

Canadian Journal

Journal canadien

*of*  
**Rural  
Medicine**

*de la*  
**médecine  
rurale**



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

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

**VOLUME 13, NO. 2, SPRING 2008**

**VOLUME 13, N° 2, PRINTEMPS 2008**

**IN THIS ISSUE**

**DANS CE NUMÉRO**

**The Occasional Intraosseous Infusion**

**Appendectomies in Labrador**

**Oligoanalgesia in a Rural ED**



cma.ca/cjrm

INTERIM SCIENTIFIC EDITOR
RÉDACTEUR SCIENTIFIQUE INTÉrimAIRE
JOHN WOOTTON, MD
Shawville, Que.

ASSOCIATE SCIENTIFIC EDITORS
RÉDACTEURS SCIENTIFIQUES ASSOCIÉS
GORDON BROCK, MD
Temiscaming, Que.

MARTIN BENFEY, MD
Fort-Coulonge, Que.

MANAGING EDITOR
DIRECTRICE DE LA RÉDACTION
SUZANNE KINGSMILL, BA, BSc, MSc
Shawville, Que.

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

STUART IGLESIAS, MD
Gibsons, BC

MARY JOHNSTON, MD
Revelstoke, BC

TRINA M. LARSEN SOLES, MD
Golden, BC

ROBERT MARTEL, MD
Arichat, NS

JAMES ROURKE, MD
St. John's, Nfld.

CARL WHITESIDE, MD
Vancouver, BC

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 Dolco Printing, Ottawa.

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

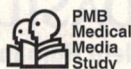
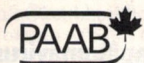
CJRM is indexed in Index Medicus and MEDLINE.

Publications Mail Agreement no. 41387051; Return undeliverable Canadian copies and address changes to: CMA Member Service Centre, CJRM, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; 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.



© 2008 Society of Rural Physicians of Canada

Canadian Journal

of Rural Medicine

Journal canadien

de la médecine rurale

VOL. 13, NO. 2, SPRING / PRINTEMPS 2008

EDITORIALS / ÉDITORIAUX

- 57 So much done — so much to do — Jim Rourke, MD, CCFP(EM), MClSc(FM), FCFP
58 Beaucoup de réalisations et encore énormément à faire — Jim Rourke, MD, CCFP(EM), MClSc(FM), FCFP
60 President's message. Recognizing the expertise in rural and remote medicine — Michael Jong, MD, MRCP(UK), CCFP, FCFP
61 Message du président. Reconnaître la compétence en médecine rurale et éloignée — Michael Jong, MD, MRCP(UK), CCFP, FCFP

ORIGINAL ARTICLES / ARTICLES ORIGINAUX

- 62 Oligoanalgesia in a rural emergency department — Dean Vlabaki, BPHE, BSc; William Kenneth Milne, MD, MSc, CCFP(EM)
68 An analysis of appendectomies performed in a Labrador general surgery practice — Colin Clarkson, MD; G. Narsing Pradhan, MD, FRCS(E), FRCSC
73 The difference between medical students interested in rural family medicine versus urban family or specialty medicine — Kymm Feldman, MD, CCFP, MHSc; Wayne Woloschuk, PhD; Margot Gowans, BSc, Grad Dip Clin Epi, MNutDiet; Dianne Delva, MD, CCFP, FCFP; Fraser Brenneis, MD, CCFP, FCFP; Bruce Wright, MD, CCFP, FCFP; Ian Scott, MD, CCFP, FCFP

THE PRACTITIONER / LE PRATICIEN

- 80 The occasional intraosseous infusion — N. John Bosomworth, MD, CCFP, FCFP

OFF CALL / DÉTENTE

- 84 Very rural obstetrics — Linda Johannson, MD, MSc, CCFP
86 Researching rural: research interns in northern Ontario — Len Kelly, MD, MClSci, CCFP, FCFP; Natalie St. Pierre-Hansen, BA



**White Super Power Ore Truck**  
Watercolour on Sennelier watercolour paper, 11" x 15"

©2005 Doug Welykholowa

This derelict mining truck, with its steel bed removed, was parked beside an old pink hotel on Highway 3, just east of the Sparwood, BC, coal mines. White trucks used this model as the basis for dozens of different types of heavy haulers from the late 1930s to the early '50s, including military vehicles during World War II.

More of Doug Welykholowa's work can be seen at [prairiegrass.ca](http://prairiegrass.ca).

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, PUBLICATIONS**  
**DIRECTRICE, SERVICES D'ÉDITION**  
GLENDA PROCTOR

**MANAGING EDITOR**  
**DIRECTRICE DE LA RÉDACTION**  
MOLLY MEITIN  
800 663-7336 x2114  
[molly.meitin@cma.ca](mailto:molly.meitin@cma.ca)

**EDITORIAL COORDINATOR**  
**COORDONNATRICE DE LA RÉDACTION**  
KATE BROWN

**PRODUCTION**  
KATHRYN A. FREAMO  
NICOLE BARBEAU, CLARA WALKER

**ONLINE PUBLISHING**  
**PUBLICATION EN DIRECT**  
HOLLY BODGER  
JAMES MANSHIP, SHIRLEY WADDELL

**CLASSIFIED ADVERTISING**  
**ANNONCES CLASSÉES**  
BEVERLEY KIRKPATRICK  
LAURIE MCLEOD, DEBORAH RODD  
[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

## LETTERS / CORRESPONDANCE

89 IUCD insertion — Anna Mason, MD; Response, Peter Hutten-Czapowski, MD

67 SERVICE INFORMATION

72 RENSEIGNEMENTS GÉNÉRAUX

90 INSTRUCTIONS FOR AUTHORS / DIRECTIVES AUX AUTEURS

98 CAREER / CLASSIFIED ADVERTISING  
ANNONCES SUR LES CARRIÈRES ET ANNONCES CLASSÉES

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

### MANUAL OF RURAL PRACTICE

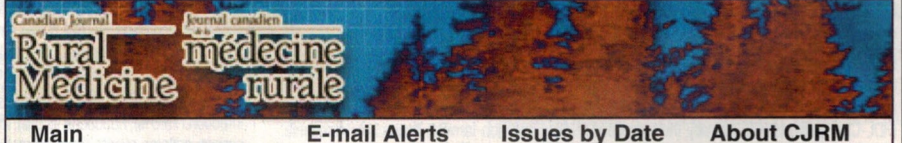
NOW IN ITS SECOND PRINTING!

PLEASE MARK YOUR CALENDARS!

**THE 16TH ANNUAL RURAL & REMOTE MEDICINE COURSE**  
WILL BE HELD IN HALIFAX, NS

APRIL 17–19, 2008

FOR MORE INFORMATION: VISIT [SRPC.CA](http://SRPC.CA) OR EMAIL [ADMIN@SRPC.CA](mailto:ADMIN@SRPC.CA)  
OR PHONE 819 647-2485



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

**MERCK FROSST CANADA LTD.**  
Gardasil 54  
Januvia Outside back cover  
**MERCK FROSST/SCHERING**  
**PHARMACEUTICALS**  
Ezetrol 56  
**PFIZER CANADA INC.**  
Lipitor Inside front cover

**VERATHON MEDICAL**  
GlideScope Inside back cover

**PRESCRIBING INFORMATION**  
Ezetrol 93-4  
Gardasil 92-3  
Januvia 91  
Lipitor 95-7



## So much done — so much to do

*Jim Rourke, MD,  
CCFP(EM),  
MClSc(FM), FCFP,  
a rural physician for  
25 years*

*Dean of Medicine, Faculty of  
Medicine, Memorial  
University of Newfoundland,  
Health Sciences Centre,  
St. John's, Nfld.*

*Assistant editor, CJRM*

*Correspondence to:  
Dr. Jim Rourke,  
Dean of Medicine, Faculty of  
Medicine, Memorial  
University of Newfoundland,  
Health Sciences Centre,  
St. John's NL A1B 5V6*

**T**he problems faced by rural medicine remain very much alive across the country.” In the first issue, in June of 1996, of the *Canadian Journal of Rural Medicine*, the official journal of the Society of Rural Physicians of Canada, founding scientific editor Dr. John Wootton went on to write:

The *Canadian Journal of Rural Medicine (CJRM)* is one manifestation of a new determination by rural physicians in every province to address [rural medical] issues.

The first editorial was aptly titled “A new venture: *CJRM*, a voice for rural medicine.”<sup>1</sup>

The first president’s message was “Why have a society of rural physicians?” by Dr. Keith MacLellan, who noted that

as rural doctors we practise a distinct form of medicine and have many challenges in common. ... It has been difficult to bring the interests and concerns of rural medicine to the attention of Canadian decision-makers.<sup>2</sup>

The SRPC has become a major Canadian force for change and improvement for rural health care, including education, working conditions and support for rural physicians toward the goal of improving the health of Canada’s rural people.

“The occasional chest tube” and “Country cardiograms: case 1” marked the beginning of the practitioner series of practical approaches to serious patient care challenges. So many of us kept these for quick reference in our emergency departments that it eventually was developed into the *Manual of Rural Practice*, which complements the SRPC’s popular and vital rural critical care courses.

The first original article, “Ambulatory epidural analgesia in obstetrics: a

proposal for rural Canada,” was the start of the *CJRM*’s peer-reviewed scientific approach to rural medicine. This stimulated and dramatically broadened research and publication of a scientific evidence-based approach, focused on clinical rural medicine. Part of the recognition of rural medicine as a discipline has included acceptance of *CJRM* by Index Medicus. In 2008 it is hard to imagine Canadian rural medicine without the SRPC and the *CJRM*.

### SO MUCH TO DO

Despite the advances over the past 12 years, rural Canadians, especially Aboriginal peoples, still have poorer health status, outcomes and access than their urban counterparts. There is so much yet to do. Here are 12 goals:

*For every rural community we should aim for*

- Clean water and sanitary waste disposal;
- Appropriate public health and social services;
- Modern and well-supported health care facilities.

*For every rural Canadian we should aim for*

- Access to a well-trained rural family physician and nurse for primary health team care;
- Access to emergency and other general hospital services within a reasonable time and distance;
- Access to specialized diagnosis and treatment within an integrated system with outcomes comparable to patients who live in cities.

*For Canadian medical schools we should aim for*

- A representative proportion of rural/urban students;

- Rural learning experiences for all students and residents to increase interest and understanding of rural practice;
- Rural streams for interested students and residents;
- Procedural and other advanced training for rural physicians to enhance provision of local services.

*For Canadian health research we should aim for*

- Development and support of a rural health

- research network infrastructure;
- Development and support of community-based rural health research involving rural physicians and other health care providers.

#### REFERENCES

1. Wootton J. A new venture: *CJRM*, a voice for rural medicine. *Can J Rural Med* 1996;1:5.
2. MacLellan K. Why have a society of rural physicians? *Can J Rural Med* 1996;1:11.

## Beaucoup de réalisations et encore énormément à faire

*Jim Rourke, MD,  
CCMF(EM),  
MCISc(FM), FCMF,  
médecin rural pendant  
25 ans*

*Doyen, Faculté de médecine,  
Université Memorial de  
Terre-Neuve, Centre des  
sciences de la santé,  
St. John's (T.-N.-L.)*

*Rédacteur adjoint, JCMR*

*Correspondance : Dr Jim  
Rourke, doyen, Faculté de  
médecine, Université Memorial  
de Terre-Neuve, Centre  
des sciences de la santé,  
St. John's NL A1B 5V6*

**L**a médecine rurale est toujours aux prises avec des problèmes, partout au Canada.» En juin 1996, dans le premier numéro du *Journal canadien de la médecine rurale*, le journal officiel de la Société de la médecine rurale du Canada, le Dr John Wootton, rédacteur scientifique fondateur, poursuivait :

L'avènement du *Journal canadien de la médecine rurale* démontre que les médecins ruraux de toutes les provinces sont déterminés plus que jamais à relever ces défis.

Le premier éditorial était coiffé de ce titre bien choisi : «Une nouvelle aventure : le *JCMR*, une voix pour la médecine rurale<sup>1</sup>.»

