

Canadian Journal

*of*  
**Rural  
Medicine**

Journal canadien

*de la*  
**médecine  
rurale**



*The official journal of the Society of Rural Physicians of Canada*

**VOLUME 17, NO. 2, SPRING 2012**

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

**VOLUME 17, N° 2, PRINTEMPS 2012**

**IN THIS ISSUE**

**DANS CE NUMÉRO**

**Physician Retention: 3 Domains**

**Needs of Rural Specialists**

**The Occasional Tonometry**

Did you know ...

# CMA OFFERS FREE ACCREDITED ONLINE COURSES

[cma.ca/virtualwaitingroom](http://cma.ca/virtualwaitingroom)



## Resistant hypertension

### JUST RELEASED!

- List the diagnostic criteria for resistant hypertension
- Discuss the pros/cons and limitations of the use of office blood pressure readings, home blood pressure monitoring and 24-hour ambulatory blood pressure monitoring in the diagnosis and management of resistant hypertension
- Identify lifestyle factors and medications that may interfere with the efficacy of antihypertensive agents
- Appropriately combine different antihypertensive agents
- Recognize common pitfalls in the prescription of antihypertensive therapy such as issues with dosing, multiple same class agents
- Identify common secondary causes of hypertension and develop a plan investigate these conditions
- Determine when it is appropriate to refer a patient with resistant hypertension

COURSE DEVELOPED BY THE UNIVERSITY OF OTTAWA



## Alzheimer's dementia

### ALSO AVAILABLE!

- Screen appropriate patients for cognitive impairment/dementia
- Differentiate among mild cognitive impairment, Alzheimer's disease, vascular dementia, Lewy body dementia, frontotemporal dementia and others
- Identify the key clinical issues
- Identify appropriate non-pharmacologic and pharmacologic management options
- Weigh and address ethical and legal issues
- Manage caregiver issues

COURSE DEVELOPED IN COLLABORATION WITH THE CANADIAN PSYCHIATRIC ASSOCIATION



## Skin disorders

### ALSO AVAILABLE!

- Differentiate and diagnose common skin dermatosis using visual clues
- Differentiate between different types of skin malignancy
- Formulate a treatment plan
- Identify when to refer to a dermatologist

COURSE DEVELOPED BY MEMORIAL UNIVERSITY



All courses developed in collaboration with CMA and Memorial University through an educational grant from Pfizer Canada. Accreditation for Parkinson's disease and skin disorders courses was provided by Memorial University of Newfoundland, Faculty of Medicine, Professional Development and Conferencing Services.



ASSOCIATION  
MÉDICALE  
CANADIENNE



CANADIAN  
MEDICAL  
ASSOCIATION



cma.ca/cjrm

**SCIENTIFIC EDITOR**  
**RÉDACTEUR SCIENTIFIQUE**  
PETER HUTTEN-CZAPSKI, MD  
Haileybury, Ont.

**ASSOCIATE SCIENTIFIC EDITOR**  
**RÉDACTEUR SCIENTIFIQUE ASSOCIÉ**  
GORDON BROCK, MD  
Temiscaming, Que.

**MANAGING EDITOR**  
**DIRECTRICE DE LA RÉDACTION**  
SUZANNE KINGSMILL, BA, BSC, MSc  
Toronto, Ont.

**ASSISTANT EDITORS**  
**RÉDACTEURS ADJOINTS**  
MIKE GREEN, MD  
Kingston, Ont.

MARY JOHNSTON, MD  
Revelstoke, BC

TRINA M. LARSEN SOLES, MD  
Golden, BC

ROBERT MARTEL, MD  
Arichat, NS

JAMES ROURKE, MD  
St. John's, NL

TODD K. YOUNG, MD  
Springdale, NL

*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 Integrated Print Solutions, Ottawa, Ont.

Address all correspondence to: Editor, CJRM, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9; 416 961-7775; fax 416 961-8271; cjrm@cjrm.net

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, 1870 Alta Vista Dr., Ottawa ON K1G 6R7; 888 855-2555; cmamsc@cma.ca

ISSN 12037796

All prescription drug advertisements have been cleared by the Pharmaceutical Advertising Advisory Board.

Printed on acid-free paper from inception.



© 2012 Society of Rural Physicians of Canada

Canadian Journal

of  
**Rural  
Medicine**

Journal canadien

de la  
**médecine  
rurale**

**VOL. 17, NO. 2, SPRING / PRINTEMPS 2012**

## **EDITORIALS / ÉDITORIAUX**

- 43 Smoke signals and carrier pigeons — *Peter Hutten-Czapski, MD*
- 44 Signaux de fumée et pigeons voyageurs — *Peter Hutten-Czapski, MD*
- 45 President's message. *Allea iacta est* — *John Wootton, MD*
- 46 Message du président. *Allea iacta est* — *John Wootton, MD*

## **ORIGINAL ARTICLES / ARTICLES ORIGINAUX**

- 47 Professional, personal and community: 3 domains of physician retention in rural communities — *Pamela J. Cameron, PhD; David C. Este, PhD; Catherine A. Worthington, PhD*
- 56 Needs of specialists in rural and remote Canada — *Clare Toguri, MSc; Michael Jong, MBBS; Judith Roger, MD*

## **THE PRACTITIONER / LE PRATICIEN**

- 63; 72 Country cardiograms case 43 — *Charles Helm, MD*
- 65 The occasional tonometry — *Gordon Brock, MD; Vydas Gurekas, MD; Jon Spencer, MD*

## **RESIDENTS' CORNER / COIN DES RÉSIDENTS**

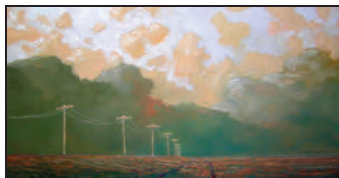
- 69 Practice makes perfect: simulation in rural emergency medicine — *Alim Nagji, BHSc; Ammara Sadiq, MD*

## **LETTERS / CORRESPONDANCE**

- 71 Urgent portable head computed tomography — *Kevin Hay, MB, BCh*

## **62 SERVICE INFORMATION**

## **73 INSTRUCTIONS FOR AUTHORS**



### Green Storm

Oil on canvas, 24" x 48"

by Steve Coffey

© 2011

[www.steve-coffey.com](http://www.steve-coffey.com);

[coffeyb@telusplanet.net](mailto:coffeyb@telusplanet.net)

"Green Storm is a reflection of the calm dancing with the swirl of our prairie landscape. The poles and lines signify the human voice singing within it."

ASSOCIATION  
MÉDICALE  
CANADIENNE



CANADIAN  
MEDICAL  
ASSOCIATION

*CJRM* is published for the SRPC by the Publications Department of the Canadian Medical Association (CMA), 1867 Alta Vista Dr., Ottawa ON K1G 5W8. The SRPC and the CMA assume no responsibility or liability for damages arising from any error or omission, or from the use of any information or advice contained in the journal, including articles, editorials, case reports, reviews, book reviews, letters and advertisements. All editorial matter in *CJRM* represents the opinions of the authors and not necessarily those of the SRPC or the CMA.

#### DIRECTOR AND PUBLISHER

#### DIRECTRICE ET ÉDITRICE

GLENDIA PROCTOR

#### ASSOCIATE DIRECTORS, PUBLICATIONS

#### DIRECTEURS ASSOCIÉS, PUBLICATIONS

HOLLY BODGER, TIM HOWE

#### MANAGING EDITOR

#### DIRECTRICE DE LA RÉDACTION

KATE BROWN

800 663-7336 x2114

[kate.brown@cma.ca](mailto:kate.brown@cma.ca)

#### PRODUCTION

KATHRYN A. FREAMO

NICOLE BARBEAU, CLARA WALKER

#### ONLINE PUBLISHING

#### PUBLICATION EN DIRECT

JAMES HARBINSON, JAMES MANSHIP

#### CAREER/CLASSIFIED ADVERTISING

#### CARRIÈRES ET ANNONCES CLASSÉES

LAURIE MCLEOD, SUSAN RITCHIE

[advertising@cma.ca](mailto:advertising@cma.ca)

#### DISPLAY ADVERTISING

#### ANNONCES PUBLICITAIRES

DEBORAH WOODMAN

#### MARKETING AND ADVERTISING SALES

#### MARKETING ET PUBLICITÉ

KEITH COMMUNICATIONS INC.

[info@keithhealthcare.com](mailto:info@keithhealthcare.com)

Toronto: 905 278-6700; 800 661-5004

fax 905 278-4850

Montréal: 514 624-6979; 877 761-0447

fax 514 624-6707

#### DIRECTIVES AUX AUTEURS

Visitez [srpc.ca](http://srpc.ca)

#### RENSEIGNEMENTS GÉNÉRAUX

Visitez [srpc.ca](http://srpc.ca)

**THE 20TH ANNUAL RURAL AND REMOTE  
MEDICINE COURSE "ON THE EDGE" IS COMING TO  
WHISTLER, BC, APR. 26-28, 2012. FOR MORE  
INFORMATION PLEASE GO TO [SRPC.CA](http://SRPC.CA)**

**ORDER YOURS TODAY!! \$54.95 VISIT [SRPC.CA/BOOKS](http://SRPC.CA/BOOKS)**

**MANUAL OF RURAL PRACTICE**

**NOW IN ITS SECOND PRINTING!**

Canadian Journal

of

Rural Medicine

Journal canadien

de la

médecine rurale

Canadian Journal of Rural  
Medicine

Issues by Date

Email Alerts

About CJRM

Readers of *CJRM* can subscribe to email alerts to receive the table of contents by email when a new issue appears. Sign up now at [cma.ca/cjrm](http://cma.ca/cjrm).

Les lecteurs du *JCMR* peuvent souscrire aux info courriels pour recevoir un avis par courriel pour chaque nouveau numéro. Inscrivez-vous dès maintenant à [amc.ca/cjrm](http://amc.ca/cjrm).

#### ADVERTISERS' INDEX / INDEX DES ANNONCEURS

##### CANADIAN MEDICAL ASSOCIATION

Inside Front Cover

##### MERCK CANADA INC.

Zostavax 64, Outside back cover

##### SEEMORE IMAGING CANADA

55

##### PRESCRIBING INFORMATION

Zostavax 74-5



# Smoke signals and carrier pigeons

*Peter Hutten-Czapski,  
MD*

*Scientific editor, CJRM  
Haileybury, Ont.*

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

**T**he following is a fairy tale of a distant era, which could not conceivably happen in the modern age of reason. But if it did, how would you defend the interests of your rural patients?

Once upon a time in a remote kingdom named Ontario, there was a town that shall remain unnamed, except to say that it lay on the shores of Lake Temiskaming. Farmers would tend the fertile fields, woodcutters the woods, miners the depths of the earth and shopkeepers the shops. There was even a shrine of the Tim of Horton where many drank the waters.

The healers of the town had an infirmary, which was built on an outcropping of limestone that overlooked the valley patchwork of farms. There the sick would lie, and the quick would attend to be bled and their phlegm be inspected by the sombre wizards and witches of the laboratories.

That actually is an embellishment. There was only one laboratory of that type in the town, and its denizens were cheerful (even under the light of the moon), but that mattered little. It was good and reliable (except in the divination of the tricky D-dimer, for which the healers of the town felt that other oracles that they consulted might be usually of better assistance, unless the matter was of sufficient uncertainty).

One day it came to pass that a decree came from the court of Queen's Park requiring divination of outpatient

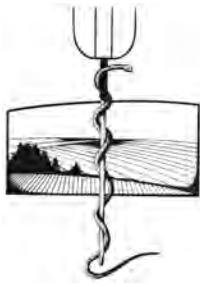
phlegm and blood be done, not by the local coven, but far afield by the Merchants of Matters Laboratory.

Great consternation befell the little group of healers. They had become accustomed to timely reports and were dismayed that what had been an efficient and safe practice would now require a day's journey by stage coach to the kingdom's capital. "Nay, nay," said the court official who came to consult. "Reporting would occur as quickly as possible by smoke signal." Despite or because of the thickness of the smoke, the official in the end had no power to do anything but implement the decision, no matter how unwise or ill-advised. The disheartened healers had to take it.

And then the feared happened. A bleeding that was to be analyzed on a Friday took not 1, not 2, but 5 days for the divination of a "critical" condition of imminent renal demise to be told. The patient in whom the renals were demising had the good sense to present to the healers before their passing, which was averted by the art.

The ire of the healers rose again. They made urgent supplications to the Merchants of Matters Laboratory at the kingdom's capital. Eventually, the boon of having divinations of "critical" conditions delivered by carrier pigeons to the infirmary at all hours was granted. A small victory, too thin on the bone to provide much nourishment, but a victory nonetheless.





# Signaux de fumée et pigeons voyageurs

*Peter Hutten-Czapski,  
MD*

*Rédacteur scientifique,  
JCMR  
Haileybury (Ont.)*

*Correspondance :  
Dr Peter Hutten-Czapski;  
phc@srpc.ca*

**L**e texte que voici est un conte du temps jadis qu'on ne saurait imaginer se passer à notre époque moderne où la raison fait loi. Mais si cela était, de quelle façon défendriez-vous les intérêts de vos patients ruraux ?

Il était donc une fois dans un royaume reculé nommé Ontario une petite ville dont nous taïrons le nom en précisant néanmoins qu'elle était sise au bord du lac Témiscamingue. Y vivaient des fermiers qui cultivaient les champs fertiles, des bûcherons qui abattaient le bois abondant, des mineurs qui descendaient dans le riche sous-sol et des commerçants qui tenaient boutique. On y trouvait même un sanctuaire du Tim de Horton où de nombreux visiteurs venaient s'abreuver.

Les guérisseurs de la ville avaient un dispensaire, érigé sur les affleurements rocheux dominant une vallée ponctuée de fermes. Là étaient alités les malades et soignés les patients venus pour une saignée ou pour faire examiner leurs humeurs par les sombres sorciers et sorcières des laboratoires.

À vrai dire, l'histoire est quelque peu enjolivée ici, car il n'y avait en réalité qu'un laboratoire de ce genre dans la ville et ses préposés étaient plutôt joviaux (même sous l'éclairage de la lune), mais ce détail importe peu. Leur travail était bon et fiable (sauf pour ce qui était de la divination de l'épineux test des D-dimères pour lequel la consultation d'autres oracles paraissait aux guérisseurs généralement plus utile, à moins que l'incertitude ne fût de toute manière trop grande).

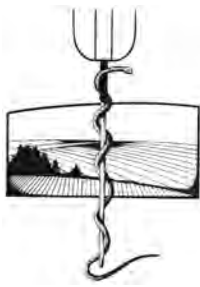
Or, il advint un jour que la Cour de

Queen's Park émit un décret exigeant que la divination du sang et des glaires des patients ambulatoires soit faite, non plus localement par l'assemblée des sorciers et sorcières, mais par le Laboratoire des Marchands d'Importance.

La nouvelle consterna le petit groupe des guérisseurs. Eux qui s'étaient habitués à une pratique efficace et sûre, et à recevoir sans tarder leurs rapports, se désolaient de voir qu'il leur faudrait désormais pour les obtenir en passer par la capitale du royaume, située à un jour de diligence. « Nenni », leur dit le fonctionnaire de la Cour venu en consultation. « Les rapports seront transmis aussi rapidement que possible, par signaux de fumée. » Malgré l'épaisse fumée, ou à cause d'elle, le fonctionnaire ne put finalement rien faire d'autre que d'appliquer la décision, quelque déraisonnable qu'elle fût. Les guérisseurs découragés durent s'incliner.

Puis, ce que l'on redoutait advint. Le sang devait être analysé un vendredi mais il fallut non pas un, pas deux, mais cinq jours pour que la divination révèle un état « critique » de défaillance rénale imminente. Le patient aux reins moribonds avait heureusement eu la sagesse de consulter les guérisseurs assez tôt, et les reins furent rescapés grâce à leur art.

Les guérisseurs s'insurgèrent de nouveau. Ils adressèrent d'urgentes suppliques aux Marchands d'Importance, dans la capitale du royaume. Finalement, ils obtinrent une grande faveur : les divinations pour les cas « critiques » seraient acheminés à toute heure au dispensaire par pigeon voyageur. C'était une trop mince victoire, certes, mais une victoire tout de même.



### President's message. *Alea iacta est*\*

John Wootton, MD  
Shawville, Que.

Correspondence to: Dr. John Wootton; jwootton@srpc.ca

I hope my Latin teacher, already dead these many years, would forgive me for having had to look up the translation of this well-known Latin phrase that a colleague sent me after reading the last president's message.<sup>1</sup> Whether Caesar uttered these words as he crossed the Rubicon hardly matters now. What has endured is the encapsulation of a moment in a phrase. The thing about offered phrases that hang in the air, as this one does, is that one gets to take them as they come. This is my interpretation.

Family medicine is at a crossroads. Medical students were on the Hill again this year lobbying for increased diversity of the medical workforce, the Hill being that place where you go when you want to get a headline, but not necessarily the place to go when you want to provoke change. Nevertheless, their perspective is a welcome departure from the resignation that seems the norm in other quarters.

Although as outgoing president of the SRPC I might be forgiven for trumpeting the rural cause yet again in this, my last, column, I think that the struggle to be faced on the farther Rubicon shore is larger than rural medicine and concerns the very fabric of primary care. To the extent that family medicine decamps into specialty enclaves, the system as a whole will become more complex, more unwieldy and less responsive to the needs of society. This matters to rural communities, but it also matters to the city. The model of care that is the norm in functional rural centres is equally needed in our metropolitan areas, if only to restrain the unbridled growth of specialist and subspecialist disciplines. Not

until the specialist steps into the arena only to carry out a specialized task, and the general practitioner (GP) and his or her team does all the rest, will the spiralling costs of health care be brought under control.

I am reminded of lessons we should have learned by now. In much of Europe the obstetrics model includes midwives for low-risk patients and obstetricians poised to receive their referrals. The GP is nowhere to be seen. In Canada in the 1950s, it was the gold medallists from McGill who set themselves up in rural practice, while in the city the GPs grumbled about being forced out of hospitals by the specialists. They formed their own college to reclaim some turf. More than 50 years later, family medicine is again being squeezed out of the mainstream and its leaders have no plan to oppose the loss of the generalist.

At the time of this writing, it's mid-February and I am late in renewing my college membership. I have been a member since the mid-1980s, grandfathered in on the basis of a rotating internship and an exam that I vaguely remember sitting. I am even a fellow of the college, and as I sit here I think about the ways the college does, and, equally often, does not, live up to my expectations. I don't begrudge the \$1000, but, like Leonard Cohen, I wonder, "why not ask for more?"<sup>2</sup>

#### REFERENCES

1. Wootton J. President's message. The elephant in the room. *Can J Rural Med* 2012;17:8.
2. Cohen L. "Bird on the wire." *Songs from a room*. Nashville: Columbia; 1969.

\*The die has been cast.

#### Society of Rural Physicians of Canada

#### Société de la médecine rurale du Canada

##### PRESIDENT / PRÉSIDENT

JOHN WOOTTON, MD  
Shawville, Que.

##### PRESIDENT-ELECT

##### PRÉSIDENT DÉSIGNÉ

ABRAHAM DE KLERK, CM, MB ChB  
Victoria, BC

##### SECRETARY / SECRÉTAIRE

GABE WOOLLAM, MD  
Happy Valley-Goose Bay, NL

##### TREASURER / TRÉSORIER

TODD YOUNG, MD  
Springdale, NL

##### MEMBERS-AT-LARGE

##### MEMBRES EXTRAORDINAIRES

GARTH CAMPBELL, MD  
Beausejour, Man.

DARLENE KITTY, MD, CCFP  
Chisasibi, Que.

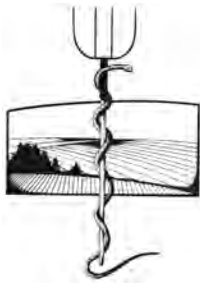
##### ADMINISTRATIVE OFFICER

##### RESPONSABLE ADMINISTRATIF

LEE TEPPERMAN  
SRPC Office, Shawville, Que.

