 797	$1075	0.692*
Total costs	$423 936	$17 664	$223 633	$9318	≤ 0.05
Program costs	NA	NA	$136 307	$5679	NA
Total costs plus program costs	$423 936	$17 664	$359 929	$14 997	0.509*

SD = standard deviation; ER = emergency room; NA = not applicable.
*Values not statistically significant.

discussed below). There was a statistically significant reduction in total costs when 12 month pre- and post-enrolment periods for system variables, including physician billing, were compared (Table 3). Although the difference between pre- and post-enrolment total costs, including the program costs, was not statistically significant, there was a mean cost decrease for this sample (pre to post) of $2667 per patient.

Discussion

In a recent policy synthesis, LaMarche and colleagues[16] explored ways to restructure primary health care in Canada. They reported that 2 models are superior: the professional coordination model, which is based on a physician–nurse team and premised on case management and continuous, coordinated care; and the integrated community model, which is based on an interprofessional team and cooperation and interaction with the community. Alone, neither model meets all of the anticipated effects of primary health care (effectiveness, quality, access, continuity, productivity and responsiveness), but it may be possibile to attain more of these effects using some combination of the 2 models. However, significant organizational change, particularly in the way funds are currently allocated, would be required.

The Nurse–Physician Collaborative Partnership developed a broader primary health care team to improve access to and quality of primary health care services for patients who were elderly and who had chronic or complex medical problems. As an innovative solution, the services had 2 key elements: a graduated, interprofessional approach to a primary health care team in which the core team was kept to a minimum of 1 family physician and 2 part-time (1 full-time equivalent) project (community) nurses, and a broader network of providers (a pharmacist and community care professionals) who were consulted as needed; and shared care, which capitalized on the expertise of both medical and nursing staff, and reflected best practices in coordinated care (thorough assessment, monitoring and early intervention). The primary intent of services was to have measurable impact on the health and health-related quality of life of patients and their caregivers.

Boult and colleagues[13] reported that interdisciplinary homecare was one of a few interventions that improves outcomes and reduces cost, a model supported by Hollander Analytical Services[17] in a recent policy paper on chronic home care services. In the United States, the Evercare program provides a coordinated approach to care of elderly patients in nursing homes.[18] The model includes a team approach and a nurse practitioner that monitors patients, provides early intervention and intensive management, and liaises with family and the primary physician; physicians are paid to spend more time with families and attend case conferences. The program, which demonstrated a 50% reduction in hospital admissions and emergency room visits as well as a cost savings of US$90 000 for each nurse practitioner employed, is now being tested in selected communities in the United Kingdom. Although patients' satisfaction did not change appreciably, families' satisfaction improved considerably.

In the Nurse–Physician Collaborative Partnership in Alberta, similar results were demonstrated. With respect to system outcomes, total acute service costs excluding program costs decreased by 40% and physician costs decreased from an average of $1130 to $1075. Inpatient costs showed the most significant decrease. A 40% increase in outpatient diagnostic tests was observed owing to use of more expensive, comprehensive type tests such as CT scans (mean increase from $159 to $263). There was a decrease of $2667 in cost post enrolment compared with pre enrolment, even when the program cost ($136 307) itself was factored in (mean $17 664 for the 12 months preceding enrolment, compared with $14 997 for the 12 months following enrolment).

In addition to our primary findings on patient and caregiver outcomes, we also found that patients and caregivers reported a high level of satisfaction. Overall, shared care appeared to improve quality of care due to increased scope of services, improved coordination or continuity of care and early intervention, and improved access due to reduced transportation concerns, regular visits and alternative arrangements for obtaining prescriptions and laboratory tests. Standardized test results showed that patients made slight improvements in activities of daily living, most notably in mobility, and that patients' mental health remained stable in the face of declining physical health. In interviews, patients and caregivers specifically reported improvements in psychological well-being due to decreased anxiety and worry about their own or their family member's health, knowledge of disease processes and confidence to manage health issues. Further research with an expanded sample is required to determine whether the trends in our small sample

would hold and enable the identification of statistically significant differences.

As we see stable outcomes (on several provider and patient dimensions) alongside decreased costs, the implication is that, all other things being equal, the shared care program appears to be the favourable option, compared with not having this program available. What this analysis does not tell us is whether the shared care program should be funded, as this requires comparison of this program on the basis of costs and benefits with other alternative uses of these resources.[19]

The Nurse–Physician Collaborative Partnership project provides a model for the integration of homecare and family practice to provide chronic illness care in rural areas. A successful partnership was facilitated by the professionals' willingness to participate, their predisposition to collaboration and regular face-to-face communication. In addition, a small core team facilitated relationship building and knowledge transfer and streamlined communication as well as case management efficiency. A working relationship based on a collaborative partnership that maximized both medical and nursing scopes of practice was satisfying to the physician, the nurses and the patients. A mutually developed shared care model provided the definition and parameters of the working relationship between the physician, nurses and the other health care providers as well as the delivery of care to patients.

Several caveats must be noted. First, the sample numbers are small and thus interpretation must be made with caution. However, the results from patient data are strengthened by system data, by triangulation, by age-related norms where available and by results from other studies in the literature. Second, the population as a whole is in declining health and therefore health-related improvements were not necessarily expected. Third, as with any pre–post design, our study is subject to potential biases due to confounding variables exerting influence during the study period. Fourth, although community use was not captured, costs would be expected to be higher before enrolment, compared with after enrolment, since one-half of the patients were receiving home care services. The physician also continued to maintain pre-enrolment level contact with patients who were seen on a regular basis at home because of the time limited nature of the program. However, this would be expected to decrease over time. Finally, the program coordinator cost is an economy of scale in as much as 5 times the number of nurses could be supervised for the same cost.

Conclusion

A small primary health care team — 1 physician and 2 nurses — demonstrated an efficient and coordinated approach to caring for patients with chronic or complex medical illness in rural Alberta. A mutually developed shared care model provided the definition and parameters of the working relationship between the physician, the nurses and the other health care providers. This working relationship was based on a collaborative partnership that maximized both medical and nursing scopes of practice and was satisfying to the physician, the nurses and the patients.

Interventions to patients and caregivers in their homes followed evidenced-based practices, reduced patient and caregiver anxiety related to health concerns and increased their confidence to manage health issues overall. The program resulted in a reduction in the number of hospital admissions and days spent in hospital, the number of emergency room and ambulatory care visits, and the number of diagnostic tests. Based on these initial results, policy initiatives, which incorporate the shared care model developed in the Nurse–Physician Collaborative Partnership, may be considered. Further research is required to test these findings with larger sample sizes and experimental study designs.

Acknowledgements: Funding for this study was obtained from the Alberta Health and Wellness Health Innovation Funds and the David Thompson Health Region.

Competing interests: Craig Mitton receives salary support from the Michael Smith Foundation for Health Research and the Canada Research Chairs Program.

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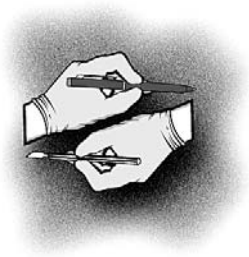

Factors associated with career satisfaction among general practitioners in Canada

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This article has been peer reviewed.

Introduction: There are important differences in rural, regional and urban general practice environments. The purpose of this study was to articulate models that explain career satisfaction among general practitioners (GPs) in these practice environments.
Methods: Of 4958 eligible physicians across Canada, 2810 (56.7%) completed a 12-page survey between January and March 2004, from whom a total of 256 GPs in rural, regional and urban communities were selected. Response bias was checked and found to be negligible. We used hierarchical regression analysis to record cumulative R^2, standardized beta and significance levels as each predictor was entered. We applied weighting factors to reflect the actual physician population in Canada.
Results: The models explained 88.5% of the variance in career satisfaction for GPs in small towns, 88.9% for GPs in regional communities and 86.3% for GPs in urban cities. The explanatory variables consisted of distress and coping, role in community activities, the quality of health care services and access to them, intrinsic and extrinsic rewards, workload and organizational structure.
Conclusion: Career satisfaction for small-town doctors is associated with being able to cope with stress in handling a wide variety of clinical conditions, largely on their own, but with effective collaboration from physicians in larger centres. Rural GPs also enjoy academic responsibilities. Satisfaction for GPs in regional communities also depends on coping with stress and the ability to maintain an efficiently operating set of secondary-level health services in their community. Satisfaction for urban GPs is associated with collegiality, which dampens stress, and access to a full range of health services, including community, hospital, mental health and rehabilitation services. Career satisfaction for all GPs is associated with equity, manageable workloads and effective practice management; however, all of these professional issues contribute, in small increments, to satisfaction.

Introduction : Il y a des différences importantes dans les milieux de pratique de la médecine générale entre les milieux ruraux, régionaux et urbains. Cette étude visait à formuler des modèles pour expliquer la satisfaction professionnelle chez les omnipraticiens (OP) dans ces milieux de pratique.
Méthodes : Sur 4958 médecins admissibles au Canada, 2810 (56,7 %) ont répondu à un questionnaire de 12 pages entre janvier et mars 2004. Sur ce total, on a choisi 256 OP de communautés rurales, régionales et urbaines. On a vérifié la déviation systématique des réponses, que l'on a jugée négligeable. Nous avons utilisé une analyse de régression hiérarchique pour consigner les niveaux R^2 cumulatif, beta normalisé et de signification à mesure qu'on entrait chaque variable explicative. Nous avons appliqué des facteurs de pondération pour tenir compte de la population réelle des médecins au Canada.
Résultats : Les modèles ont expliqué 88,5 % de la variation au niveau de la satisfaction professionnelle des OP dans les petites villes, 88,9 % dans le cas des OP de communautés régionales et 86,3 % dans le cas des OP d'agglomérations urbaines. La détresse et l'adaptation, le rôle des activités communautaires, la qualité des services de santé et l'accès à ceux-ci, les récompenses intrinsèques et extrinsèques, la charge de travail et la structure organisationnelle ont constitué les variables explicatives.

Conclusion : Chez les médecins des petites villes, la satisfaction professionnelle est associée à la capacité de faire face au stress pour traiter un vaste éventail de problèmes cliniques, en grande partie seuls, mais avec la collaboration efficace de médecins des agglomérations plus importantes. Les OP ruraux apprécient aussi les responsabilités universitaires. La satisfaction chez les OP des communautés régionales dépend aussi de la capacité à faire face au stress et à maintenir un ensemble efficient de services de santé secondaires dans leur communauté. Chez les OP des milieux urbains, la satisfaction est reliée à la collégialité, qui atténue le stress, et à l'accès à un éventail complet de services de santé, ce qui comprend des services de santé communautaires, hospitaliers, de santé mentale et de réadaptation. Chez tous les OP, on établit un lien entre la satisfaction professionnelle et l'équité, des charges de travail gérables et la gestion efficace d'une pratique, mais tous ces enjeux professionnels se cumulent pour contribuer à la satisfaction.

Introduction

Collectively, general practitioners (GPs) make up one-half of the total number of physicians in Canada. Our health care system relies on GPs to be the gatekeepers for access to medical services, both in the community and in the hospital, and to be the care providers for primary medical care needs. Given Canada's geography, there will always be a need for rural, regional and urban GPs. According to figures from Statistics Canada,[1] about 25% of Canada's population lives in rural areas, defined as communities that either do not have hospitals or have small hospitals that do not provide specialized care; another 25% of the population lives in communities that have hospitals that offer a range of secondary-level specialized care; and 50% of Canada's population lives in urban centres as defined by the presence of a medical school.[1] About two-thirds of GPs live in urban centres.[2] These practice environments differ greatly. While there have been many studies on the career satisfaction of GPs, none, as far as we know, have captured the distinctions between rural, regional and urban settings.

Distinctions between urban, regional and rural practice environments

Urban

In the urban centres, GPs conduct most of their work in group practices in community-based offices, referring patients to specialists when needed, arranging admission to hospitals when required and visiting patients in hospitals, nursing homes, rehabilitation centres and sometimes mental health facilities. General practitioners in urban centres tend to create their own niche within a complex network of services that extends from primary to tertiary care centres.[3–5]

Regional

General practitioners in regional communities provide services to varying sized catchment areas in hospitals ranging from 50 to 200 beds that provide a broad range of secondary-level treatments as defined by Tepper and colleagues.[6] However, they tend to be chronically short of certified specialists required to keep their surgical, obstetrical and psychiatric programs viable.[7] Physicians in regional centres must convince small-town doctors not to refer their patients directly to the big city by assuring them that their patients will be referred back to them for follow-up care and to tertiary centres when necessary.[8] Regional physicians need to form cooperative linkages with subspecialists in tertiary centres to pass on the rare and complex cases to subspecialists at the tertiary centres.[7] When these 2 conditions are met, viable secondary level services can develop at regional referral centres.