Dans son premier message du président, intitulé «Pourquoi une société des médecins ruraux?», le Dr Keith MacLellan signalait que

comme médecins ruraux, nous pratiquons une médecine distincte et nous avons de nombreux défis communs à relever. (...) Il a été difficile d'attirer l'attention des décideurs du Canada sur les intérêts et les préoccupations de la médecine rurale<sup>2</sup>.

Or, la SMRC est devenue un important agent de changement et d'amélioration

pour les soins de santé en milieu rural au Canada, y compris l'éducation, les conditions de travail et l'appui accordé aux médecins ruraux pour atteindre leur but, soit l'amélioration de la santé de la population rurale du Canada.

Les articles «The occasional chest tube» et «Country cardiograms: case 1» ont marqué le début d'une série sur les moyens pratiques pour les médecins de relever certains des défis épineux du soin des patients. Nous étions si nombreux à avoir conservé ces textes pour pouvoir les consulter rapidement à l'urgence qu'on a fini par les compiler dans le *Manual of Rural Practice* qui complète les cours populaires et essentiels sur les soins critiques offerts par la SMRC.

Le premier article original, «Ambulatory epidural analgesia in obstetrics: a proposal for rural Canada», marquait le début de l'approche scientifique avec examen par les pairs qui est celle du *JCMR*. Cette pratique a stimulé et élargi de façon spectaculaire la recherche et la diffusion d'une approche scientifique factuelle axée sur la médecine rurale clinique. L'acceptation du *JCMR* par Index Medicus a aidé à reconnaître la médecine rurale comme discipline.

- Rural learning experiences for all students and residents to increase interest and understanding of rural practice;
- Rural streams for interested students and residents;
- Procedural and other advanced training for rural physicians to enhance provision of local services.

*For Canadian health research we should aim for*

- Development and support of a rural health

- research network infrastructure;
- Development and support of community-based rural health research involving rural physicians and other health care providers.

#### REFERENCES

1. Wootton J. A new venture: *CJRM*, a voice for rural medicine. *Can J Rural Med* 1996;1:5.
2. MacLellan K. Why have a society of rural physicians? *Can J Rural Med* 1996;1:11.

## Beaucoup de réalisations et encore énormément à faire

*Jim Rourke, MD,  
CCMF(EM),  
MCISc(FM), FCMF,  
médecin rural pendant  
25 ans*

*Doyen, Faculté de médecine,  
Université Memorial de  
Terre-Neuve, Centre des  
sciences de la santé,  
St. John's (T.-N.-L.)*

*Rédacteur adjoint, JCMR*

*Correspondance : Dr Jim  
Rourke, doyen, Faculté de  
médecine, Université Memorial  
de Terre-Neuve, Centre  
des sciences de la santé,  
St. John's NL A1B 5V6*

**L**a médecine rurale est toujours aux prises avec des problèmes, partout au Canada. En juin 1996, dans le premier numéro du *Journal canadien de la médecine rurale*, le journal officiel de la Société de la médecine rurale du Canada, le Dr John Wootton, rédacteur scientifique fondateur, poursuivait :

L'avènement du *Journal canadien de la médecine rurale* démontre que les médecins ruraux de toutes les provinces sont déterminés plus que jamais à relever ces défis.

Le premier éditorial était coiffé de ce titre bien choisi : «Une nouvelle aventure : le *JCMR*, une voix pour la médecine rurale<sup>1</sup>.»

Dans son premier message du président, intitulé «Pourquoi une société des médecins ruraux?», le Dr Keith MacLellan signalait que

comme médecins ruraux, nous pratiquons une médecine distincte et nous avons de nombreux défis communs à relever. (...) Il a été difficile d'attirer l'attention des décideurs du Canada sur les intérêts et les préoccupations de la médecine rurale<sup>2</sup>.

Or, la SMRC est devenue un important agent de changement et d'amélioration

pour les soins de santé en milieu rural au Canada, y compris l'éducation, les conditions de travail et l'appui accordé aux médecins ruraux pour atteindre leur but, soit l'amélioration de la santé de la population rurale du Canada.

Les articles «The occasional chest tube» et «Country cardiograms: case 1» ont marqué le début d'une série sur les moyens pratiques pour les médecins de relever certains des défis épineux du soin des patients. Nous étions si nombreux à avoir conservé ces textes pour pouvoir les consulter rapidement à l'urgence qu'on a fini par les compiler dans le *Manual of Rural Practice* qui complète les cours populaires et essentiels sur les soins critiques offerts par la SMRC.

Le premier article original, «Ambulatory epidural analgesia in obstetrics: a proposal for rural Canada», marquait le début de l'approche scientifique avec examen par les pairs qui est celle du *JCMR*. Cette pratique a stimulé et élargi de façon spectaculaire la recherche et la diffusion d'une approche scientifique factuelle axée sur la médecine rurale clinique. L'acceptation du *JCMR* par Index Medicus a aidé à reconnaître la médecine rurale comme discipline.

## ÉNORMÉMENT À FAIRE ENCORE

En dépit des progrès réalisés depuis 12 ans, la population rurale du Canada, et en particulier la population autochtone, est toujours en moins bonne santé et a toujours un moins bon accès aux services que la population urbaine. Il y a encore énormément à faire. Voici douze objectifs.

*Pour chaque communauté rurale :*

- de l'eau propre et l'enlèvement sanitaire des ordures;
- des services de santé publique et des services sociaux appropriés;
- des établissements de santé modernes et bien appuyés.

*Pour tous les Canadiens ruraux :*

- accès à un médecin de famille rural et à une infirmière ayant reçu une solide formation pour dispenser des soins primaires en équipe;
- accès à des services d'urgence et autres services hospitaliers généraux dans un délai et à une distance raisonnables;
- accès à des services spécialisés de diagnostic et de traitement dans un système intégré qui donne des résultats pour la santé comparables à ceux des milieux urbains.

*Dans les facultés de médecine canadiennes :*

- un pourcentage représentatif d'étudiants ruraux et urbains;
- des expériences d'apprentissage en milieu rural pour tous les étudiants et résidents afin de les aider à comprendre la pratique en milieu rural et de les y intéresser davantage;
- un volet rural pour les étudiants et les résidents intéressés;
- une formation sur les interventions et autres soins avancés à l'intention des médecins ruraux afin d'améliorer la prestation des services à l'échelle locale.

*Pour la recherche en santé au Canada :*

- implantation et soutien d'une infrastructure de réseaux de recherche en santé rurale;
- implantation et soutien de recherches en santé rurale communautaire mettant à contribution les médecins ruraux et d'autres prestataires de soins de santé.

## RÉFÉRENCES

1. Wootton J. Une nouvelle aventure : la SCMR, une voix pour la médecine rurale. *J can med rural* 1996;1:5.
2. MacLellan K. Pourquoi une société des médecins ruraux? *J can med rural* 1996;1:11.

## Country Cardiograms

Have you encountered a challenging ECG lately?

In most issues of *CJRM* an ECG is presented and questions are asked.

On another page, the case is discussed and the answer is provided.

Please submit cases, including a copy of the ECG, to Suzanne Kingsmill, Managing Editor, *CJRM*, Box 1086, Shawville QC J0X 2Y0; [cjrm@lino.com](mailto:cjrm@lino.com)

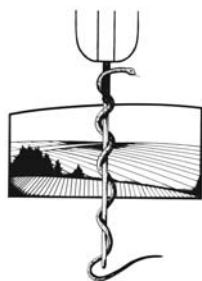
## Cardiogrammes ruraux

Avez-vous eu à décrypter un ECG particulièrement difficile récemment?

Dans la plupart des numéros du *JCMR*, nous présentons un ECG assorti de questions.

Les réponses et une discussion du cas sont affichées sur une autre page.

Veuillez présenter les cas, accompagnés d'une copy de l'ECG, à Suzanne Kingsmill, rédactrice administrative, *JCMR*, CP 1086, Shawville (Québec) J0X 2Y0; [cjrm@lino.com](mailto:cjrm@lino.com)



# President's message. Recognizing the expertise in rural and remote medicine

*Michael Jong, MD,  
MRCPC(UK), CCFP,  
FCFP*

*Happy Valley—Goose Bay,  
Nfld.*

*Correspondence to:  
Dr. Michael Jong,  
Box 205, Station B,  
Happy Valley—Goose Bay  
NL A0P 1E0*

### Society of Rural Physicians of Canada

### Société de la médecine rurale du Canada

#### **PRESIDENT / PRÉSIDENT**

MICHAEL JONG, MD, MRCPC(UK), CCFP,  
FCFP

*Happy Valley—Goose Bay,  
Newfoundland and Labrador*

#### **PAST-PRESIDENT**

#### **PRÉSIDENTE SORTANTE**

TRINA M. LARSEN SOLES, MD  
Golden, BC

#### **SECRETARY / SECRÉTAIRE**

HUGH HINDLE, MB BS, CCFP  
Hinton, Alta.

#### **TREASURER / TRÉSORIER**

BRAAM DE KLERK, MB ChB, DCH,  
DIP Obst  
Inuvik, NT

#### **MEMBERS-AT-LARGE**

#### **MEMBRES EXTRAORDINAIRES**

SANDY MACDONALD, MD, CCFP  
Iqaluit, Nunavut

KARL STOBBE, MD, CCFP(EM), FCFP  
Beamsville, Ont.

BEV KARRAS, MD  
Nipawin, Sask.

#### **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

**R**ural doctors are a special breed. Physicians practising in rural and remote communities, by necessity, have acquired skills and knowledge beyond that required of their urban colleagues. The SRPC is considering recognizing physician members (with a minimum of 5 years membership with the Society) who have accumulated 10 years of practice experience in rural and remote communities, and who have maintained professional development with a minimum of 5 CME events sponsored by the Society. Recognized members would be granted a fellowship in rural and remote medicine. This award would confer greater recognition than the current SRPC Rural Service Award. By granting the fellowship, the SRPC would be recognizing physicians who have gained expertise through experiential learning, who have survived, and who love to work in rural and remote communities.

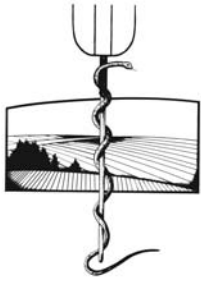
The SRPC is working with other national medical organizations to improve rural health care. The CMA has a new policy that supports a national rural health strategy. Other organizations, including the College of Family Physicians of Canada, the Association of Faculties of Medicine of Canada, the Canadian Federation of Medical Students, and the Canadian Association of Internes and Residents, support us in our struggle to improve rural health care. We have a great friend in the Society of Obstetricians and Gynaecologists of Canada. The SOGC recognizes the challenges that women in rural Canada face and has

collaborated with the SRPC to improve maternal and newborn care. Two years ago, the SOGC signed a memorandum of understanding (MOU) allowing the SRPC to teach ALARM International. This year, the SOGC has committed to sponsoring \$6000 per year for the Rural and Remote Medicine Conference. We are working on an MOU that will allow SRPC members to attend the SOGC's conference at the same rate as SOGC members. The SOGC is starting pilot projects to support rural health care providers in the pilot sites, with designated support from their members in the referral centres. We will be continuing to work closely to improve maternal and newborn care in Canada and we all recognize that to do this, support is needed for rural and remote communities where the need is greatest. The SOGC is to be commended for its understanding and support.

In conjunction with the CMA, the SRPC is lobbying for "More Doctors, More Care." I encourage everyone to tell their patients, friends, community members, local media and MPs that in rural Canada we have half the number of doctors per capita compared with urban areas. We need a national rural health strategy.

This is my last president's message. I appreciate the opportunity to serve the Society. It has been an enriching experience and I have worked with great people. In April, Dr. Karl Stobbe will take over as president. I wish him much success in promoting rural health, and I will support him to the best of my ability.