##### SRPC / SMRC

Box 893,  
Shawville QC J0X 2Y0;  
819 647-7054;  
877 276-1949;  
fax 819 647-2485;  
admin@srpc.ca  
srpc.ca



John Wootton, MD  
Shawville (Qc)

Correspondance : Dr John  
Wootton; jwootton@srpc.ca

## Message du président. *Alea iacta est*\*

J'espère que mon professeur de latin, disparu depuis des années déjà, me pardonnera d'avoir dû chercher la traduction de cette expression latine bien connue qu'un collègue m'a envoyée après avoir lu le dernier message du président<sup>1</sup>. Que César ait murmuré ces mots en franchissant le Rubicon importe à peine maintenant. Ce qui est resté, c'est le moment figé dans une expression. Ce qui importe au sujet des expressions qui perdurent comme celle-ci, c'est qu'on peut les prendre au pied de la lettre. C'est ainsi que je l'interprète.

La médecine familiale est à un tournant. Des étudiants en médecine se sont présentés de nouveau cette année sur la Colline pour exercer des pressions en faveur de la diversité accrue de l'effectif médical. La Colline, c'est l'endroit où l'on se rend pour faire les manchettes, mais pas nécessairement l'endroit où aller lorsque l'on veut provoquer le changement. La perspective des étudiants constitue néanmoins une différence heureuse face à la résignation qui semble la norme dans d'autres milieux.

Même si on pourra me pardonner, à titre de président sortant de la SMRC, de claironner la cause de la médecine rurale de nouveau dans cette chronique qui est ma dernière, je pense que la lutte qu'il faut entreprendre sur l'autre rive du Rubicon dépasse l'envergure de la médecine rurale et atteint la trame même des soins primaires. Dans la mesure où la médecine familiale s'installe dans des spécialités, le système dans l'ensemble deviendra plus complexe, plus lourd et moins à l'écoute des besoins de la société. Cette évolution importe pour les communautés rurales, mais elle importe aussi pour les milieux urbains. Le modèle de soins qui est la norme dans des centres ruraux fonctionnels s'impose aussi dans nos régions métropolitaines, ne serait-ce que pour brider la croissance sauvage du nombre des spécialités et des surspécialités. Ce n'est que lorsque le

spécialiste interviendra seulement pour exécuter une intervention spécialisée et que l'omnipraticien (OP) et son équipe feront tout le reste que l'on réussira à contrôler la flambée des coûts des soins de santé.

Je me rappelle les leçons que nous devrions maintenant savoir. Dans la majeure partie de l'Europe, le modèle obstétrique inclut des sages-femmes qui s'occupent des patientes à faible risque et des obstétriciens prêts à traiter celles qu'on leur envoie. L'OP n'intervient pas du tout. Au Canada, au cours des années 50, c'étaient les étoiles de McGill qui s'installaient en pratique rurale, tandis qu'en ville, les OP grognaient parce que les spécialistes les chassaient des hôpitaux. Ils ont créé leur propre ordre pour reprendre un peu de place. Plus de 50 ans plus tard, la médecine familiale se retrouve de nouveau repoussée du courant général et ses chefs de file n'ont aucun plan pour s'opposer à la disparition du généraliste.

Au moment où je rédige cette chronique, nous sommes à la mi février et je suis en retard pour renouveler mon adhésion à l'ordre. Je suis membre depuis le milieu des années 80, bénéficiant d'une clause de droits acquis à la suite d'un internat en rotation et d'un examen auquel je me rappelle vaguement m'être présenté. Je suis même fellow de l'ordre et en rédigeant cette chronique, je pense aux façons dont l'ordre est à la hauteur de mes attentes et ne l'est pas tout aussi souvent. Je ne me plains pas des 1000 \$, mais comme Leonard Cohen, je m'interroge : « Pourquoi ne pas en demander davantage ? »<sup>2</sup>.

### RÉFÉRENCES

1. Wootton, J. Message du président. L'éléphant dans la pièce. *Can J Rural Med* 2012;17:8.
2. Cohen L. « Bird on the wire ». *Songs from a room*. Nashville : Columbia, 1969.

\*Les dés sont jetés.



## Professional, personal and community: 3 domains of physician retention in rural communities

*Pamela J. Cameron,  
MSW, PhD*

*David C. Este, MSW,  
PhD*

*Faculty of Social Work,  
University of Calgary,  
Calgary, Alta.*

*Catherine A.  
Worthington, MSc, PhD  
School of Public Health and  
Social Policy, University of  
Victoria, Victoria, BC*

*Correspondence to: Dr. David  
Este, Faculty of Social  
Work, University of  
Calgary, 2500 University  
Dr. NW, Calgary AB  
T2N 1N4;  
deste@ucalgary.ca*

*This article has been peer  
reviewed.*

**Introduction:** We sought to explore the professional, personal and community domains of physician retention in 4 rural communities in Alberta and to develop a preliminary framework for physician retention.

**Methods:** We used a qualitative, collective case study design to study 4 rural communities (cases) in Alberta that retained family physicians for 4 years or longer. Participants included physicians, staff members, spouses and community members. Data collected from interviews, documents and observations were analyzed individually, and similarities and differences across all cases were assessed.

**Results:** A range of factors that could influence physicians' decisions to stay in a particular community were described by participants. Within the professional domain, physician supply, physician dynamics, scope of practice and practice set-up were common across all communities, and innovation, and management and support emerged from some communities. The personal factors, goodness-of-fit, individual choice, and spousal and family support were present in all communities. Four community factors — appreciation, connection, active support, and physical and recreational assets — emerged across all communities, and reciprocity was present in 3 communities. From these data, we developed a preliminary retention framework.

**Conclusion:** Physicians, policy-makers and community members are encouraged to consider the 3 retention domains of professional, personal and community.

**Introduction :** Nous avons voulu explorer les dimensions professionnelle, personnelle et communautaire de la fidélisation des médecins dans quatre communautés rurales de l'Alberta et élaborer un cadre préliminaire de fidélisation des effectifs médicaux.

**Méthodes :** Nous avons employé un modèle d'étude de cas qualitatif et collectif pour analyser quatre communautés rurales (cas) de l'Alberta qui ont conservé leurs médecins de famille pendant quatre ans ou plus. Les participants incluaient des médecins, des employés, des conjoints et des membres de la communauté. Les données recueillies à partir d'entrevues, de documents et d'observations ont fait l'objet d'analyses individuelles et nous avons évalué les similitudes et les différences entre tous les cas.

**Résultats :** Les participants ont décrit un éventail de facteurs susceptibles d'influer sur la décision des médecins de rester dans une communauté en particulier. Pour ce qui est de la dimension professionnelle, l'offre de médecins et la dynamique des médecins, de même que le champ de pratique et l'organisation de la pratique ont été des facteurs communs à toutes les communautés, tandis que l'innovation, la gestion et le soutien se sont distingués dans certaines. Parmi les facteurs personnels, mentionnons le degré d'ajustement, les choix personnels et le soutien des conjoints et de la famille, observés dans toutes les communautés. Quatre facteurs communautaires, soit l'appréciation, les liens, le soutien actif et les installations matérielles et récréatives, sont ressortis dans toutes les communautés, tandis que la réciprocité a été notée dans trois communautés. À partir de ces données, nous avons élaboré un cadre préliminaire pour favoriser la fidélisation.

**Conclusion :** Nous encourageons les médecins, les décideurs et les membres de la communauté à tenir compte de ces trois dimensions de la fidélisation : professionnelle, personnelle et communautaire.

## INTRODUCTION

Primary care physicians provide a variety of health services to rural areas<sup>1,2</sup> and contribute to the health and well-being of rural residents and communities.<sup>3</sup> Yet, health care is a valuable resource in rural communities that is often in short supply.<sup>4,5</sup> Regardless of the number and nature of differences in rural communities internationally, rural communities in many jurisdictions face shortages of physicians.<sup>6-8</sup>

There is a small body of literature on retention of rural physicians. Rural physician retention has been attributed to a variety of personal and professional factors, such as job satisfaction,<sup>9,10</sup> background<sup>11,12</sup> and workload.<sup>6,13</sup> With respect to the role of community, Conte and colleagues<sup>14</sup> found that what recruited physicians to an area did not retain them, and that the broader community had an impact on retention in terms of geography (location) and support. Other studies have also recognized community factors as playing some role in physician retention.<sup>6,15-17</sup>

Given the variety of potential factors related to retention of rural physicians that have been identified, the purpose of this study was to examine multiple domains, including the personal, professional and community factors that may influence physician retention in 4 rural communities in Alberta. We used a qualitative, collective case study method<sup>18,19</sup> to explore specific factors and strategies of rural communities to retain physicians, and the actual and potential role of the community in retention.<sup>20</sup> Through an examination and comparison of these cases, we developed a preliminary retention framework.

## METHODS

A collective case study methodology allows researchers to undertake an in-depth analysis of a single case or multiple cases,<sup>21</sup> covering contextual conditions and using multiple sources of evidence.<sup>19</sup> Four rural communities in Alberta that successfully retained at least one primary care physician for 4 years or more were selected as cases. Retention was defined as 4 years or longer, based on previous research suggesting rural physicians often migrate after about 4 years.<sup>22,23</sup> Cases were examined independently, followed by comparative analysis of the data.

### Sampling and recruitment

Based on a review of the literature, committee discussions and discussions with representatives from the Alberta Rural Physician Action Plan (RPAP),

we developed a typology of 7 factors, including proximity to the nearest urban centre, access to health care resources, community size, geographical location in the province, practice type, number of years at least one physician was retained and community resources. A matrix with 4 cells evolved from this typology: southern farming, urban-edge, micro community and northern resource-based. Various communities were considered that might fit this matrix within rural Alberta. Discussions with 3 representatives from RPAP, reviews of data documenting retained physicians in Alberta and reviews of community profiles available online were undertaken to narrow down potential communities that would be invited to participate in the study. After reviewing information from the Alberta Medical Association and the College of Physicians and Surgeons of Alberta, reviewing the data available and hearing suggestions regarding the suitability of particular communities from RPAP, we compiled a list of potential communities. The first author then contacted the communities regarding participation via email or fax. Communities were matched as closely as possible to the matrix quadrants.

Once a contact physician from each community agreed to participate in the study, the corresponding health region was contacted. Community A was a small southern ranching community, community B was situated in a busy western industrial area, community C was a small eastern remote community and community D was a northern community largely supported by oil, agriculture and tourism. Participants within each community were either recruited by the contact physician or responded to advertisements independently. Data were collected in a 1-week period within each community. Communities A, B and D estimated their catchment areas to have populations greater than 10 000, and community C estimated their catchment area to be populated by fewer than 10 000 people. There were hospitals in all of the communities studied. Communities were located about 1-4 hours from their respective nearest urban centre. Three of the communities studied (A, B, D) had access to family physicians and some specialists, whereas community C did not have local obstetric or surgical opportunities.

### Data collection

We used individual interviews, document review and personal observation to collect data. The first author conducted individual interviews with participants (including physicians, spouses, hospital or

office staff, and community members) in each community. We used a general interview guide approach,<sup>24</sup> consisting of about 20 questions for each participant type. The questions related to participants' community, physician recruitment and retention, and community actions. In addition, specific questions about each community emerged during the interview process with participants.

Physicians and managerial, nursing, reception, radiography and nurse's aide staff were interviewed. Community members interviewed were patients in their local communities, including business people, journalists, parents, mayors and town councillors. Because of the ethical parameters of the study, the lead author was unable to approach individuals directly regarding participation and therefore relied on the contact physician in each community, word of mouth and local advertisements to enrol participants.

## Data analysis

Interviews were tape recorded with the consent of the participants and transcribed. Individual transcripts were sent to interested participants for member checking (i.e., personal interview transcripts were reviewed for confirmation and further commentary<sup>18</sup>). Verified transcripts were uploaded into the qualitative analysis software program ATLAS.ti 5.0 to be coded. A separate code list was built for each community. The lists were compared to create a final code list used for coding all interviews. Four cases, based on the 4 communities, were built individually, and the similarities and differences between cases were then examined, using matrices based on Miles and Huberman's "stacking comparable cases"<sup>30</sup> as well as cognitive mapping to illustrate retention domains, the relations between the domains, and specific retention factors, and to develop a preliminary retention framework.

This study was approved by the University of Calgary Conjoint Health Research Ethics Board, and agreements were made with each community's

health region with respect to data collection, analysis and dissemination.

## RESULTS

Data from 43 participants were collected in 41 interviews (2 interviews were conducted with 2 participants each), ranging from 9 to 12 interviews per community (Table 1). Of the 15 physician participants, 80% were male, with ages ranging from about 30 to 60 years (Table 2). Duration of practice in each rural community ranged from 4 to more than 30 years. Seven physicians were Canadian-born, with 8 others born in 4 other countries. The foreign-trained physicians were fluent in English. All physicians interviewed were part of a physician group (or partnership in the case of community C) in the community. Of the 15 physician participants, 13 were married.

Despite geographic, demographic, economic and health-resource, and other contextual differences among the 4 communities studied, common retention strategies emerged. Factors that were positively associated with retention in terms of professional, personal and community domains are discussed first, followed by the presentation of a preliminary retention framework.

### Professional domain of retention

There were 4 key factors within the professional realm of retention that were common across all of the communities studied: physician supply, physician dynamics, scope of practice and practice set-up (Table 3). Two professional factors were found only within certain communities: innovation, and management and support. Innovation emerged within communities A and D. References to management and support factors were found in communities A, C and D.

### Physician supply

Physician participants repeatedly discussed the im-

**Table 1. Study participants**

Participant type	Community				Total
	A	B	C	D	
Physician	4	5	2	4	15
Spouse	1	1	1	1	4
Staff	2	2	6	4	14
Community member	2	3	3	2	10
Total	9	11	12	11	43

**Table 2. Age of participants**

Participants	Community; age, range (mean) yr				Total
	A	B	C	D	
Physicians*	30–60 (47.7)	30–60 (44.6)	40–50 (46.5)	35–50 (45.5)	30–60 (46.0)
Other†	32–77 (51.2)	30–52 (43.8)	32–59 (44.8)	41–69 (50.4)	30–77 (47.5)

\*Age ranges of physicians are approximate to conceal their identities.

†Includes all other participant types (spouse, staff, community member).

portance of an adequate physician supply to retention. One physician in a remote community explained, “If I were to stay here myself, I don’t think I am going to stay very long ‘cause I’m going to be on call every night.” In this case, having another physician to practise with was essential to retention. A male physician illustrated the importance of adequate numbers of physicians and how recruitment had an impact on retention:

There was a time when there was only 5 of us here ... it was nuts ... we hung on ... I think had it gone on for very much longer, we would have had to do — you know, we would have died. And so the South Africans [recruited as physicians] saved our souls.

Thus, recruiting physicians was necessary to avoid burning out the existing physicians in the community. The fact that the physicians “hung on” was a testament in part to their physician dynamics.

### Physician dynamics

Many participants acknowledged the importance of the physician complement. For example, “You help each other ... when we’re swamped. People say, ‘Can I help you?’ It makes a huge difference” [female physician]. A male physician highlighted the importance of these dynamics: “I don’t think I can emphasize how important it is to have ... a group that works and pulls together ... I think it had a lot to do with why we’ve had so many docs stay so long.” Participants recognized that physician dynamics influenced retention in the communities studied.

### Scope of practice

A major retention theme that emerged was the im-

portance of a diverse scope of practice for rural physicians. A male physician provided an example of this factor: “I’ve stayed because, primarily, it’s a very supportive group who I feel privileged to have worked with, and they’ve allowed me to sort of develop areas of expertise that wouldn’t normally be available to me.” Another male physician explained,

Why do I stay here? Because I can do the stuff that I’m trained to do here. If I move to [nearest city], they won’t allow me to do [procedures] or look after sick patients ... I would be put into family practice, not rural general practice.

Retention was clearly linked to the ability to practise medicine in a broad sense.

### Practice set-up

Practice set-up emerged across each community studied. This factor included the physical space, and financial and workload issues, with workload issues referring to a reasonable pace of practice. Participants explained the benefits of the practice set-up in their community, using phrases such as “everybody in the practice feels like they get a fair shake” [male physician], demonstrating their attempts to make the practice collaborative. A female physician summarized the benefits:

I think things are good enough already with the clinic and the community and the specialist connections we have that keeps CME [continuing medical education] up to date. There’s really nothing more anyone could ask.

Such arrangements made a difference to physicians’ satisfaction with their professional responsibilities.

### Innovation

Physicians in communities A and D demonstrated an interest in innovation, change and growth. A male physician stated, “We’re doing it. We’re the driving force.” This quotation was indicative of the innovative spirit of many rural physicians. One female staff member explained that physicians in her community were not satisfied with the status quo and were “competitive and they want to be at the top of the game.” Innovation was summarized well by a female community member who remarked,

I believe the ones that are retained enjoy having the extra control, power and influence that they do have in a smaller hospital/health community. In a rural area they have a much greater ability to exert influence and create the work environments and conditions they desire.

**Table 3. Professional retention factors**

Factor	Community			
	A	B	C	D
Physician supply	X	X	X	X
Innovation	X			X
Physician dynamics	X	X	X	X
Scope of practice*	X	X	X	X
Management and support†	X		X	X
Practice set-up‡	X	X	X	X

\*Includes access to hospital practice.

†This does not refer to physicians’ own management within the clinic setting. Physician management would fall under practice set-up.

‡Financial and workload issues are included.

The management and support factor emerged in communities A, C and D. This factor referred to administrative management and staff support, rather than physicians' own management skills within the clinic setting. A female physician contemplated the importance of staff to her retention:

I would not function if I didn't have help ... If I didn't have someone to bounce ideas off, who wasn't helping me get myself organized with patients, to answer those calls. It was ... key, having that kind of staff and that kind of relationship.

A male staff member shared, "The whole thing about recruitment and retention, everything has to do with culture. If you create the right culture, people — then you feel part of it." The positive attitude of management supported professional retention.

### **Personal domain of retention**

Three personal retention factors emerged that were common across all communities: goodness-of-fit, individual choice, and spousal and family support. The first 2 factors were related to a physician's personal attitude, and the last was related to spousal and familial relationships. Goodness-of-fit and individual choice are examined separately because they were discussed in different ways. Goodness-of-fit was discussed by participants as the way in which the physician fit into the community — how his or her personality and lifestyle fit with the local culture. Individual choice was discussed in terms of a physician's personal decision to embrace the community and make a conscious decision to become involved and stay in a particular place.

#### *Goodness-of-fit*

According to a female physician, retention is encouraged when professional and personal fulfillment is attained. She described why this personal goodness-of-fit was so important:

What I heard from a neighbouring community is something as silly as the waiting list to get a docking place for your boat at one of the lakes is something like 2 years. So one of the docs was commenting ... 'Well maybe I should look for some other place to go dock my boat.' And a week later he got a phone call from the town council: 'We have a spot for your boat' [laugh]. But to me that kind of almost borders on blackmail ... To me it's more about, 'Am I able to work the way I want to work? Am I able to establish a quality of life for me and my family?' ... To me, that is my money.

It appears that the participant was able to find

an appropriate goodness-of-fit for herself in her community. A male physician explained, "If they threw \$10 000 at me a year extra and later \$20 000, would I stay because of it? Not really ... the money's not really going to make me happy. So, it's more the quality of the practice, the town, the lifestyle."

#### *Individual choice*

To be retained personally, a physician's lifestyle needs to mesh with what is available within the community. One male doctor frankly stated, "To live in rural communities, you've got to be an outdoors person to some extent. If you're interested in opera, well, you know, you're screwed." A male physician offered the fact that he took personal responsibility for his satisfaction within the community:

I think we created this for ourselves. This was kind of an internal thing that we were motivated to being in a rural community so we came in with a positive outlook on things ... we're looking for a rural community and that's what we found and that's fitted our needs perfectly.

In essence, physicians in these communities "wanted a community and that's what they found" [female staff member].