Rural

Small-town doctors see a great number of patients and make a wide variety of clinical decisions without immediately available consultation from colleagues.[9,10] Many rural hospitals can only offer primary care, basic hospital care and triage.[11] The successful small-town doctor must at once be "a jack of all trades"[11] and be willing to be a community leader.[12] Some people have a passion to lead this kind of life[13]; however, finding such individuals has always been challenging.[14]

Career satisfaction studies of general practitioners

Many factors contribute to physicians' career satisfaction, including workplace stress and the ability to

cope with that stress,[15–20] participation in social and leisure activities,[21–27] the fair distribution of rewards,[28–31] and workload[21,27,32] as well as organizational and managerial functions.[21,23,33] Career satisfaction is also associated with the ability to access quality services for patients.[16,17,33]

Career satisfaction has been subject to a great deal of study because of its impact on the individual[29,34] and on job performance.[35–38] According to Mawardi,[39] factors that contribute to career satisfaction for physicians include accurate diagnosis and successful treatment, service to humanity, respect and appreciation, teaching and research. Factors that contribute to dissatisfaction include time pressures, patient-related problems, paperwork and administrative work, lack of facilities and fixed payment schemes.

There have been several major studies of career satisfaction specific to GPs. The major studies have been by Cooper and colleagues[40] in the United Kingdom, who found that GPs are affected by 4 broadly distinguishable stress factors:

1. demands of the job such as visiting patients at home during inclement weather, increased demands by patients for second opinions, adverse media publicity, lack of appreciation from patients and worrying about patients' complaints;
2. interruptions to family life, emergency calls during office hours, dealing with problem patients, and calls at odd hours;
3. conflicts between work and home life; and
4. administration of the practice.

More recently, the large scale American Physician Worklife Study of primary care practice by the SGIM Career Satisfaction Study Group yielded a comprehensive model of job satisfaction for American primary care physicians that articulated the importance of long-term patient–physician relationships, control over work schedules and administrative work, clinical autonomy, an appropriate practice size, balance between work and personal life, perceived time pressure and reasonable proportions of complex cases.[41] The last 2 analyses of physician satisfaction by the Canadian Medical Association in 1998 and 2002 indicated that GPs felt overworked, with too many patients and too many separate competing demands by insurance bureaucrats, hospital administration, other agencies such as public health, and specialists seeking letters documenting reasons for referral. In addition, more intrusions are made on days off than in past years, and many physicians catch up on paperwork during their days off.[42,43]

Our Canadian study of GPs differs from previous studies in that it uses a concise yet comprehensive measure of career satisfaction that captures factors related to intrinsic interest, performance, and professional and personal issues.[34] It also recognizes the distinctive practice environments of urban, regional and rural GPs.

Methods

Study populations and data collection

A stratified random sample of 5300 physicians was drawn from a comprehensive commercial database listing all 60 859 physicians actively practising in Canada as of January 2002. Data were collected between January and April 2004 using a mail questionnaire. To check for bias between responding and non-responding physicians, all non-responding physicians were sent a 1-page survey containing key items.[44]

Definition of rural

Over the years, various commissions of inquiry[45,46] have defined rural, regional and urban community sizes according to increasing thresholds of populations and resources following the principles of medical geography.[47,48] In theory, small communities serve their local populations, regional communities provide primary and secondary level services to their local populations and receive referrals for secondary services from proximal small communities, and urban communities provide primary, secondary and tertiary level services for their populations and receive referrals for tertiary services from both regional and small communities.

In practice, the distinctions between community types are often blurred. Following the lead of previous studies of general practice,[49,50] this study used an order of magnitude approach consisting of small towns, regional communities and urban centres. We chose 3 community sizes:

- small town — 5000–9999 people (population large enough to sustain a medical practice and a small hospital that does not offer secondary specialist services);
- regional — 50 000–99 999 people (population large enough to support a secondary hospital but not large enough to support tertiary services); and
- tertiary — 500 000–999 999 people (population large enough to support tertiary hospital

services but not so large that competing multihospital networks and quaternary services are involved).

Measures

The dependent variable — career satisfaction

The comprehensive career satisfaction measure developed by Lepnurm and colleagues[34] with a Cronbach's reliability that indicates the consistency of a scale of alpha 0.92 was used as the dependent variable. Reliabilities over alpha 0.7 are considered acceptable and over 0.8 are very good. This measure consisted of 16 items, with 4 dimensions:

1. inherent satisfaction with practising medicine;
2. satisfaction with professional working conditions;
3. satisfaction with job performance; and
4. satisfaction with personal life.

Each of the dimensions was measured using 4 items scored on a 6-point scale from "strongly agree" to "strongly disagree."

The independent and control variables

We arranged explanatory variables in a sequence consisting of demographic or control factors, stress and coping, health care system quality and access, professional equity, workload and organizational characteristics (Fig. 1).[33]

Control factors

Control factors consisted of sex, family responsibility, number of years in practice and self-reported health status. The family responsibility variable was based on ranked age groupings of physicians' children, recognizing that infants and toddlers require the most parental attention, followed by preschoolers and then older children.[51]

Stress and coping

Many studies of stress intertwine perceived stress, strain and burnout, often combining elements of each under the common label of stress.[52] Our study focused on perceived stress, which was labelled "distress" to distinguish it from job strain[53,54] and burnout.[55] The distress scale had very good reliability (α 0.81) with 10 items all scored on a 7-point scale from "never" to "every day." Physicians were also asked to indicate their ability to cope with stress on a single 5-point scale.

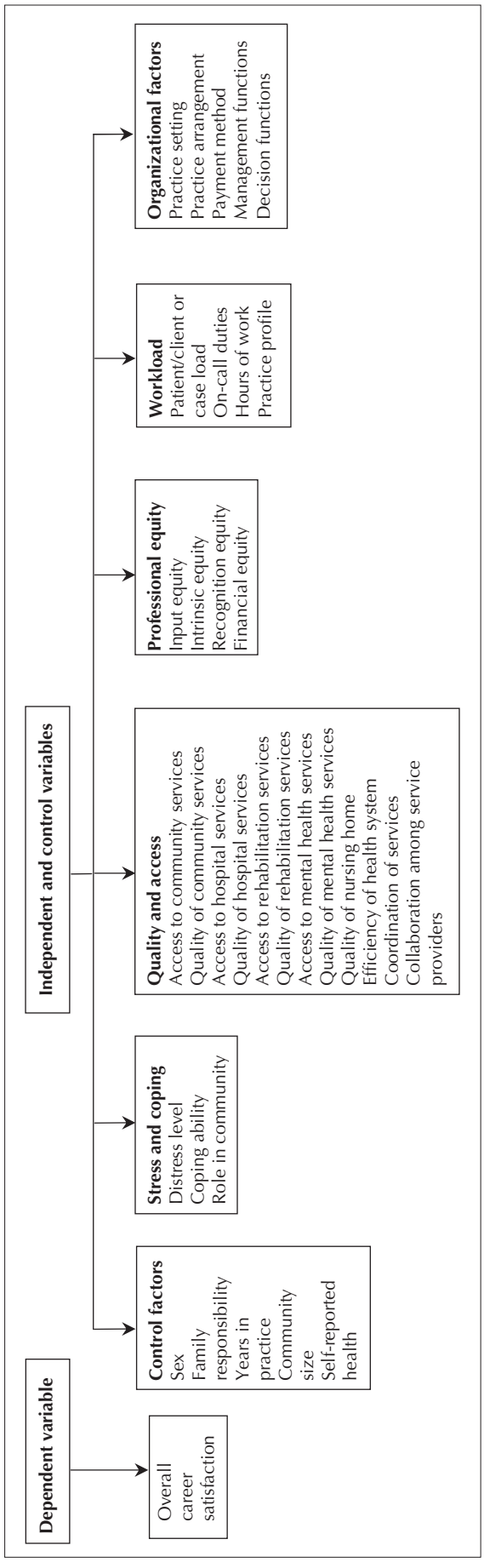

Fig. 1. Factors contributing to career satisfaction.

Community roles and activities

Community roles and activities may either contribute to or help to alleviate stress. To establish a relation between career satisfaction and roles and activities in the community, we used a matrix of activities and roles, including time spent on 6 categories of activities (sporting and recreation, cultural and arts, spiritual or religious, community and charity, health care, and other activities) and time spent on 6 types of specific roles in increasing levels of intensity (attendance and participation, volunteer, provide medical expertise, coaching or instruction, fundraising, and leadership).

Collegiality

Collegiality was measured using 3 items:

1. When you need to talk about a problem there are colleagues available who can give you sound advice?
2. A colleague is willing to take on extra work so that you can take time for special training or CME.
3. If you needed a week off to attend to urgent personal or family needs a colleague would fill in for you?

All 3 items were measured on a 6-point scale (strongly disagree to strongly agree). The collegiality scale had very good reliability (α 0.84).

Quality and access

Physicians were asked to rate their assessments of access to, and the quality of, 5 specific services (community, mental health, hospital, rehabilitation and nursing home services) using individual grading scales marked in increments of 10 from 0 to 100. Physicians were also asked to report their views on the quality of the health care system using 3 global items that rated efficiency of the system, coordination of services and collaboration among different providers in the community on 6-point scales.

Professional equity

The 4 equity measures used in this study are input, intrinsic, recognition and financial equity.[56] Input pertains to the physical, intellectual and mental effort made by physicians in providing care to patients and also includes financial investments in paying staff and maintaining facilities. Intrinsic equity refers to the inherent rewards that are derived from providing care to patients, the sense of accomplishment and fulfillment in practising medicine. Recognition pertains to externally provided rewards, such as peer recognition, gratitude expressed by patients and their families, and respect from nurses and administrators. Financial equity pertains to fairness in financial remuneration.[56] The items were all measured on 6-point scales.

Workload

We measured clinical workload by summing the number of weighted cases handled by the physician (routine cases = 1.0, complex medical cases = 1.25, cases with serious personal problems such as substance abuse and battering = 1.25 and cases characterized by both complex medical and personal problems = 1.5). A similar approach was used by Mainous and colleagues[57] in their physician work life studies. The number of hours of work, time on call and the extent of academic responsibilities were also captured.

Organizational factors

Items captured by the study included whether the physician

1. was part of an individual or group practice;
2. shared revenues and expenses, or both;
3. was on contract with a health organization; or
4. participated in alternative funding programs.

With respect to methods of payment, physicians were asked to indicate the distribution of income among fee-for-service, salary, capitation and sessional contracts.

Management variables consisted of 2 scales pertaining to level of organizational formality and managerial decision-making. The first scale was made up of 7 items related to carrying out a range of management activities, including strategic planning, setting budgets, conducting performance appraisals of staff, evaluating the efficiency of operations and the quality of services, and holding meetings to discuss administrative and clinical issues. It was found to be very reliable (α 0.89). The second scale was a managerial decision-making scale made up of 7 items related to taking on new physicians, hiring and setting pay levels of staff, purchasing supplies and medical equipment, selecting clinical services and facility financing. It was also found to be very reliable (α 0.92).

Analysis

A multiple regression model with beta values and

individual and cumulative coefficients of determination R^2 was used to verify the direction and magnitude of relations within the model.[58,59]

Results

Study subjects

Of the 5300 physicians across Canada who were sent questionnaires, 149 were deemed ineligible for a variety of reasons (retirement or reduced practice, maternity leave, return to medical school, lack of clinical care involvement, serious illness and death) and 193 had moved, leaving 4958 eligible physicians. Of these, 2810 (56.7%) returned completed questionnaires, among whom there were 1006 GPs and 112 GP-specialists (not included). We checked response bias and found that it was negligible.

A total of 256 of the responding GPs were located in the selected 3 community sizes: small town (76 GPs), regional (74 GPs) and urban (106 GPs). Responding GPs from other community sizes were not included in this study. Slightly more than one-half (53.9%) of the small-town GPs were female, compared with 41.9% in regional communities and 71.7% in the urban centres. The mean age of GPs in small towns was 46.1 years, compared with 48.3 years in regional communities and 46.8 years in urban cities (Table 1).

GPs in small towns and regional communities were more likely to have academic responsibilities and to have their offices located in a hospital than GPs located in urban areas. GPs in small towns (75%) and urban areas (80.2%) were more likely to report being part of a group practice than those working in regional communities (59.5%). GPs in small towns were less likely to rely on fee-for-service as their method of remuneration, compared with GPs in regional communities or urban areas.

Career satisfaction

We observed only slight differences in career satisfaction among GPs based on community size. GPs in small towns were slightly more satisfied with their careers (4.04 out of 6) than GPs in regional communities (3.91) or urban areas (3.93). The majority in all 3 community sizes indicated that they were satisfied or very satisfied (Table 2). Few physicians indicated that they were dissatisfied or very dissatisfied with their careers.

The coefficient of determination (R^2) was record-

Table 1. Age distribution of responding general practitioners

Community size	No. of GP respondents	Mean age, yr	Age group, yr; no. (and %)					
			25–34	35–44	45–54	55–64	65–74	75–85
Small towns (5000–9999 people)	76	46.12	5 (6.6)	31 (40.8)	26 (34.2)	12 (15.8)	2 (2.6)	0 (0.0)
Regional communities (50 000–99 999 people)	74	48.31	6 (8.1)	23 (31.1)	24 (32.4)	18 (24.3)	3 (4.1)	0 (0.0)
Urban communities (500 000–999 999 people)	106	46.82	8 (7.5)	36 (34.0)	41 (38.7)	17 (16.0)	4 (3.8)	0 (0.0)

GP = general practitioner.