# Message du président. Reconnaître la compétence en médecine rurale et éloignée

*Michael Jong, MD,  
MRCP(UK), CCFP,  
FCFP*

*Happy Valley–Goose Bay,  
(T.-N.-L.)*

*Correspondance :  
Dr Michael Jong,  
CP 205, Station B,  
Happy Valley–Goose Bay  
NL A0P 1E0*

**L**es médecins de campagne sont une race à part. Pour pratiquer dans les communautés rurales et éloignées, il faut forcément avoir acquis des connaissances générales et spécialisées plus poussées que celles des collègues urbains. La SMRC envisage de reconnaître les médecins membres depuis au moins cinq ans qui ont accumulé dix années d'expérience pratique dans des communautés rurales et éloignées et qui ont poursuivi leur perfectionnement professionnel en participant à au moins cinq activités d'EMC parrainées par la Société. Les membres reconnus recevront le titre de fellow en médecine rurale et éloignée, qui leur confèrera une plus grande reconnaissance que l'actuel Prix du service en milieu rural de la SMRC. En accordant le statut de fellow, la SMRC reconnaîtra les médecins qui ont acquis des compétences pratiques par leur expérience, qui ont survécu et qui adorent leur travail en milieu rural et éloigné.

La SMRC collabore avec d'autres associations médicales nationales afin d'améliorer les soins de santé en milieu rural. L'AMC a adopté une nouvelle politique qui appuie une stratégie nationale en santé rurale. D'autres organismes, y compris le Collège des médecins de famille du Canada, l'Association des facultés de médecine du Canada, la Fédération des étudiants et des étudiantes en médecine du Canada et l'Association canadienne des médecins résidents, nous appuient dans les efforts que nous déployons pour améliorer les soins en milieu rural. La Société des obstétriciens et gynécologues du Canada est une excellente amie. La SOGC reconnaît les défis que doivent relever les femmes des milieux ruraux au Canada et a collaboré avec la

SMRC pour améliorer les soins maternels et néonataux. Il y a deux ans, la SOGC a signé un protocole d'entente (PE) qui permet à la SMRC d'offrir le programme GESTA International. Cette année, la SOGC s'est engagée à accorder une commandite de 6000 \$ par année à la Conférence sur la médecine en milieu rural et éloigné. Nous préparons aussi un PE qui permettra aux membres de la SMRC d'assister à la conférence de la SOGC au même tarif que les membres de celle-ci. La SOGC lance des projets pilotes pour appuyer des fournisseurs de soins de santé en milieu rural en accordant un soutien désigné à ses membres dans les centres de référence. Nous continuons de collaborer de près afin d'améliorer les soins maternels et néonataux au Canada et nous reconnaissons tous qu'à cette fin, il faut appuyer les communautés rurales et éloignées dont les besoins sont les plus urgents. Il faut féliciter la SOGC de sa compréhension et de son appui.

La SMRC participe avec l'AMC à la campagne «Plus de médecins pour plus de soins». Je vous encourage tous et toutes à dire à vos patients, à vos amis, aux membres de la communauté, aux médias locaux et aux députés fédéraux qu'en milieu rural au Canada, nous avons deux fois moins de médecins par habitant qu'en milieu urbain. Nous avons besoin d'une stratégie nationale sur la santé rurale.

Ce message est mon dernier à titre de présidente. Je vous remercie de m'avoir permis de servir la Société. Ce fut une expérience enrichissante et j'ai travaillé avec des gens exceptionnels. En avril, le Dr Karl Stobbe prendra la relève. Je lui souhaite beaucoup de succès dans la promotion de la santé rurale et je l'appuierai de mon mieux.



## ORIGINAL ARTICLE ARTICLE ORIGINALE

# Oligoanalgesia in a rural emergency department

Dean Vlahaki, BPHE,  
BSc

Medical Student, University  
of Queensland, Brisbane,  
Australia

William Kenneth  
Milne, MD, MSc,  
CCFP(EM)

Adjunct Professor, Depart-  
ment of Family Medicine,  
University of Western  
Ontario, London, Ont.

Correspondence to:  
Dr. William Kenneth Milne,  
27 Bruce St. W, Goderich  
ON N7A 2M5

This article has been peer  
reviewed.

**Objective:** Multiple studies conducted over many years have demonstrated that pain is poorly managed in the emergency department (ED). This phenomenon has been referred to in the medical literature as “oligoanalgesia.” However, little is known about whether oligoanalgesia occurs in a rural ED. National Ambulatory Care Reporting System data from 2003 for a small rural hospital in Ontario showed patients were satisfied with the amount of pain medicine they received in the ED. We designed a study to replicate a published urban study that investigated the use of analgesia in isolated lower limb injuries. Our objective was to see if oligoanalgesia was also a problem in a rural ED.

**Methods:** In 2003 we conducted a retrospective chart review of patients who presented to the South Huron Hospital ED with isolated lower extremity injuries for which radiographs of the foot, ankle or both were obtained. Demographics of the ED patients with lower extremity injuries were quantified. Other parameters included whether or not patients received analgesia in the ED; how long it took to get assessed, treated and discharged; whether patients received any analgesia upon discharge; what type of analgesia they received; and whether it required a prescription.

**Results:** A total of 189 patients met inclusion criteria, with 35 fractures identified (18.5%). Sixty-three percent of patients were male. The average age was 32.6 years. The mean Canadian Emergency Department Triage and Acuity Scale level was 4.4. The mean time to physician assessment was 31.6 minutes. The mean length of time spent in the ED was 74 minutes. Over one-half of the patients received analgesia upon discharge from the ED whether or not they had a fracture. In addition, 73% of the people in the fracture group received analgesia requiring a prescription, versus only 46% in the nonfracture group. Narcotics were used more often in the fracture group than in the nonfracture group (26% v. 6%).

**Conclusion:** The phenomenon of oligoanalgesia was not observed as often in our rural ED for isolated lower limb injuries, when compared with the published urban study.

**Objectif :** De multiples études réalisées au cours de nombreuses années ont démontré que la douleur est mal gérée à l'urgence. On a appelé ce phénomène «oligoalgésie» dans les publications médicales. On connaît pas, cependant, l'étendue de ce phénomène dans les services d'urgence ruraux. Les données sur un petit hôpital rural de l'Ontario tirées du Système national d'information sur les soins ambulatoires en 2003 ont montré que les patients étaient satisfaits des analgésiques qu'ils avaient reçus à l'urgence. Nous avons conçu une étude pour reproduire une étude publiée réalisée en milieu urbain au cours de laquelle on a étudié l'utilisation de l'analgésie dans des cas de traumatismes isolés des membres inférieurs. Nous voulions savoir si l'oligoalgésie était aussi un problème à l'urgence en milieu rural.

**Méthodes :** En 2003, nous avons réalisé une étude rétrospective de dossiers de patients qui se sont présentés à l'urgence de l'Hôpital South Huron avec des traumatismes isolés des membres inférieurs pour lesquels on a pris des radiographies du pied ou de la cheville ou les deux. Nous avons quantifié les caractéristiques démographiques des patients accueillis à l'urgence avec un traumatisme des membres inférieurs et nous avons aussi utilisé les paramètres suivants : si les patients avaient reçu ou non un analgésique à l'urgence, le temps d'attente avant de se faire évaluer, de

se faire traiter et d'obtenir leur congé, si les patients ont reçu des analgésiques en partant, le type d'analgésique reçu et s'il fallait une ordonnance pour le médicament en question.

**Résultats :** Au total, 189 patients satisfaisaient aux critères d'inclusion et l'on a identifié 35 fractures (18,5 %). Il y avait 63 % de patients de sexe masculin. Les patients avaient en moyenne 32,6 ans. Le niveau moyen de l'échelle canadienne de triage et de gravité pour les services d'urgence était de 4,4. Il a fallu attendre en moyenne 31,6 minutes pour obtenir une évaluation d'un médecin. Le séjour à l'urgence a duré en moyenne 74 minutes. Plus de la moitié des patients ont reçu un analgésique en quittant l'urgence, qu'ils aient subi ou non une fracture. En outre, 73 % des victimes d'une fracture ont reçu un analgésique sur ordonnance par rapport à 46 % seulement des patients qui n'ont pas subi de fracture. On a utilisé des narcotiques plus souvent chez les patients qui ont subi une fracture que chez les autres (26 % c. 6 %).

**Conclusion :** Pour des traumatismes isolés des membres inférieurs, on n'a pas observé l'oligoanalgésie aussi souvent dans ce service d'urgence rural, comparativement aux résultats de l'étude publiée réalisée en milieu urbain.

## INTRODUCTION

The term "oligoanalgesia" has been used to describe the phenomenon of poor pain management through the underuse of analgesia.<sup>1-5</sup> In many cases, pain is the primary motive for a patient's presentation to the emergency department (ED).<sup>6-11</sup> It has been well-documented that numerous patients presenting to the ED receive little or no analgesia to manage their pain.<sup>12-15</sup> Several factors are thought to contribute to this poor pain management. Children are less likely than adults to receive analgesics in the ED.<sup>2,11</sup> Ethnicity is also felt to play a role in oligoanalgesia.<sup>3,4,16,17</sup> Lack of health insurance is another factor shown to result in less analgesia provided in the ED.<sup>16</sup>

Many studies that demonstrate oligoanalgesia have been conducted in urban EDs.<sup>1-11,13,14,18-20</sup> No studies that investigated oligoanalgesia in a rural ED setting were identified in a PubMed literature search. However, National Ambulatory Care Reporting System (NACRS) data for South Huron Hospital showed patients were satisfied with the amount of pain medicine they received in this rural ED. Patients reported that the "right amount of pain medicine was received in ED" (89%) and that the "ED did all it could to control pain" (62%).

Data from the NACRS report raised the hypothesis that pain was better addressed in a rural ED. To investigate this hypothesis, we performed a retrospective chart review of patients who presented to the South Huron Hospital ED with isolated lower limb injuries for 2003. This study was based on and compared with a previous study by Kozlowski and

colleagues,<sup>20</sup> which showed that pain was poorly addressed for this type of trauma in an urban ED. The purpose of our study was to see if oligoanalgesia was also an issue in our rural ED.

## METHODS

Approval for the retrospective chart review was obtained from the South Huron Hospital Medical Advisory Board. A search of the radiology department's computer database identified patients who presented to the ED between Jan. 1 and Dec. 31, 2003, for whom radiographs of the foot, ankle or both were requested. The majority of radiographs were ordered by attending physicians, though some were requested by the triage nurse in accordance with the Ottawa Ankle Rules.<sup>21</sup> Exclusion criteria included patients presenting without acute trauma, patients with multiple trauma or patients for whom radiographs were taken for follow-up assessment, after diagnosis of fractures.

Multiple data points were obtained from each chart, including basic demographic information. Times of patient registration, physician assessment and discharge from the ED were collected, along with the Canadian Emergency Department Triage and Acuity Scale (CTAS) level assigned by the triage nurse.<sup>22</sup> The presence or absence of fracture was recorded. Whether or not the patient received analgesia before arrival to the ED, in the ED or upon discharge from the ED was quantified. In addition, the type of analgesia that was provided at discharge and whether it required a prescription was noted.

## RESULTS

A total of 228 patient charts were pulled for patients who had radiographs of the foot, ankle or both. There were 39 charts that met the exclusion criteria. Of these charts, 9 were excluded because the patient's chief complaint was something other than acute trauma. Fifteen charts were excluded because the patients presented with multiple trauma, and a further 15 charts were excluded because the patients presented for follow-up or cast removal visits. This resulted in 189 patient charts that were included in the entire data cohort. The data shown in Table 1 were obtained and subsequently broken down into subgroups.

**Table 1. Characteristics of patient visits by presence or absence of fracture**

Characteristic of patient visit	Entire cohort, n = 189	Patients without fracture, n = 154	Patients with fracture, n = 35
Male patients, %	63.0	64.9	54.3
Mean (and SD) patient age	32.6 (1.37)	30.6 (3.14)	41.5 (1.49)
Mean CTAS score	4.4	4.4	4.2
Patients with fracture, %	18.5	—	—
Mean (and SD) total visit time, min	74.0 (4.06)	64.1 (3.43)	113.9 (14.00)
Mean (and SD) waiting time until physician examination, min	31.6 (2.42)	29.7 (2.16)	34.74 (8.25)

CTAS = Canadian Emergency Department Triage and Acuity Scale; SD = standard deviation.