#### *Spousal and family support*

A female staff member declared that "for my experience anyways, the family had better be happy in the community, and if they're not happy in the community, then ... no amount of money is going to keep them here." A male physician referred to the spouse as the "anchor," and a female physician commented, "that brings you to the retention piece. The most critical thing is that your spouse is happy. You know, that's probably the number 1 [thing] that we find." One spouse thought part of the reason they were still in the community was "because I'm happy. If I ... weren't happy, I think [physician] would have said, 'Let's go.'" A female spouse of a physician who was retained for a substantial length of time shared her feelings about living well in her community: "I love the small town community. I love being able to go for groceries and you know what? If it takes me 3 hours 'cause I have to stop and talk to 30 people, I'm okay with that!"

Spousal satisfaction and integration into the local community were considered to be fundamental to retention for some participants.



## Community domain of retention

Appreciation, connection, active support, and physical and recreational assets were positively related to physician retention in the 4 rural communities studied (Table 4). Reciprocity emerged as a community retention factor in 3 of the 4 communities (all but community B). A more detailed discussion of the factors within the community domain can be found elsewhere.<sup>25</sup>

### *Appreciation*

Physicians cited a number of examples of how the community appreciated and accepted them. A female physician highlighted her community's appreciation of local physicians through gestures such as sending physicians Christmas cards, chocolates or flowers periodically. The community too, recognized acceptance and appreciation as important. A male community member commented, "They are very much part of the community and I think very much appreciated."

### *Connection*

Physicians underscored the value of feeling connected to the community. A male physician commented, "I really enjoy this small town atmosphere, knowing people, knowing our neighbours." Another physician highlighted the connection to the community and its relation to retention: "The things that I would say that keep me ... in the community, would be just the people."

### *Active support*

Participants provided concrete examples of how the community mobilized to assist and show support for physicians. There were many attempts to financially support the facilities in which the physicians operated (e.g., fundraising). There was also community pressure on politicians when there were threats of

facility closures: "the political pressure [from the community] to make this happen ... was really strong ... 'cause we all knew if they closed the hospital, 5 of us would be gone" [female physician]. Informally, communities also support physicians: "when the chips are down, people are all people, and they've been great ... if I'm ever in trouble, everyone will come" [female physician].

### *Physical and recreational assets*

The physical and recreational aspects of the community were also a factor in retaining physicians in the 4 communities. Highlighting several local recreational assets, one physician stated, "They've got good facilities ... we've got a swimming pool ... we've got a good church ... that's an important part of our life." A wide variety of recreational opportunities for physicians and their families were highlighted in the 4 communities.

### *Reciprocity*

As noted previously, reciprocity emerged as a community retention factor in communities A, C and D. The relationship between physicians and the community was perceived as mutually beneficial, with physicians working hard to care for patients and contributing to the community, while community members showed gratitude and respect through community initiatives and continuing support as patients. A male physician explained, "You do have to pay back ... we as physicians here do very well ... our patients treat us well ... you have to be seen in the community." As a male community member explained, "It's a 2-way street. The physicians here have been fantastic ... we'll do everything we can to keep them both personally and council [local government]—wise."

## Connections among domains

Although factors were described as individual entities and divided into 3 domains, the factors involved were interrelated. A female physician explained the dynamic relation among these domains as follows:

The challenge I've faced personally has been in maintaining those boundaries of being a professional in a community ... having friends that are patients. It's that endless boundary difficulty ... you can't talk about work and work is your major stressor ... your friends are often your patients or your neighbours. ... [They] cross that boundary. ... It can be quite lonely in rural practice. Not being able to talk about lots of things that are upsetting you, even to your spouse.

**Table 4. Community retention factors**

Factor	Community			
	A	B	C	D
Appreciation	X	X	X	X
Reciprocity	X		X	X
Connection	X	X	X	X
Active support	X	X	X	X
Physical and recreational assets	X	X	X	X

Based on these findings, one could speculate that if the practice set-up is excellent, but the community lacks physician supply, professional retention may be threatened. If the physician enjoys the community but her spouse does not, personal retention may be threatened. If there is active support from the community but not sufficient recreational assets, community-based retention may be threatened. Between-domain examples are also relevant: if the scope of practice is adequate, but a physician feels unappreciated by the community, retention may be threatened.

### Physician retention in rural communities: a preliminary framework

Based on themes generated in the 4 communities, we developed a physician retention framework (Fig. 1) including the 3 retention domains. This framework illustrates the different elements of retention for these 4 communities and how these factors are interrelated. In these communities, each domain was important for retention of rural physicians. Some of the factors within domains were expressed more fully in some communities than in others. For example, community A cited many examples of active support, whereas community B provided few examples. In community D, participants discussed physician supply at great length, whereas in community C this factor was not as prominent.

## DISCUSSION

Participants were rooted in their communities; their perceptions, actions and interactions told the story

of successful retention in the 4 communities studied. Their personal observations formed the basis of the themes generated, and these themes suggest a number of lessons that can be learned from this study.

- Each community was unique, and every physician was unique. There was no “one size fits all” retention strategy.
- Recruitment was intricately linked to retention. They influenced each other and acted in a cyclical fashion.
- The relationship between the physician and community was relevant to retention.
- The actual and potential role of the community varied but had considerable potential in physician retention.
- Personal, professional and community factors were relevant to retention in these rural communities. Without fulfillment in each domain, retention may be at risk.
- There was no singular role for any person or group. Retention was a dynamic and creative concept, and was not the responsibility of any one person.
- Recruitment strategies were often formal, whereas retention strategies were largely informal.
- Retention strategies could be physician- or community-led; physicians and communities could play roles in retention strategies.

The key finding of this case study was the importance of the interplay between professional, personal and community factors. These results support and expand results from the small number of existing retention studies. Strong community links, professional support and local practice arrangements,<sup>6</sup>

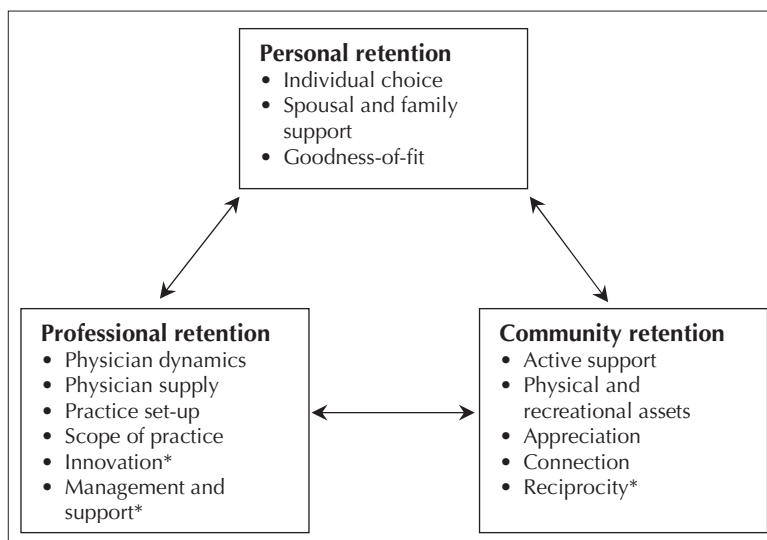


Fig. 1. Three domains of physician retention in rural communities: a preliminary framework.

\*Factor that emerged in some, but not all communities.

varied practice, recreational opportunities, working relationships,<sup>26</sup> preference for a rural lifestyle, desire for autonomy, a wide scope of practice, close relationships with their community,<sup>15,27,28</sup> and personal, professional and community concerns<sup>16</sup> have been linked to physician satisfaction and retention.

## Limitations

This study employed a case study method, and thus reader or user generalization<sup>29</sup> is appropriate; study results, however, may not be generalizable beyond the 4 specific cases. In addition, member checking did not occur beyond the initial transcript with participants who were interested. Thus, there was no additional audit for clarity or confirmation. The first author was unable to approach individuals directly regarding participation because of the ethical parameters of this study, and enrolment of participants was therefore subject to the efforts of the local contact physician and word of mouth. This constraint may have excluded additional participants with insight into retention.

The finite time available to spend in each community was another limitation; this did not allow for full immersion in local culture. Threats to validity exist with each method employed. Data source and methods triangulation were used as a “corrective tactic”<sup>30</sup> to enhance the trustworthiness of the data. In addition, an interview schedule was used in which participant groups were asked the same core questions,<sup>24</sup> discussions took place among the authors regarding interview schedule during data collection and throughout analysis, and notes were taken for journals (personal observations) and for making interview summaries after the completion of each interview. Finally, the preliminary framework for physician retention was intended to provide a preliminary illustration of retention. It was not intended to be definitive and has not been validated. Furthermore, each rural community is unique and individual community context must be central.

## CONCLUSION

Rural physicians are part of the fabric that holds rural communities together. Physicians who understand various retention factors at play may be more readily able to identify and direct action at domains that need reinforcement or attention. This understanding may enhance physicians’ experience with rural practice and their lifestyle, and thereby encourage physi-

cian retention. Rural communities can foster positive doctor–patient relationships, work to promote healthy and strong communities, and work with physicians to sustain and improve local community and health services. This study speaks to the importance of rural professionals to the health of rural communities and highlights important issues for physicians, communities and policy-makers to contemplate and act on with respect to recruiting and retaining rural professionals.

**Competing interests:** None declared.

## REFERENCES

1. Canadian Institute for Health Information. *Geographic distribution of physicians in Canada: beyond how many and where*. Ottawa (ON): The Institute; 2005.
2. Rourke J, Newbery P, Topps D. Training an adequate number of rural family physicians. *Can Fam Physician* 2000;46:1245-8, 1252-5.
3. Ministerial Advisory Council on Rural Health. *Rural health in rural hands: strategic directions for rural, remote, northern and Aboriginal communities*. Ottawa (ON): Ministerial Advisory Council on Rural Health; 2002.
4. Pitblado JR, Pong RW, Irvine MA, et al. *Assessing rural health: toward developing health indicators for rural Canada*. Sudbury (ON): Centre for Rural and Northern Health Research, Laurentian University; 1999.
5. Goertzen J. The four-legged kitchen stool. Recruitment and retention of rural family physicians. *Can Fam Physician* 2005;51:1181-3, 1184-6.
6. Hays R, Wynd S, Veitch C, et al. Getting the balance right? GPs who chose to stay in rural practice. *Aust J Rural Health* 2003;11:193-8.
7. MacDowell M, Glasser M, Fitts M, et al. A national view of rural health workforce issues in the USA. *Rural Remote Health* 2010;10:1531.
8. Straume K, Sondena M, Prydz P. Postgraduate training at the ends of the earth — A way to retain physicians? *Rural Remote Health* 2010;10:1356.
9. Gil-Soo H, Humphreys J. Integration and retention of international medical graduates in rural communities: a typological analysis. *J Sociol* 2006;42:189-207.
10. Williams ES, Konrad TR, Scheckler WE, et al. Understanding physicians’ intentions to withdraw from practice: the role of job satisfaction, job stress, mental and physical health. *Health Care Manage Rev* 2001;26:7-19.
11. Rourke JTB, Incitti F, Rourke LL, et al. Keeping family physicians in rural practice. Solutions favoured by rural physicians and family medicine residents. *Can Fam Physician* 2003;49:1142-9.
12. Wade ME, Brokaw JJ, Zollinger TW, et al. Influence of hometown on family physicians’ choice to practice in rural settings. *Fam Med* 2007;39:248-54.
13. Jones JA, Humphreys JS, Adena MA. Rural GPs’ ratings of initiatives designed to improve rural medical workforce recruitment and retention. *Rural Remote Health* 2004;4:314.

14. Conte SJ, Imershein AW, Magill MK. Rural community and physician perspectives on resource factors affecting physician retention. *J Rural Health* 1992;8:185-96.
15. Backer EL, McIlvain HE, Paulman PM, et al. The characteristics of successful family physicians in rural Nebraska: a qualitative study of physician interviews. *J Rural Health* 2006;22:189-91.
16. Pope ASA, Grams GD, Whiteside CBC, et al. Retention of rural physicians: tipping the decision-making scales. *Can J Rural Med* 1998;3:209-16.
17. Miedema B, Hamilton R, Fortin P, et al. The challenges and rewards of rural family practice in New Brunswick, Canada: lessons for retention. *Rural Remote Health* 2009;9:1141.
18. Stake RE. *The art of case study research*. Thousand Oaks (CA): Sage Publications; 1995.
19. Yin RK. *Case study research: design and methods*. 3rd ed. Thousand Oaks (CA): Sage Publications; 2003.
20. Cameron PJ. *Physician retention in four rural communities in Alberta: a collective case study*. Calgary (AB): University of Calgary; 2008.
21. Creswell JW. *Qualitative inquiry and research design: choosing among five traditions*. Thousand Oaks (CA): Sage Publications; 1997.
22. Kamien M. Staying in or leaving rural practice: 1996 outcomes of rural doctors' 1986 intentions. *Med J Aust* 1998;169:318-21.
23. West PA, Norris TE, Gore EJ, et al. The geographic and temporal patterns of residency-trained family physicians: University of Washington Family Practice Residency Network. *J Am Board Fam Pract* 1996;9:100-8.
24. Patton MQ. *Qualitative research & evaluation methods*. 3rd ed. Thousand Oaks (CA): Sage Publications; 2002.
25. Cameron PJ, Este DC, Worthington CA. Physician retention in rural Alberta: key community factors. *Can J Public Health* 2010; 101:79-82.
26. British Columbia Medical Association. *Attracting and retaining physicians in rural British Columbia: a report of the BCMA Rural Issues Committee*. Vancouver (BC): The Association; 1998.
27. Chauhan T, Jong M, Buske L. Recruitment trumps retention: results of the 2008/09 CMA Rural Practice Survey. *Can J Rural Med* 2010;15:101-7.
28. Hancock C, Steinbach A, Nesbitt TS, et al. Why doctors choose small towns: a developmental model of rural physician recruitment and retention. *Soc Sci Med* 2009;69:1368-76.
29. Merriam S. *Qualitative research and case study applications in education*. 2nd ed. San Francisco (CA): Jossey-Bass Publishers; 1998.
30. Miles MB, Huberman AM. *Qualitative data analysis: an expanded sourcebook*. 2nd ed. Thousand Oaks (CA): Sage Publications; 1994.

## DOCTORS SPEAK OUT

Podium — Letters to the Editor — Editorials

We invite physicians to speak out on issues that concern them.

Send your submissions to Suzanne Kingsmill,  
Managing Editor,  
*CJRM*, 45 Overlea Blvd., P.O. Box 22015,  
Toronto ON M4H 1N9; [cjrm@cjrm.net](mailto:cjrm@cjrm.net)

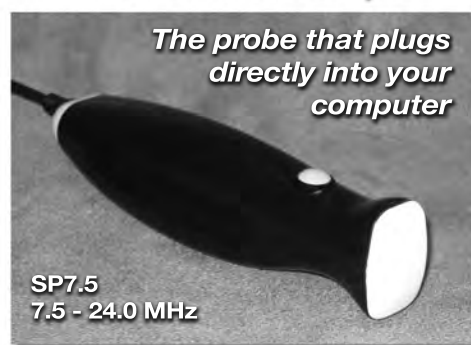
## LES MÉDECINS S'EXPRIMENT

La parole aux médecins — Lettres à la rédaction  
— Éditoriaux

Nous invitons les médecins à commenter les questions qui les intéressent.

Faites parvenir vos textes à Suzanne  
Kingsmill, rédactrice administrative,  
*JCMR*, 45, boul. Overlea, C. P. 22015,  
Toronto (Ontario) M4H 1N9; [cjrm@cjrm.net](mailto:cjrm@cjrm.net)

## SeeMore™ USB Ultrasound "the new stethoscope"



Probes for general abdominal imaging (OB, Emergency Medicine, Bladder Scanning, Primary Care); MSK, nerve block and vascular access; plus endocavity probes for transvaginal and transrectal prostate imaging.

**Truly affordable, portable ultrasound.**

**SeeMore Imaging Canada**  
Tel: 604.922.0874 • 1.800.927.4687  
[www.seemore.ca](http://www.seemore.ca) • [info@seemore.ca](mailto:info@seemore.ca)

## Needs of specialists in rural and remote Canada

Clare Toguri, MSc  
Faculty of Medicine,  
University of Toronto,  
Toronto, Ont.

Michael Jong, MBBS,  
MRCP(UK), CHE,  
FCFP, FRRMS  
Discipline of Family  
Medicine, Faculty of  
Medicine, Memorial  
University of Newfoundland,  
St. John's, NL

Judith Roger, MD,  
FRCSC  
Department of Surgery,  
Western Memorial Regional  
Hospital, Corner Brook, NL  
Faculty of Medicine,  
Memorial University of  
Newfoundland, St. John's, NL

Correspondence to: Clare  
Toguri; clare.toguri@mail  
.utoronto.ca

This article has been peer  
reviewed.

**Introduction:** Very little literature exists on rural specialists as a unique group and how best to meet their needs. We sought to provide some baseline information on specialists practising in rural and remote Canada to better understand their reasons for working rurally, their workload and how supported they felt, as well as their sources of advice and satisfaction with continuing medical education (CME).

**Methods:** The Society of Rural Physicians of Canada mailed a survey to specialists working in rural and remote Canada. Specialists were identified based on databases of the Canadian Medical Association (CMA) and the provincial colleges. The survey focused on reason(s) for working in a rural or remote setting, level of support and CME.

**Results:** The survey was sent to 1500 physicians and yielded a 19% response rate. Although 85% of respondents felt supported overall, less than 20% felt supported by the CMA or by the Royal College of Physicians and Surgeons of Canada (RCPSC). Conversely, most felt supported by immediate colleagues (85%) and their community (78%). Most wished they had access to more training, with close to 90% agreeing that additional training should be available if they had worked for several years in a rural or remote area and a need was demonstrated.

**Conclusion:** The CMA and the RCPSC may wish to work with rural specialists to foster a more supportive relationship and better meet their needs. Additionally, efforts should be made to provide rural specialists with better access to relevant CME.

**Introduction :** On dispose de très peu d'articles scientifiques sur les spécialistes en milieu rural en tant que groupe distinct et sur la façon de répondre à leurs besoins. Nous avons tenté de fournir des renseignements de base sur la pratique spécialisée dans les régions rurales et éloignées, au Canada, afin de mieux comprendre pourquoi certains y exercent, quelle est leur charge de travail et le degré de soutien perçu, de même que leurs sources de conseils et leur satisfaction à l'endroit de l'éducation médicale continue (EMC).

**Méthodes :** La Société de la médecine rurale du Canada a posté un sondage aux spécialistes qui travaillent en région rurale et éloignée, au Canada. Les spécialistes ont été recensés à partir des bases de données de l'Association médicale canadienne (AMC) et des ordres provinciaux. Le questionnaire portait sur les raisons de choisir la pratique en région rurale et éloignée et sur le degré d'aide et d'EMC reçu.

**Résultats :** Le sondage a été envoyé à 1500 médecins et a produit un taux de réponse de 19 %. Même si 85 % des répondants ont dit se sentir généralement appuyés, moins de 20 % ont dit ressentir cet appui de la part de l'AMC et du Collège royal des médecins et chirurgiens du Canada (CRMCC). En revanche, la plupart se sont dits aidés par leurs collègues immédiats (85 %) et par leur communauté (78 %). La plupart des répondants ont dit souhaiter un meilleur accès à la formation, près de 90 % étant d'avis qu'on devrait leur offrir de la formation additionnelle après quelques années de pratique en milieu rural et éloigné; ce besoin a pu être démontré.

**Conclusion :** L'AMC et le CRMCC pourraient envisager de travailler avec les spécialistes en milieu rural pour mieux les soutenir et répondre à leurs besoins. De plus, il faudrait faire des efforts pour offrir aux spécialistes en région rurale un meilleur accès à une EMC adaptée à leurs besoins.



## INTRODUCTION

Although about 20% of Canadians live in rural and remote areas, less than 10% of all physicians work there.<sup>1</sup> These figures have changed little over time, with 22.2% of the population and 9.8% of physicians in 1996, and 21.1% of the population and 9.4% of physicians in 2004 living in rural and remote Canada. Furthermore, most rural physicians work in family medicine, with only 2.4% of specialists working in rural and remote communities.<sup>1</sup>

Canadian physicians are drawn to rural areas by the opportunity to practise a broad scope of skills and by the appeal of the rural lifestyle.<sup>2</sup> Having grown up in a rural community may be positively associated with doctors practising in a similar setting, but rural experience during training (for physicians raised in urban communities) may also positively influence the decision to pursue rural practice.<sup>3</sup> However, the literature largely describes the experience of family physicians and either excludes specialists or merges the groups together.<sup>2,3</sup> Therefore, it is still not clear what motivates specialists to work in rural areas.