Table 2. The career satisfaction levels of responding general practitioners

Community size	No. of GP respondents	Mean satisfaction rating	6-point scale rating;* no. (and %) of responses					
			Very dissatisfied	Dissatisfied	Slightly dissatisfied	Slightly satisfied	Satisfied	Very satisfied
Small towns (5000–9999 people)	76	4.04	0 (0.0)	7 (9.2)	16 (21.1)	24 (31.6)	25 (32.9)	4 (5.3)
Regional communities (50 000–99 999 people)	74	3.91	2 (2.7)	4 (5.4)	18 (24.3)	25 (33.8)	25 (33.8)	0 (0.0)
Urban communities (500 000–999 999 people)	106	3.93	1 (0.9)	5 (4.7)	25 (23.6)	45 (42.5)	29 (27.4)	1 (0.9)

GP = general practitioner.
*The use of 2 choices around the midpoint (slightly dissatisfied and slightly satisfied) rather than a single choice (neither dissatisfied nor satisfied), is used to avoid the contaminating effect of mixing respondents who really were undecided with those who actually tended toward a middle position. Furthermore, splitting the midpoint prompts the respondent not to select the midpoint as a default choice.[83–85]

ed cumulatively and separately for the 3 different groups (small town = 76, regional = 74 and urban = 106) and expressed in the columns (5000–9999, 50 000–99 999 and 500 000–999 999). By convention, control factors (sex, family responsibility, number of years in practice and self-reported health status) are entered first to control for their effect on the total explained variance. In this study, they are important, explaining 33.4% of the variance in career satisfaction for small-town physicians but only 4.9% of the variance for regional physicians and 7.1% of the variance in career satisfaction for the urban physicians (Table 3). The factors and variables were entered in sequence according to the model (Fig. 1) and the cumulative variance in career satisfaction increased cumulatively until the last factor of payment method was entered. The incremental contribution of any one factor or variable can be determined by subtraction from the previous cumulative variance. For example, financial equity makes an incremental contribution of 5.6% (76.3%–81.9%) to the variance in career satisfaction for small-town doctors and only 0.1% (75.5%–75.6%) and 1.8% (78.1%–79.9%) for regional and urban physicians.

The multivariate models explained a high percentage of variance in career satisfaction: 88.5% in small towns, 88.9% in regional communities and 86.3% in urban areas. As expected, the contribution of individual explanatory variables differed between the 3 community sizes (Table 4 and Table 5).

Control factors

The control factors of sex (Table 4), degree of family responsibility, number of years in practice and self-reported health (Table 5) contributed to the career satisfaction model (Table 3) in all 3 community sizes. In general, greater career satisfaction was associated with being male, with more years of practice, with less family responsibility and with greater self-reported health on a 5-point scale from very poor to excellent.

Table 3. Factors explaining the career satisfaction of general practitioners across 3 community sizes*

	Community size								
	Small towns (5000–9999 people)			Regional communities (50 000–99 999 people)			Urban communities (500 000–999 999 people)		
Independent and control variables	R^2	β	*p* value	R^2	β	*p* value	R^2	β	*p* value
Control factors									
Sex	7.0	+0.010	0.346	0.0	+0.045	0.001	0.0	–0.059	0.000
Degree of family responsibility	7.0	–0.140	0.000	1.0	–0.015	0.302	1.0	–0.037	0.003
Years in practice	19.5	+0.147	0.000	1.6	+0.045	0.018	1.4	+0.126	0.000
Self-reported health	33.4	+0.138	0.000	4.9	+0.053	0.000	7.1	+0.052	0.000
Stress and coping, and role in community									
Distress level	58.9	–0.572	0.000	36.0	–0.332	0.000	55.5	–0.353	0.000
Ability to cope with stress	61.7	+0.298	0.000	40.1	+0.285	0.000	NA	NA	NS
Time spent on activities of interest in community	NA	NA	NS	41.2	–0.120	0.000	56.3	–0.042	0.001
Community activities relieve stress	NA	NA	NS	41.7	–0.190	0.000	NA	NA	NS
Change in community leadership commitment	NA	NA	NS	NA	NA	NS	56.4	+0.080	0.000
Quality and access									
Access to community services	NA	NA	NS	42.2	+0.188	0.000	NA	NA	NS
Quality of community services	NA	NA	NS	NA	NA	NS	56.7	+0.210	0.000
Access to hospital	NA	NA	NS	NA	NA	NS	57.0	+0.269	0.000
Quality of hospital	64.9	+0.158	0.000	42.2	+0.051	0.006	58.2	+0.086	0.000
Access to rehabilitation services	NA	NA	NS	51.0	+0.139	0.000	60.3	+0.095	0.000
Quality of rehabilitation services	NA	NA	NS	52.9	+0.043	0.015	60.3	+0.113	0.000
Access to mental health services	NA	NA	NS	58.8	+0.270	0.000	61.8	+0.106	0.000
Quality of mental health services	NA	NA	NS	NA	NA	NS	63.6	+0.168	0.000
Access to nursing home	NA	NA	NS	59.0	+0.204	0.000	NA	NA	NS
Quality of nursing home	NA	NA	NS	60.3	+0.129	0.000	64.0	+0.061	0.000
Efficiency of health system	66.7	+0.045	0.000	60.3	+0.342	0.000	66.0	+0.134	0.000
Coordination of services	66.7	+0.177	0.000	NA	NA	NS	NA	NA	NS
Collaboration between providers	70.6	+0.206	0.000	60.7	+0.130	0.000	67.0	+0.096	0.000

Continued on next page

Distress

Distress was a very important contributor to career satisfaction, with cumulative variance rising to 58.9% (an incremental rise of 25.5%) for small-town physicians, 36.0% (an incremental rise of 31.1%) for regional physicians and 55.5% (an incremental rise of 48.4%) for urban physicians. Levels of distress were negatively associated with career satisfaction, with small-town physicians reporting somewhat higher levels of distress than the other 2 groups (Table 3). The ability to cope with stress contributed to career satisfaction for both small-town and regional physicians. Time spent on community activities were minor and somewhat negative factors for regional and urban physicians.

Access to community services

Assessments of access to and the quality of a variety of services within their local health care system were important contributors to career satisfaction for both regional and urban physicians. Among small-town physicians, only quality of hospital services was a contributor; however, efficiency and collaboration between providers from larger communities were also important contributors. The variance in career satisfaction explained by this group of variables ranged from 19.0% for regional physicians to 8.9% for small town and 10.6% for urban physicians (Table 3).

Equity

The 4 equity scales explained from 11% to 15% of variance for the 3 groups. Each group reported similar levels of input, intrinsic and recognition equity, with small-town physicians reporting somewhat higher levels of financial equity than their urban counterparts. All were positively associated with career satisfaction, with the exception of a minor negative association with input equity among urban physicians (Table 3).

Table 3. Continued

	Community size								
	Small towns (5000–9999 people)			Regional communities (50 000–99 999 people)			Urban communities (500 000–999 999 people)		
Independent and control variables	R^2	β	*p* value	R^2	β	*p* value	R^2	β	*p* value
Professional equality									
Input equity	72.1	+0.154	0.000	68.8	+0.193	0.000	67.3	–0.030	0.037
Intrinsic equity	72.6	+0.052	0.000	70.3	+0.211	0.000	77.2	+0.370	0.000
Recognition equity	76.3	+0.162	0.000	75.5	+0.116	0.000	78.1	+0.124	0.000
Financial equity	81.9	+0.241	0.000	75.6	+0.216	0.000	79.9	+0.221	0.000
Workload									
Weekly hours	NA	NA	NS	76.3	+0.093	0.000	81.3	–0.028	0.043
Weekday evenings on call	82.5	–0.045	0.000	NA	NA	NS	81.8	–0.117	0.000
Saturdays or Sundays on call	NA	NA	NS	79.7	–0.091	0.000	81.8	–0.083	0.000
Clinical workload	84.4	–0.115	0.000	80.1	+0.258	0.000	NA	NA	NS
Academic responsibilities	84.6	+0.091	0.000	NA	NA	NS	82.1	–0.077	0.000
Organizational factors									
Individual or group setting	85.5	+0.092	0.000	80.5	+0.071	0.000	83.0	+0.090	0.000
Community or hospital setting	85.7	–0.076	0.000	80.8	+0.084	0.000	83.0	–0.045	0.001
Individual or shared revenue or expenses	86.0	+0.040	0.001	85.1	–0.422	0.000	NA	NA	NS
Collegiality	NA	NA	NS	NA	NA	NS	84.3	+0.188	0.000
No. of physicians	NA	NA	NS	86.2	–0.188	0.000	84.3	–0.088	0.000
Become less formal or more formal	86.1	+0.038	0.001	87.1	–0.079	0.000	84.4	–0.055	0.000
Do you have sufficient decision influence?	NA	NA	NS	87.2	–0.045	0.000	84.5	+0.139	0.000
Management functions	87.6	+0.158	0.000	87.7	+0.089	0.000	84.5	+0.177	0.000
Delegation of decisions	87.6	–0.040	0.000	88.0	+0.042	0.010	86.1	–0.257	0.000
Payment method	88.5	–0.123	0.000	88.9	+0.173	0.000	86.3	+0.087	0.000

NA = not applicable; NS = not statistically significant.

*β values and levels of significance indicate the magnitude and strength of the association between career satisfaction and individual ranked factors and continuous variables. β values with positive signs indicate a direct relationship. For example, career satisfaction is positively related with years in practice and self-reported health. β values with negative values indicate an inverse relationship. The best example is that career satisfaction declines as level of distress rises. Note, many of the incremental contributions tend to be small but significant. Insignificant factors were removed from the model; they are recorded as NS.

Workload factors

Workload factors made small but significant contributions to explain variance in career satisfaction, with an incremental increase of 4.9% for regional, 2.5% for small town and 2.3% for urban physicians. Workload factors were negatively correlated with career satisfaction, with the exception of academic responsibilities, which was a positive association for small-town physicians. Hours of work and clinical workload were positively associated with career satisfaction for regional physicians (Table 3).

Practice structure

Practice structure and the manner in which work is organized were also found to contribute to career satisfaction. For regional physicians, this explained 8.8% of variance in career satisfaction; it explained 3.9% for small-town physicians and 4.2% for urban physicians. The most striking organizational variable was the handling of revenues and expenses. In regional communities, GPs preferred to handle both revenues and expenses as individuals, even though they often practised in groups (Table 3).

Table 4. Coding for ranked categorical factors for general practitioners*

Independent factors	Code	No. (and %) of GP respondents: Small towns (5000–9999 people), *n* = 76†	Regional communities (50 000–99 999 people), *n* = 74†	Urban communities (500 000–999 999 people), *n* = 106†
Sex				
Female	1	41 (53.9)	31 (41.9)	76 (71.7)
Male	2	35 (46.1)	43 (58.1)	30 (28.3)
Degree of family responsibility‡				
No children	0	20 (26.3)	28 (37.8)	32 (30.2)
Older children	1	12 (15.8)	8 (10.8)	20 (18.9)
Young children	2	20 (26.3)	17 (23.0)	40 (37.7)
Infants and toddlers	3	24 (31.6)	21 (28.4)	14 (13.2)
Academic responsibilities§				
None	0	33 (43.4)	31 (41.9)	53 (50.0)
Some (1%–15% of time)	1	43 (56.6)	43 (58.1)	50 (47.2)
Considerable (≥ 15% of time)	2	0 (0.0)	0 (0.0)	3 (2.8)
Individual or group setting				
Individual	1	19 (25.0)	30 (40.5)	21 (19.8)
Group	2	57 (75.0)	44 (59.5)	85 (80.2)
Community or hospital setting				
Community	1	69 (90.8)	69 (93.2)	102 (96.2)
Hospital	2	7 (9.2)	5 (6.8)	4 (3.8)
Individual or shared revenue and expenses				
Individual revenue and individual expenses	1	26 (34.2)	29 (39.2)	28 (26.4)
Individual revenue and shared expenses	2	31 (40.8)	32 (43.2)	46 (43.4)
Shared revenue and shared expenses	3	7 (9.2)	7 (9.5)	15 (14.2)
Salary or contract	4	12 (15.8)	6 (8.1)	17 (16.0)
Payment method				
More than 95% FFS	7	33 (43.4)	52 (70.3)	76 (71.7)
75%–94% FFS	6	24 (31.6)	17 (23.0)	15 (14.2)
51%–74% FFS	5	11 (14.5)	1 (1.4)	5 (4.7)
Other types	4	4 (5.3)	1 (1.4)	1 (0.9)
51%–74% fixed¶	3	1 (1.3)	1 (1.4)	3 (2.7)
75%–94% fixed	2	1 (1.3)	2 (2.8)	1 (0.9)
More than 95% fixed	1	2 (2.6)	0 (0.0)	5 (4.7)

GP = general practitioner; FFS = fee-for-service.
*Ranked factors are non-parametric in that they are expressed in frequency distributions with categories arranged from lowest to highest.
†Of total respondents, 76 (30%) were from small town communities, 74 (29%) were from regional communities and 106 (41%) were from urban communities.
‡Older children included those in high school and older children living at home; young children included those in preschool and elementary.
§Included teaching and research.
¶ Salaried or fixed contract.