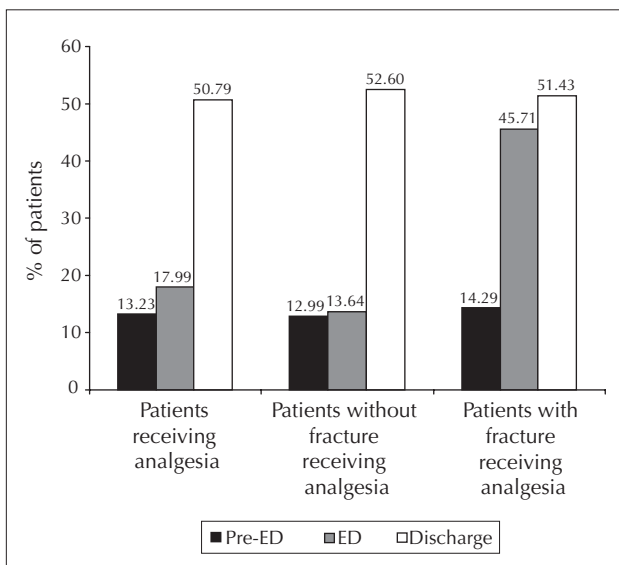


Fig. 1. The administration of analgesia for the entire cohort and broken down by presence or absence of fracture. ED = emergency department.

About 13% of patients reported taking some form of analgesia before presenting to the ED. Overall, roughly 18% of patients were given some form of analgesia in the ED. However, when a fracture was identified by the physician, a patient was given analgesia roughly 3 times more often than a patient without a fracture, while still in the ED (46% v. 14%). Over 50% of all patients received some form of analgesia, advice or a prescription for analgesia upon discharge from the ED. This was independent of whether or not a fracture was identified (Fig. 1).

Analgesia that can be obtained over-the-counter (OTC) was recommended to patients without a fracture more often than analgesia that requires a prescription. Alternatively, patients with a fracture received a prescription for analgesia nearly 3 times more often than they received a recommendation for OTC analgesia (Fig. 2).

Upon discharge from the ED, almost 40% of patients without fractures were most often advised to use OTC nonsteroidal anti-inflammatory drugs (NSAIDs) to address their pain. Patients without fractures only received a narcotic prescription 6% of the time (Fig. 3) upon discharge. In contrast, patients with fractures received a prescription for narcotics more than 4 times as often (26% v. 6%) upon discharge (Fig. 4).

## DISCUSSION

When a fracture was identified, physicians in a rural ED were twice as likely as physicians in an urban ED to provide medication in the ED (46% v. 23%)

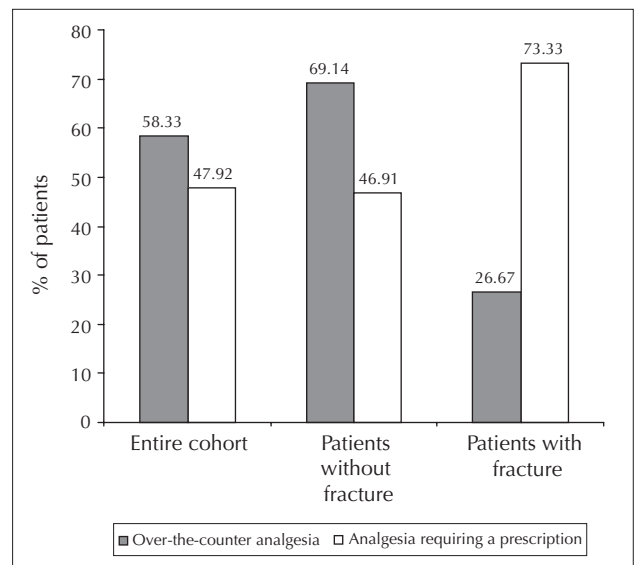


Fig. 2. Analgesia prescribed on discharge for the entire cohort and by presence of fracture. Patients may receive one or both types of analgesia.

and twice as likely to give a prescription when the patient was discharged (73% v. 36%). Therefore, oligoanalgesia was not observed as often in our rural ED for isolated lower limb injuries when compared with the previous urban study by Kozlowski and colleagues.<sup>20</sup>

Only one-half of the rural patients reported taking pain medication before arriving at the ED, compared with one-quarter of the patients in the urban study. This might explain why more rural patients received pain medication in the ED. However, this does not explain why patients with fractures were twice as likely to receive a prescription for pain medication upon discharge.

When a fracture was not diagnosed, analgesia was provided about 14% of the time in both settings. However, twice as many patients treated in the rural ED were given a prescription upon discharge compared with the urban ED (52% v. 27%). This again indicates that pain, with or without fracture, was more aggressively treated in this rural environment.

About 50% of patients, with or without fracture, received either a prescription or a recommendation to use OTC medication for their pain. The identification of a fracture did change physician prescribing habits. Prescription medication was used more often than OTC medication if a fracture was identified. The type of prescription provided was also different if a fracture was identified. Narcotics, compared with NSAIDs, were 4 times more likely to be prescribed at discharge when a fracture was diagnosed.

Patients presenting to our rural ED with an

isolated lower limb injury were also managed in a timely manner. The mean time to physician assessment was about 30 minutes for patients presenting with an average CTAS score of 4.4. This is a shorter wait time than the guideline of 60 minutes for a CTAS-IV patient.<sup>22</sup> It is also shorter than the median wait time found in Ontario EDs of 54 minutes for a CTAS-IV patient.<sup>23</sup> The mean length of stay (LOS) in our study was also significantly shorter. Ontario ED patients had a median LOS of 100 minutes, compared with 74 minutes for patients in our rural ED.<sup>23</sup>

The times found in this study were also better than those reported by Todd and colleagues,<sup>18</sup> who looked at patients with painful conditions presenting to 2 urban EDs. Their study reported that the mean time to analgesic, if it was provided, was 116 minutes and that the mean LOS was 240 minutes. So patients arriving in our rural ED with painful conditions were assessed, treated and discharged quickly, when compared with national guidelines, provincial statistics and urban EDs.

Why does it appear that isolated lower leg injuries are more aggressively treated in this rural setting compared with a similar urban study and other urban studies investigating oligoanalgesia? One reason could be that the volume of patients presenting to the rural ED is much smaller. This facility has about 10 000 ED visits per year. It is staffed by 1 physician and 2 registered nurses. Patients are seen much more quickly in this setting.<sup>24</sup> The patient with the lower limb injury may very well be the only person in the ED. Therefore,

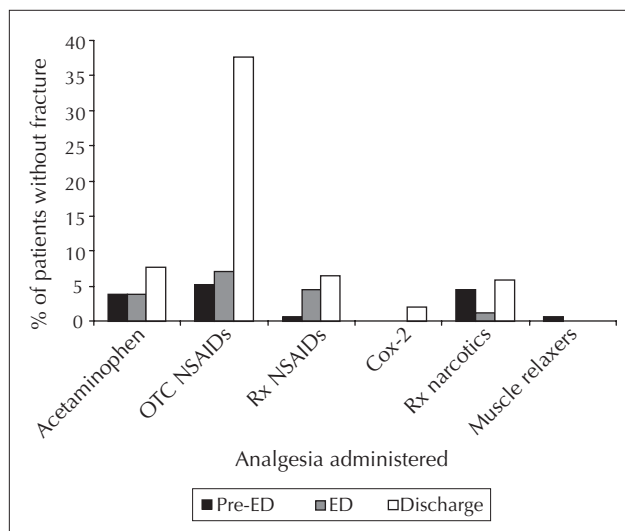


Fig. 3. Percent of patients without fracture receiving analgesia, broken down by type of analgesia. ED = emergency department, NSAIDs = nonsteroidal anti-inflammatory drugs, OTC = over-the-counter, Rx = prescription.

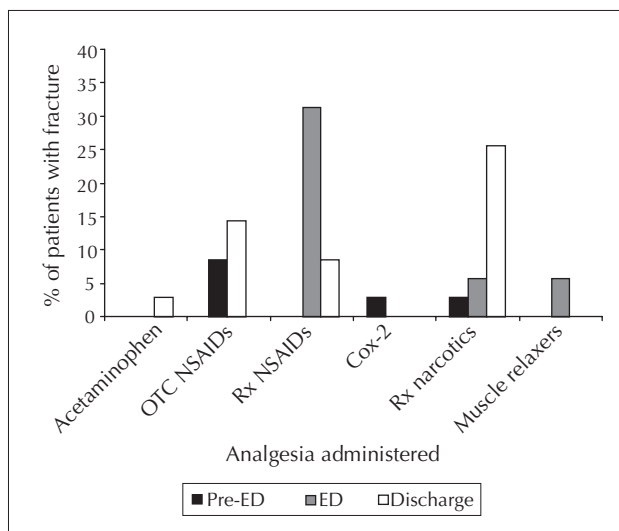


Fig. 4. Percent of patients with fracture receiving analgesia, broken down by type of analgesia. ED = emergency department, NSAIDs = nonsteroidal anti-inflammatory drugs, OTC = over-the-counter, Rx = prescription.

he or she may get much closer personal attention and his or her pain may be recognized more quickly.

The physical size of a small ED could also contribute to pain being recognized and treated more aggressively. The rural ED in our study has 3 treatment rooms and 1 treatment chair. The nurses and doctor can see all of the patients from the desk. The imaging department is across the hall. These close settings allow the staff to observe the patients closely and monitor their pain.

Only 18.5% of patients imaged had fractures identified in the rural setting, compared with 35% in the urban setting. The patient in the rural ED with a fractured ankle may be the only fracture seen that day and could very well represent the most painful condition seen for the entire shift. Therefore, this may lead the ED physician to treat this painful condition more aggressively.

Another reason for using twice the analgesia in the rural ED and upon discharge could be the familiarity of the staff with the patients. The patients presenting to the rural ED are mostly members of the small town and surrounding farm community. Chances are that someone from the hospital staff will either know the patient personally or be related to him or her. This might create an environment of greater empathy for patients' pain.

Training of the attending physicians in the rural ED could also play a role in better pain management in the ED. Family physicians who have completed a 2-year residency, with or without a third year option in emergency medicine, staff most Canadian rural EDs. Our ED is staffed only by family medicine-trained physicians, with many practising primary care within the community. These general practitioners may be more sensitive to their patients' painful conditions.

Also, patients presenting with their painful injury may be treated by their personal physician. This may lead to the duty doctor recognizing a patient's pain and treating it more aggressively. These physicians may also be more comfortable prescribing narcotics because they know the patients well and will be seeing them for follow-up.

There were limitations of this study inherent in its retrospective chart review design. Some physicians documented whether analgesia was offered to the patient but was declined, while other physicians did not document if analgesia was offered. Also, it is difficult to determine directly if patients got enough analgesia when it was offered because it was not documented whether patients were asked if their pain was better. Further studies should be done at

other rural EDs to see if this observation was an isolated finding. In addition, a prospective study could be designed to see if other painful conditions are more aggressively treated in a rural setting.

While this study was very encouraging, there is still room for improvement. About 50% of patients with fractures did not receive any pain medication in the ED or on discharge from the ED. To reach these patients who did not receive any analgesia we exhort the Canadian Association of Emergency Physicians to incorporate a pain score as part of the vital signs assessment.

## CONCLUSION

Patients presenting with painful isolated lower limb injuries are assessed, treated and discharged quickly in our rural ED. These patients are also twice as likely to receive pain medication in the ED and upon discharge, compared with the published urban study. This suggests the phenomenon of oligoanalgesia is less of a problem in our rural ED.

**Acknowledgements:** The successful completion of this research project would not have been possible without the assistance of Joanne Bowen, MRT(R), Susan Oke, Brenda Palsa, RN, and Linda Wilcos, MLS.