Whereas most interest has focused on best practices for recruiting to rural areas, retaining physicians is equally important. Retention may be improved by increasing access to relevant continuing medical education (CME).<sup>4</sup> Although 60% of rural physicians surveyed by the Canadian Medical Association (CMA) in 2008 were very or somewhat satisfied with the availability of CME,<sup>2</sup> the number of those dissatisfied was found to be double that of their urban colleagues.<sup>5</sup>

We have a basic understanding of the needs of rural Canadian physicians; however, the focus of research has been on family physicians.<sup>2,5</sup> Rural specialists remain largely unrepresented in the literature. It is not clear how supported rural specialists feel in their work or how satisfied they are with CME and additional training opportunities. The purpose of this paper is to provide some baseline information on Canada's rural specialists, including reasons for choosing rural practice, and to assess and describe the perceived level of support and satisfaction with CME and available training.

## METHODS

In 2008, the Society of Rural Physicians of Canada (SRPC) mailed a survey to specialists working in rural and remote Canada to collect information on this demographic. The survey focused on 3 broad areas of interest, including reason(s) for working in

a rural or remote setting, level of support and CME. The purpose of the survey was to assess the needs of specialists to better address these needs at future SRPC meetings.

The CMA database was used to identify all registered specialists in Canada.<sup>6</sup> Databases from the provincial colleges were used to identify specialists not registered in the CMA database. In both cases, a second digit of zero in the mailing postal code was used to identify specialists in rural and remote areas. Based on the list of rural specialists identified from databases, a paper survey and explanatory letter were mailed out to physicians. To confirm rural or remote status, the survey included screening questions about the size of the population the physician served and the distance to the next referral centre. There was no follow-up mailing.

## RESULTS

The survey was sent to 1500 physicians; 286 respondents returned completed or partially completed surveys, yielding a modest 19% response rate.

### Demographics

The returned surveys were organized based on specialty, as declared by the physician (Fig. 1). The greatest number of replies came from general surgeons (19%), followed by internists (14%). Figure 1 shows all reported specialties. It was assumed that respondents only checked medical subspecialist or surgical subspecialist if their specialty was not otherwise listed. Respondents who checked more than one selection were entered as the most specific specialty. For example, if a physician checked urologist and surgical subspecialist, he or she was entered only as a urologist.

Screening questions confirmed the rural or remote location of physicians' work communities (Fig. 2). Most specialists (58%) worked in communities with populations of less than 30 000, with very few (1%) working in communities with populations greater than 100 000. Of this 1%, half were located more than 200 km from a referral centre. Among all respondents, 69% were less than 200 km and 14% were more than 400 km from a referral centre (Fig. 3).

### Reasons for working in a rural or remote setting

Of the respondents, 75% indicated that family reasons, safety and outdoor lifestyle were reasons for

practising in a rural area. Close to 60% of respondents indicated that autonomy (59%) and the variety of cases and challenges (57%) were reasons. Only 16% indicated that financial reasons influenced their decision. Just 3% said that working in a rural area was an immigration or licensing requirement.

## Support and workload

Overall, 85% of respondents felt supported, 9% did not feel supported and the remainder felt ambiguous about the question. When asked about specific sources of support, physicians felt most supported

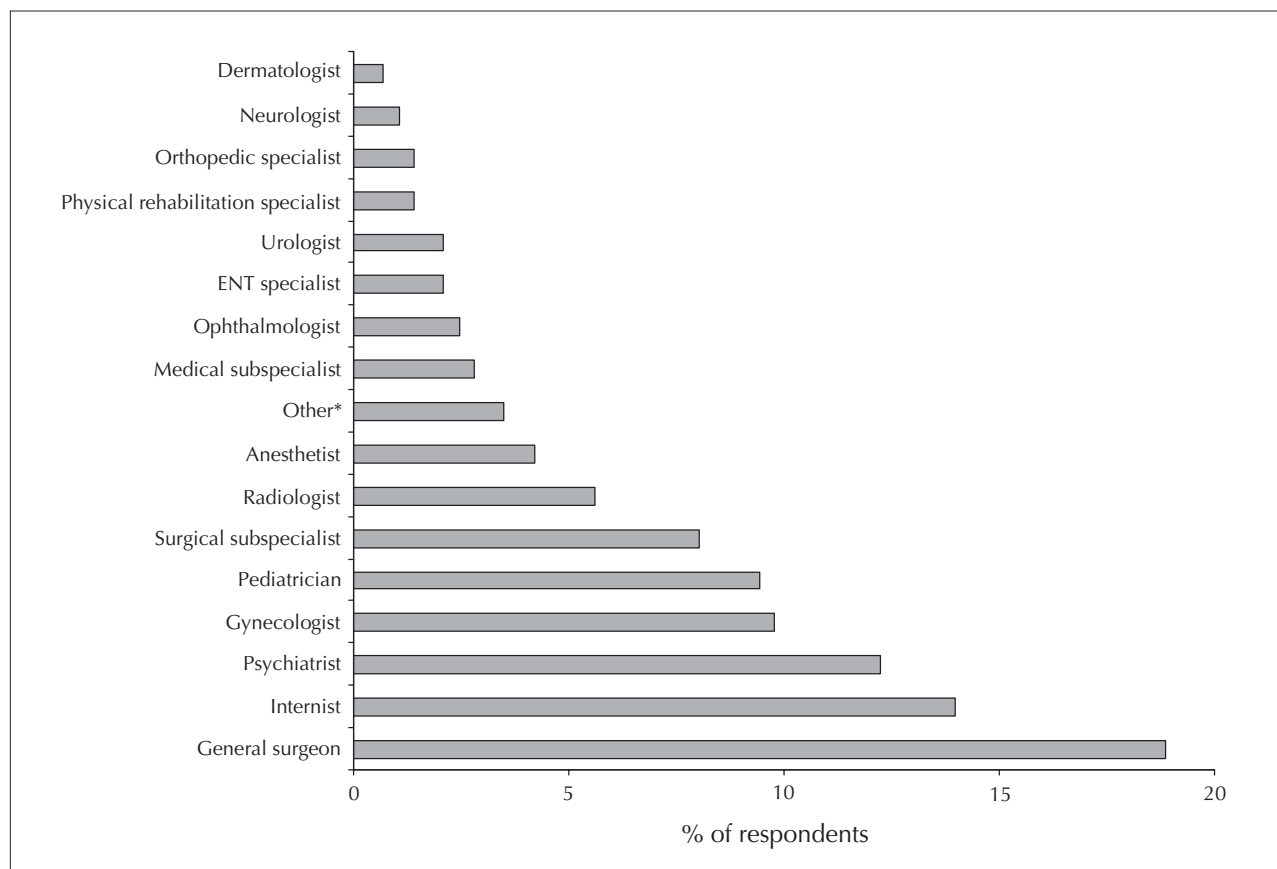


Fig. 1. Breakdown of specialties as declared by respondents. ENT = ear, nose and throat.

\*Includes specialties such as pathology, emergency medicine, laboratory medicine, nuclear medicine, plastic surgery, rheumatology and public health.

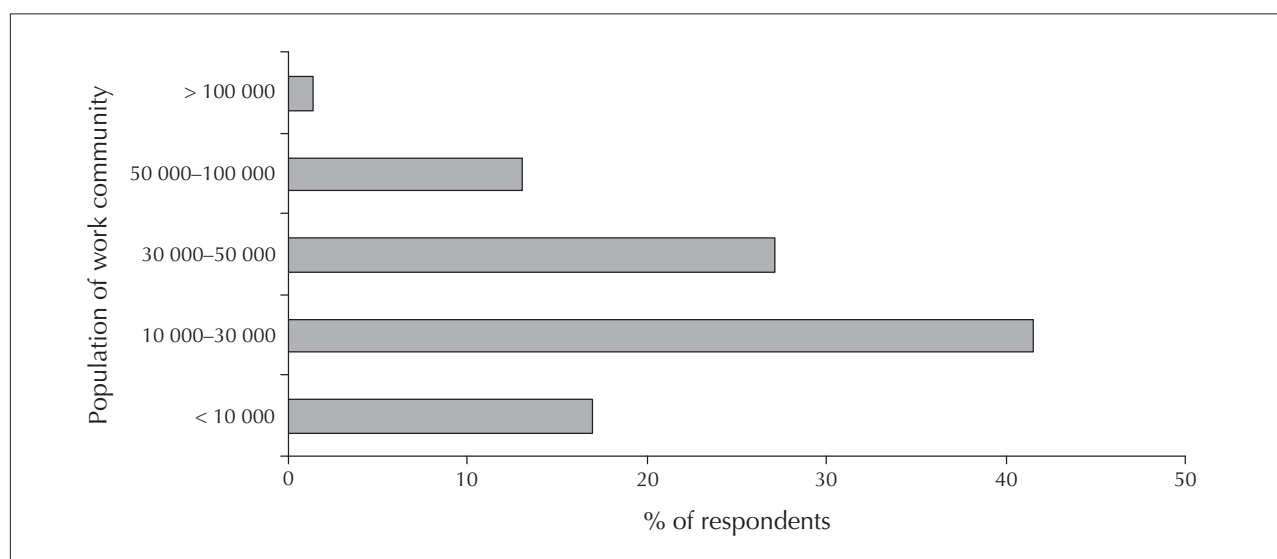


Fig. 2. Breakdown of the population of physicians' work community.

by their immediate colleagues (85%). Most also felt supported by their communities (78%) and nurses in the hospital (75%). However, less than one-fifth of physicians felt supported by the CMA (17%) and the Royal College of Physicians and Surgeons of Canada (RCPSC; 19%). Only 4% of respondents felt supported by all sources (Fig. 4).

When asked about their workload, most respondents (45%) indicated that at times it was too much. Only 3% said it was not adequate (Fig. 5).

### Advice-seeking practices and CME

Nearly three-quarters (72%) of respondents said

that for immediate advice they relied on the Internet, books and/or videos. Many (61%) also consulted a colleague in a tertiary care centre (Fig. 6).

Of the respondents, 25% felt they had not been adequately prepared for their current practice, and 80% of this group sometimes wished they had access to more training. Of all respondents, 68% sometimes wished they had access to more training, and 88% felt entitled to more training after practising several years, if a need was demonstrated.

Eighty-one percent agreed that either continued training via mentorship or time at a larger centre would be useful. Close to three-quarters (72%) of all respondents said they would prefer a short peri-

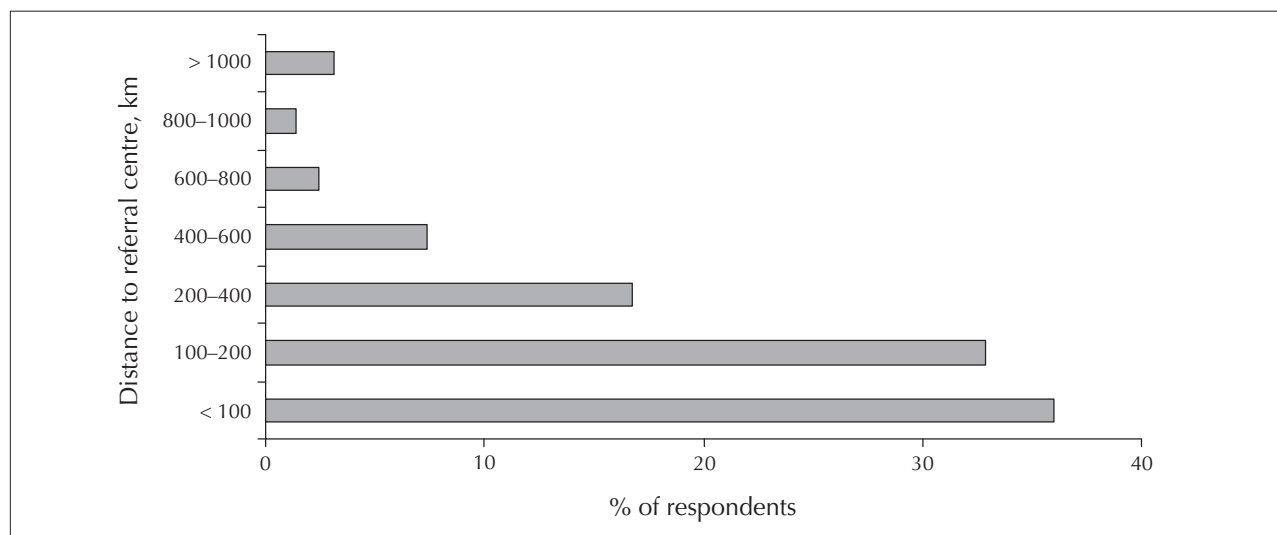


Fig. 3. Distance to the nearest referral centre.

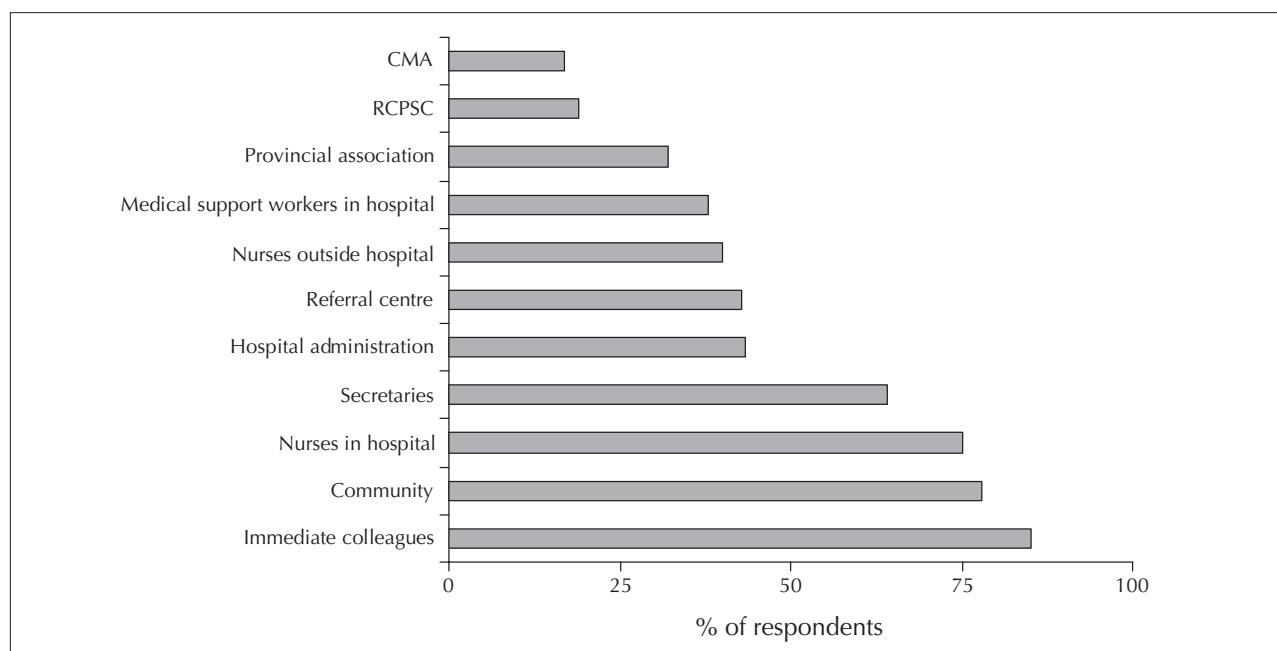


Fig. 4. Percentage of respondents who felt supported by each group. CMA = Canadian Medical Association; RCPSC = Royal College of Physicians and Surgeons of Canada.

od of training between 1 and 4 weeks over longer periods of upwards of a year.

In the comments added by some respondents, it was clear that although some specialists were interested in actively engaging in CME beyond their practising centre, few were able to get the locums necessary to take part. Additionally, many cited travel costs and losses in income as barriers to participation.

## DISCUSSION

As expected, most respondents reported practising in a rural or remote location as determined by demographic responses about size of community and distance to the nearest referral centre. Additionally, a number of respondents reported that transportation to their referral centre was limited to boat or air transit, naturally increasing the time required for the transfer, as well as the associated costs.

According to the 2007 National Physician Survey, about 2.1% of all specialists practise rurally and 0.9% practise in geographically remote areas.<sup>7</sup>

Although previous studies<sup>2,5</sup> have investigated factors motivating physicians to practise in rural and remote regions, they generally do not distinguish between family physicians and specialists or were only interested in family physicians. Here, specialists were surveyed on their reasons for choosing rural practice. Fully three-quarters of respondents said family reasons, safety and outdoor lifestyle were reasons for practising in a rural area, and close to 60% cited autonomy and variety of cases. These results support findings of a 2008/09 CMA survey of rural physicians, which found the top 2 factors considered important in selecting a rural practice were the opportunity to practise a full skill set and a preference for rural lifestyle.<sup>2</sup>

Only 16% of respondents indicated that finances were a factor in choosing to practise in a rural area.

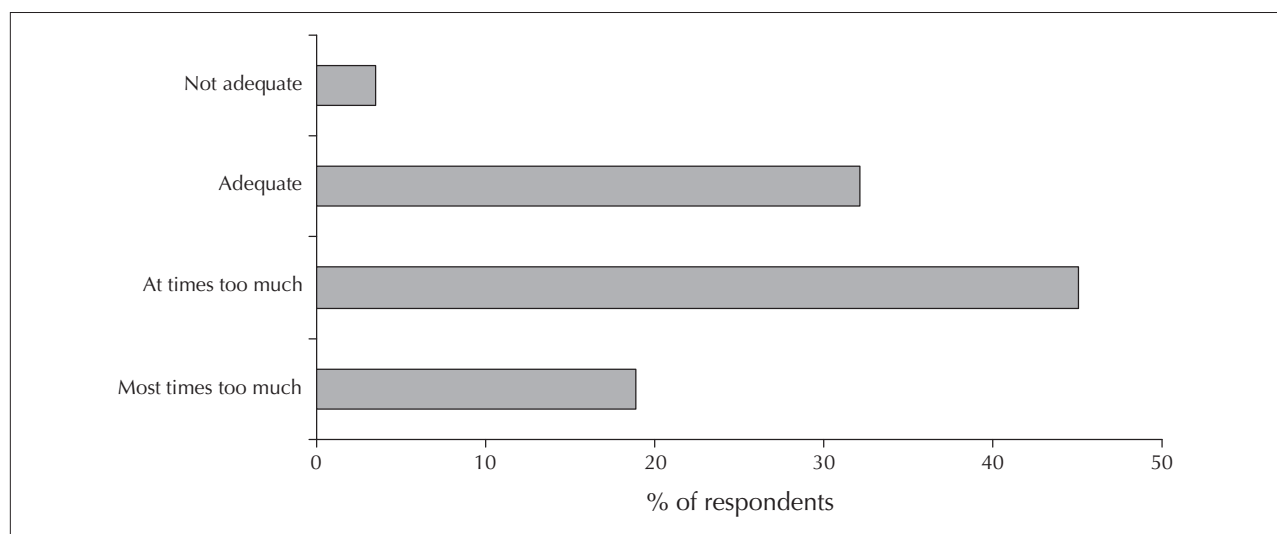


Fig. 5. Self-described workload of specialists.