Payment methods

Although payment methods were found to be significant factors contributing to career satisfaction, their influence was not great (Table 3). The most important finding is that the perspectives of rural practitioners differed from their urban colleagues. Rural physicians preferred the fee-for-service method, while both regional and urban physicians supported blended or fixed payment schemes (Table 3 and Table 4).

Table 5. Ranges, means and standard deviations for continuous variables for general practitioners*

	Community size					
	Small towns (5000–9999 people)		Regional communities (50 000–99 999 people)		Urban communities (500 000–999 999 people)	
Variables	Mean (and SD)	Range	Mean (and SD)	Range	Mean (and SD)	Range
Dependent variable						
Career satisfaction	4.04 (1.06)	1–6	3.91 (1.02)	1–6	3.93 (0.91)	1–6
Independent and control variables						
Control factors						
Degree of family responsibility	2.99 (2.53)	0–10	2.45 (2.36)	0–10	2.25 (2.00)	0–10
Years in practice	18.5 (10.2)	1–55	20.8 (9.18)	1–55	18.3 (9.6)	1–55
Self-reported health	3.86 (0.81)	1–5	3.96 (0.82)	1–5	3.88 (0.83)	1–5
Stress and coping, and role in community						
Distress level	40.1 (10.3)	7–70	44.2 (8.7)	7–70	41.4 (9.8)	7–70
Ability to cope with stress	3.97 (0.78)	1–5	3.82 (0.78)	1–5	3.83 (0.75)	1–5
Time spent on activities of interest in community	2.70 (1.01)	1–20+	2.69 (0.94)	1–20+	2.66 (0.95)	1–20+
Community activities relieve stress	4.25 (0.91)	1–6	4.28 (0.94)	1–6	4.16 (0.84)	1–6
Change in community leadership commitment	3.20 (0.54)	1–5	3.07 (0.60)	1–5	3.14 (0.49)	1–5
Quality and access						
Access to community services	57.4 (21.1)	0–100	50.3 (20.9)	0–100	58.0 (19.0)	0–100
Quality of community services	62.4 (22.2)	0–100	61.0 (19.3)	0–100	68.5 (14.6)	0–100
Access to hospital	69.5 (20.9)	0–100	57.8 (20.8)	0–100	52.0 (21.6)	0–100
Quality of hospital	75.0 (15.8)	0–100	73.1 (14.9)	0–100	72.4 (15.5)	0–100
Access to rehabilitation services	41.9 (22.9)	0–100	44.2 (21.9)	0–100	46.0 (19.3)	0–100
Quality of rehabilitation services	59.5 (25.6)	0–100	66.4 (18.3)	0–100	67.7 (13.9)	0–100
Access to mental health services	48.0 (24.5)	0–100	32.3 (17.9)	0–100	36.5 (21.2)	0–100
Quality of mental health services	60.7 (24.0)	0–100	53.0 (22.0)	0–100	63.4 (17.9)	0–100
Access to nursing home	43.7 (25.4)	0–100	45.0 (23.5)	0–100	45.3 (19.3)	0–100
Quality of nursing home	67.8 (19.7)	0–100	65.5 (17.8)	0–100	63.9 (15.7)	0–100
Efficiency of health system	3.58 (1.0)	1–6	2.99 (0.91)	1–6	3.05 (0.96)	1–6
Coordination of services	3.39 (0.91)	1–6	3.16 (0.84)	1–6	3.16 (0.87)	1–6
Collaboration among service providers	3.75 (0.94)	1–6	3.84 (0.96)	1–6	3.43 (0.97)	1–6
Professional equality						
Input equity	31.6 (4.2)	6–42	32.4 (5.0)	6–42	31.3 (4.8)	6–42
Intrinsic equity	27.8 (4.8)	6–36	27.6 (4.5)	6–36	27.1 (5.0)	6–36
Recognition equity	20.2 (4.2)	5–30	19.3 (4.0)	5–30	19.5 (4.2)	5–30
Financial equity	20.8 (6.0)	5–30	18.0 (6.7)	5–30	17.9 (7.0)	5–30
Workload and organizational factors						
Weekly hours	47.0 (13.4)	8–90	48.7 (11.0)	8–90	43.2 (14.1)	8–90
Weekday evenings on call	3.87 (2.29)	0–18+	4.04 (2.38)	0–18+	3.92 (2.64)	0–18+
Saturdays or Sundays on call	2.88 (1.29)	0–8	2.66 (1.25)	0–8	2.65 (1.47)	0–8
Clinical workload	163.8 (72.7)	10–300	180.1 (75.3)	10–300	135.1 (74.8)	10–300
Collegiality	13.8 (2.8)	3–18	13.6 (3.2)	3–18	12.2 (3.7)	3–18
No. of physicians†	5.9 (5.8)	1–20+	6.6 (7.6)	1–20+	6.4 (9.2)	1–20+
Become less formal or more formal	2.71 (0.61)	1–5	2.80 (0.44)	1–5	2.85 (0.47)	1–5
Do you have sufficient decision influence?	3.82 (0.48)	1–5	3.96 (0.45)	1–5	3.76 (0.64)	1–5
Management functions	12.9 (4.2)	7–21	12.4 (4.0)	7–21	13.2 (4.2)	7–21
Delegation of decisions	12.1 (2.0)	7–14	12.4 (1.6)	7–14	11.4 (2.2)	7–14

SD = standard deviation.
*Continuous variables are parametric in that they have means and standard deviations.
†Included doctors in offices and hospitals.

Discussion

Most GPs were satisfied with their career, with small-town doctors being slightly more satisfied. They also perceived slightly greater recognition and financial equity than their colleagues in larger cities. Small-town doctors also work longer hours and it is not surprising that they would find distress to be very important in career satisfaction. These findings are similar to US studies of primary practice.[20,60,61] Although GPs in Canada are concerned with financial equity, they appear to place less importance on financial rewards than their colleagues in the United States.[20,60,61] These findings agree with our companion study of psychiatrists and surgeons.[33]

Community activities are important[62] but are not viewed in the same way by GPs in different sized communities. Community activities were not found to be significant for physicians in small communities. Perhaps this is because all small-town GPs have an important leadership role in the community.[12] Physicians in regional communities find that leadership roles relieve distress, and physicians in urban communities find leadership roles satisfying. Perhaps group practice arrangements in urban settings are not as stress producing as the smaller groups in regional communities. Further, community activities may afford GPs leadership opportunities that are not available to them in hospitals.

This study has illustrated some differences in the way GPs from very different community sizes consider access and quality issues. GPs in small towns only considered the quality of hospital services to be important because specialized facilities are not located in their communities, whereas physicians in regional referral centres considered access and quality of hospital and specialized institutional services to be especially important because to be successful referral centres they must be capable of providing a range of services or patients will bypass them and go to urban centres.[8,63] General practitioners in urban centres consider access and quality of the full continuum of services from community to nursing homes to be important because admission to facilities is more regulated in urban centres.[60,61,63,64] Urban physicians in this study reported lower ratings of access to all services.

Our findings that GPs in small towns are particularly concerned about efficiency and collaboration among health care providers of specialized services is in agreement with the study of obstetrics in a small hospital in British Columbia[65] and of cholecystectomies in Labrador.[66]

Having considered quality issues, this study also demonstrated the importance of professional equity, which is a broader concept than fairness, in explaining the career satisfaction of GPs.[56] GPs in small towns and especially in regional centres work longer hours than GPs in urban centres and this is captured by our measure of input equity. It takes physical stamina and the ability to cope with stress to be a country doctor; this is borne out in 2 large-scale surveys by the Canadian Medical Association in 1998[42] and in 2002[43] and anecdotally by Renouf's lament of a country doctor.[10] Further, Wetmore and Stewart[67] suggest that it takes confidence to carry out procedural skills. In terms of input equity, GPs in urban centres felt they had contributed more than they had received in return. In absolute terms, GPs in small towns reported input equities of 31.6 points on an equity scale of 42, 32.4 points in regional communities and 31.3 points in urban cities.

Unlike their urban colleagues, GPs in small towns and regional communities reported positive correlations between input equity and career satisfaction. This reinforces the findings of previous Canadian studies of rural practice.[67–69] Physicians with a societal orientation[12] and the desire for a varied practice[68] were more likely to prefer rural practice, and those who had more confidence in procedural skills were more likely to develop satisfying rural practices.[67]

GPs in small-town and regional practices consider recognition more important, compared with their urban colleagues who are often overshadowed by specialists. Urban GPs consider intrinsic equity more important. This study found that financial equity is important to small-town doctors. This finding is corroborated by many US studies and is not surprising in light of the hours worked by small-town doctors, the amount of on-call work that they do and the scarcity of collegial support.[16,69]

Career satisfaction is also affected by the organization of the work. GPs in regional centres reported the highest workloads, followed by rural GPs and then urban GPs. GPs in small towns are often overworked, and excessive clinical workloads are associated with dissatisfaction. Conversely, GPs in the regional areas appear to thrive on high clinical workloads; this is crucial to maintain the viability of their hospitals as referral centres.[7] Studies focusing on the circumstances of regional general practice are rare. Hay's[7] work in Australia is one of the very few studies detailing the factors that contribute to viable regional medical practices. Anecdotal evidence gathered by the Saskatchewan Commissions

on Directions in 1990[70] for Saskatchewan, which has always had difficulties in recruiting and retaining physicians outside the major cities, supports Hay's findings in that collaboration between GPs, GP specialists and certified specialists from larger centres is essential to maintaining viable referral hospitals in Moose Jaw and Prince Albert. Having viable referral centres in regional communities also reduces pressures on urban centres. More research in this area should be conducted.

GPs in some urban centres compete for patients as there is an abundance of GPs in many of the major cities. Of the 76 GPs in small towns, 43 reported having academic responsibilities and found this to be positively associated with career satisfaction. Conversely, GPs in urban centres reported a negative association between career satisfaction and academic duties. Perhaps academic duties are not rewarded well enough or perhaps they detract from clinical work. Some studies suggest that physicians selecting general practice tend to be clinically and not academically oriented.[72]

The development of group practice and the phasing out of solo practice has been driven by the need for collegial support in the diagnosis and treatment of patients and by physicians' desire to resolve conflicts between their personal and working lives. This appears to be true for GPs, even in small towns. With the exception of GPs in regional communities, most GPs do not want to set up their practices in hospitals. In the urban centres, GPs do not have much decision-making authority in hospitals. However, they do have more influence in regional centres.

Collegiality was important to urban GPs but not to GPs in regional or small communities. GPs in urban areas report the lowest ratings of collegial support, yet they value it most highly. It seems that urban GPs view each other as competitors for patients. These findings make sense when organizational issues are considered. GPs in small towns appear to be ready for more formal management of their practices, which is understandable; they are stretched between doing paperwork and travelling to see some of their patients in their local hospital, and they only have a few colleagues in very small group practices. Small-town doctors often have difficulties scheduling holidays because of the lack of available locums.[9] Although GPs in regional and urban centres also prefer group practice and the sharing of expenses, they do not appear to want formal management practices. Studies of managed care in the United States are cold comfort for Canadian GPs who hear tales of preadmission authorizations, mandatory second opinions and other intrusive bureaucratic procedures before diagnostic tests or treatment procedures can be conducted.[60,61] Nevertheless, when basic management functions, such as conducting meetings to discuss administrative or clinical issues, establishing budgets, evaluating efficiency of operations or quality of services, and conducting staff performance appraisals, are carried out in a formal way, the GPs reported that career satisfaction was positively correlated with the presence of formal management for such functions. However, small-town GPs preferred to make managerial decisions themselves, while GPs in regional and urban centres let go of these decisions.

Finally, it was not surprising that GPs in small towns still prefer fee-for-service remuneration and GPs in regional and urban centres are more willing to experiment with blended and alternative remuneration systems.

Limitations

The response rate of 56.7% in this study was higher than most comparable studies. Proper stratification, including statistical power calculations, and non response bias checks followed by adjustments to the raw results with weighting factors constitutes the soundest approach to securing a sufficient number of respondents who accurately represent the study population.[72–74] A final limitation of the study is the cross-sectional design, which prevents the ascribing of causality. Therefore, the emphasis in this has been on the development of valid measures.

Conclusion

This study has demonstrated that GPs' career satisfaction can be explained; however, there appear to be distinctive practice environments in rural areas, regional communities and in urban cities. Financial incentives and familiarity with small-town practice may entice a young medical school graduate to spend a few years in a small town[75,76]; however, retention will likely depend on making this lifestyle attractive to small-town practitioners and their families.[67,76] The opportunity to play a senior role in a regional referral hospital may entice some GPs to set up practice in a regional community, but retention will depend on opportunities to practice a broad range of clinical skills,[7,57] the capacity to receive continuing medical education to maintain advanced skills, and the availability of relief or collegial support.[69,71,75–77] Career satisfaction for urban

GPs rests on finding and maintaining a respected niche in the existing large health care network.[78–80] Urban GPs require steady access to quality services across the full continuum of services since they see the broadest range of general medical cases. Controlling working hours, maintaining the practice infrastructure and securing supportive collegial relationships is more complex in expensive and more competitive urban environments.