**Competing interests:** None declared.

## REFERENCES

1. Wilson JE, Pendleton JM. Oligoanalgesia in the emergency department. *Am J Emerg Med* 1989;7:620-3.
2. Selbst SM, Clark M. Analgesic use in the emergency department. *Ann Emerg Med* 1990;19:1010-3.
3. Todd KH, Samaroo N, Hoffman JR. Ethnicity as a risk factor for inadequate emergency department analgesia. *JAMA* 1993;269:1537-9.
4. Todd KH, Deaton C, D'Adamo AP, et al. Ethnicity and analgesic practice. *Ann Emerg Med* 2000;35:11-6.
5. Beel TL, Mitchiner JC, Frederiksen SM, et al. Patient preferences regarding pain medication in the ED. *Am J Emerg Med* 2000;18:376-80.
6. Ducharme J, Barber C. A prospective blinded study on emergency pain assessment and therapy. *J Emerg Med* 1995;13:571-5.
7. Hoyt KS, Sparger G. Pain assessment by ED nurses. *J Emerg Nurs* 1984;10:306-12.
8. Boisbaubin EV. The assessment and treatment of pain in the emergency room. *Clin J Pain* 1989;5:S19-24.
9. Johnston CC, Gagnon AJ, Fullerton L, et al. One-week survey of pain intensity on admission to and discharge from the emergency department: a pilot study. *J Emerg Med* 1998;16:377-82.
10. Tanabe PO, Buschmann M. A prospective study of ED pain

- management practices and the patient's perspective. *J Emerg Nurs* 1999;25:171-7.
11. Brown JC, Klein EJ, Lewis CW, et al. Emergency department analgesia for fracture pain. *Ann Emerg Med* 2003;42:197-205.
  12. Drayer RA, Hnederson J, Reidenberg M. Barriers to better pain control in hospitalized patients. *J Pain Symptom Manage* 1999;17:434-40.
  13. Fosnocht DE, Swanson ER, Bossart P. Patient expectations for pain medication delivery. *Am J Emerg Med* 2001;19:399-402.
  14. Guru V, Dubinsky I. The patient vs. caregiver perception of acute pain in the emergency department. *J Emerg Med* 2000;1:7-12.
  15. Joranson DE, Gilson AM, Dahl JL, et al. Pain management, controlled substances, and state medical board policy: a decade of change. *J Pain Symptom Manage* 2002;23:138-47.
  16. Hostetler MA, Auinger P, Szilagyi PG. Parenteral analgesic and sedative use among ED patients in the United States: combined results from the National Hospital Ambulatory Medical Care Survey (NHAMCS) 1992-1997. *Am J Emerg Med* 2002;20:83-7.
  17. Weisse CS, Sorum PC, Sanders KN, et al. Do gender and race affect decisions about pain management? *J Gen Intern Med* 2001;16:211-7.
  18. Todd KH, Sloan EP, Chen C, et al. Survey of pain etiology, management practices and patient satisfaction in two urban emergency departments. *CJEM* 2002;4:252-6.
  19. Tcheryny-Lessenot S, Karwowski-Soulié F, Lamarche-Vadel A, et al. Management and relief of pain in an emergency department from the adult patient's perspective. *J Pain Symptom Manage* 2003;25:539-46.
  20. Kozlowski MJ, Wiater JG, Pasqual RG, et al. Painful discrimination: the differential use of analgesia in isolated lower limb injuries. *Am J Emerg Med* 2002;20:502-5.
  21. Stiell IG, Greenberg GH, McKnight RD, et al. Decision rules for the use of radiography in acute ankle injuries. *JAMA* 1993;269:1127-32.
  22. Beveridge R. CAEP issues. The Canadian Triage and Acuity Scale: a new and critical element in health care reform. Canadian Association of Emergency Physicians. *J Emerg Med* 1998;16:507-11.
  23. *Understanding emergency department wait times: Who is using emergency departments and how long are they waiting?* Ottawa (ON): Canadian Institute for Health Information; 2005.
  24. Vlahaki D, Milne WK. A rural hospital exceeding CTAS benchmark. Canadian Association of Emergency Physicians Annual Meeting; 2007 June 2-6; Victoria (BC).

## SERVICE INFORMATION

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

**Nonmembers (2008 rates):** *Individuals:* Canada, \$94 (single copy, \$30); USA and elsewhere, US\$119. *Institutions:* Canada, \$151 (single copy, \$30); USA and elsewhere, US\$176 (single copy, US\$30). *Students* \$35 Canadian/US\$. Please contact the CMA Member Service Centre (see next paragraph) for other information. These rates include surface postage. Canadian subscribers please add 5% GST/13% HST (NS, NB, NL) as applicable.

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, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; 888 855-2555 x2307 (Canada/US) or 613 731-8610 x2307; fax 613 236-8864; cmamsc@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:** Bulk reprints of *CJRM* articles are available in minimum quantities of 50. For information please contact the reprint coordinator, Janis Murrey, 800 663-7336 or 613 731-8610 x2110; fax 613 565-7704; permissions@cma.ca.

**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. 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

**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 *Ubblich'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 Bev Kirkpatrick or Deborah Rodd, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; 800 663-7336 or 613 733-8610 x2127/2314, fax 613 565-7488, advertising@cma.ca. See Classified Advertising section of *CJRM* for information on rates. **Display ads:** Contact Deborah Woodman (see preceding information); x2159.



## ORIGINAL ARTICLE ARTICLE ORIGINALE

# An analysis of appendectomies performed in a Labrador general surgery practice

Colin Clarkson, MD

General Surgery Resident,  
Memorial University of  
Newfoundland, St. John's,  
Nfld.

G. Narasing Pradban,  
MD, FRCS(Ed), FRCSC

General Surgeon, Health  
Labrador Centre, Happy  
Valley-Goose Bay, Nfld.

Correspondence to:  
Dr. Colin Clarkson,  
155 Forest Road, Unit 50,  
St. John's NL A1A 1E7

This article has been peer  
reviewed.

**Introduction:** The main objective of our study was to determine the rates of negative appendectomies and perforated appendices at the Labrador Health Centre, and make a comparison with the rates published in the literature.

**Methods:** The study population consisted of all patients who underwent appendectomies during the 5-year period ending Apr. 3, 2006. The number and rates of negative appendectomies and perforated appendices were determined for each age and sex category.

**Results:** Of the 64 patients who were included in the study, 11% were found to have undergone negative appendectomies and 27% had perforated appendices. There was a clear trend toward decreasing perforation rates with increasing age as well as a trend toward increasing negative appendectomy rates with increasing age.

**Conclusion:** The rates of negative appendectomies and perforated appendices at the Labrador Health Centre are comparable with those published in the literature. Trends found in the data will help to guide future improvements in patient management.

**Introduction :** Notre étude visait principalement à déterminer les taux d'appendicectomie négative et d'appendice perforé au Centre de santé du Labrador et à les comparer avec les taux publiés dans la littérature scientifique.

**Méthodes :** La population étudiée était constituée de tous les patients ayant subi une appendicectomie au cours de la période 5 ans terminée le 3 avril 2006. Nous avons déterminé, pour chaque catégorie d'âge et chaque sexe, le nombre et le taux d'appendicectomies négatives et d'appendices perforés.

**Résultats :** Sur les 64 patients qui ont été inclus dans l'étude, on a constaté que 11 % avaient subi une appendicectomie négative et 27 %, un appendice perforé. Il y avait une tendance claire à la diminution des taux de perforation avec l'âge, ainsi qu'une tendance à l'augmentation des taux d'appendicectomie négative avec l'âge.

**Conclusion :** Les taux d'appendicectomie négative et d'appendice perforé au Centre de santé du Labrador se comparent à ceux qu'on a publiés dans la littérature scientifique. Les tendances révélées par les données aideront à guider des améliorations futures de la prise en charge des patients.

## INTRODUCTION

Appendectomy is one of the most common abdominal operations performed on an emergency basis,<sup>1-3</sup> with an overall lifetime occurrence reported to range from 12% to 25%.<sup>2</sup> Diagnosing appendicitis can be difficult given the many potential causes of abdominal pain. However, delays in the diagnoses of acute appendicitis are associated

with increased morbidity and mortality rates.<sup>1</sup> The use of diagnostic imaging in cases of suspected appendicitis has increased in recent years, with CT and ultrasonography (US) being the most commonly used modalities.

There are many articles in the literature addressing the usefulness of CT and US in diagnosing appendicitis, and the relative role each should play. Recent review articles and large trials



suggest that CT is probably more accurate than US for diagnosing appendicitis in adults and adolescents.<sup>1,3</sup> The sensitivity and specificity reported for CT range from 90% to 100% and 91% to 99%, respectively, with US sensitivity and specificity reported as 75%–90% and 81%–100%, respectively.<sup>1,3</sup> The overall accuracy of CT has been reported to range from 93% to 100%, and that of US from 71% to 97%.<sup>1,2</sup>

Despite these relatively high reported rates, the diagnosis of appendicitis remains difficult to make at times. Variations in patient age, ability to cooperate, body habitus, the presence of pregnancy and the availability of CT and US, as well as the availability and skill of trained operators all have an effect on the ease with which a diagnosis can be made. Additionally, it is widely accepted that some diagnoses of acute appendicitis should be made purely on clinical grounds, and in those cases, operative intervention should not be delayed for the sake of imaging.

Given the difficulty of diagnosing appendicitis and the increased rates of morbidity and mortality associated with a delay in treatment, surgeons are often faced with a “statistical trade-off.” If they are quick to take suspected cases of appendicitis to the operating room, the rates of negative appendectomy will be high. Along with this come the risks associated with general anesthetic and abdominal surgery, and the potential for delayed diagnoses of the true cause of the abdominal pain. In order to keep these risks to a minimum, the surgeon may instead opt for a more conservative approach to cases of suspected appendicitis, delaying the operation until a more definitive diagnosis can be made. Unfortunately, this method of

lowering the rate of negative appendectomies may bring with it a subsequent increase in the rate of perforated appendices and, therefore, an increase in the rates of associated morbidity and mortality.

The main objective of our study was to determine the overall rates of negative appendectomies and perforated appendices at the Labrador Health Centre as well as the rates within specific age and sex categories. These rates were then compared with rates published in larger studies. This will serve as a quality analysis and the data may enable staff to focus on specific areas to improve patient care. The rates of negative appendectomies and perforated appendices determined in our study of a small northern community hospital will also be useful for future researchers to use as a comparison.

## METHODS

Our study was carried out at the Labrador Health Centre, which is located in Happy Valley–Goose Bay, Newfoundland and Labrador. The hospital usually maintains 28 beds, and in addition to serving the local population of about 8000 people, it serves a further 6000 people who live in the outlying coastal communities. There are a number of family physicians, 1 general surgeon and 1 obstetrician–gynecologist staffing the hospital, with other visiting specialists coming periodically.

Our study was a retrospective chart review. The study population consisted of all patients who underwent an appendectomy at the Labrador Health Centre during the 5-year period ending Apr. 3, 2006.

Patients were classified either as having a perforated

**Table 1. Combined data for male and female patients, showing the number and rate of negative appendectomies and perforated appendices, grouped by various age categories**

Age category, yr	Negative appendectomy	Perforated appendix	Total no. of appendectomies	% negative	% perforated
0–4	0	1	1	0	100
5–9	0	2	4	0	50
10–14	1	4	12	8	33
15–19	2	5	19	11	26
20–24	1	0	9	11	0
25–29	1	0	2	50	0
30–34	2	0	7	29	0
35–39	0	0	3	0	0
40–44	0	3	4	0	75
45–49	0	0	0	—	—
50–54	0	2	3	0	67
≤ 19	3	12	36	8	33
≥ 20	4	5	28	14	18
Total	7	17	64	11	27

appendix (noted at operation), a negative appendectomy (normal-appearing appendix at operation, subsequently confirmed by histology) or an inflamed appendix (either noted grossly during the operation or with subsequent histology). The number and rates of negative appendectomies and perforated appendices were determined for each age and sex category. Seven relevant articles focusing on rates of perforated appendices and negative appendectomies were reviewed and compared with our study.

## RESULTS

A total of 65 patient names were collected from the operating room log book. One patient was subsequently excluded from the study as there was no pathology report available. The main results of the

study are organized in Table 1, with Table 2 and Table 3 showing the results for females and males separately. The overall negative appendectomy rate was 11%, with a 27% rate of perforation. Table 4 summarizes the demographics of the patients in the cohort studied, with Table 5 summarizing the operative findings in the 7 patients who were ultimately determined to have normal appendices.