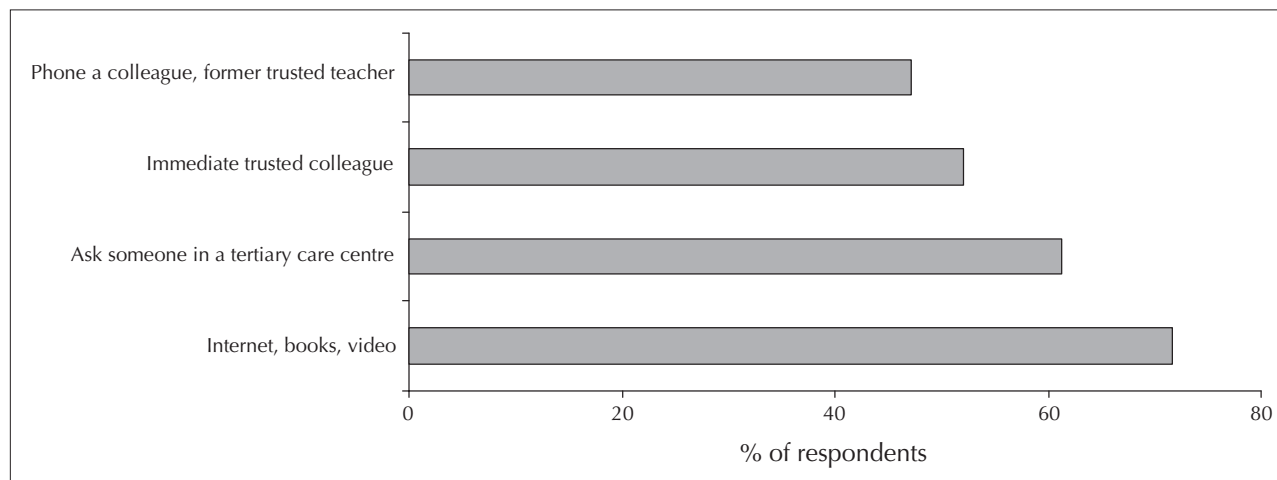


Fig. 6. Who or where respondents turned to for immediate advice.

Comparatively, the 2007 National Physician Survey found that 8% of specialists reported financial incentives and 4% reported nonfinancial incentives played a role in their recruitment or retention in their current location.<sup>7</sup> Given that the most common incentive offered to both younger ( $\leq 45$  yr) and older ( $> 45$  yr) physicians to encourage them to practise in rural Canada is financial,<sup>2</sup> this may warrant a reassessment of recruitment and retention strategies for rural specialists.

A total of 11% of international medical graduates practising in Canada work in rural areas.<sup>5</sup> However, the recruitment of this group has played a minor role in filling the need for specialists in rural Canada. Only 3% of respondents said that working in a rural area was an immigration or licensing requirement. This may indicate a reporting bias, which may in turn suggest a greater need to meet the specific needs of this group. Conversely, international medical graduates may be primarily family physicians.

Although it is reassuring that 85% of respondents felt supported overall, it is disconcerting that less than one-fifth felt supported by the CMA and the RCPSC. A better understanding of this perceived lack of support and what can be done to improve it may lead to higher levels of satisfaction among rural specialists.

Given that most specialists relied on the Internet, books and/or videos for immediate advice, it would be interesting to know the nature of the resources — whether they are evidence-based, journal articles or Cochrane Reviews. The strong (61%) reliance on colleagues in a tertiary care centre also emphasized the importance of forming good working relationships between centres.

The overwhelming response for relevant and accessible CME and additional training should not be taken lightly. These findings are supported by the CMA data holdings, which found that twice as many rural physicians were dissatisfied with CME opportunities as compared with urban physicians.<sup>5</sup> Although the 2007 National Physician Survey found that only 26% of specialists reported being neutral or dissatisfied with the availability of CME opportunities to meet their needs, with 65% being satisfied,<sup>7</sup> these numbers may largely represent the opinions of urban specialists. Given that more than 97% of specialists practise in urban centres,<sup>1</sup> the opinions of rural specialists may not be accurately reflected in these numbers. Our survey suggests that rural specialists are not satisfied with the availability of CME.

Furthermore, it has been suggested that provid-

ing physicians in rural and remote communities with better access to CME may improve retention.<sup>4</sup> Although these results could reflect a reporting bias, they should encourage the CMA, colleges and other networks to improve CME opportunities, which may in turn improve feelings of support.

## Limitations

The SRPC's survey of rural specialists yielded a modest 19% response rate. This response rate may have been improved by the use of other methods of contact, including email, fax and telephone. As well, a follow-up mailing may have picked up invalid addresses. The explanatory letter that accompanied the survey indicated that completing the survey would take about 10 minutes and that the results would be used to try to better meet the needs of specialists at future SRPC meetings. This may have dissuaded specialists who had very little time or did not feel that SRPC meetings benefit them.

It is possible that the responses received were biased. Physicians who are particularly interested in CME at SRPC meetings may have been more likely to respond. Similarly, those planning on leaving rural practice, either for retirement or for urban practice, may have been less likely to respond. Because the survey did not ask for identifying data, we cannot know whether the responses received are representative of the profile of Canadian specialists across geographical areas or age categories.

## CONCLUSION

Although financial incentives are still very common, it may be worthwhile also exploring preferences for rural lifestyle and variety of practice as incentives to recruit and retain specialists to rural areas. Additionally, the CMA and the RCPSC may wish to work with rural specialists to foster a more supportive relationship and better meet the needs of this unique, and often neglected, group. Finally, our results suggest a great interest among rural specialists to have better access to relevant CME and training opportunities. The CMA and the RCPSC may wish to address access to CME in upcoming policy and program choices.

**Competing interests:** None declared.

## REFERENCES

1. Canadian Institute for Health Information. *Geographic distribution*



of physicians in Canada: beyond how many and where. Ottawa (ON): The Institute; 2005.

2. Chauhan TS, Jong M, Buske L. Recruitment trumps retention: results of the 2008/09 CMA Rural Practice Survey. *Can J Rural Med* 2010;15:101-7.
3. Chan BT, Degani N, Crichton T, et al. Factors influencing family physicians to enter rural practice: Does rural or urban background make a difference? *Can Fam Physician* 2005;51:1246-7.
4. White CD, Willett K, Mitchell C, et al. Making a difference: education and training retains and supports rural and remote doctors in Queensland. *Rural Remote Health* 2007;7:700.
5. Canadian Medical Association. *Rural physician analysis based on CMA data holdings*. Ottawa (ON): The Association; 2008.
6. CMA Masterfile, January 2006, Canadian Medical Association.
7. The College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada. National Physician Survey. National results by FP/GP or other specialist, sex, age, and all physicians. 2007. Available: [www.nationalphysiciansurvey.ca/nps/2007\\_Survey/Results/physician1-e.asp](http://www.nationalphysiciansurvey.ca/nps/2007_Survey/Results/physician1-e.asp) (accessed 2011 July 1).

## SERVICE INFORMATION

**Society of Rural Physicians of Canada (SRPC) members:** Subscription price included in membership fee.

**Nonmembers (2012 rates):** *Individuals:* Canada, \$112 (single copy, \$23); United States and elsewhere, US\$143 (single copy, US\$23). *Institutions:* Canada, \$181 (single copy, \$23); United States and elsewhere, US\$230 (single copy, US\$23). *Students/residents:* \$36 Can/US\$. Please contact the CMA Member Service Centre (see next paragraph) for other information. These rates include surface postage. Canadian subscribers please add applicable taxes.

All subscriptions are payable in advance. Payment should be made to the Canadian Medical Association (CMA) in the funds specified. MasterCard, VISA and American Express are accepted. Orders or requests for information should be addressed to *CJRM*, CMA Member Service Centre, 1870 Alta Vista Dr., Ottawa ON K1G 6R7; 888 855-2555 x2307 (Canada/US) or 613 731-8610 x2307; fax 613 236-8864; [cmadata@cma.ca](mailto:cmadata@cma.ca).

**Missing issues:** Claims for missing issues must be made within 3 months of publication date (subject to availability).

**Change of address:** Send one month before effective date to the CMA Member Service Centre (see above).

**Reprints:** Commercial and author reprints can be purchased through our partner Sheridan Press. To purchase commercial article reprints and ePrints, or to request a quote, please contact Matt Neiderer, Content Sales, Sheridan Content Services; 800 635-7181 x8265; [matt.neiderer@sheridan.com](mailto:matt.neiderer@sheridan.com). Authors can order their reprints by submitting an author reprint order form available at the Sheridan Press Electronic Order Centre at [www.sheridan.com/cma/eoc](http://www.sheridan.com/cma/eoc) or by contacting Lori Laughman,

Customer Service Representative, Sheridan Reprints Services; [lori.laughman@sheridan.com](mailto:lori.laughman@sheridan.com).

**Copyright and Permissions:** Copyright for all material is held by the SRPC or its licensors, unless otherwise indicated. You may reproduce or otherwise use material from this journal only in accordance with Canadian copyright law and provided that credit is given to the original source. In the case of photocopying or other reprographic copying, please contact the Canadian Copyright Licensing Agency (Access Copyright): 800 893-5777; [accesscopyright.ca](http://accesscopyright.ca). For any other use, including republishing, redistribution, storage in a retrieval system or transmission in any form or by any means, please contact Permissions Coordinator, CMA Publications, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; fax 613 565-7704; [permissions@cma.ca](mailto:permissions@cma.ca).

**Indexing and Abstracting:** *CJRM* is available through the following services: MEDLINE/*Index Medicus*, Ovid Technologies, EbscoHost EJS, ProQuest Information and Learning Company, CAB Abstracts, Global Health and *Ullrich's International Periodicals Directory*. All articles published in *CJRM* are available free at the time of publication at [cma.ca/cjrm](http://cma.ca/cjrm).

**RuralMed:** Information on RuralMed (the SRPC listserv) is available online at [srpc.ca](http://srpc.ca).

**Advertising:** *Classified ads:* Contact Journal Advertising, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; 800 663-7336 or 613 731-8610 x2107/2041; fax 613 565-7488; [advertising@cma.ca](mailto:advertising@cma.ca). See Classified Advertising section of *CJRM* for information on rates. *Display ads:* Contact Journal Advertising (see preceding information), x2159.

## Country cardiograms case 43

Charles Helm, MD,  
CCFP  
Tumbler Ridge, BC

Correspondence to:  
Dr. Charles Helm,  
Box 1690,  
Tumbler Ridge BC  
V0C 2W0;  
drchelm@pris.bc.ca

This article has been peer  
reviewed.

A 62-year-old man is brought to the emergency department of a remote hospital in British Columbia. He has had vague feelings of indigestion for more than 24 hours. His examination is normal, other than an elevated blood pressure reading of 160/105 mm Hg. His cardiovascular risk factors include an adverse lipid profile, obesity, a sedentary lifestyle, type 2 diabetes mellitus and extreme stress over the preceding 12 months, as well as a family history of premature myocardial infarction.

His symptoms abate, and troponin T results are negative. His initial electro-

cardiogram (ECG) is shown in Figure 1.

Although the patient's presentation does not seem typical for an ischemic cardiac event, he is retained for monitoring and reassessment. He continues to feel unwell, but without specific symptoms.

A repeat ECG, taken 8 hours after the initial one, is shown in Figure 2. The patient's troponin T level is now elevated at 0.55 µg/L (> 0.10 µg/L is consistent with myocardial infarction).

What has happened?

For the answer, see page 72.

Competing interests: None declared.

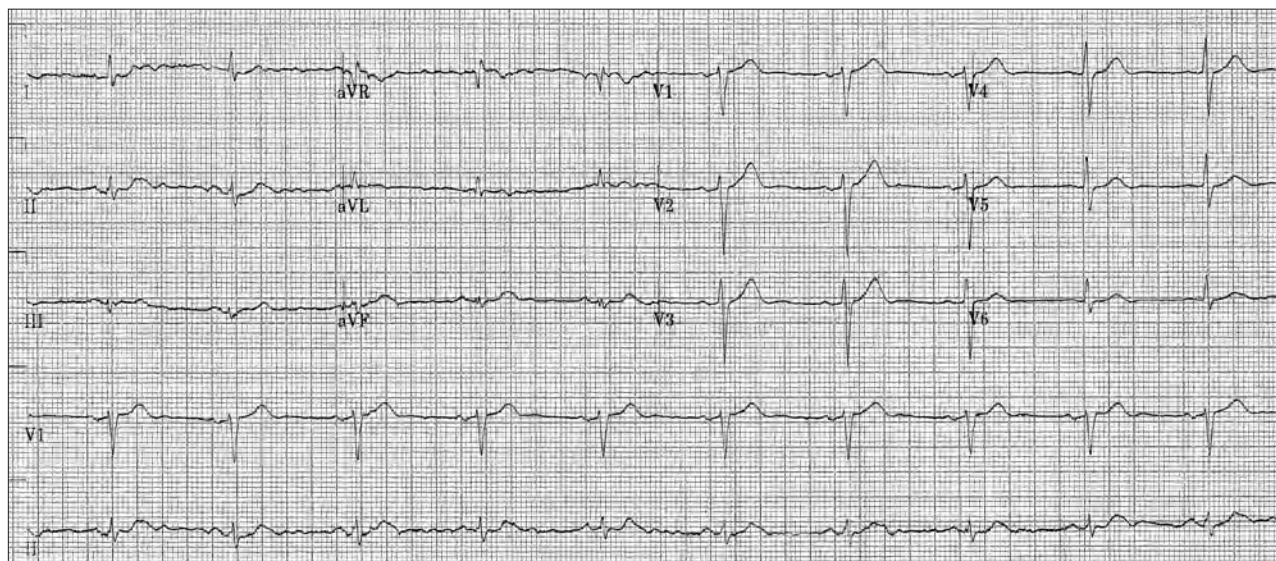


Fig. 1. Initial electrocardiogram of a 62-year-old man with indigestion for more than 24 hours.

"Country cardiograms" is a regular feature of *CJRM*. We present an electrocardiogram and discuss the case in a rural context. Please submit cases to Suzanne Kingsmill, *CJRM*, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9; cjrm@cjrm.net.

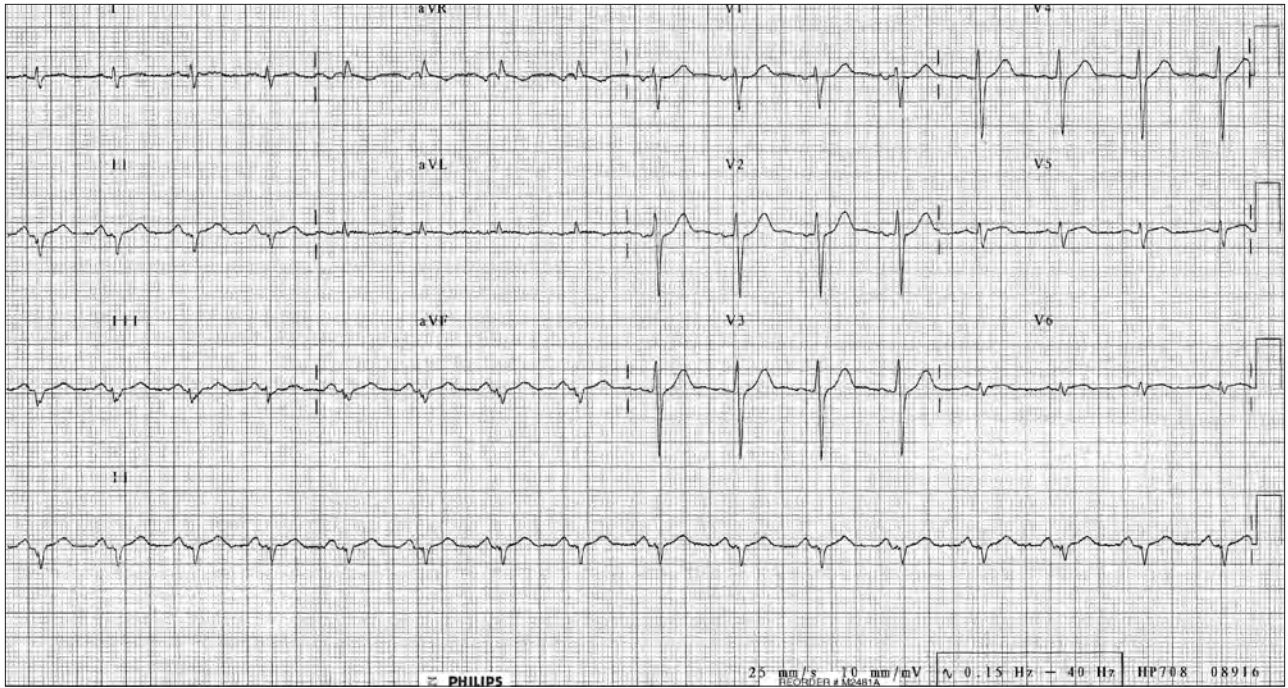




Fig. 2. Repeat electrocardiogram, taken 8 hours after the initial one.



**ZOSTAVAX<sup>®</sup>**

[zoster vaccine live, attenuated (Oka/Merck)]



**MERCK**  
Merck Canada Inc., Kirkland, Quebec

VACC-1009208-0000-E-CDN-AUG-12  
 ® Registered trademark of Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. Used under license.  
 © 2011 Merck Canada Inc., a subsidiary of Merck & Co., Inc. All rights reserved.



## The occasional tonometry

Gordon Brock, MD,  
FCFP, FRRMS  
Vydas Gurekas, MD,  
CCFP, FRRMS  
Centre de Temiscaming et de  
Kipawa, Temiscaming, Que.

Jon Spencer, MD,  
FRCS  
Private Practice, North Bay,  
Ont.

Correspondence to:  
Dr. Gordon Brock;  
geebee@neilnet.com

*This article has been peer  
reviewed.*

**A**lthough the importance of ocular pressure was recognized as early as 1875, the first truly practical instrument for its measurement was patented in 1905 by the Norwegian ophthalmologist Hjalmar Schiøtz. The Schiøtz tonometer has changed little since then and is still a viable choice for the rural physician.

Intraocular pressure is considered statistically normal at 16.1 (standard deviation 2.8) mm Hg. A value of 22 mm Hg, 2 standard deviations above this norm, represents the cut-off between “normal” and “high” intraocular pressure.<sup>1</sup>

### TONOMETRY IN RURAL PRACTICE

Because the Schiøtz tonometer is robust and cheap, and doesn’t depend on a battery, we feel that it excels as an evaluation tool for the proverbial “red eye in the emergency department” for the rural physician. The “Schiøtz” can sit on the shelf literally for years and still be ready for instant use. In acute angle-closure glaucoma, the pressure will be very high, often greater than 50 mm Hg, and this difference from the “normal” will be easily detectable by the Schiøtz.<sup>1</sup>

Although it has received a “C” rating from the Canadian Task Force on the Periodic Health Examination, some physicians may have an interest in screening for glaucoma.<sup>2</sup> Treatment of glaucoma is really within the province of the ophthalmologist. However, rural physicians with an interest in glaucoma or practising in an area without access to an ophthalmologist may follow some patients. These physicians will likely be aware of the advantages and disadvantages of the various types of tonometer

and may want to invest in a “noncontact” or “miniaturized” tonometer for a higher degree of accuracy and greater comfort for the patient (see Types of tonometers).

### TYPES OF TONOMETERS

No tonometer pierces the eyeball and directly measures the intraocular pressure; all use some indirect method of estimating the true intraocular pressure. There are 4 broad classes of tonometers: indentation, applanation, noncontact and miniaturized.

- **Indentation tonometers**, such as the Schiøtz tonometer (Fig. 1) (widely available from medical supply companies at a cost of about \$350), use a rod-like “plunger” to “indent” the cornea and thus give an estimation of the pressure within the eyeball.
- **Applanation tonometers**, such as the Haag-Streit Goldmann (\$1500–\$2400\*) and the Perkins (\$1395–\$1495\*), determine intraocular pressure by measuring the force needed to flatten a small, central area of the cornea. This class of tonometer gives very accurate, “gold-standard” readings, but some require a slit lamp to use and all require some experience to obtain proper readings.
- **Noncontact tonometers**, such as



Fig. 1. The Schiøtz tonometer.

the Reichert PT100 (\$8700\*), the Keeler Pulsair 2000 (\$9000\*) and the portable Nidek NT-2000 (\$12 500\*), use a puff of air to flatten the cornea and thus indirectly measure the intraocular pressure. They do not require anesthesia of the eye — and so can be used by nonphysicians — and are preferred for screening for glaucoma. They are probably the least accurate of the 4 types and tend to give the highest readings.<sup>3</sup>

- **Miniaturized tonometers**, such as the Reichert Tono-Pen XL (18 cm long, 60 g; \$3900\*) and the Tono-Pen AVIA (\$4400\*), are hand-held, electronic tonometers that feature portability as their main advantage. They use a probe tip, protected by a disposable latex cover, to barely indent the cornea. This process is repeated several times and an average reading of intraocular pressure is displayed on an LCD (liquid crystal display) screen.