Perhaps smaller countries can rely exclusively on urban GPs, but Canada will always require a steady supply of rural and regional GPs. Regardless of their environment, GPs have to maintain a vibrant role in academia, in refining their societal roles as the first point of contact for primary care and in continually refining their scope of practice in a proactive manner.[71,81,82]

Acknowledgement: This research was supported by the Canadian Institutes for Health Research grant FRN: 50295.

Competing interests: None declared.

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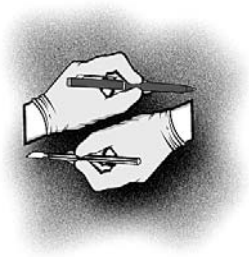

The ARTS of risk management in rural and remote medicine

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This article has been peer reviewed.

Introduction: This paper describes an action research process (in which the researchers are active participants throughout the process of development, testing and refinement) to develop a framework for clinical risk assessment and management in the context of rural and remote medicine. The framework is needed to support educational, medicolegal and quality improvement processes in rural and remote medical practice.

Methods: The research process included identifying a problem and gradually developing a research question, developing a potential model for application in a specific context, refining the tool and piloting the tool in a limited context. The research question and framework were developed during a series of teleconferences under the aegis of the Censorial Panel of the Australian College of Rural and Remote Medicine (ACRRM). After the framework was developed and refined, it was tested at a workshop in conjunction with the ACRRM Scientific Forum in Alice Springs, Australia, in July 2004. Workshop participants were principally but not exclusively rural medical practitioners from across Australia. The main outcome measure was a working framework for risk management broadly applicable in rural and remote medicine.

Results: The process clarified differences between safety and quality approaches in metropolitan and rural and remote medical practice, culminating in an appropriate clinical risk management framework.

Conclusion: The action research as undertaken resulted in a workable risk management framework that is worthy of further development and that may be a valuable educational tool, both for existing practitioners and for future rural doctors. Further, it has potential as a means of providing legal protection to rural practitioners when actual rural practice is at odds with "best practice" as defined by a metropolitan group of experts.

Introduction : Ce document décrit un processus de recherche-action (dans le contexte duquel les chercheurs participent activement à l'ensemble du processus d'élaboration, essai et amélioration) visant à élaborer un cadre d'évaluation et de gestion des risques cliniques en médecine dans les régions rurales et éloignées. Ce cadre est nécessaire pour appuyer des processus d'éducation, médicolégaux et d'amélioration de la qualité en pratique de la médecine en milieu rural et éloigné.

Méthodes : Le processus de recherche a consisté notamment à définir un problème et à élaborer graduellement une question de recherche, à mettre au point un modèle possible d'application dans un contexte précis, à raffiner l'outil et à en faire l'essai pilote dans un contexte limité. On a élaboré la question et le cadre de recherche au cours d'une série de téléconférences sous l'égide du Censorial Panel de l'Australian College of Rural and Remote Medicine (ACRRM). Une fois le cadre mis au point et raffiné, on l'a mis à l'essai en juillet 2004 au cours d'un atelier du Forum scientifique de l'ACRRM, à Alice Springs, Australie. Les participants à l'atelier étaient principalement, mais non exclusivement, des médecins ruraux de toutes les régions de l'Australie. Le cadre pratique de gestion du risque applicable de façon générale à la médecine en milieu rural et éloigné constituait la principale mesure de résultat.

Résultats : Le processus a clarifié des différences entre des approches axées sur la

sécurité et la qualité dans la pratique de la médecine en région métropolitaine et en milieu rural et éloigné et a produit un cadre approprié de gestion des risques cliniques.
Conclusion : La recherche-action entreprise a produit un cadre pratique de gestion des risques qu'il vaut la peine de développer davantage et qui peut constituer un outil précieux d'éducation à la fois pour les praticiens actifs et pour les futurs médecins ruraux. Il est de plus porteur de possibilités comme moyen de fournir une protection légale aux médecins ruraux lorsque la pratique rurale réelle entre en conflit avec la «meilleure pratique» telle que définie par un groupe d'experts d'une région métropolitaine.

Introduction

Although quality has been the key issue in health care since Donald Berwick brought the work of Alexander Demming to the attention of the medical community in the 1980s,[1] it is being complemented and possibly superseded by a focus on risk in the last 10–15 years. In Australia, this has occurred since the 1995 landmark study of Wilson and colleagues,[2] in which medical errors were firmly identified as resulting in significant morbidity and mortality for hospital inpatients. The Australian Council for Safety and Quality in Healthcare, established in 2000, has reinforced the focus on safety and risk management. Following major events overseas[3] and more recently in Australia,[4,5] risk management has become a major priority for health systems.

The work of James Reason[6] was seminal in identifying the events leading up to an adverse event, and other industries, such as the airline industry, have used this framework in a very positive way. In medicine, such models have focused on patient safety through the analysis of adverse events almost entirely in the hospital setting. The process is retrospective and historical, and it gives rise to accumulated data on which to plan, improve and monitor. Vincent and colleagues' framework and root cause analysis are examples of this approach.[7]

A generic approach, applicable to a broad range of situations including health, is detailed in the Australian and New Zealand Standard for Risk Management.[8] The process is prospective but uses data when it is available, although it relies more on subjective assessment based on "what if" scenarios. Importantly, it allows for the assessment of impact on all stakeholders and it identifies opportunities as well as mitigating loss.

In the rural and remote context, however, there is little history of adverse event analysis, hence little data for planning improvement in any structured way.

RDA and ACCRM

Rural and remote medicine in Australia has successfully traversed several major crossroads. Some 10 years ago it was realized that the then current organizations in Australia were not adequately serving the needs of either rural and remote practitioners or their patients. This brought about the establishment of the Rural Doctors Associations (RDA) in all states and the Australian College of Rural and Remote Medicine (ACRRM). These organizations have campaigned strongly for rural health and their recent application to the Australian Medical Council for the recognition of rural and remote medicine as a specialty in its own right (Application for Recognition of the Specialty of "Rural and Remote Medicine" by the Australian College of Rural and Remote Medicine. ACRRM, unpublished document, 2004) has seen the training program recognized as an accredited alternative for the training of rural generalists.[9]

Within the ACRRM, it has been necessary to critically examine what separates rural and remote medical practice from metropolitan medical practice. During this process, it became clear that risk and risk management in rural and remote medicine have characteristics that are unique, or at least sufficiently different from the characteristics when they are applied in a metropolitan setting to warrant further examination.

Thus the work of the Quality and Safety in Practice Committee of the ACRRM Censor's Panel (of which the authors were members) developed into an action research project in relation to risk in rural and remote medicine with the following aims:

- Improve patient safety by educating rural and remote practitioners about risks specific to the rural and remote context. This will enable informed management decisions that minimize the impact of risk on all stakeholders.
- Reduce the effect of the current attitude of

defensive medicine on the recruitment of junior doctors to rural and remote science.
- Analyze risk in rural and remote medicine to help define the specialty.
- Develop a framework for the analysis of events and research that would provide context-specific evidence for rural and remote best practice.

Methods

As opposed to a carefully designed prospective randomized controlled trial designed to answer one question, this project had characteristics of action research with the development of an iterative approach to the research question.

We briefly describe 6 stages; their outcomes will be presented sequentially in the results section.

Identifying the problem and gradually developing the research question

The need to define risk in the context of rural and remote medicine was identified as an important part of the process of trying to define what makes rural and remote medicine unique.

Literature search

We undertook a literature search to determine the current knowledge base about risk management, what is known about its specific application to medical areas and whether there is unique work in rural risk management.

Developing a potential model for application in a specific context

Following the literature review, it was important to determine whether any existing models of risk management could be applied directly to a rural context or if modifications would be necessary to ensure applicability in the local setting.

Refining of the tool

Following the initial development of a model, it was important to undergo an iterative process with a range of rural and remote stakeholders to refine the model so that it could be more broadly applicable.

Piloting the tool in a limited context

Once we decided on a model, it was necessary to "road test" it with a range of previously uninvolved rural and remote practitioners. This was done in the context of a workshop at the ACRRM Scientific Forum in Alice Springs, Australia, in July 2004.

Further refining the tool and extending the concept more broadly

This is in the planning stages.

Results

Identifying the problem and gradually developing a research question

There are several key distinguishing features of rural and remote medicine practice patterns:
- The care provided in rural and remote areas, including procedural and other advanced medicine, which in urban settings would ordinarily be provided by a range of separate medical craft groups (i.e., disciplines, specialties and subspecialties), is complex. This means that an individual's scope of practice requires a broad core as well as specific advanced clinical knowledge and skills, including knowledge of Aboriginal and Torres Strait Islander health issues, emergency care skills and knowledge of population health.
- The roles and settings, including hospitals and other community health facilities, are diverse. The geographic and sociologic contexts of practice range from larger regional centres to extremely remote communities, and the distinct health or morbidity profiles across rural and remote Australia must be taken into consideration.
- There is extensive practice of distance-based professional collaboration between rural and remote medical practitioners and other specialists in the provision of shared care, skills transfer and education.
- Rural medical practitioners face longer working hours and on-call responsibilities coupled with significant workforce shortages.
- There is closer contact between the doctor and the individuals within the community, and there are implications of the social–professional mix in that relationship.
- In the event of an adverse outcome, there are implications to the doctor and to the community.

From this analysis, we considered it likely that risk management in rural and remote areas would be different from that in metropolitan practices.

We developed the questions, "If this is so, what

models exist that can be used locally or do they need to be modified, and what value might any be, if applied in particular contexts?"

Literature search

The literature review revealed many methods for risk assessment and management,[10–14] but in relation to medicine, the seminal framework is that of Vincent and colleagues.[7] It was developed and validated in the major hospital context, which the authors suggested could be adapted to a range of circumstances. However it is clear that this work is primarily a retrospective approach and not ideally suited to the breadth of circumstances or the range of stakeholders encountered in the rural and remote context.

Developing a potential model for application in a specific context

We decided to explore the generic approach specified in the Australian and New Zealand standard for risk management,[8] which is prospective in nature; it does rely on subjective assessments based on "what if" scenarios but allows the assessment of impact on all stakeholders. It also identifies opportunity and mitigates losses. The model has a sequence of steps:

1. Identify the context.
2. Identify the risks.
3. Analyze the risks.
4. Estimate the level of risks.
5. Treat the risks (in the rural and remote medicine context this is done via an education process or medicolegal checklist).

ARTS

Rural medical practitioners have taken into consideration components of the ARTS (assessment, resources, transport and support) list intuitively based on their extensive experience. The challenge was to make the process explicit. An earlier attempt by one author, which identified areas of risk that needed to be balanced, was sufficient to arouse interest in the concept within the ACRRM but did not have practical application.

In Far North Queensland, a mnemonic for decision making was developed to teach registrars in general practice, particularly obstetrics (Dr. Bruce Cameron, Atherton, Queensland: personal communication, 2003): RATS stood for resources, assessment, telephone and support. We decided to use RATS to modify Vincent's framework accordingly.

The RATS framework was changed to ARTS and we developed a model with a number of subheadings for each heading (Fig. 1). Assessment is primarily a situational analysis. The framework document is presented in the same form as the one that was used during the workshop, with the exception of some minor formatting and editing changes for publication purposes.

Risk analysis

In relation to risk analysis, we used the pre-existing Australian and New Zealand Standard for Risk Management[8] matrix framework. For level of risk, we applied the qualitative risk matrix that considered consequence (on a 5-point scale from 1, insignificant, to 5, catastrophic) compared with likelihood (rated from A, almost certain, to E, rare). The overall level of risk is the product of the consequence of impact of the risk, if realized, and the likelihood of the risk happening; thus, in each situation the risk can be rated on a 4-point scale as low, moderate, high or extreme (Table 1 and Table 2). These assessments are subjective but are an attempt to standardize the approach to quantification of the risks identified in the ARTS framework. Table 1 and Table 2 are those used at the workshop, with the exception of some minor formatting and editing changes for publication purposes.

Clinical management differs according to the level of risk. Extreme risk requires risk management measures that include extensive protocols that are adhered to, regularly checked procedures and constant vigilance. High risk requires specific protocols and education about them as well as familiarity with procedures. Moderate risk requires standard protocols with flexibility as well as general preparedness. Low risk is managed by improved routine procedures and good-quality practice.

Refining the tool

Each of the headings in the ARTS framework could be relevant to each of the stakeholders in any given scenario. In this light, it required a qualitative estimate of the level of risk that could then be fed into the ARTS framework to build a composite picture of the risk for each scenario. This was done using a steering group to develop the final instruments and to develop the plan for the workshop.

Initially, the concept was explored by using 3 typical clinical examples: acute appendicitis, acute myocardial infarction and acute psychosis. Manage-

ment for each condition by the primary attending clinician differs as a result of differences in geographical remoteness, access to support and professional expertise.