Key points from the relevant articles have been summarized in Table 6, along with some of the data collected in our study.

## DISCUSSION

### *Seven relevant articles*

The published rates of negative appendectomies

**Table 2. Data for female patients showing the number and rate of negative appendectomies and perforated appendices grouped by various age categories**

Age category, yr	Negative appendectomy	Perforated appendix	Total no. of appendectomies	% negative	% perforated
0-4	0	1	1	0	100
5-9	0	1	2	0	50
10-14	1	2	8	13	25
15-19	1	1	9	11	11
20-24	0	0	1	0	0
25-29	0	0	0	—	—
30-34	2	0	6	33	0
35-39	0	0	1	0	0
40-44	0	1	1	0	100
45-49	0	0	0	—	—
50-54	0	1	1	0	100
≤ 19	2	5	20	10	25
≥ 20	2	2	10	20	20
Total	4	7	30	13	23

**Table 3. Data for male patients showing the number and rate of negative appendectomies and perforated appendices grouped by various age categories**

Age category, yr	Negative appendectomy	Perforated appendix	Total no. of appendectomies	% negative	% perforated
0-4	0	0	0	—	—
5-9	0	1	2	0	50
10-14	0	2	4	0	50
15-19	1	4	10	10	40
20-24	1	0	8	13	0
25-29	1	0	2	50	0
30-34	0	0	1	0	0
35-39	0	0	2	0	0
40-44	0	2	3	0	67
45-49	0	0	0	—	—
50-54	0	1	2	0	50
≤ 19	1	7	16	6	44
≥ 20	2	3	18	11	17
Total	3	10	34	9	29

and perforated appendices vary widely (Table 6). The literature reviewed here showed negative appendectomy rates of 3.03% to 15.5%, and rates of perforation ranging from 16% to 35.08%. The rates found at the Labrador Health Centre are well within these ranges, with a negative appendectomy rate of 11% and a 27% rate of perforation. The literature shows a clear trend of decreasing perforation rates with increasing age, at least until early adulthood. This trend is also present in our data, with perforation rates of 33% in patients 19 years of age and younger, and 18% in patients 20 years of age and older.

Published perforation rates appear to be similar for female and male patients. In our study, the rates differed by 6%, with the perforation rates of 23% and 29% for female and male patients, respectively. Another trend that is present in our data, which is not apparent in the literature, is that our negative appendectomy rate increases with age, from 8% in patients younger than 19 years old to 14% in patients 20 years of age and older. This trend is present in both the male and female patient groups.

There are some limitations to this study. The relatively small number of patients within each of our various age and sex stratified subgroups makes it difficult to draw firm conclusions about perceived

differences. Additionally, there are variations in the literature with respect to patient demographics, subgroup analysis and study findings, and this makes direct comparison difficult.

## CONCLUSION

In conclusion, of the 64 patients who were included in this study, 11% underwent negative appendectomies and 27% had perforated appendices. These rates at the Labrador Health Centre are comparable with those published in the literature. Trends found in the data may help to guide future improvements in patient management and will serve to assist future researchers looking for a comparable study population.

**Competing interests:** None declared.

**Table 6. Summary of the published rates of negative appendectomies and perforated appendices reported in various categories**

Study	Category	Negative, %	Perforation, %
Jablonski and Guagliardo <sup>4</sup>	Age 4–8	—	42
	Age 15–18	—	25
	Age 4–18	—	31
Ponsky et al <sup>5</sup>	Age 5–17	3.03	35.08
Bendeck et al <sup>6</sup>	Combined	9	25
	Males < 16	7	30
	Females < 16	22	31
	Males ≥ 16	4	25
	Females ≥ 16	11	23
York et al <sup>7</sup>	Nonimaged ages 2–17	4.4	14.6
Flum et al <sup>8</sup>	Imaged ages 2–17	10.4	15.1
	Combined	15.5	
Hale et al <sup>9</sup>	Combined	13	21
	Age ≤ 8	—	38
	Age ≥ 9	—	18
	Age ≥ 45	—	49
	Age ≤ 44	—	18
Temple et al <sup>10</sup>	Age ≥ 16	14	16
Current study	Combined	11	27
	Age ≤ 19	8	33
	Age ≥ 20	14	18
	Females all ages	13	23
	Females ≤ 19	10	25
	Females age ≥ 20	20	20
	Males all ages	9	29
	Males ≤ 19	6	44
	Males age ≥ 20	11	17

Note: Ages listed in years.

\*Combined refers to data from males, females and all ages.

**Table 4. Age range and mean age of patients with perforated and inflamed appendices**

Cohort demographics	Age range, yr	Mean age, yr
Perforated		
Male	5–53	23.3
Female	4–53	21.3
Combined*	4–53	22.5
Inflamed		
Male	8–52	23
Female	8–39	19.6
Combined*	8–52	21.4

\*Combined refers to data from both females and males.

**Table 5. Summary of operative findings in patients who were classified as having normal appendices**

Findings	No. of cases
Perforated jejunum	1
Ruptured ovarian cyst	1
Possible small bowel gastroenteritis	1
No pathology visualized	1
Mesenteric adenitis	2
No findings recorded	1
Total	7

## REFERENCES

1. Paulson EK, Kalady MF, Pappas TN. Suspected appendicitis. *N Engl J Med* 2003;348:236-42.
2. Old JL, Dusing RW, Yap W, et al. Imaging for suspected appendicitis. *Am Fam Physician* 2005;71:71-8.
3. Terasawa T, Blackmore C, Bent S, et al. Systematic review: computed tomography and ultrasonography to detect acute appendicitis in adults and adolescents. *Ann Intern Med* 2004;141:537-46.
4. Jablonski KA, Guagliardo MF. Pediatric appendicitis rupture rate: a national indicator of disparities in healthcare access. *Popul Health Metr* 2005;3:4.
5. Ponsky TA, Huang ZJ, Kittle K, et al. Hospital- and patient-level characteristics and the risk of appendiceal rupture and negative appendectomy in children. *JAMA* 2004;292:1977-82.
6. Bendeck SE, Nino-Murcia M, Berry GJ, et al. Imaging for suspected appendicitis: negative appendectomy and perforation rates. *Radiology* 2002;225:131-6.
7. York D, Smith A, Phillips JD, et al. The influence of advanced radiographic imaging on the treatment of pediatric appendicitis. *J Pediatr Surg* 2005;40:1908-11.
8. Flum DR, McClure TD, Morris A, et al. Misdiagnosis of appendicitis and the use of diagnostic imaging. *J Am Coll Surg* 2005;201:933-9.
9. Hale DA, Molloy M, Pearl RH, et al. Appendectomy — a contemporary appraisal. *Ann Surg* 1997;225:252-61.
10. Temple CL, Huchcroft SA, Temple WJ. The natural history of appendicitis in adults — a prospective study. *Ann Surg* 1995;221:278-81.

## RENSEIGNEMENTS GÉNÉRAUX

**Membres de la Société de la médecine rurale du Canada (SMRC) :** Abonnement inclus dans la cotisation.

**Non-membres (tarifs 2008) :** *Particuliers :* Canada, 94 \$ (30 \$ l'exemplaire); États-Unis et ailleurs, 119 USD. *Établissements :* Canada, 151 \$ (30 \$ l'exemplaire); États-Unis et ailleurs, 176 USD (30 USD l'exemplaire). *Étudiants :* 35 \$ (CAD ou USD). Veuillez communiquer avec le Centre des services aux membres de l'AMC (voir paragraphe suivant) pour obtenir plus de renseignements. Les tarifs comprennent les frais d'envoi de surface. Les abonnés canadiens sont priés d'ajouter 5 % de TPS ou 13 % de TVH (N.-É., N.-B., T.-N.-L.), selon le cas.

Tous les abonnements sont payables d'avance. Il faut établir les paiements à l'ordre de l'Association médicale canadienne (AMC), dans la devise indiquée. Les cartes MasterCard, VISA et American Express sont acceptées. Commandes et demandes de renseignements : *JCMR*, Centre des services aux membres de l'AMC, 1867, prom. Alta Vista, Ottawa (Ont.) K1G 5W8; 888 855-2555, poste 2307 (Canada et É.-U.) ou 613 731-8610, poste 2307; télécopieur : 613 236-8864; [cmamsc@cma.ca](mailto:cmamsc@cma.ca).

**Numéros manquants :** Il faut présenter sa demande de remplacement de numéros manquants dans les trois mois de la date de publication (les numéros seront acheminés moyennant leur disponibilité).

**Changements d'adresse :** Il faut prévenir un mois d'avance le Centre des services aux membres de l'AMC (voir ci-dessus).

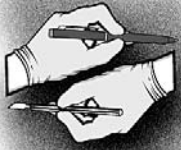
**Tirés à part :** On peut obtenir en quantité des tirés à part des articles du *JCMR* (50 exemplaires au moins). Pour obtenir plus de renseignements, prière de communiquer avec la coordonnatrice des tirés à part, Janis Murrey (800 663-7336 ou 613 731-8610, poste 2110; télécopieur : 613 565-7704; [permissions@cma.ca](mailto:permissions@cma.ca)).

**Droits d'auteur et autorisations :** Le droit d'auteur de tout le matériel appartient à la SMRC ou à ses concédants, sauf indication contraire. Il est permis de reproduire ou d'utiliser autrement le matériel trouvé dans ce journal à condition de respecter la Loi canadienne sur le droit d'auteur et d'accorder le crédit à l'auteur original. Pour photocopier un document ou le reproduire autrement, veuillez communiquer avec la Canadian Copyright Licensing Agency (Access Copyright), au 800 893-5777; [accesscopyright.ca](http://accesscopyright.ca). Pour toute autre utilisation, y compris la réédition, la redistribution, le stockage dans un système de consultation ou la transmission sous quelque forme ou par quelque moyen que ce soit, veuillez communiquer avec la coordonnatrice des autorisations, Publications AMC, 1867, prom. Alta Vista, Ottawa (Ont.) K1G 5W8; télécopieur : 613 565-7704; [permissions@cma.ca](mailto:permissions@cma.ca).

**Disponibilité :** Services d'index et de résumé : le *JCMR* est disponible par l'entremise des services suivants : MEDLINE/*Index Medicus*, d'Ovid Technologies, EbscoHost EJS, ProQuest Information and Learning Company, CAB Abstracts, Global Health et *Ulbrich's International Periodicals Directory*. Tous les articles publiés dans le *JCMR* sont disponibles gratuitement au moment de leur parution à [amc.ca/cjrm](http://amc.ca/cjrm)

**MedRurale :** Pour trouver de l'information sur MedRurale (le serveur de listes de la SMRC), des renseignements sont disponibles en ligne ([srpc.ca](http://srpc.ca)).

**Publicité : Petites annonces :** Communiquez avec Bev Kirkpatrick ou Deborah Rodd, *JCMR*, 1867, prom. Alta Vista, Ottawa (Ont.) K1G 5W8; 800 663-7336 ou 613 733-8610, poste 2127 ou 2314; télécopieur : 613 565-7488, [advertising@cma.ca](mailto:advertising@cma.ca). La section des annonces du *JCMR* contient de l'information sur les tarifs. **Annonces publicitaires :** Communiquez avec Deborah Woodman (voir renseignements ci-dessus); poste 2159.