\*Prices are courtesy of INNOVA Medical Ophthalmics ([www.innova.ca](http://www.innova.ca)), effective February 2012 and subject to change.

## THE SCHIOTZ TONOMETER

The Schiotz tonometer<sup>4-6</sup> is inexpensive, simple to use and easily accurate enough for our purposes. We do recommend that an afternoon with an ophthalmologist, who can demonstrate it for you on a consenting patient, would be useful. The Schiotz is durable, requires little maintenance and can sit on the shelf for years between uses. There are no batteries to run down or leak! It would be a perfectly satisfactory device for the rural physician who has only an occasional interest in tonometry.

The Schiotz tonometer consists essentially of a hollow barrel with a relatively large footplate and a holder. A free-floating, rod-like plunger with a 5.5 g weight attached — the default weight — fits inside the barrel. When held vertically just above the eye, the plunger will move downwards by gravity and “indent” the cornea. This very small up-and-down movement is magnified by a lever arm to move a needle that gives a reading on a horizontal scale numbered arbitrarily 0–20. The “harder” the eye is due to higher intraocular pressure, the lower the indentation will be and so the lower the scale will read. By means of a table provided with the instrument, this scalar reading is converted to a reading of intraocular pressure in mm Hg.

To account for the range of pressure, different (supplied) weights (7.5 g and 10 g) may be added to the plunger.

Relative contraindications to Schiotz tonometry include corneal abrasions, infections and corneal edema or past damage, which may give a falsely high value. Potential side effects of the Schiotz are corneal abrasion, reaction to the local anesthesia and transmission of infection.<sup>4-6</sup>

## HOW TO USE THE SCHIOTZ TONOMETER

1. Assemble the instrument. Because proper cleaning may not have been done, clean the plunger and footplate with alcohol and allow to dry (see Care of the Schiotz tonometer).
2. Calibrate the Schiotz by positioning it on the provided test block and taking the pressure. The reading should be zero. (If not, return to the supplier for servicing). We usually start with the 7.5 g weight on the tonometer (Fig. 2).
3. Recall that the best relaxant and analgesic is careful explanation of the procedure to the patient (Fig. 3).
4. Place the patient in the supine position. Loosen any tight collar.



Fig. 2. Calibrate the Schiotz.



5. Anesthetize the cornea, using whichever ophthalmologic anesthetic drops you are familiar with (Fig. 4).
6. Separate the eyelids with the fingers of one hand, being careful not to apply any pressure to the eyeball and thus raise the pressure (Fig. 5). Ask the patient to fixate forward (on the ceiling or other target above).
7. Hold the tonometer by the handle, above the eye,



Fig. 3. Carefully explain the procedure to the patient.



Fig. 4. Anesthetize the cornea.



Fig. 5. Separate the eyelids, being careful not to apply pressure to the eyeball.

- and lower it as vertically as possible, until the footplate is lightly resting on the centre of the cornea. We find it helpful to lower the tonometer in several short steps, stopping for a few seconds after each step, to allow the patient to get used to the object descending on his or her eye (Fig. 6).
8. Lower the handle to a position just between the top and bottom of the barrel, so that the tonometer is resting by its own weight on the cornea (Fig. 7).



Fig. 6. Lower the tonometer by a series of short steps to position the footplate over the centre of the cornea.



Fig. 7. Position the tonometer over the centre of the cornea.

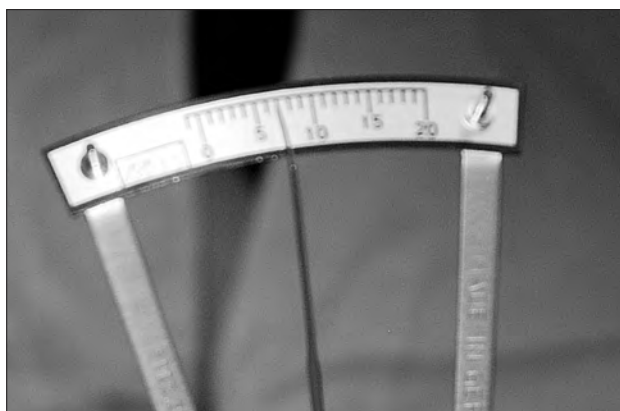


Fig. 8. Note the reading produced by the needle on the scale. Some oscillation of the needle is normal.

- Note the reading produced by the needle on the scale. Some oscillation of the needle is normal and is due to the pulse transmitted to the intraocular fluid; it indeed confirms proper placement of the tonometer (Fig. 8). Try to take a reading at the centre point of the oscillation. If the reading is less than 4, add another weight onto the plunger and repeat the procedure. Using the conversion table in Appendix 2, convert the scalar reading to an ocular pressure



Fig. 9. Clean the plunger and tip with alcohol.



Fig. 10. Clean the barrel.

reading, depending on which of the 2 weights has been attached (step 2). For example, with 7.5 g weight attached, a scalar reading of 7.0 indicates an intraocular pressure of 18.5 mm Hg, which is normal. With the 10.0 g weight attached, the corresponding value would be 27.2 mm Hg, which is elevated.

## CARE OF THE SCHIOTZ TONOMETER

- Remove the plunger, and use alcohol to clean the plunger and tip (Fig. 9).
- Clean the inside of the barrel with an alcohol-soaked pipe cleaner or Q-tip and then with a dry pipe cleaner or Q-tip (Fig. 10).
- Clean the footplate with alcohol.
- Allow to dry and then place disassembled in the provided box.

**Competing interests:** None declared.

## REFERENCES

- Catalano RA, ed. *Ocular emergencies*. Philadelphia (PA): W.B. Saunders; 1992.
- The periodic health examination. Canadian Task Force on the Periodic Health Examination. *CMAJ* 1979;121:1193-1254.
- Peyman GA. *Principles and practice of ophthalmology*. Philadelphia (PA): W.B. Saunders; 1986.
- Albert DM, Jakobiec FA. *Principles and practice of ophthalmology*. Philadelphia (PA): W.B. Saunders; 2000.
- Duane TD. *Clinical ophthalmology*. New York (NY): Harper and Row; 1989.
- Ritch R, Shields MB, Krupin T. *The glaucomas*. London (UK): Mosby; 1996.

### Appendix 1. Distributors of tonometers

INNOVA Medical Ophthalmics  
Toronto, Ont.; 416 615-0185  
Pacific Medical Technologies, Inc.  
Vancouver, BC; 604 540-1755  
Toronto, Ont.; 888 855-6558  
Precision Ophthalmic, Inc.  
Anjou, Que.; 514 388-1515

### Appendix 2. Schiotz scale conversion table

Scale reading	Ocular pressure, mm Hg	
	7.5 g weight	10 g weight
1.0	49.8	69.3
2.0	42.1	59.1
3.0	35.8	50.6
4.0	30.4	43.4
5.0	25.8	37.2
6.0	21.9	31.8
7.0	18.5	27.2

### Practice makes perfect: simulation in rural emergency medicine

*Alim Nagji, BHSc  
Ammara Sadiq, MD  
Faculty of Medicine &  
Dentistry, University of  
Alberta, Edmonton, Alta.*

*Correspondence to:  
Mr. Alim Nagji;  
anagji@gmail.com*

**M**y (A.N.'s) first code was unpleasant — I doubt that they should ever be an enjoyable experience. However, it would have been highly useful to have had a degree of training to prepare me for what to expect and to afford me some degree of usefulness. Thrust into the emergency room within weeks of my arrival at Slave Lake Healthcare Centre, I embarked on a 9-month journey through the Rural Integrated Community Clerkship Program, an experience that brought me closer to the staff and granted me an intimate glimpse into the realities of rural medicine. In discussion with nursing staff, I noticed a palpable desire to prepare for the inevitable. In the rural hospital there is no luxury of having a trauma team or code squad. We were it.

Rural emergency medicine has always featured a host of challenges, from the sheer diversity and unpredictability of patient presentations to the constant balancing of limited resources. Whereas urban centres benefit from high degrees of specialization, rural practitioners are often required to rely heavily on limited experiences, and health care workers are frequently stretched beyond their job description. A strong team dynamic is essential for enhancing communication, maintaining composure and ensuring good patient outcomes.<sup>1,2</sup> Research has demonstrated that simulation can lead to improved team communication, more efficient services and enhanced operator skills.<sup>3-6</sup> Importantly, the relative infrequency of these events and the immediacy of

treatment needs require teams that are adept at triaging, assessing, treating and arranging for transfer.

My preceptor, Dr. Sadiq, and I drafted mock scenarios and acquired the Anesoft advanced cardiac life support (ACLS) computer-based simulator to host 8 mock cardiac code sessions for nurses, doctors and paramedics. In the course of the sessions, we assigned code leaders, reviewed roles and responsibilities and played through constantly evolving scenarios. Where necessary, we paused, discussed options or pharmacology, or offered feedback on how to proceed. We acquainted ourselves with the trauma room and new advances in technology, including the King LT (King Systems) or the laryngeal mask airway, to ensure confidence with these devices if the need arose.

As a facilitator for the sessions, I did considerable research into ACLS algorithms, which led to an increased level of comfort in the code environment. Although I'm not capable of running a code, in future scenarios I could at least play a meaningful role. More importantly, staff became proficient with the equipment in the trauma room, gained added confidence in their clinical abilities and fostered further trust within the team. We had a substantial contingent of paramedics participate; as experts in stabilizing patients and preparing them for transfer, their in-field and real-time experience proved invaluable.

The sessions were well received by staff because of their interdisciplinary nature. Building rapport among health care professionals is essential in team-

based environments, in which we constantly rely on each other for support and guidance. Furthermore, they became informal debriefing sessions for past resuscitations, an opportunity to learn from missteps and share feedback without blame. As many rural areas do not regularly partake in morbidity and mortality rounds, these simulation sessions could easily serve as vehicles to audit past encounters, with a heavy emphasis on preparing for the next.

There were some notable limitations, especially because of the optional and “extracurricular” nature of this activity; individuals frequently participated after a shift or came in during their time off. The scheduling challenge hampered continuity from week to week, resetting the group dynamic. Making sessions such as these a mandatory and essential component of the hospital culture could boost staff confidence, enhance team rapport and open up opportunities for feedback. As rural medicine continues to evolve, drawing on a wider range of professions, it is integral to maintain cohesion in the acute environment and create opportunities to draw on our strengths so that we can maximize patient outcomes and continue to provide high-calibre care.

When the fires hit Slave Lake, it was remarkable to bear witness to the calamity that ensued. However, the level of destruction, as severe as it was, would have been unfathomably worse had it not been for the rapid, cohesive response of firefighters, RCMP officers, and medical and other emergency personnel. Disasters demonstrate a multitude of similarities with medical codes: their unpredictability can catch us unprepared, the sequelae can be devastating and the challenge can be overwhelming. Practising codes, much like rehearsing fire drills, transcends the cerebral rumination of process into muscle memory; when the alarm rings, you head for the door. Similarly, harnessing the power of simulation to conduct interdisciplinary training has a plethora of opportunities, both inside and outside the hospital.

As vicegerents for the health of our patients, we work intensely with our teams to provide a high level of care with limited resources. Quite simply, we fashion bastions from dedication and ramparts of cohesion to defend the health of our communities. Without continuing to hone our skills and creating opportunities for knowledge translation among professions, we would be bereft of growth and be left outdated, leaving our towns exposed to a host of new problems. Continuing medical education encompasses continuing medical practice, an essential component on the never-ending road to perfection.

**Acknowledgements:** The authors thank Mr. Michael Kapusta and Dr. Ashraf Khan for their contributions toward creating and facilitating these sessions. Thank you to the staff at Slave Lake Healthcare Centre for their dedication to teaching throughout the year. Our thoughts and prayers go out to the people of Slave Lake for a speedy recovery following the devastating fires.

**Competing interests:** None declared.

## REFERENCES

1. Siassakos D, Bristowe K, Draycott T, et al. Clinical efficiency in a simulated emergency and relationship to team behaviours: a multisite cross-sectional study. *BJOG* 2011;118:596-607.
2. Fernandez R, Voznilek JA, Hegarty CB, et al. Developing expert medical teams: towards an evidence-based approach. *Acad Emerg Med* 2008;15:1025-36.
3. Capella J, Smith S, Philip A, et al. Teamwork training improves the clinical care of trauma patients. *J Surg Educ* 2010;67:439-43.
4. Berkenstadt H, Erez D, Munz Y, et al. Training and assessment of trauma management: the role of simulation-based medical education. *Anesthesiol Clin* 2007;25:65-74.
5. Fritz PZ, Gray T, Flanagan B. Review of mannequin-based high fidelity simulation in emergency medicine. *Emerg Med Australas* 2008;20:1-9.
6. Pascual JL, Holena DN, Michael AV, et al. Short simulation training improves objective skills in established advanced practitioners managing emergencies on the ward and surgical intensive care unit. *J Trauma* 2011;71:330-7.



Please send us your comments and opinions. / Nous serons heureux de recevoir vos commentaires et opinions. Letters to the editor should be addressed to: / Prière de faire parvenir les lettres à la rédaction à l'adresse suivante : *CJRM*, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9; fax 416 961-8271; [cjrm@cjrm.net](mailto:cjrm@cjrm.net)

## URGENT PORTABLE HEAD COMPUTED TOMOGRAPHY

Wainwright Health Centre, in Wainwright, Alta., is the first facility staffed by rural family physicians to use the CereTom (NeuroLogica Corp), a portable head computed tomography (CT) scanner. Following the introduction published in *CJRM*,<sup>1</sup> this letter summarizes our first 12 months using the CereTom for urgent CT, excluding urgent CT for stroke and transient ischemic attack (TIA). The initial results for stroke and TIA were published by Shuaib and colleagues.<sup>2</sup>

We performed 51 urgent scans in 50 patients (27 female and 23 male); an 80-year-old man underwent 2 scans. Four youths (8%; 1 female and 3 male), aged 11–17 years, underwent scans following head trauma (not surprisingly, due to certain sports and activities, such as cycling without a helmet, especially among the males!). Twenty-eight patients (56%) were aged 18–65 years and 18 patients (36%) were over 65 years of age.

We had a medical staff of 8 family physicians: 5 doctors ordered 6–8 scans each. One doctor ordered 11 scans, and the remaining 2 doctors ordered 1 scan each. This works out to a moderate average of 1 urgent non-stroke and non-TIA scan per physician every 2 months.

Four patients underwent scans ordered by external physi-

cians. A patient even came from Lethbridge, Alta. (about 900 km round-trip) because Wainwright had the *only* CT scanner in the province that could scan a patient who weighed 490 lb.

Reasons for scanning included

- 18 instances of trauma and/or concussion;
- 17 new neurologic issues (e.g., seizures, unexplained loss of consciousness);
- 9 instances of late TIA/stroke (beyond protocol time limits);
- 6 instances of acute headache.

A summary of the CT reports and management follows:

- reports noted 21 scans (about 40%) showing some abnormality, most frequently “cerebral atrophy” or “old stroke”;
- 4 patients (about 8%) were recommended to undergo follow-up magnetic resonance imaging;
- 3 cases (about 6%) were discussed with specialists by telephone;
- 2 patients (about 4%) were referred out immediately: 1 for repair of facial fractures and 1 with obtundation and a complex neurologic history;
- 30 scans (about 60%) were “normal.”

This review has improved our radiology department’s documentation before imaging, because of the 4 women under 30 years of age who underwent scanning, only 1 had a note in her chart that she was not pregnant.

In their initial report of 18 patients under the Northern Alberta Telestroke Program, Shuaib and colleagues found that 17 received adequate care at Wainwright Health Centre without the need for transfer. The authors stated,

Before the availability of the portable scanner, all 18 patients would have required transfer ... at a greater cost to the health care system.<sup>2</sup>

The case report noted in my introductory article<sup>1</sup> showed that early transfer as a direct result of prompt CT diagnosis has given an occasional patient a good outcome after surgery.

This summary shows that most of our nonstroke, non-TIA patients undergoing urgent CT were safely assessed and received treatment locally after a portable head CT scan. One can imagine the enormous cost and time savings if this machine were used in very remote centres.

**Kevin Hay, MB, BCh, BAO, MRCPI, FCFP**  
Wainwright Health Centre  
Wainwright, Alta.

## REFERENCES

1. Hay K. Portable head computed tomography for rural centres. *Can J Rural Med* 2010;15:125-6.
2. Shuaib A, Khan K, Whittaker T, et al. Introduction of portable computed tomography scanners, in the treatment of acute stroke patients via telemedicine in remote communities. *Int J Stroke* 2010; 5:62-6.



## Country cardiograms case 43: Answer

*Charles Helm, MD,  
CCFP  
Tumbler Ridge, BC*

**F**igure 1 (on page 63) shows an electrocardiogram (ECG) that is within normal limits, with normal sinus rhythm at a rate of 62 beats/min, normal complexes and intervals, and an axis of  $0^{\circ}$ .

The interpretation of Figure 2 (on page 64), without knowledge of Figure 1, might have read as follows: normal sinus rhythm, 93 beats/min; normal intervals; axis in fourth quadrant ( $265^{\circ}$ ), transition zone shifted to the left; small r waves in inferior leads, possible left anterior fascicular block; consider old inferior myocardial infarction. No significant ST-T changes.

Consideration of the 2 tracings together, however, allows a different interpretation to emerge. The interval changes, other than the axis shift, are mostly in the inferior leads and leads V5–V6. There has been loss of height of R waves in these leads, especially in leads II, V5 and V6; only a minute r wave remains in lead II (and it appears to disappear completely at times, likely in accordance with respiration). Deep S waves have developed.

The electrocardiographic changes of myocardial infarction classically involve ST-segment elevation or depression, T-wave changes (tall in the hyperacute phase, deeply inverted later) and the evolution of abnormal Q waves.

Not all myocardial infarction presentations follow these rules. The loss of height of R waves can be regarded as a “Q-wave equivalent.” This forms the probable explanation of the pattern of

change seen in these ECGs, suggesting involvement of the inferior and lateral myocardium. The elevated troponin T levels, indicating myocardial damage, support this. It is possible, of course, that there were ST-segment changes of short duration that were not picked up by these electrocardiograms.

This patient required transfer to a tertiary centre. On coronary angiography, extensive disease was apparent, and 5 stents were inserted.

Inferior myocardial infarction may present more with dyspeptic symptoms rather than typical chest pain, and patients with diabetes have a higher incidence of myocardial infarction that is silent or has seemingly minor symptoms. There will always be patients who present to the emergency department with atypical symptoms, with investigations that are initially negative.

Dealing with such cases appropriately can be challenging. Troponin levels take time to become elevated, and follow-up tests are therefore required if the presentation occurred within the first 8 hours of symptom onset. In this patient, the fact that symptoms had been present for 24 hours at the time of the initial investigations, and were abating, would have made it tempting to regard the initial results as accurate. However, the troponin rise only occurred later. This patient serves as a reminder that rules are not absolute and that meticulous follow-up has benefits.

**For the question, see page 63.**

# INSTRUCTIONS FOR AUTHORS

---

The *Canadian Journal of Rural Medicine (CJRM)* is a quarterly peer-reviewed journal available in print form and on the Internet. It is the first rural medical journal in the world indexed in Index Medicus, as well as MEDLINE/PubMed databases.

*CJRM* seeks to promote research into rural health issues, promote the health of rural and remote communities, support and inform rural practitioners, provide a forum for debate and discussion of rural medicine, provide practical clinical information to rural practitioners and influence rural health policy by publishing articles that inform decision-makers.

Material in the following categories will be considered for publication.

**Original articles:** research studies, case reports and literature reviews of rural medicine (3500 words or less)

**Commentary:** editorials, regional reviews and opinion pieces (1500 words or less)

**Clinical articles:** practical articles relevant to rural practice. Illustrations and photos are encouraged (2000 words or less)

**Off Call articles:** a grab-bag of material of general interest to rural doctors (e.g., travel, musings on rural living, essays) (1500 words or less)

**Cover:** artwork with a rural theme

## Manuscript submission

Submit 2 hard copies of the manuscript to the Editor, *Canadian Journal of Rural Medicine*, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9, and an electronic version, preferably by email to [cjrm@cjrm.net](mailto:cjrm@cjrm.net), or on CD. The preferred electronic version is an older Word format (in doc format such as Word 2003 or older — not docx). Digital art and photos must accompany the manuscript in separate files (see “Electronic figures and illustrations”).