Table 3 describes the typical management of acute presentations by the primary attending clinician in different geographic settings as typified by Rural Remote Metropolitan Area codings. Generally, the more remote the location, the greater the involvement of the clinician and the less the available support. This will inevitably introduce an increased number and variety of more severe risks to both clinicians and patients.

Pilot study

We performed a pilot study at a half-day workshop in Alice Springs, Australia. About 40 participants were involved, including facilitators, speakers and support personnel. There were 21 formal participants, the vast majority of whom were doctors in small group settings. Following background presen-

The ARTS of rural and remote medicine (assessment, resources, transport, support)
Level of risk for patient (P), doctor (D) and community (C)

RISK IDENTIFICATION	P	D	C
ASSESSMENT (situational analysis)			
Complexity What risk of error does the clinical context and complexity result in? For example, is the clinical context acute or chronic, what speed of clinical response is required, are the diagnoses and treatment straight forward or are multiple steps required? Are there complex communication needs?			
Socioeconomic factors What risk will there be to the patient/family and community in relation to dislocation, cost, income and productivity?			
Cultural and psychological factors This risk relates primarily to those resulting from the patient and community's belief systems around illness, treatment and expectations, and around communication. For the doctor, it revolves around medicolegal risk and the pressures on management decisions from nonclinical sources.			
Public health issues This relates to infection control, occupational or environmental health issues, health promotion activities, and the risk to doctors, family and team from contagious illness.			
RESOURCES			
Human Given the available local human resources, what risk is there for the patient in this clinical context? Will safety for patients, practitioners, and the community be compromised by the demands of this case on local resources?			
Advice and information Is the availability of clinical information and specialist advice in this context adequate for patient safety or doctor support?			
Technical What risk is there for the patient in this clinical context given the physical infrastructure (facilities, communications, etc.)?			
TRANSPORT			
Additional risks What additional risk is there for the patient, doctor and other health personnel in this clinical context if transport is required?			
SUPPORT			
Psychological What are the risks to the patient and family, doctor, team and family, and community in this clinical context given the psychological (and professional) supports available to each?			
Management and organizational Are there systems in place that support the management of this case, or are they a barrier? Is the local (and distant) management supportive and enabling, or is it a battle to manage this case in the patient's best interest?			

Fig. 1. The ARTS framework, with the subheadings developed for each part of the framework (assessment, resources, transport and support).

tations relating to the importance of and rationale for the development of the risk assessment framework, we formed small group sessions in which a range of representative cases were discussed in an informal context by the groups applying the framework. These included medical, surgical and psychiatric case scenarios in both acute and chronic settings.

Each group reached a rating about level of risk for the patient, the doctor and the community for each item (if appropriate) in the ARTS framework. No attempt was made to reach an overall rating. At the end of the session, we assessed participants' learning and their thoughts about the value of the process and its ease of application to other contexts. At this stage, it was not considered appropriate to seek feedback about the specific cases.

The stated workshop objective was to enhance a joint understanding of the different and specific issues in risk management in the rural and remote context and to progress toward a working framework for risk management applicable to such a context. Participants were asked to rate the effectiveness of the workshop in achieving the identified learning objective. The results are presented in Table 4. The response rate was 19 out of 21, or 90%.

Positive comments were received in relation to the value of the technique for teaching and education, for considering risk management in the broader context and for promoting safe practice within rural environments. It was also suggested by a number of participants that the "transport" heading of the framework be divided into acute care transport issues and general issues of access to primary medical and referral or hospital services for patients and other stakeholders. Similarly, some participants suggested that a "family" category would be a useful addition to the stakeholder analysis. These changes have not been included in the appended framework (Fig. 1).

Further refining the tool and extending the concept more broadly

We have not yet refined the concept but plan to do so in the near future. There are also plans for discussion with other national organizations, such as the Australian Council for Safety and Quality in Healthcare.

Discussion

The action research as undertaken is the first stage of an evolving process that will integrate a "safety and quality" framework within rural and remote clinical practice and within a recognized professional medical college. The results from the workshop are encouraging. They indicate that there is grassroots support for work to be done to produce a product that is of more than academic interest.

There is no doubt that the process is currently complicated and subjective. If it is applied to multiple health problems in a range of contexts we may end up with results that are different or, at worst, conflicting, without any clear resolution. Further, the practical value of applying the framework to any particular case in a certain context is unclear at this stage. However, it must be stated that interest in the approach has been expressed by both the Australian

Table 1. Risk matrix and overall level of risk: qualitative measures of consequence of impact on patient, practitioner and community*

Level	Descriptor	Example, detail or description
1	Insignificant	No injuries, low financial loss, little inconvenience
2	Minor	Minor injury or health detriment, some financial loss, significant time impact
3	Moderate	Significant adverse event or outcome, disruption to family, practice or community
4	Major	Serious adverse outcome, permanent disability, costs beyond local resources, local health capacity exceeded
5	Catastrophic	Death, overwhelming effect on practice viability

*Adapted from the Australia and New Zealand Standard for Risk Management.[8]

Table 2. Risk matrix and overall level of risk: qualitative risk analysis matrix indicating overall grading of risk for each level of consequence and likelihood*

Likelihood	1 (insignificant)	2 (minor)	3 (moderate)	4 (major)	5 (catastrophic)
A (almost certain)	M	H	E	E	E
B (likely)	L	H	H	E	E
C (possible)	L	M	H	E	E
D (unlikely)	L	L	M	H	E
E (rare)	L	L	M	H	H

E = extreme risk; H = high risk; M = moderate risk; L = low risk.
*Adapted from the Australia and New Zealand Standard for Risk Management.[8]

Commission for Quality and Safety in Healthcare and medical defense organizations.

Feedback from individual practitioners involved in the first workshop indicates that ARTS has

Table 3. Management according to Rural Remote Metropolitan Area classification*

Condition	RRMA 1–2	RRMA 3–4	RRMA 5–7
Acute myocardial infarction	1. Immediate diagnosis. 2. Initiation of care, (oxygen, IV nitrates, morphine). 3. Immediate referral via specific coronary retrieval team. 4. Post-coronary follow-up and coordination of secondary prevention activities. 5. Participation in local divisional group health promotion and disease prevention programs.	1. Immediate diagnosis. 2. Initiation of care, (oxygen, IV nitrates, morphine). 3. Preparation for admission, pathology and assessment of status for definitive treatment (thrombolysis, arrhythmias). 4. Management of definitive care or preparation for transfer to tertiary centre. 5. Management of complications, arrhythmias, etc. 6. Review and management of post-coronary state, rehabilitation coordination. 7. Management of ongoing secondary prevention program. 8. Initiation and supervision of community health promotion and disease prevention programs.	1. Immediate diagnosis. 2. Initiation of care, (oxygen, IV nitrates, morphine). 3. Preparation for admission, assessment of status for definitive treatment or transfer to major centre in the absence of immediate pathology access. 4. Management or initiation of definitive care or preparation for transfer to tertiary centre. 5. Immediate management of acute complications, arrhythmias, etc. 6. Management and advice of community and family responsibilities, especially in indigenous communities. 7. Review and management of post-coronary state, and rehabilitation coordination. 8. Management of ongoing secondary prevention program. 9. Initiation and supervision of community health promotion and disease prevention programs.
Acute appendicitis	1. Immediate diagnosis. 2. Referral to surgeon or public facility.	1. Immediate diagnosis. 2. Immediate ordering of pathology tests and confirmation of diagnosis. 3. Assessment of surgical risk. 4. Assessment of anesthetic risk. 5. Preparation and transfer of patient to major centre if risks too substantial for immediate care. 6. Completion of surgical or anesthetic procedure. 7. Management of acute complications. 8. Ongoing postoperative care.	1. Immediate diagnosis in the absence of pathology tests 2. Assessment of surgical risk. 3. Assessment of anesthetic risk. 4. Preparation and transfer of patient to major centre if risks too substantial for immediate care or if in solo practice. 5. Completion of surgical or anesthetic procedure (if not in solo practice). 6. Management of acute complications (if not in solo practice). 7. Ongoing postoperative care.
Acute psychosis	1. Immediate diagnosis. 2. Acute referral to specialized psychiatric facility. 3. Post-discharge shared care with specialized mental health team or psychiatrist.	1. Immediate diagnosis. 2. Initiation of legal process of certification. 3. Initiation and management of acute therapy, chemical or physical restraint. 4. Preparation for retrieval to specialized psychiatric facility (may involve administration of general anesthetic prior to RFDS retrieval). 5. Management of social and family consequences within community. 6. Post-discharge ongoing care and management, (may be with intermittent allied health and mental health services).	1. Immediate diagnosis. 2. Initiation of legal process of certification. 3. Initiation and management of acute therapy, chemical or physical restraint. 4. Preparation for retrieval to specialized psychiatric facility (may involve administration of general anesthetic prior to RFDS retrieval). 5. Management of social and family consequences within community. 6. Post-discharge ongoing care and management, (may be with seldom or intermittent allied health and mental health services).

RRMA = Rural Remote Metropolitan Area Index; IV = intravenous; RFDS = Rural Flying Doctor Service.
*RRMA is a classification from 1 to 7 (1 = capital city, 7 = remote township or community of population < 1000).

Table 4. Effectiveness in achieving workshop learning objective: "to enhance a joint understanding of the different and specific issues in risk management in the rural and remote context and to progress a working framework for risk management applicable to the context of rural and remote medicine"

Effectiveness rating	No. of respondents (and %); *n* = 19
Slightly effective	2 (11)
Effective	9 (47)
Highly effective	5 (26)
Extremely effective	3 (16)

achieved its effect by raising awareness of the issues and that it may at least have value as an educational tool both for existing practitioners and for potential rural doctors. Further, we believe it has a place in demonstrating that rural and remote medical practice is clearly and unavoidably different from metropolitan practice.

The process for implementation of the ARTS framework is under consideration. We anticipate that it can be refined, simplified and applied as a tool for many conditions across a range of contexts. The challenge will be the integration of ARTS into clinical guidelines for rural and remote practitioners as well as informing the safety and quality standards that will drive the censorial processes of a professional college.

There appear to be at least 2 areas of potential use, at least initially. One is educational — doctors who are potentially entering rural and remote practice, particularly those whose experience has previously only been in metropolitan practice, can use the framework (through the development of a simplified tool) for a range of simple medical conditions. They can compare and contrast risk and risk management between major metropolitan and rural and remote sites, for example, in Australia, between Double Bay and Dubbo, or between Toorak and Theodore (the former are in metropolitan Sydney and Melbourne, respectively, and the latter are in rural New South Wales and Queensland, respectively). In its simplest form, the framework can remain as a useful *aide memoir*, particularly for doctors in training and those new to the practice of rural and remote medicine.

Second, with the proliferation of guidelines for best practice for a range of conditions, the framework will allow rural practitioners to develop the tools to demonstrate that guidelines arising from metropolitan environments are not necessarily applicable to all contexts and that "best practice" is context dependent. As a root-cause analysis framework, ARTS can be used to collect the hard evidence needed to support rural and remote best practice, to support existing rural practitioners against legal challenge and to assuage the fears of budding rural practitioners, particularly those with a procedural interest. If it achieves only this, it will be worth the effort invested in its development thus far.

Acknowledgements: We thank the Research Unit of the Australian College of Rural and Remote Medicine (ACRRM), which assisted with the development and refinement of the framework, undertook the literature review, participated in the workshop and contributed to the rewriting of the manuscript.

We also acknowledge the valuable contribution, during the development and piloting phases, of Dr. Neil Beaton, Medical Superintendent Atherton Hospital, Chair, Clinical Practice Guidelines/Indicators Working Group, Quality and Safety in Practice Committee ACRRM; Dr. Ian Kammerman, Rural Doctor, Tamworth, Conjoint Senior Lecturer, School of Medical Practice and Population Health, University of Newcastle, Committee Member, Risk Management Working Group, Quality and Safety in Practice Committee ACRRM; and Dr. Peter Thomas, Deputy Director, Emergency Deptartment, Princess Alexandra Hospital Brisbane, Committee Member, Clinical Practice Guidelines/Indicators Working Group, Quality and Safety in Practice Committee ACRRM.

Competing interests: None declared.

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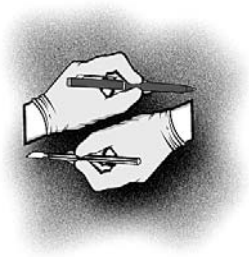

A large splenic epidermoid cyst in rural Labrador

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This article has been peer reviewed.

Introduction

Splenic cysts are rare clinical entities, reportedly occurring in only 0.5%–2.0% of the population.[1] The first splenic cyst was reported in 1829 by Andral,[2] and with the increasing use of diagnostic imaging, splenic cysts are now more commonly being diagnosed incidentally.[3] We report the case of a splenic cyst in an 18-year-old man who initially presented to a remote nursing station in Labrador with non-specific abdominal complaints. After being transferred to a community hospital, the patient was found to have a very large splenic cyst and he subsequently underwent a total splenectomy with the removal of an associated epidermoid cyst.