## ORIGINAL ARTICLE ARTICLE ORIGINALE

# The difference between medical students interested in rural family medicine versus urban family or specialty medicine

*Kymm Feldman, MD,  
CCFP, MHSc*

*Assistant Professor,  
Preclerkship Director,  
Department of Family and  
Community Medicine,  
University of Toronto,  
Toronto, Ont.*

*Wayne Woloschuk, PhD  
Director of Program Evaluation,  
Undergraduate Medical  
Education, University of  
Calgary, Calgary, Alta.*

*Margot Gowans, BSc,  
Grad Dip Clin Epi,  
MNutDiet*

*Researcher, Department of  
Family Medicine, University  
of British Columbia,  
Vancouver, BC*

*Dianne Delva, MD,  
CCFP, FCFP*

*Professor and Director of  
Faculty Development, Division  
of Medical Education,  
Assistant Dean, Post-Graduate  
Medical Education, Dalhousie  
University, Halifax, NS*

*Fraser Brenneis, MD,  
CCFP, FCFP*

*Associate Professor, Director  
of Integrated Community  
Clerkship, Department of  
Family Medicine, Faculty  
of Medicine and Dentistry,  
University of Alberta,  
Edmonton, Alta.*

*Bruce Wright, MD,  
CCFP, FCFP*

*Associated Professor,  
Department of Family  
Medicine, Associate Dean of  
Undergraduate Medical  
Education, University of  
Calgary, Calgary, Alta.*

*Ian Scott, MD, CCFP,  
FCFP*

*University of British  
Columbia*

*Correspondence to:  
Dr. Kymm Feldman,  
265 McCaul St., Toronto ON  
M5T 1W7*

*This article has been peer  
reviewed.*

**Objective:** To determine how first-year medical students interested in rural family medicine in Canada differ from their peers.

**Method:** From 2002 to 2004, first-year students ( $n = 2189$ ) from 16 classes in 8 Canadian medical schools ranked intended career choices and indicated influences on their choices using Likert scales. We used  $t$  tests and  $\chi^2$  tests to determine demographic influences and factor analysis, and we used analysis of variance to examine associated attitudes.

**Results:** Of the 1978 surveys returned (90.3%), 1905 were used in the analysis. Rural family medicine was ranked first by 11.1%, varying from 4.7% to 20.2% among schools. Students interested in rural family medicine were more likely to have grown up rurally, graduated from a rural high school and have family in a rural location than others ( $p < 0.001$ ). They were more likely to be older, in a relationship, to have volunteered in a developing nation and less likely to have university-educated parents than those interested in a specialty ( $p < 0.008$ ). Attitudes of students choosing family medicine, rural or urban, include social orientation, preference for a varied scope of practice and less of a hospital orientation or interest in prestige, compared with students interested in specialties ( $p < 0.001$ ).

**Conclusion:** Medical schools may address the rural physician shortages by considering student demographic factors and attitudes at admission.

**Objectif :** Déterminer ce qui distingue de leurs pairs les étudiants de première année de médecine qui s'intéressent à la médecine familiale en milieu rural au Canada.

**Méthode :** De 2002 à 2004, les étudiants de première année ( $n = 2189$ ) de 16 classes de 8 facultés de médecine canadiennes ont classé leur choix de carrière éventuel et indiqué les facteurs qui ont influencé leur choix en utilisant des échelles de Likert. Nous avons utilisé des tests  $t$  et des tests de  $\chi^2$  pour déterminer les influences démographiques et l'analyse des facteurs, et nous avons analysé les études connexes au moyen d'une analyse de variance.

**Résultats :** Sur les 1978 questionnaires reçus (90,3 %), 1905 ont servi à l'analyse. La médecine familiale en milieu rural a été le premier choix de 11,1 % des répondants (pourcentage variant de 4,7 % à 20,2 % entre les facultés). Les étudiants intéressés par la médecine familiale en milieu rural étaient plus susceptibles que les autres ( $p < 0,001$ ) d'avoir grandi en milieu rural, d'avoir obtenu leur diplôme d'une école secondaire rurale et d'avoir de la famille en milieu rural. Ils étaient plus susceptibles d'être plus âgés, de vivre avec un(e) partenaire et d'avoir fait du bénévolat dans un pays en développement, et moins susceptibles d'avoir des parents ayant fait des études universitaires que les étudiants intéressés à une spécialité ( $p < 0,008$ ). Les attitudes des étudiants qui choisissent la médecine familiale, en milieu rural ou urbain, comprennent l'orientation sociale, la préférence pour un champ de pratique varié et le fait d'être moins orientés vers l'hôpital et moins intéressés par le prestige que les étudiants qui privilégient une spécialité ( $p < 0,001$ ).

**Conclusion :** Les facultés de médecine pourraient s'attaquer aux pénuries de médecins en milieu rural en tenant compte, au moment de l'admission, des caractéristiques démographiques des étudiants et de leurs attitudes.

## INTRODUCTION

The decline in medical student interest in family medicine as a career choice is well-documented in Canada and worldwide.<sup>1,2</sup> This is a concern in Canada as family physicians provide most of the care in rural locations.<sup>3</sup> Approximately 25.5% of Canadians live in rural areas,<sup>4</sup> but of Canada's 31 286 physicians practising family medicine, only 4962 (15.9%) of them practise in rural areas.<sup>5</sup> Another contributor to the rural physician shortage is the perception that rural medicine carries a heavier work burden at a time when students may be more interested in work balance and lifestyle.<sup>6</sup> Also, women are less likely to choose rural medicine. With increasing proportions of women in medicine, this shortage is likely to intensify.<sup>7</sup> Admission committees concerned with the social accountability of medical schools may be interested in knowing what factors are associated with student interest in a career in rural medicine. This may assist admission committees in the appropriate selection of incoming students to meet rural health care needs.

Known predictors for students choosing family medicine as a career choice include female sex, older age and concern about medical lifestyle.<sup>8</sup> The students also have a "societal orientation," a desire for a "varied scope of practice" and are less likely to be "hospital oriented."<sup>1</sup> Students who choose to specialize may be more "abstract" in their thinking and more "conscientious" and "rule-bound."<sup>8</sup> Students choosing specialties are also more likely to be male and to have a father practising medicine.<sup>8</sup> The predictors of an interest in a family medicine career are not specific to an interest in rural family medicine.

There is strong evidence that students who have a rural background are more likely to enter rural medicine either as general practitioners or specialists, regardless of the time spent in the rural area as a child.<sup>8-10</sup> Students with a rural background are more likely to be both interested in rural practice and currently practising rural family medicine than their urban-raised peers.<sup>11,12</sup> Furthermore, those choosing family medicine (rural or urban) as a probable career on entry into medical school are more likely to have lived in smaller communities at the time of high school completion.<sup>1</sup> However, rural background is not necessary for an interest in rural family medicine, as 34%–67% of rural doctors have urban backgrounds.<sup>15</sup>

Australian students intent on rural general practice value the nature of the community and a sense of belonging more highly than their urban counterparts. Students intending to practise in urban areas

cite income, access to facilities, and family and professional needs as more important, compared with their peers who intend to go into rural practice. These findings may not be applicable in Canada as the perception that urban general practitioners earn more money than rural ones may not be true in Canada.<sup>14</sup> In this study, we explore how medical students with an interest in rural family medicine differ from their peers interested in urban family medicine or in specialty practice in Canada.

## METHODS

We collected data from first-year medical students in 16 classes who commenced medical school from 2002 to 2004, inclusive. There were 3 classes each from the University of British Columbia and the University of Calgary; 2 classes each from the University of Toronto, McMaster University, Queen's University and the University of Western Ontario; and 1 class each from the University of Ottawa and the University of Alberta.

The students were asked to complete a 6-page entry questionnaire developed by Wright and colleagues<sup>1</sup> within 1 month of beginning medical school. Students were asked to rank their top 3 career choices from the following 9 options: emergency medicine, urban family medicine, rural family medicine, internal medicine, obstetrics and gynecology, pediatrics, psychiatry, surgery and "other," with a space to list their other fields of interest. Career choices were then expressed as 3 groups: rural family medicine, urban family medicine and specialty medicine. Students were asked to both rank and indicate the degree to which 27 attitudinal variables (Box 1) influenced their first-ranked choice using a 5-point Likert-type scale ranging from 1 (no influence) to 5 (major influence). Demographic data were collected.

## Analysis

Statistical analysis was conducted using SPSS Version 11.0 (SPSS, Inc., Chicago, Illinois). Rates, *t* tests and  $\chi^2$  tests were used to compare demographics according to career choice. Factor analysis was used to identify groupings of the attitudinal variables that influenced career choice. Items with an Eigen value greater than 1 were retained. The minimum factor loading was set at 0.5. The mean value of Likert scale items that loaded on each factor was calculated for each student. Analysis of variance, followed by the Scheffé post-hoc test, was then carried

out to assess differences among the 3 career choice groups for each of the 6 resulting attitudinal factors.

## RESULTS

We asked 2189 students to complete the questionnaire. We received 1978 surveys, with a response rate of 90.3%. Incomplete surveys were excluded. There were 60 surveys without a specific career preference indicated and 13 respondents who were unsure of a specific career preference at the time. The final sample of 1905 was included in the analysis.

### Career choice

Of the total sample, 11.1% named rural family medicine as their first career choice (Table 1). The proportion of students choosing family medicine varied greatly among medical schools (4.7%–20.2%) (Table 2).

### Demographics

The demographic profiles of students interested in rural family medicine, urban family medicine or a

specialty are shown in Table 3. Students who identified rural family medicine as their first choice of career were significantly less likely to be single than students identifying other career choices. They were also more likely than other students to have completed high school in a town with a population below 50 000, to have spent more than one-half of their childhood in a rural community, to have parents, grandparents and siblings still living in a rural community, and to show a desire to work in a rural community after graduation. In addition, students who identified rural family medicine as their first choice of career were older, less likely to have university-educated parents and less likely to have family or friends practising medicine than students who identified a specialty as their first choice of career. They were also less likely to be female than students who identified urban family medicine as their first choice of career.

The proportion of students who had done volunteer work in certain fields also differed according to career choice (Table 4). Students who ranked rural family medicine as their first choice were less likely to have undertaken volunteer work within hospitals and more likely to have undertaken volunteer work in developing nations than those choosing a specialty.

#### Box 1. Possible influences on first choice career

1. Wide variety of patient problems
2. Narrow variety of patient problems
3. Good match to career
4. Interesting patient population
5. Focus on in-hospital care
6. Focus on patients in the community
7. Focus on urgent care
8. Focus on non-urgent care
9. Immediate results of interventions
10. Adequate income to eliminate debt
11. High income potential
12. Long-term relationship with patients
13. Status among colleagues
14. Acceptable on-call schedule
15. Don't like uncertainty
16. Prefer medical to social problems
17. Emulate a known physician
18. Interest in research
19. Social commitment
20. Stable and secure future
21. Health promotion is important
22. Acceptable hours of practice
23. Flexibility inside medicine
24. Flexibility outside medicine
25. Keep all options open
26. Past experience with physician
27. Short postgraduate training

Table 1. Students' top choice of career

Career choice	No. of students (and %), n = 1905
Internal medicine	426 (22.4)
Surgery	323 (17.0)
Pediatrics	303 (15.9)
Urban family medicine	284 (14.9)
Rural family medicine	211 (11.1)
Emergency	110 (5.8)
Obstetrics and gynecology	77 (4.0)
Psychiatry	62 (3.3)
Other	109 (2.7)

Table 2. Students' career choice according to medical school

Medical school	Career choice; no. (and %) of students		
	Rural family medicine	Urban family medicine	Specialty
University of British Columbia	64 (15.1)	79 (18.7)	280 (66.2)
University of Calgary	25 (8.6)	43 (14.7)	224 (76.7)
University of Alberta	7 (6.0)	9 (7.7)	101 (86.3)
University of Toronto	17 (4.7)	52 (14.4)	293 (80.9)
University of Ottawa	13 (10.5)	27 (21.8)	84 (67.7)
McMaster University	39 (20.2)	26 (13.5)	128 (66.3)
Queen's University	22 (12.0)	26 (14.2)	135 (73.8)
University of Western Ontario	24 (11.4)	22 (10.4)	165 (78.2)

In addition, they were more likely to have done volunteer work in sports than those interested in urban family medicine.

### Attitudes

With factor analysis we determined how the 27 items influencing students' career choice grouped together to create a smaller number of underlying factors. Twenty-two items clustered into 6 factors (medical lifestyle, social orientation, prestige, hospital orientation, role model and varied scope of practice) explained 52.9% of the variance. The 6 factors and

respective items that composed each factor are presented in Box 2.

With respondents grouped according to first career choice, a comparison of their mean factor scores is shown in Table 5.