Hard copies of the manuscript should be double-spaced, with a separate title page containing the authors names and titles and a word count, an abstract of no more than 200 words (for original articles category), followed by the text, full references and tables (each table on a separate page). Reference marks should be typed in the text and enclosed by brackets <1> and listed in the order of appearance at the end of the text and not prepared using electronic EndNotes or Footnotes. The approved style guide for the manuscript is the “Uniform requirements for manuscripts submitted to biomedical journals” (see [www.cmaj.ca/site/authors/policies.xhtml](http://www.cmaj.ca/site/authors/policies.xhtml)).

Include a covering letter from the corresponding author indicating that the piece has not been published or submitted for publication elsewhere and indicate the category in which the article should be considered. Please provide the name and contact information of a potential independent reviewer for your work.

## Electronic figures and illustrations

Illustrations should be in JPG, EPS, TIFF or GIF formats as produced by the camera at a minimal resolution of 300 dpi (typically a 2 mega pixel or better camera for 10 × 15 cm image). Do not correct colour or contrast as our printer will do that. Do not include text or captions in the image. If you need to crop the picture ensure that you save with the highest quality (lowest compression). Do not scan art or reduce the resolution of the photos unless you indicate in the cover letter that you have done so and will also be forwarding high resolution copies on either CD or as camera ready art.

## Written permissions

Written permission must be provided for the reproduction of previously published material, for illustrations that identify human subjects, and from any person mentioned in the Acknowledgements or cited as the source of a Personal Communication.

# ZOSTAVAX<sup>®</sup>

[zoster vaccine live, attenuated (Oka/Merck)]



## Prescribing Summary



## Patient Selection Criteria

### THERAPEUTIC CLASSIFICATION

Live, attenuated virus varicella-zoster vaccine

### INDICATIONS AND CLINICAL USE

ZOSTAVAX<sup>®</sup> is indicated for the prevention of herpes zoster (shingles).

ZOSTAVAX<sup>®</sup> is indicated for immunization of individuals 50 years of age or older.

### SPECIAL POPULATIONS

For use in special populations, see Supplemental Product Information, WARNINGS AND PRECAUTIONS, Special Populations.

### CONTRAINDICATIONS

History of hypersensitivity to any component of the vaccine, including gelatin. History of anaphylactic/anaphylactoid reaction to neomycin (each dose of reconstituted vaccine contains trace quantities of neomycin). Neomycin allergy generally manifests as a contact dermatitis. However, a history of contact dermatitis due to neomycin is not a contraindication to receiving live virus vaccines.

Primary and acquired immunodeficiency states due to conditions such as: acute and chronic leukemias; lymphoma; other conditions affecting the bone marrow or lymphatic system; immunosuppression due to HIV/AIDS; cellular immune deficiencies. Immunosuppressive therapy (including high-dose corticosteroids); however, ZOSTAVAX<sup>®</sup> is not contraindicated for use in individuals who are receiving topical/inhaled corticosteroids or low-dose systemic corticosteroids or in patients who are receiving corticosteroids as replacement therapy, e.g., for adrenal insufficiency.

Active untreated tuberculosis.

Pregnancy (see WARNINGS AND PRECAUTIONS - Pregnant Women in the Supplemental Product Information).



## Safety Information

### WARNINGS AND PRECAUTIONS

#### General

The health care provider should question the patient about reactions to a previous dose of any varicella-zoster virus (VZV)-containing vaccines (see CONTRAINDICATIONS).

As with any vaccine, adequate treatment provisions, including epinephrine injection (1:1000), should be available for immediate use should an anaphylactic/anaphylactoid reaction occur. Deferral of vaccination should be considered in the presence of fever  $>38.5^{\circ}\text{C}$  ( $>101.3^{\circ}\text{F}$ ). ZOSTAVAX<sup>®</sup> does not protect all individuals against the development of Herpes Zoster or its sequelae. See ACTION AND CLINICAL PHARMACOLOGY and CLINICAL TRIALS in the product monograph.

The duration of protection beyond 4 years after vaccination with ZOSTAVAX<sup>®</sup> is unknown. The need for revaccination has not been defined.

ZOSTAVAX<sup>®</sup> has not been studied in individuals who have previously experienced an episode of herpes zoster.

#### Transmission

In clinical trials with ZOSTAVAX<sup>®</sup>, transmission of the vaccine virus has not been reported. However, post-marketing experience with varicella vaccines suggests that transmission of vaccine virus may occur rarely between vaccinees who develop a varicella-like rash and susceptible contacts. Transmission of vaccine virus from varicella vaccine recipients who do not develop a varicella-like rash has also been reported and is therefore a theoretical risk for vaccination with ZOSTAVAX<sup>®</sup>. The risk of transmitting the attenuated vaccine virus to a susceptible individual should be weighted against the

risk of developing natural herpes zoster and potentially transmitting wild-type VZV to a susceptible contact.

### ADVERSE REACTIONS

#### Adverse Drug Reaction Overview

In clinical trials, ZOSTAVAX<sup>®</sup> has been evaluated for general safety in more than 32,000 adults 50 years of age or older. ZOSTAVAX<sup>®</sup> was generally well tolerated.

### ZOSTAVAX<sup>®</sup> Efficacy and Safety Trial (ZEST) in Subjects 50 to 59 Years of Age

In the ZEST study, subjects received a single dose of either ZOSTAVAX<sup>®</sup> (n=11,184) or placebo (n=11,212) and were monitored for general safety throughout the study. During the study, a vaccine-related serious adverse experience was reported for 1 subject vaccinated with ZOSTAVAX<sup>®</sup> (anaphylactic reaction).

All subjects received a vaccination report card (VRC) to record adverse events occurring from Days 1 to 42 postvaccination in addition to undergoing routine safety monitoring throughout the study.

Vaccine-related injection-site and systemic adverse experiences reported at an incidence of  $\geq 1\%$  are shown in Table 1. The overall incidence of vaccine-related injection-site adverse experiences was significantly greater for subjects vaccinated with ZOSTAVAX<sup>®</sup> versus subjects who received placebo (63.9% for ZOSTAVAX<sup>®</sup> and 14.4% for placebo).

**Table 1: Vaccine-Related Injection-Site and Systemic Adverse Experiences Reported in  $\geq 1\%$  of Adults Who Received ZOSTAVAX<sup>®</sup> or Placebo (1-42 Days Postvaccination) in the ZOSTAVAX<sup>®</sup> Efficacy and Safety Trial**

Adverse Experience	ZOSTAVAX <sup>®</sup> (N = 11,094) %	Placebo (N = 11,116) %
<b>Injection-Site</b>		
Pain <sup>†</sup>	53.9	9.0
Erythema <sup>†</sup>	48.1	4.3
Swelling <sup>†</sup>	40.4	2.8
Pruritus	11.3	0.7
Warmth	3.7	0.2
Hematoma	1.6	1.6
Induration	1.1	0.0
<b>Systemic</b>		
Headache	9.4	8.2
Pain in extremity	1.3	0.8

<sup>†</sup> Designates a solicited adverse experience. Injection-site adverse experiences were solicited only from Days 1-5 postvaccination.

Within the 42-day postvaccination period in the ZEST, noninjection-site zoster-like rashes were reported by 30 subjects (15 for ZOSTAVAX<sup>®</sup> and 15 for placebo). Of 21 specimens that were adequate for Polymerase Chain Reaction (PCR) testing, wild-type VZV was detected in 10 (3 for ZOSTAVAX<sup>®</sup>, 7 for placebo) of these specimens. The Oka/Merck strain of VZV was not detected from any of these specimens.

Within the same 42-day postvaccination reporting period in the ZEST, varicella-like rashes were reported by 115 subjects (64 for ZOSTAVAX<sup>®</sup> and 51 for placebo). Of 21 specimens that were available and adequate for PCR testing, VZV was detected in one of these specimens from the group of subjects who received ZOSTAVAX<sup>®</sup>; however, the virus strain (wild type or Oka/Merck strain) could not be determined.

### Shingles Prevention Study (SPS) in Subjects 60 Years of Age and Older

In the largest of these trials, the Shingles Prevention Study (SPS), 38,546 subjects received a single dose of either ZOSTAVAX<sup>®</sup> (n=19,270) or placebo (n=19,276) and were monitored for safety throughout the study. During the study, vaccine-related serious adverse experiences were reported for 2 subjects vaccinated with ZOSTAVAX<sup>®</sup> (asthma exacerbation and polymyalgia rheumatica) and 3 subjects who received placebo (Goodpasture's syndrome, anaphylactic reaction, and polymyalgia rheumatica).

In the Adverse Event Monitoring Substudy, a subgroup of individuals from the SPS (n=3,345 received ZOSTAVAX<sup>®</sup> and n=3,271 received placebo) were provided vaccination report cards to record adverse events occurring from Days 0 to 42 postvaccination in addition to undergoing routine safety monitoring throughout the study.

**Table 2: Number of Subjects with  $\geq 1$  Serious Adverse Events (0-42 Days Postvaccination) in the Shingles Prevention Study**

Cohort	ZOSTAVAX <sup>®</sup> n/N %	Placebo n/N %	Relative Risk (95% CI)
<b>Overall Study Cohort</b>			
All ages	255/18671 1.4%	254/18717 1.4%	1.01 (0.85, 1.20)
60-69 years old	113/10100 1.1%	101/10095 1.0%	1.12 (0.86, 1.46)
$\geq 70$ years old	142/8571 1.7%	153/8622 1.8%	0.93 (0.74, 1.17)
<b>AE Monitoring Substudy Cohort</b>			
All ages	64/3326 1.9%	41/3249 1.3%	1.53 (1.04, 2.25)
60-69 years old	22/1726 1.3%	18/1709 1.1%	1.21 (0.66, 2.23)
$\geq 70$ years old	42/1600 2.6%	23/1540 1.5%	1.76 (1.07, 2.89)

N=number of subjects in cohort with safety follow-up  
n=number of subjects reporting an SAE 0-42 Days postvaccination

The incidence of death was similar in the groups receiving ZOSTAVAX<sup>®</sup> or placebo during the Days 0-42 postvaccination period: 14 deaths occurred in the group of subjects who received ZOSTAVAX<sup>®</sup> and 16 deaths occurred in the group of subjects who received placebo. The most common reported cause of death was cardiovascular disease (10 in the group of subjects who received ZOSTAVAX<sup>®</sup>, 8 in the group of subjects who received placebo). The overall incidence of death occurring at any time during the study was similar between vaccination groups: 793 deaths (4.1%) occurred in subjects who received ZOSTAVAX<sup>®</sup> and 795 deaths (4.1%) in subjects who received placebo.

Vaccine-related injection-site and systemic adverse experiences reported at an incidence  $\geq 1\%$  are shown in Table 3. Most of these adverse experiences were reported as mild in intensity. The overall incidence of vaccine-related injection-site adverse experiences was significantly greater for subjects vaccinated with ZOSTAVAX<sup>®</sup> versus subjects who received placebo (48% for ZOSTAVAX<sup>®</sup> and 17% for placebo).

**Table 3: Vaccine-Related Injection-Site and Systemic Adverse Experiences Reported in  $\geq 1\%$  of Adults Who Received ZOSTAVAX<sup>®</sup> or Placebo (0-42 Days Postvaccination) in the Adverse Events Monitoring Substudy of the Shingles Prevention Study**

Adverse Experience	ZOSTAVAX <sup>®</sup> (N = 3345) %	Placebo (N = 3271) %
<b>Injection Site</b>		
Erythema <sup>†</sup>	35.6	6.9
Pain/tenderness <sup>†</sup>	34.3	8.6
Swelling <sup>†</sup>	26.1	4.5
Hematoma	1.6	1.4
Pruritus	7.1	1.0
Warmth	1.7	0.3
<b>Systemic</b>		
Headache	1.4	0.9

<sup>†</sup> Designates a solicited adverse experience. Injection-site adverse experiences were solicited only from Days 0-4 postvaccination.

The remainder of subjects in the SPS received routine safety monitoring, but were not provided report cards. The types of events reported in these patients were generally similar to the subgroup of patients in the Adverse Event Monitoring Substudy. Within the 42-day postvaccination reporting period in the SPS, the number of reported noninjection-site zoster-like rashes among all subjects was small (17 for ZOSTAVAX<sup>®</sup>, 36 for placebo; p=0.009). Of these 53 zoster-like rashes, 41 had specimens that were available and adequate for PCR testing. Wild-type VZV was detected in 25 (5 for ZOSTAVAX<sup>®</sup>, 20 for placebo) of these specimens. The Oka/Merck strain of VZV was not detected from any of these specimens.

The number (n=59) of reported varicella-like rashes was also small. Of these varicella-like rashes, 10 had specimens that were available and adequate for PCR testing. VZV was not detected in any of these specimens. The results of virus testing in subjects with varicella-like and zoster-like rashes should be interpreted with caution due to the number of samples that were not available for testing.

The numbers of subjects with elevated temperature ( $\geq 38.3^{\circ}\text{C}$  [ $\geq 101.0^{\circ}\text{F}$ ]) within 7 days postvaccination were similar in the ZOSTAVAX<sup>®</sup> and the placebo vaccination groups [6 (0.2%) vs. 8 (0.3%), respectively].

### Other Studies

In other clinical trials conducted prior to the completion of the SPS, the reported rates of noninjection-site zoster-like and varicella-like rashes within 42 days postvaccination were also low in both zoster vaccine recipients and placebo recipients. Of the 17 reported noninjection-site zoster-like and varicella-like rashes, 10 specimens were available and adequate for PCR testing. The Oka/Merck strain was identified by PCR analysis from the lesion specimens of only two subjects who reported varicella-like rashes (onset on Day 8 and 17).

To address concerns for individuals with an unknown history of vaccination with ZOSTAVAX<sup>®</sup>, the safety and tolerability of a second dose of ZOSTAVAX<sup>®</sup> was evaluated. In a placebo-controlled, double-blind study, 98 adults 60 years of age or older received a second dose of ZOSTAVAX<sup>®</sup> 42 days following the initial dose; the vaccine was generally well tolerated. The frequency of vaccine-related adverse experiences after the second dose of ZOSTAVAX<sup>®</sup> was generally similar to that seen with the first dose.

### Post-Marketing Adverse Drug Reactions

The following additional adverse reactions have been identified during post-marketing use of ZOSTAVAX<sup>®</sup>. Because these reactions are reported voluntarily from a population of uncertain size, it is generally not possible to reliably estimate their frequency or establish a causal relationship to the vaccine.

*Skin and subcutaneous tissue disorders:* rash.

*Musculoskeletal and connective tissue disorders:* arthralgia; myalgia.

*General disorders and administration site conditions:* injection-site rash; injection-site urticaria; pyrexia; injection-site lymphadenopathy.

*Immune system disorders:* hypersensitivity reactions including anaphylactic reactions.

To report a suspected adverse reaction, please contact Merck Canada Inc. by:  
Toll-free telephone: 1-800-567-2594  
Toll-free fax: 1-877-428-8675  
By regular mail: Merck Canada Inc., P.O. Box 1005, Pointe-Claire – Dorval, QC H9R 4P8

### DRUG INTERACTIONS

#### Overview

ZOSTAVAX<sup>®</sup> must not be mixed with any other medicinal product in the same syringe. Other medicinal products must be given as separate injections and at different body sites.

Concurrent administration of ZOSTAVAX<sup>®</sup> and antiviral medications known to be effective against VZV has not been evaluated.

### Use with Other Vaccines

ZOSTAVAX<sup>®</sup> and PNEUMOVAX<sup>®</sup> 23 (pneumococcal vaccine, polyvalent, MSD Std.) should not be given concomitantly because concomitant use resulted in reduced immunogenicity of ZOSTAVAX<sup>®</sup> (see CLINICAL TRIALS in the product monograph).



## Administration

### DOSAGE AND ADMINISTRATION

(see Product Monograph for complete information)

#### Recommended Dose and Dosage Adjustment FOR SUBCUTANEOUS ADMINISTRATION.

Do not inject intravascularly.

Individuals should receive a single dose consisting of the entire content of the vial (approximately 0.65 mL).

ZOSTAVAX<sup>®</sup> is not a treatment for zoster or postherpetic neuralgia (PHN). If an individual develops herpes zoster despite vaccination, active current standard of care treatment for herpes zoster should be considered.

At present, the duration of protection after vaccination with ZOSTAVAX<sup>®</sup> is unknown. In the Shingles Prevention

Study (SPS), protection was demonstrated through 4 years of follow-up. The need for revaccination has not yet been defined.

Reconstitute immediately upon removal from the freezer.

To reconstitute the vaccine, use only the diluent supplied, since it is free of preservatives or other antiviral substances which might inactivate the vaccine virus.

#### Vial of diluent:

To reconstitute the vaccine, first withdraw the entire contents of the diluent vial into a syringe.

To avoid excessive foaming, slowly inject all of the diluent in the syringe into the vial of lyophilized vaccine and gently agitate to mix thoroughly. Withdraw the entire contents into a syringe, and using a new needle, inject the total volume of reconstituted vaccine subcutaneously, preferably into the upper arm - deltoid region.

**IT IS RECOMMENDED THAT THE VACCINE BE ADMINISTERED IMMEDIATELY AFTER RECONSTITUTION, TO MINIMIZE LOSS OF POTENCY. DISCARD RECONSTITUTED VACCINE IF IT IS NOT USED WITHIN 30 MINUTES.**

Do not freeze reconstituted vaccine.

CAUTION: A sterile syringe free of preservatives, antiseptics, and detergents should be used for each injection and/or reconstitution of ZOSTAVAX<sup>®</sup> because these substances may inactivate the vaccine virus.

It is important to use a separate sterile needle and syringe for each patient to prevent transfer of infectious agents from one individual to another.

Needles should be disposed of properly.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. ZOSTAVAX<sup>®</sup> when reconstituted is a semi-hazy to translucent, off white to pale yellow liquid.

#### OVERDOSAGE

There are no data with regard to overdose.

For management of a suspected drug overdose, contact your regional Poison Control Center.

### STORAGE AND STABILITY

#### Storage

ZOSTAVAX<sup>®</sup> **SHOULD BE STORED FROZEN** at an average temperature of  $-15^{\circ}\text{C}$  or colder until it is reconstituted for **injection** (see DOSAGE AND ADMINISTRATION). Any freezer, including frost-free, that has a separate sealed freezer door and reliably maintains an average temperature of  $-15^{\circ}\text{C}$  or colder is acceptable for storing ZOSTAVAX<sup>®</sup>. The diluent should be stored separately at room temperature ( $20$  to  $25^{\circ}\text{C}$ ) or in the refrigerator ( $2$  to  $8^{\circ}\text{C}$ ). Do not store the diluent in a freezer.

Before reconstitution, protect from light.

**DISCARD IF RECONSTITUTED VACCINE IS NOT USED WITHIN 30 MINUTES.**

**DO NOT FREEZE THE RECONSTITUTED VACCINE.**



## Study References

#### References:

1. National Advisory Committee on Immunization. Update on varicella. CDR 2004;30(ACS-1):1-28.
2. Oxman MN. Clinical manifestations of herpes zoster. In: Arvin AM, Gershon AA, editors. Varicella-zoster virus virology and clinical management. Cambridge Press 2000:246-75.
3. Data on file, Merck Canada Inc.: Product Monograph. ZOSTAVAX<sup>®</sup>, 2011.

### Supplemental Product Information

#### WARNINGS AND PRECAUTIONS

##### Special Populations

**Geriatric:** The mean age of subjects enrolled in the largest (N=38,546) clinical study of ZOSTAVAX<sup>®</sup> was 69 years (range 59-99 years). Of the 19,270 subjects who received ZOSTAVAX<sup>®</sup>, 10,376 were 60-69 years of age, 7,629 were 70-79 years of age, and 1,263 were 80 years of age or older. ZOSTAVAX<sup>®</sup> was demonstrated to be generally safe and effective in this population.