Case

This 18-year-old man initially presented with a 2-day history of abdominal pain. He described it as sudden onset, localized to the left upper quadrant, and aggravated by movement and breathing. He had no history of similar pain. There was no history of abdominal trauma, gastrointestinal problems or genitourinary problems. Physical examination showed tenderness in the left upper quadrant that radiated to the umbilicus area. The patient's vital signs were all within normal limits, and no abdominal mass was palpable. A urine dipstick was also normal. When the patient's abdominal pain failed to resolve over the 24 hours following his presentation, he was transferred to the regional referral centre. When assessed by the emergency department physician, the patient was pain-free and had no significant clinical findings. Routine screening investigations — urinalysis, complete blood count and fecal occult blood test — were all reported as normal. Stool samples for ova and parasites were negative. The patient subsequently underwent abdominal imaging with ultrasound and CT scan. These showed a large 12.6 × 10.8 × 13.4-cm splenic cyst with associated satellite peripheral small cysts (Fig. 1). Serology for *Echinococcus granulosus* infestation was requested[3,4] and was reported as negative. The patient subsequently underwent an open total splenectomy. About 1500 mL of fluid was evacuated from the cyst before attempting mobilization of the spleen for splenectomy. Partial splenectomy, which was desirable and had been offered as an option to the patient if technically feasible, was not attempted because the cyst was based on almost the entire anteromedial aspect of the spleen, extending from the superior to the inferior pole. The patient made an uneventful recovery after surgery. Pathology showed a 422 g epidermoid splenic cyst (Fig. 2).

The patient received Pneumovax, Hemophilus influenza B and meningococci vaccinations before surgery.

Discussion

When a splenic cyst is encountered, the differential diagnoses include congenital splenic cysts, cysts secondary to parasitic infestations, splenic trauma, splenic infarction and splenic abscess.[5] A history of even remote trauma should be sought. Splenic cysts can be classified as either parasitic or nonparasitic.[4,6] Worldwide, the majority of splenic

cysts are parasitic and are due to *Echinococcus granulosus* infestation.[3,4] Based on the presence or absence of an epithelial lining, nonparasitic splenic cysts can be further classified into true cysts (also called primary or epithelial) or false cysts (also called secondary or pseudocysts).[5–7] About 30%–40% of all splenic cysts are true cysts, which are encountered most commonly in children and young adults.[4] Many authors have reported that the incidence of splenic cysts is higher in females than in males.[2] Depending on the pattern of the inner surface cell layer, true splenic cysts can be further divided into mesothelial, dermoid or epidermoid subtypes.[4,6] The epidermoid cyst accounts for about 10%–20% of all splenic cysts.[1,2]

In patients with an asymptomatic, small, true splenic cyst, conservative management may be reasonable.[5] However, when a splenic cyst is symptomatic, or if the diagnosis is uncertain, surgical exploration is warranted.[5] Some authors advocate surgery for splenic cysts larger than 4–5 cm because of the increased risk of complications.[4] If surgery was warranted in the past, splenic cysts were managed with open total splenectomy. Currently, there has been a trend toward partial splenectomy, when it is technically feasible, because of the association of post-splenectomy sepsis with total splenectomy.[4] Minimal access surgery is also feasible. "Limited" treatments, such as catheter drainage or sclerosis, are associated with high rates of recurrence and infection (or both), and have largely been abandoned.[4,5] Total splenectomy, partial splenectomy and cystectomy have all been reported as adequate treatments for splenic cysts.[5]

Fig. 1. CT scan showing a large splenic cyst.

Fig. 2. Splenic cyst after drainage and removal.

Decisions about the optimal surgical procedure are tailored to the clinical situation, and the final decision is frequently made during surgery. The surgical options are based on the size of the cyst, its relation to the splenic hilar vessels and parenchyma, and the amount of healthy splenic tissue that remains.[7] Any type of procedure that preserves the spleen is technically difficult to perform if the cyst is very large, if it is located in the splenic hilum, if it is covered completely by the splenic parenchyma, or if there are multiple cysts.[4] In these cases, a complete splenectomy should be performed using either the open or the laparoscopic approach.[4]

Competing interests: None declared.

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The occasional trigger point injection

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This article has been peer reviewed.

Trigger points and myofascial pain are common diagnoses. They can occur in any patient, even in those not diagnosed with a chronic condition, such as fibromyalgia or recurrent myofascial pain syndromes. The underlying mechanism for the development of these discrete hyperirritable nodular areas of muscles, first described in 1949,[1] is unknown. The commonly acceptable pathological explanation includes an area of contracted muscle sarcomeres[2] and irritable muscle end plates.[3]

Clinicians find patients complaining of musculoskeletal pain that does not fit an accepted neurologic or orthopedic strain pattern. The trigger point will be painful to the touch and compression will illicit a local and referred pain that simulates the patient's discomfort.[1]

Needling therapies for pain relief have been used for thousands of years.[4] Chinese physicians performed dry needling in the seventh century AD. Acupuncture and dry needling did not become of major interest to Europeans until the 1800s.

Literature review

Although commonly encountered in clinical practice, the literature is scant on this subject. There is a distinction in the literature between tender points (associated with fibromyalgia), which are painful to soft touch, and trigger points, which require more pressure and are often an identified muscle knot.[5] Such a discussion is beyond the scope of this article. Since fibromyalgia patients often have both tender points (considered less responsive to injections) and trigger points, a trial of a trigger point injection may be beneficial.[2]

We searched Medline for myofascial pain syndromes, therapy and trigger point injections. Of the 152 articles we found, there were 3 systematic reviews and 15 somewhat controlled studies. Most were level III evidence. A 2000 Cochrane review[6] concluded that there was inadequate evidence for or against the use of trigger point injections for the management of low back pain.[6] We examined the literature beyond this review and found several small studies that compared which agents worked best for injections. However, they did not have enough power to comment on overall efficacy.[7–10]

Most studies use a variety of sterile water, lidocaine or bupivacaine, and there is no clearly superior substance. One author found equivalent results with dry needling when compared with local anesthetic.[11] Interestingly, a small crossover study of 10 patients did find that the benefits of successful trigger point injections were reversible with intravenous narcan, perhaps indicating a local or regional endorphin response to needling.[11]

The illustrated self-treatment guide by Davies and Davies, *The Trigger Point Therapy Workbook,* is an excellent resource to physicians and patients.[12] It is clearly written and describes how patients can identify and treat their own regional pain trigger points, often with application of pressure, e.g., leaning against a tennis ball over specific points. The classic, 2-volume, *Myofascial Pain and Dysfunction: The trigger point manual,* is a more extensive medical text on the subject.[13]

Patient presentation

While fully developed fibromyalgia and chronic pain syndromes require interdisciplinary rehabilitation services, primary care physicians may often be faced with a patient with isolated or recurrent trigger points.

Typically, a patient will present with pain or paresthesia symptoms that do not fit an organic illness diagnostic pattern. Rather than feeling overwhelmed at the vast differential diagnosis, one should perform a simple search for trigger points, which very often results in positive findings. An appropriate examination is prudent to rule out serious pathology. This is followed by a simple trigger point injection, which may alleviate the vast majority of the patient's myofascial pain. A common response would be an 8 or 9 out of 10 pain reduction. The neck and shoulder are common sites of myofascial pain (Fig. 1 and Fig. 2).

If the trigger point is not found, the patient may leave with a long series of investigations in front of him or her, or with angst that some ominous process is brewing. It is remarkably common to have patients with the same problem say that they have seen many physicians over the years, that they have been through an extraordinary number of investigations and that they have often been prescribed protracted doses of narcotics. They are happy to leave the office pain-free with an exercise prescription in hand (or low dose amitriptyline at hs). A recurrence of symptoms requiring a repeat injection every 6–12 months is not uncommon. Once the diagnosis is made, a busy practitioner might refer a patient to a chiropractor, massage therapist or acupuncturist, etc., often with similarly good results.

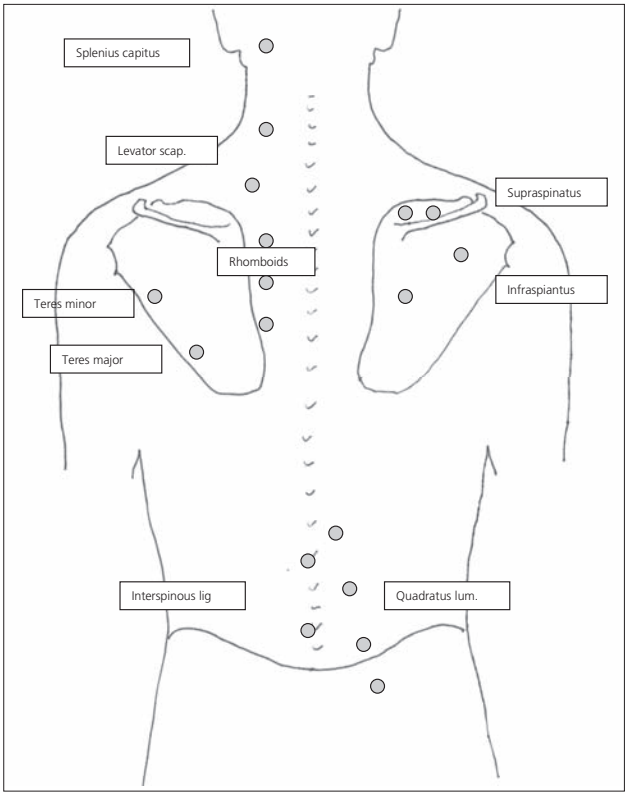

Fig. 1. The dots represent upper and lower back areas where trigger points commonly occur.

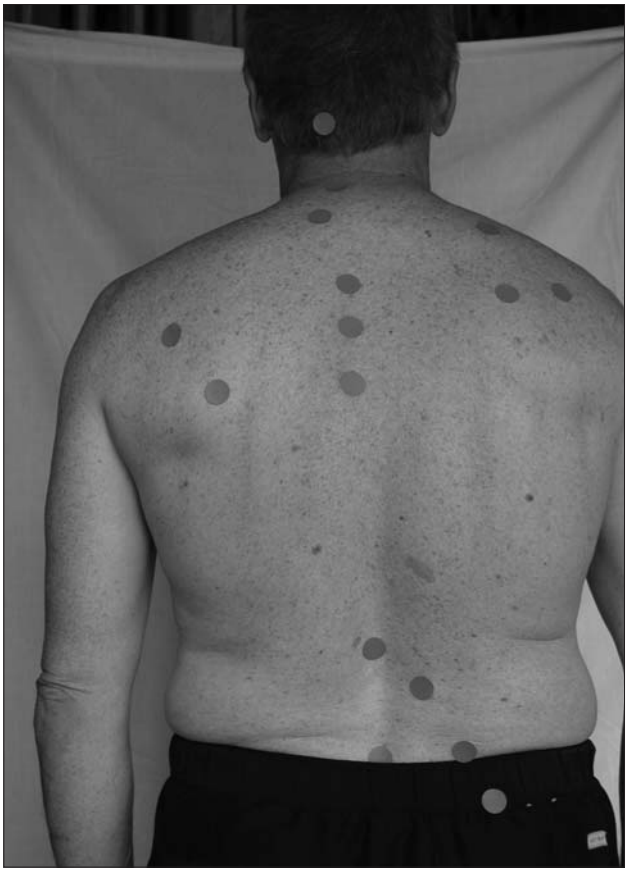

Fig. 2. The dots represent the same common trigger points that are shown in Figure 1 as they are identified clinically. The points are bilateral but, for clarity, are shown here unilaterally.

Procedure

The procedure is easy and only takes a few moments.

Step 1

In our experience 0.25% bupivacaine 1–2 mL per trigger point is appropriate. The long-acting nature of this agent will prevent the local soreness that some patients experience from the process. One percent or 2% lidocaine can also be used.

Step 2

The trigger point is localized with finger pressure —

it is often helpful to landmark the spot with the plastic needle cover to create a superficial "target" impression on the skin (Fig. 3, Fig. 4 and Fig. 5).

Fig. 3. The image shows how the trigger point is found, by gentle palpation and increased finger pressure, which causes a local and radiating reproduction of the pain that is consistent with the symptoms.

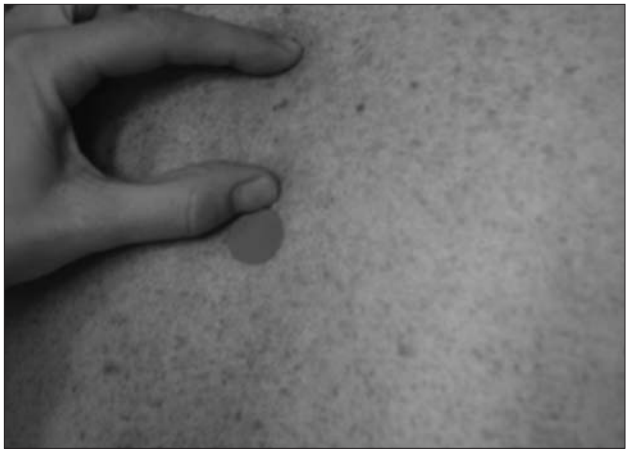

Fig. 4. The image shows how the skin is stretched between 2 fingers to lessen the pain of injection and immobilize the underlying muscle knot.

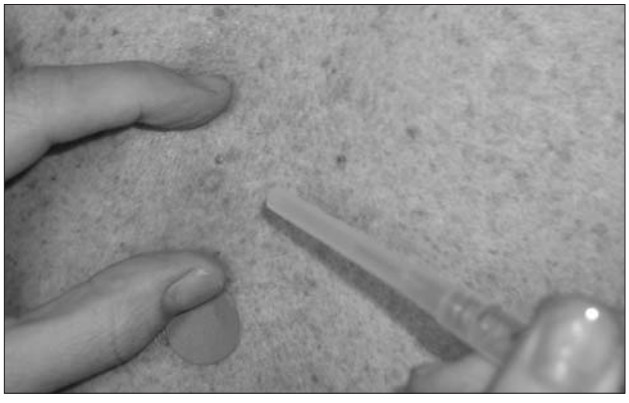

Fig. 5. The most tender spot is localized accurately using the needle cover and giving the patient choices until the sorest spot is identified and marked with pressure. This gives a "bullseye" to inject.

Step 3

After an alcohol swipe, the 25-gauge needle is inserted smoothly to the clinical depth; usually 1 cm into muscle or interspinous ligament (Fig. 6 and Fig. 7). The amount of overlying adipose tissue will determine total needle depth; the physician will feel the increase in resistance upon entering the muscle. At the moment of injection the patient will often identify an intense reproduction of their presenting symptoms and, importantly, in the same radiating pattern. This is a good sign and usually correlates with positive outcome.

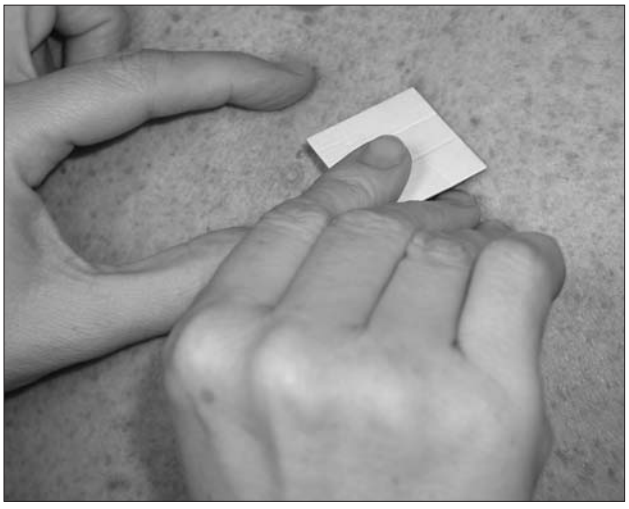

Fig. 6. The image shows how the technique in Figure 5 is followed by an alcohol swipe, using clean technique.

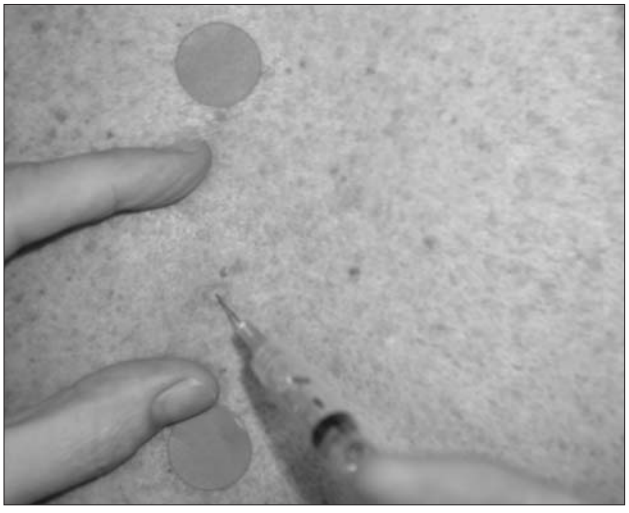

Fig. 7. The needle is uncovered and placed smartly through the skin, entering to an approximate muscle depth of 1 cm. The physician will eventually develop a feel for when he or she is entering the affected muscle. The injection is made slowly and is accompanied by an anticipated initial increase in the pain along the particular radicular pattern identified by the patient. If there is no temporary worsening of the pain, the needle has likely missed the mark and may need to be repositioned.

Conclusion

Mastering the simple trigger point injection allows the practitioner to identify and treat pains that do not fit traditional patterns. It sometimes allows for immediate resolution of the pain without the need for further investigation. Follow-up with the patient will allow us to identify successful interventions that may be repeated if the trigger point becomes active in the future. This is a safe and simple procedure that we may often overlook, particularly in our more challenging patients.

Competing interests: None declared.

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Factors Affecting Rural Medicine: an improvement on the Rurality Index of Ontario

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There has been considerable controversy over the Rurality Index of Ontario (RIO) and its true ability to define "rurality." Some rural health care workers feel that their community has received an unjust rating (either too high or too low), which in turn affects available funding.

The current RIO, as adapted in Table 1, fails to specifically address 5 of the 10 key factors in rurality identified by the Rural and Remote Health Innovations Initiative in its final report to Health Canada.[1] The factors not addressed include the inability to provide general surgery (although obstetrics and anesthesia are mentioned), the high levels of on-call responsibility, the difficulty obtaining a locum, the lack of equipment (e.g., radiographic and laboratory) and limited or nonexistent public transportation.[2]

Clearly, an accurate RIO is imperative to rural communities and rural physicians. The Resident Committee has taken the liberty of developing an amended RIO scale that may prove more useful in addressing the core components of rurality and may be implemented across Canada. This new index, entitled Factors Affecting Rural Medicine (FARM), is outlined in Table 2. The FARM criteria are intended for use as a supplement to the existing RIO criteria, for a total maximum score of 500.

The Resident Committee welcomes

Table 1. Current Rurality Index of Ontario criteria[2]

Criteria	Score, no. of points
Family practitioners	
Active GPs or FPs	20 minus no. of active practitioners
Population to GP ratio	Maximum 10
The hospital	
Availability of EMS	+ 5
Availability of anesthesiologist	+ 7.5
Low-volume obstetrics	+ 7.5
Presence of specialists	20 minus no. of specialists
The town	
Travel time to basic referral centre	Maximum 40
Travel time to advanced referral centre	Maximum 15
Population; bonus for < 46 000, low density or Aboriginal	Maximum 35
Lack of college or airport	+ 10 each
Extreme rain, snowfall or temperature	+ 5 each
Maximum total	175

FP = family practitioner; GP = general practitioner; EMS = emergency medical services.

Table 2. The Factors Affecting Rural Medicine	
Criteria	Score, no. of points
Family practitioners	
On call > 6 d/mo	+ 50
Inability to get locum coverage in past yr	+ 50
The hospital	
CT scanner (within 50 km)	– 25
Limited or no radiography or lab services on evenings and weekends	+ 20
Operating room	0
Operating room but no surgeon	+ 10
> 2 handgun injuries/yr	– 20
> 20 fishhook removals/yr	+ 20
The town	
Size	10 minus no. of traffic lights
Smell of manure on main street	+ 15
< 5 men in town during hunting season	+ 15
ATV to population ratio > 0.7	+ 15
The coffee	
Any Starbucks (within 30 km)	– 100
< 3 Tim Hortons	+ 5
No Tim Hortons	+ 10
Robin's Donuts	+ 15
The stores	
Wal-mart	– 50
Stedmans	+ 15
LCBO	0
LCBO in corner store	+ 15
Major car dealership	– 10
Car dealership on front lawn	+ 15
The social life	
Curling club	+ 5
Curling club that hosts weddings or receptions	+ 15
Royal Canadian Legion	+ 5
CME events at the Legion	+ 20
Maximum total	325

ATV = all-terrain vehicle; CME = continuing medical education.

feedback on the FARM, and invites all rural practitioners to write and tell us the score that their community would receive!

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The validity of the GPRI

To the Editor:

The Leduc General Practice Rurality Index (GPRI)[1] was outlined for us a decade ago. Curiously, despite the fact that it had not been applied or validated, it was widely cited by many authors when discussing the problematic and continuing issue of defining "rural." Without an illustration of its application, it was difficult to assess its utility. Therefore, the demonstration in the Spring 2007 issue[2] of how the GPRI was used to characterize the practice patterns of rural and urban general practitioners in British Columbia was most welcome.

Unfortunately, it is very difficult to agree with the authors' conclusions that their analyses provide "a very strong case for the validity of the GPRI as a measurement of rurality"[2] or that they have demonstrated the "excellent correlation between the BC billing data and the GPRI."[2] Of the 18 fee categories that were correlated with the GPRI and a simplified version of the index (GPRI-S), only 2 produced coefficients greater than 0.7, at best explaining barely 60% of the statistical variation. The majority of the correlation coefficients had absolute values less than 0.3. Given the number of parameters that are necessary to calculate the GPRI and GPRI-S scores, some of which are not that easily obtained, these results seem to me to be very disappointing.

A number of my colleagues and I have used the Statistics Canada Rural and Small Town (RST) Classification System to examine physician distribution[3] and rural health status[4] in all of Canada. I wondered whether there was an association between GPRI scores and RST categories, so I matched the GPRI and GPRI-S values in Table 4 of the Olatunde, Leduc and Berkowitz article[2] with the 2001 Urban and Metropolitan Influenced Zones (MIZs) that are included in the RST system. The mean values for the GPRI scores were 2.1 large urban centres, 8.5 medium-sized urban centres, 17.8 small urban centres, 39.0 strong or moderate MIZs and 46.5 weak or no MIZs. The mean GPRI-S scores were 5.9 large urban centres, 10.3 medium-sized urban centres, 35.4 small urban centres, 43.4 strong or moderate MIZs and 54.6 weak or no MIZs. Statistically significant ($p < 0.01$) correlations between the GPRI/GPRI-S scores and a numerical ranking of the urban-RST categories ranged from Kendall's tau values of 0.73 to Spearman's rho values of 0.85. The urban-RST approach performs just as well, or just as poorly, as the GPRI approach but with no need for the additional time or expense in acquiring data to generate GPRI scores.

To conclude that there are "significant differences in the fee-for-service practice patterns between rural and urban general practitioners"[2] does not require the complexity of a GPRI or GPRI-S. A simplified RST classification will do the same[5] with a lot less effort and just as much validity.

We all recognize that defining rural is difficult; and generating complex numerical indices is especially hazardous. In my view, the GPRI needs a great deal of fine-tuning before it can be used as a meaningful index of rurality.

Roger Pitblado, PhD
Sudbury, Ont.

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[Dr. Leduc replies:]

To the Editor:

Our data demonstrate an excellent correlation between the GPRI and the billing data of BC general practitioners and make a very strong case for the validity of the GPRI as a measure of rurality. To our knowledge, these findings are unprecedented in the

relevant literature. Dr. Pitblado has misunderstood our results, but perhaps I can explain them a little better:

The 18 fee categories were logical groups of fee codes billed by general practitioners. In a fee-for-service environment, these groups represented the services general practitioners performed for their patients. Some of the fee categories demonstrated a strong positive correlation to degree of rurality. In other words, these services made up a larger percentage of the general practitioners' total volume of services to their community the smaller and more remote the practice was from basic and advanced medical referral centres. Some of the fee categories demonstrated a strong negative correlation to degree of rurality. In other words, these services made up a smaller percentage of the general practitioners' total volume of services to their community the smaller and more remote the practice was from basic and advanced medical referral centres. Other fee categories showed no significant difference. This likely means that the numbers of these services were too small, or the relation between these particular services and rurality was not linear. It does not mean that the GPRI is any less valid.

For their research, Dr. Pitblado and his colleagues used the Statistics Canada Rural and Small Town (RST) method of defining rurality. He asks why we did not choose this method ourselves. We agree with many others who have concluded that there is no single measurement of rurality that is adequate for all situations; a definition of rural should be adapted to the purpose for which it is being applied.[1,2]

The idea for the GPRI came in response to the Northern and Isolation Allowance (NIA) program in British Columbia in the early 1990s. The intent was to develop a definition that could be used in the same way (for rural retention payments) and in rural research, that was simpler, health care oriented and could be applied in other provinces. The intent was also to address shortcomings in the many different Statistics Canada rural definitions,[2] including the RST method.

We believe that the GPRI has at least 3 advantages over the Statistics Canada methods:

1. It is a continuous rather than a categorical scale so it avoids creating markedly different scores for 2 very similar communities on either side of a threshold.
2. It recognizes that in rural areas patients routinely travel much farther or in different directions for medical care than they do for employment.
3. It indirectly measures travel time to designated basic and advanced medical referral centres, which are defined according to a minimum basket of services, while allowing for changes in designation if minimum services are not maintained.

We find the GPRI (simplified) quite easy to measure. The only requirements are the local population, the identity of the basic and advanced referral centres, and a road map.

As we said in our article, the billing data are very comprehensive but lack the necessary detail to determine if the GPRI (or any other rural definition) is truly valid. This data makes a very strong case, but, as we stated, further testing is necessary.

Meanwhile, there is a pressing need for more rural research. We don't have time to wait for the perfect definition of rural (if one can ever exist). Valued contributors such as Dr. Pitblado should continue to use the best tools available.

Eugene Leduc, MD
Victoria, BC

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