**Pregnant Women:** There are no studies in pregnant women. It is also not known whether ZOSTAVAX<sup>®</sup> can cause foetal harm when administered to a pregnant woman or can affect reproduction capacity. However naturally-occurring varicella-zoster virus infection is known to sometimes cause foetal harm. Therefore, ZOSTAVAX<sup>®</sup> should not be administered to pregnant women; furthermore, pregnancy should be avoided for three months following vaccination (see CONTRAINDICATIONS).

**Nursing Women:** It is not known whether VZV is secreted in human milk. Therefore, because some viruses are secreted in human milk, caution should be exercised if ZOSTAVAX<sup>®</sup> is administered to a nursing woman.

**Pediatrics:** ZOSTAVAX<sup>®</sup> is not recommended for use in this age group.

**HIV-AIDS Patients:** The safety and efficacy of ZOSTAVAX<sup>®</sup> have not been established in adults who are known to be infected with HIV with or without evidence of immunosuppression (see CONTRAINDICATIONS).

**Immunocompromised Subjects:** Data are not available regarding the use of ZOSTAVAX<sup>®</sup> in immunocompromised subjects (see CONTRAINDICATIONS).

® Registered trademarks Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. Used under license.

11-05\_139888

VACC-1008558-0000-E-CDN-AUG-12

PRODUCT MONOGRAPH AVAILABLE AT  
[www.merck.ca](http://www.merck.ca)  
OR UPON REQUEST AT 1-800-567-2594

Member



[www.merck.ca](http://www.merck.ca)



MERCK CANADA INC.  
P.O. BOX 1005, POINTE-CLAIRE  
DORVAL, QUEBEC H9R 4P8





## CAREER/CLASSIFIED ADVERTISING CARRIÈRES ET ANNONCES CLASSÉES

The Ontario Human Rights Code prohibits discriminatory employment advertising.

The *Canadian Journal of Rural Medicine (CJRM)* is pleased to accept classified advertisements. The deadline is 1 month before issue date. Classified rates: 1 page \$1020; 2/3 page \$975; 1/2 page \$830; 1/3 page \$635; 1/4 page \$530; 1/8 page \$450. For a *CJRM* confidential-reply box number there is a \$20 charge (first insertion only). VISA, MASTERCARD AND AMERICAN EXPRESS ACCEPTED.

Advertisements should be sent to: Journal Advertising, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; tel 800 663-7336 or 613 731-8610 x2107/2041; fax 613 565-7488; advertising@cma.ca

Send all box number replies to: Box \_\_\_\_, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8.

Le Code des droits de la personne de l'Ontario interdit la discrimination dans la publicité relative à l'emploi.

Le *Journal canadien de la médecine rurale* accepte volontiers les annonces classées. Celles-ci doivent être reçues au Journal au plus tard 1 mois avant la date de parution. Tarif des annonces classées : 1 page, 1020 \$; 2/3 page, 975 \$; 1/2 page, 830 \$; 1/3 page, 635 \$; 1/4 page, 530 \$; 1/8 page, 450 \$. L'emploi d'une boîte-réponse confidentielle au *JCMR* donne lieu à la perception d'un supplément de 20 \$ (pour la première insertion seulement). VISA, MASTERCARD ET AMERICAN EXPRESS ACCEPTÉS.

Le texte des annonces doit être adressé à : Annonces classées, *Journal canadien de la médecine rurale*, 1867, prom. Alta Vista, Ottawa ON K1G 5W8; tél. 800 663-7336 ou 613 731-8610 x2107/2041; fax 613 565-7488; advertising@cma.ca

Veuillez faire parvenir les réponses aux numéros de boîtes à l'adresse suivante : Boîte \_\_\_\_, *CJRM*, 1867, prom. Alta Vista, Ottawa ON K1G 5W8.



### Family Physicians

It's more than a practice  
.....it's a lifestyle!

**Northern Medical Services** is seeking family physicians for full-time, itinerant contract and locum positions available in northern Saskatchewan. Experience practice in a remote setting and receive a competitive remuneration package (compensation in excess of **\$270,000-\$362,000** per annum depending upon qualifications and employment location) plus additional personal and professional benefits too numerous to mention. Locum rate: **\$1300-\$1700** per day plus on-call stipend.

**Kerri Balon, Recruitment Coordinator**  
**Northern Medical Services**  
Division of Academic Family Medicine  
404, 333 – 25th Street E.  
Saskatoon, SK Canada S7K 0L4  
Tel 306 665-2898  
Fax 306 665-6077  
Toll Free 1-866-NMS-DOCS  
(667-3627)  
Email [balon.nms@sasktel.net](mailto:balon.nms@sasktel.net)



[www.northerndocs.com](http://www.northerndocs.com)

RM-240



The true  
north,  
strong  
and free

**Do you like the great outdoors?**  
**Looking for a diverse and challenging practice?**

**The Sioux Lookout Region may be  
the place for you.**

Sioux Lookout is a dynamic, full-service community in Northwestern Ontario.

Our physicians provide services to residents of Sioux Lookout as well as 31 remote First Nations.

Full-time, part-time and locum positions available

Flexible work environment

Eligible for Underserved Area Grant with  
Ministry of Health and Long Term Care

**Contact Adrienne Langston at**  
**[Adrienne.Langston@slnha.com](mailto:Adrienne.Langston@slnha.com) or 1-877-317-4797**

[www.siuoxlookoutareadocs.ca](http://www.siuoxlookoutareadocs.ca)

RM-256a





# BE A TRAILBLAZER.

The University of Manitoba is a place where you can define your future and your career. Our commitment to discovery and community encompasses everything we do, from the education we offer students to the workplace we create for staff.

The University of Manitoba offers excellent benefits, world-class facilities and an inspirational environment where you can shape your career and make a positive impact every day.

## Academic Family Physician (Urban Stream)

• *Department of Family Medicine, Faculty of Medicine*

As a skilled Family Physician you will share your knowledge with residents and other learners, ensure your patients receive excellent care, and participate in scholarly activity. This is an exciting opportunity to practice in a Winnipeg teaching clinic with an inter-professional faculty.

### Qualifications:

- Eligible for licensure as a Family Physician in the Province of Manitoba
- Certified or eligible for certification by the College of Family Physicians of Canada

## Academic Family Physician (Northern/Remote Stream)

• *Department of Family Medicine, Faculty of Medicine*

• *J A Hildes Northern Medical Unit, Faculty of Medicine*

You are a skilled Family Physician with northern experience, an interest in teaching, and a desire to combine northern and urban practice. Working half-time in Winnipeg and half-time in Manitoba First Nations Communities, you prepare residents to work in northern and remote regions.

### Qualifications:

- Eligible for licensure as a Family Physician in the Province of Manitoba
- Certified or eligible for certification by the College of Family Physicians of Canada

For more information on these opportunities, please visit:  
[umanitoba.ca/employment](http://umanitoba.ca/employment)



UNIVERSITY  
OF MANITOBA

RM-258

## Life's better here...

Career. Outdoors. Recreation. Enjoyment. Individuality. Balance.



## General Internist - Nelson, BC

Interior Health is actively recruiting for a General Internist in Nelson, British Columbia, to complement another on-site GIM at the Kootenay Lake Hospital. Nelson is situated on the West Arm of Kootenay Lake in the heart of the Selkirk Mountains. This wonderful opportunity includes private office work, ward consultations, emergency room consultations and specialty clinics (Healthy Heart, Diabetes, Liver/hepatitis, Oncology). The GIM position does not entail any formal on-call duties.

Kootenay Lake Hospital has 30 in-patient beds with medical, surgical, and maternal-child rooms providing services to approximately 28,000 area residents. On-site specialists: two Obstetrician/Gynaecologists, one Paediatrician, one Neurologist (does EMG and nerve conduction testing), one Radiologist, ER Physicians, three GP Anaesthetists, one Ophthalmologist, three Psychiatrists, visiting General Surgeons, two visiting Retinologists, a visiting Rheumatologist and Thoracic Surgery telemedicine service. The hospital has the largest maternity service in the West Kootenays (340 deliveries per year average). It also has new ER and G/E 64 slice CT scanner. The region has a mobile MRI service. Nelson is 70 km from the Kootenay Boundary Regional Hospital in Trail which offers general surgery, internal medicine and ICU, nephrology / renal dialysis, orthopaedic surgery, O&G, urology, plastic surgery, radiology/nuclear medicine, etc. A High Acuity Response Team (HART) ensures rapid transport of patient to the Regional Hospital. EMR use in the region is extensive and sophisticated. A dynamic and comprehensive Family Practice community supports our specialists. Nelson is considered as the 'Gem of the Kootenays', come and see it for yourself.

Please contact: [physicianrecruitment@interiorhealth.ca](mailto:physicianrecruitment@interiorhealth.ca)  
or online at [www.betterhere.ca](http://www.betterhere.ca)



Interior Health

RM-262

# Life's better here...

Career. Outdoors. Recreation. Enjoyment. Individuality. Balance.

Family Practice/General Practitioners—Interior of British Columbia



In the Interior, work and life balance could include the opportunity to ski, golf, bike, wind surf or visit a winery all in the same day. The Southern Interior of British Columbia invites you to experience what we have to offer. This year-round paradise is the destination of choice for nature lovers, adventurers, and recreationalists.

We are currently seeking Family Practice and General Practitioners throughout the region, and are excited to show you our backyard. Diverse opportunities to accommodate all interests including inpatient care, emergency rooms, OBS, labs, X-Rays, physiotherapy services, home care, home support, public health and more.

Learn more about the communities of BC's sunny Southern Interior and find out why...it's better here.

If you are interested in making the change, or would like to refer a physician, please contact: [physicianrecruitment@interiorhealth.ca](mailto:physicianrecruitment@interiorhealth.ca) or go online at [www.betterhere.ca](http://www.betterhere.ca).



TRAIL PENTICTON WILLIAMS LAKE KASLO VERNON NELSON SORRENTO SICAMOUS SALMON ARM REVELSTOKE

LYTTON KAMLOOPS CLEARWATER CHASE ASHCROFT SUMMERLAND OSOYOOS ENDERBY PRINCETON OLIVER KELOWNA

NAKUSP MIDWAY CASTLEGAR INVERMERE GOLDEN FERNIE ELKFORD CRESTON CRANBROOK 100 MILE HOUSE

RM-261

## Explore New Frontiers

Dynamic, challenging family practice in scenic Northern Manitoba & Ontario

- experience First Nations healthcare and culture
- flexible and attractive contract arrangements - full or part-time
- annual package starting at \$360,000 for full-time positions
- must be licensed or eligible for licensure with CPSM or CPSO
- no overhead
- signing & retention bonuses; CME allowance
- relocation & travel assistance
- 7+ weeks vacation plus statutory holidays
- furnished accommodations & meal allowance provided
- challenging medicine; dynamic & supportive colleagues
- gratifying work

Amdocs is changing the face of medicine in the north one physician at a time - Join our team and be a part of this exciting adventure!

If you are interested in finding out more about available practice opportunities with Amdocs, please contact **Liz Bilton, Manager, Recruitment** at;

[lbilton@amdocshealth.com](mailto:lbilton@amdocshealth.com)  
1.888.934.1556

**AMDOCS<sup>+</sup>**  
WE CARE WITH CARE  
[www.amdocshealth.com](http://www.amdocshealth.com)

THE  
**NORTH WEST**  
COMPANY

RM-253a

## Fort St. James British Columbia, Canada

### OFFERING A SUBSTANTIAL RECRUITMENT BONUS

Fort St. James is located in central British Columbia on the shores of Stuart Lake.

The community is surrounded by beautiful scenery and many recreational opportunities including a golf course, downhill and x-country ski area.

Fully Computerized, Modern Clinic.  
Excellent Remuneration and Lucrative  
Financial Incentives.

Visit our web site for more information at  
[www.fsjamesmedicalclinic.com](http://www.fsjamesmedicalclinic.com)  
and/or contact:

**Charlene Thomas**  
Family Physician Recruitment Coordinator  
Email [charlenethomas@telus.net](mailto:charlenethomas@telus.net)  
Tel 604 313-2711

RM-259

# Adventure is Calling...

## Healthcare opportunities in the Northwest Territories

Now is the time to experience the majestic beauty the North has to offer while at the same time providing primary care services in five remote communities.

The Sahtu Health & Social Services Authority is looking for **family physicians** interested in working and travelling in the NWT.

We are offering a unique opportunity to combine clinical practice with community visits, while collaborating with secondary and tertiary services through medical transport and TeleHealth.

SHSSA also has permanent and short term opportunities for Registered Nurses & Social Workers.



If you feel you are up for an adventure contact:

Denise King • Email [denise\\_king@gov.nt.ca](mailto:denise_king@gov.nt.ca) • Tel 867 587-3651 • Fax 867 587-3436  
[www.shssa.org](http://www.shssa.org)

RM-257



Government of **Western Australia**  
Department of **Health**  
**WA Country Health Service**



ROYALTIES  
FOR REGIONS

## Go the distance reap the rewards

**Be adventurous, come and practise medicine in rural Western Australia and you will get:**

- the satisfaction of providing health and medical services to rural communities
- professional support through training, medical indemnity and other incentives
- generous remuneration packages and attractive conditions.



Visit [www.health.wa.gov.au/doctors4ruralWA](http://www.health.wa.gov.au/doctors4ruralWA) for more details of the incentive packages that are available. Then email [doctors4ruralWA@health.wa.gov.au](mailto:doctors4ruralWA@health.wa.gov.au) or phone +61 8 9223 8589.



*"Professional fulfilment is clearly only one aspect of country life. I enjoy living in York which has a strong emphasis on community spirit."*

Dr Matt Archer

DOI12078A FEB 12 Canadian Journal Rural Med RM-254



# Thinking about warmer weather? Consider practising as a family physician in Western Australia

Rural HealthWest

**RIGHT**  
doctor **RIGHT**  
practice

Meet with the experts who can answer your questions and remove the complexities of migration. Visit us at the **On The Edge Rural and Remote 2012 conference** in Whistler, BC from 26-28 April 2012.

For more information email [recruit@ruralhealthwest.com.au](mailto:recruit@ruralhealthwest.com.au)

*Sea change, tree change, lifestyle change*



**BushMedico**  
Rural HealthWest

T +61 8 6389 4500 W [www.ruralhealthwest.com.au](http://www.ruralhealthwest.com.au)

Rural Health West is the leading rural health workforce agency in Western Australia and provides a FREE recruitment service.

RM-255

## REPRINTS

**We have partnered with Sheridan Press!**

To purchase commercial article reprints and e-prints or to request a quote, please contact

**Matt Neiderer**

Content Sales  
Sheridan Content Services

800 635-7181 x6265  
[matt.neiderer@sheridan.com](mailto:matt.neiderer@sheridan.com)



# Rural BC, the place to be.



Prince George, The North



Clinton, The Interior

## Meet with our team

Society of Rural Physicians of Canada:  
Rural and Remote Medicine

April 26 – 28, 2012  
Fairmont Chateau Whistler  
Whistler, British Columbia

## PRACTICE MEDICINE IN BRITISH COLUMBIA Enrich your career. Enhance your quality of life.

Join the hundreds of physicians who have moved to rural British Columbia to enjoy a quality of life that is envied around the world. Find out how our physician services team can assist you in matching your lifestyle interests with exciting career opportunities. **Register online today!**

PHYSICIANS

NURSES

ALLIED HEALTH

[healthmatchbc.org](http://healthmatchbc.org)

FIND A JOB IN BC

Health Match BC is a free health professional recruitment service funded by the Government of British Columbia, Canada



RM-260

TOLL-FREE: 1.877.867.3061 • TEL: 1.604.736.5920 • EMAIL: [welcome@healthmatchbc.org](mailto:welcome@healthmatchbc.org)

Photos: Tim Swanky, Picture BC & Tourism BC





Approximately 95% of Canadian adults have had chickenpox and are therefore at risk for herpes zoster<sup>1</sup>

**A DISEASE THAT MAY CAUSE  
BURNING, STABBING,  
SEARING PAIN<sup>2\*</sup>**

**And there is no way to predict  
who will develop herpes zoster<sup>3</sup>**

#### INDICATIONS AND CLINICAL USE

ZOSTAVAX® is indicated for the prevention of herpes zoster (shingles) in individuals 50 years of age or older.

#### SELECTED IMPORTANT SAFETY INFORMATION

ZOSTAVAX® is not a treatment for zoster or postherpetic neuralgia (PHN). If an individual develops herpes zoster despite vaccination, active current standard of care treatment for herpes zoster should be considered. Vaccination with ZOSTAVAX® may not result in protection of all vaccine recipients. ZOSTAVAX® is contraindicated in patients with a history of hypersensitivity to any component of the vaccine, including gelatin; a history of anaphylactic/anaphylactoid reaction to neomycin; primary and acquired immunodeficiency states due to conditions such as: acute and chronic leukemias; lymphoma; other conditions affecting the bone marrow or lymphatic system; immunosuppression due to HIV/AIDS, cellular immune deficiencies; immunosuppressive therapy (including high-dose corticosteroids); active untreated tuberculosis; pregnancy. In clinical trials, ZOSTAVAX® has been evaluated for general safety in more than 32,000 adults 50 years of age or older. ZOSTAVAX® was generally well tolerated. Vaccine-related injection-site and systemic adverse experiences reported at an incidence  $\geq 1\%$  are shown below. The overall incidence of vaccine-related injection-site adverse experiences was significantly greater for subjects vaccinated with ZOSTAVAX® versus subjects who received placebo (48% for ZOSTAVAX® and 17% for placebo among recipients aged  $\geq 60$  (Shingles Prevention Study (SPS)) and 63.9% for ZOSTAVAX® and 14.4% for placebo among recipients aged 50-59) (ZOSTAVAX® Efficacy and Safety Trial (ZEST)). Vaccine-related injection-site and systemic adverse experiences reported in  $\geq 1\%$  of adults who received ZOSTAVAX® (N=3,345) or placebo (N=3,271) (0-42 Days Postvaccination) in the Adverse Event Monitoring Substudy of the SPS were: erythema<sup>†</sup> (35.6%, 6.9%), pain/tenderness<sup>†</sup> (34.3%, 8.6%), swelling<sup>†</sup> (26.1%, 4.5%), hematoma (1.6%, 1.4%), pruritus (7.1%, 1.0%), warmth (1.7%, 0.3%), headache (1.4%, 0.9%). Most of these adverse experiences were reported as mild in intensity. The remainder of subjects in the SPS received routine safety monitoring, but were not provided report cards. The types of events reported in these patients were generally similar to the SPS subgroup of patients in the Adverse Event Monitoring Substudy. Vaccine-related injection-site and systemic adverse experiences reported in  $\geq 1\%$  of adults who received ZOSTAVAX® (N=11,094) or placebo (N=11,116) (1-42 Days Postvaccination) in the ZEST were: pain<sup>†</sup> (53.9%, 9.0%), erythema<sup>†</sup> (48.1%, 4.3%), swelling<sup>†</sup> (40.4%, 2.8%), pruritus (11.3%, 0.7%), warmth (3.7%, 0.2%), hematoma (1.6%, 1.6%), induration (1.1%, 0.0%), headache (9.4%, 8.2%), pain in extremity (1.3%, 0.8%).

**ZOSTAVAX®**

[zoster vaccine live, attenuated (Oka/Merck)]

**THE FIRST AND ONLY VACCINE INDICATED  
TO HELP PREVENT HERPES ZOSTER  
IN INDIVIDUALS 50 YEARS OF AGE OR OLDER**

\* ZOSTAVAX® is not indicated to reduce the morbidity and complications associated with herpes zoster.

† Designates a solicited adverse experience. Injection-site adverse experiences were solicited only from Days 0-4 postvaccination in SPS and from Days 1-5 postvaccination in ZEST.

Please visit our website at:  
[www.merck.ca](http://www.merck.ca)



**MERCK**

Merck Canada Inc., Kirkland, Quebec



VACC-1008558-0000-E-CDN-AUG-12

© Registered trademark of Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. Used under license.  
© 2011 Merck Canada Inc., a subsidiary of Merck & Co., Inc. All rights reserved.



See prescribing summary on page 74