### DISCUSSION

The proportion of students choosing a career in family medicine (rural or urban) on entry to medical school in this study was 26%, similar to the 26.4% of students choosing family medicine as their first choice in the Canadian Resident Matching

**Table 3. Demographic differences according to career choice**

Demographic	Career choice; % of students*			p value
	Rural family medicine, n = 211	Urban family medicine, n = 284	Specialty, n = 1410	
Age, yr	25.9	24.7	—	0.101
	25.9	—	23.7	< 0.001
	—	24.7	23.7	< 0.001
Female sex	60.8	72.0	—	0.009
	60.8	—	53.7	0.055
	—	72.0	53.7	< 0.001
Relationship status (single)	54.5	65.6	—	0.013
	54.5	—	74.0	< 0.001
	—	65.6	74.0	0.004
Premedical education (science)	90.1	90.8	—	0.784
	90.1	—	92.0	0.367
	—	90.8	92.0	0.535
Postgraduate education	14.7	20.4	—	0.101
	14.7	—	19.9	0.075
	—	20.4	19.9	0.828
Parental education (university educated)	66.5	71.8	—	0.204
	66.5	—	77.5	0.001
	—	71.8	77.5	0.039
Family or friends in medicine	33.2	37.3	—	0.340
	33.2	—	40.7	0.037
	—	37.3	40.7	0.288
Family or friends in family medicine	23.7	23.9	—	0.949
	23.7	—	18.7	0.083
	—	23.9	18.7	0.040
Population of town where high school was completed < 50 000	53.6	15.2	—	< 0.001
	53.6	—	18.3	< 0.001
	—	15.2	18.3	0.217
Rural childhood (> 50%)	56.3	14.6	—	< 0.001
	56.3	—	17.8	< 0.001
	—	14.6	17.8	0.193
Rural parents	57.8	18.7	—	< 0.001
	57.8	—	18.6	< 0.001
	—	18.7	18.6	0.975
Rural grandparents	37.9	16.5	—	< 0.001
	37.9	—	19.1	< 0.001
	—	16.5	19.1	0.318
Rural siblings	33.2	10.2	—	< 0.001
	33.2	—	10.6	< 0.001
	—	10.2	10.6	0.858
Proposed work community (< 50 000)	69.6	6.3	—	< 0.001
	69.6	—	7.2	< 0.001
	—	6.3	7.2	0.674

\*Unless otherwise indicated.



Service in 2004 (CaRMS 2004).<sup>15</sup> Interest in rural family medicine on entry to medical school across the country ranged from 4.7% at the University of Toronto to a high of 20.2% at McMaster University. This may be owing to a self-selection process or to the number of students from a rural background who are enrolled at each university.<sup>16</sup> A percentage of students interested in rural medicine identified emergency medicine as a secondary career option, which may suggest perceived similarities between the 2 disciplines or awareness that running the emergency department in a small-town hospital is the responsibility of the family physicians. Although the individual students choosing family medicine may differ from entry to graduation, Colquitt and colleagues<sup>17</sup> reported that the best predictor of eventual practice of family medicine is interest at matriculation. Others<sup>18</sup> credit postadmission recruitment. It may be important to differentiate students who express an interest in family medicine or generalism on entrance to medical school from those who express interest during an interview. So far, the data show that career interest expressed at an interview may not actually reflect students' true interests.<sup>9</sup>

Our research confirmed the findings of other studies. We found that students interested in rural family practice are more likely to have spent most of their childhood living in a rural community and to have graduated from high school in a smaller community than those interested in either urban family medicine or a specialty. It is not surprising then that students interested in rural practice are also more likely to have parents or grandparents living in a rural community than those interested in urban family or specialty medicine.

A sex imbalance across career choices is apparent

early in medical training, with more men than women interested in rural family medicine or a specialty, while urban family practice appeals to more women than men. Past research has shown this imbalance to persist throughout medical school and into practice.<sup>5</sup>

In contrast with other studies, we found no difference in age between students interested in rural family medicine and their urban peers interested in family

#### Box 2. The factors and underlying influences on career choice

##### Factor 1: Medical lifestyle

- 24. Flexibility outside of medicine
- 22. Acceptable hours of practice
- 23. Flexibility inside of medicine
- 14. Acceptable on-call schedule
- 25. Keeping options open

##### Factor 2: Social orientation

- 21. Health promotion important
- 12. Long-term relationship with patients
- 6. Focus on patients in the community
- 19. Social commitment
- 4. Interesting patient population

##### Factor 3: Prestige

- 11. High income potential
- 10. Adequate income to eliminate debt
- 13. Status among colleagues
- 20. Stable/secure future

##### Factor 4: Hospital orientation

- 7. Focus on urgent care
- 5. Focus on in-hospital care
- 9. Results of interventions immediately available
- 16. Prefer medical to social problems

##### Factor 5: Role model

- 26. Meaningful past experience with physician
- 17. Emulate a physician

##### Factor 6: Varied scope of practice

- 1. Wide variety of patient problems
- 2. Narrower variety of patient problems\*

\*Recorded in reverse order as going in opposite direction to other influence in factor.

Table 4. Differences in volunteer work according to career choice

Type of volunteer work	Career choice; %			Results of $\chi^2$ tests; <i>p</i> value
	Rural family medicine, <i>n</i> = 211	Urban family medicine, <i>n</i> = 284	Specialty, <i>n</i> = 1410	
Work within hospitals	64.5	69.0	—	0.286
	64.5	—	73.4	0.007
	—	69.0	73.4	0.130
Work in developing countries	27.0	23.9	—	0.437
	27.0	—	19.1	0.008
	—	23.9	19.1	0.065
Work with sports	53.6	38.7	—	0.001
	53.6	—	48.5	0.172
	—	38.8	48.5	0.003
Work with people with physical disabilities	40.3	45.4	—	0.254
	40.3	—	38.4	0.608
	—	45.4	38.4	0.028

medicine. Younger students were more likely to consider longer training programs. There may be an interaction of age and rural background. Age increased with the proportion of childhood spent in a rural community, and we know that the rurally raised student is also more likely to choose rural family medicine. Consequently, the older the student, the more likely they are to be from a rural area and the more likely they are to choose rural family medicine.

Students interested in rural family medicine are more likely to be in a relationship than those interested in urban family medicine. Students interested in rural medicine are both older and more likely to be in a relationship than those interested in a specialty. This may explain findings that spouses influence practice location of family medicine graduates.<sup>19</sup>

Students interested in the specialties were more likely to have a parent with a university education than those interested in either a rural or an urban family medicine career. They were also more likely to have family or friends practising medicine than students interested in rural family medicine. Expectations for a specialty career might be related to anticipated prestige associated with longer, or a perception of more difficult, training. Further investigation is needed to understand this finding.

“Medical lifestyle” was a more important influence on students choosing rural family medicine, compared with those choosing a specialty, but it was a less important influence compared with students choosing urban family medicine. Thus students interested in rural family medicine value lifestyle but also recognize that work and practice realities of rural medicine are less predictable than urban family practice. Both family medicine groups ranked “social orientation” and “varied scope of practice” as important, attesting to perceptions of family medicine as a varied practice meeting the needs of a community. Those interested in a specialty gave priority to “prestige” and “hospital orientation,” which may be attributes perceived in specialty practice and not

a motivating factor for students interested in family medicine.<sup>12,20</sup>

Students interested in rural family medicine were more likely to have participated in volunteer work in a developing nation than those interested in a specialty; however, an extended period of time spent living or travelling in a developing country was not associated with that career choice. We hypothesize that this relationship may have to do with the interest and possibly the skills obtained while volunteering in developing nations, as most medical work in developing nations is in primary care because resources for secondary and tertiary care are limited. Thus students who are interested in rural medicine may have experience in developing countries where they are exposed to the need for primary care and understand that providing comprehensive care is possible in locations without specialists. In addition, they were less likely to have volunteered in a hospital than students interested in the specialties and more likely to have volunteered in sports than their urban colleagues interested in family medicine. This suggests an appreciation for the opportunities available in a rural setting.

Overall, the response rate in this study was high and included students from 3 western medical schools and 5 eastern medical schools, which supports the generalizability of results to the entire Canadian medical education community.

### Limitations

This study is limited owing to its cross-sectional design. Students’ first choice of career on entry into medical school may not reflect their ultimate career choice. The survey instrument may not be sensitive enough to detect attitudinal differences between students interested in rural and urban family medicine, as most of the differences noted were demographic. Further studies exploring the values associated with career choice might uncover more complex influences

**Table 5. Mean factor scores according to first choice of career (5-point Likert scale)**

Factor name	Career choice; mean score			Results of ANOVA	
	Rural family medicine, <i>n</i> = 211	Urban family medicine, <i>n</i> = 284	Specialty, <i>n</i> = 1410	F	<i>p</i> value
Medical lifestyle	3.71	3.97	3.46	46.04	< 0.0005
Social orientation	4.20	4.12	3.35	221.90	< 0.0005
Prestige	1.71	1.85	2.10	25.49	< 0.0005
Hospital orientation	2.32	2.26	3.08	163.31	< 0.0005
Role model	2.81	2.82	2.72	0.89	0.415
Varied scope of practice	4.32	4.12	3.11	244.27	< 0.0005

ANOVA = analysis of variance.

on career choice among medical students. Finally a larger sample size, including all Canadian medical schools, would strengthen our findings.

## CONCLUSION

Students who indicate rural family medicine as a first career choice on entry to medical school are more likely than the others to have lived most of their childhood in a rural community, graduated from a rural high school and have family living in a rural location. They are also more likely to be older, male, be involved in a relationship, less likely to have a parent with university education, more likely to have volunteered in a developing nation and more likely to volunteer in sports. Attitudes of students choosing family medicine, rural or urban, include more of a social orientation and less of a hospital orientation, a preference for a varied scope of practice and a lower interest in prestige than students interested in a specialty. Lifestyle is important to students interested in family medicine, but less so for rural-oriented students. While many factors may influence students' final career choice, medical schools can address the shortage of rural physicians by attending to demographic factors and the attitudes of students at admission to select students likely to fill this need.

**Competing interests:** None declared.

## REFERENCES

1. Wright B, Scott I, Woloschuk W, et al. Career choice of new medical students at three Canadian universities: family medicine versus specialty medicine. *CMAJ* 2004;170:1920-4.
2. Andriole DA, Whelan AJ, Schechtman KB. Recent trends in match process outcomes for US senior medical students. *Acad Med* 2003;78:S6-9.
3. Canadian Institute for Health Information. The practicing physician community in Canada 1989/90 to 1998/99: workforce and workload as gleaned through billing profiles for physician services. Ottawa (ON): The Institute; 2001. Available: <http://secure.cihi.ca/cihiweb/products/PracticingPhysicianCommunityCanada.pdf> (accessed 2008 Mar 7).
4. 2001 Census of Canada. Available: [www12.statcan.ca/english/census01/home/index.cfm](http://www12.statcan.ca/english/census01/home/index.cfm) (accessed 2008 Mar 7).
5. Canadian Institute for Health Information. Table 1. Urban-rural number of physicians by specialty, Canada, 2004. Available: [http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=media\\_11jan2006\\_e](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_11jan2006_e) (accessed 2008 Mar 7).
6. Tolhurst HM, Stewart SM. Balancing work, family and other lifestyle aspects: a qualitative study of Australian medical students' attitudes. *Med J Aust* 2004;181:361-4.
7. Colwill JM, Cultice JM. The future supply of family physicians: implications for rural America. *Health affairs* 2003;22:190.
8. Ward AM, Kamien M, Lopez DG. Medical career choice and practice location: early factors predicting course completion, career choice and practice location. *Med Educ* 2004;38:239-48.
9. Kassebaum DG, Szenas PL, Schuchert MK, et al. Determinants of the generalist career intentions of 1995 graduating medical students. *Acad Med* 1996;71:198-209.
10. Azer SA, Simmons D, Elliott SL. Rural training and the state of rural health services: effect of rural background on the perception and attitude of first-year medical students at the University of Melbourne. *Aust J Rural Health* 2001;9:178-85.
11. Woloschuk W, Tarrant M. Do students from rural backgrounds engage in rural family practice more than their urban-raised peers? *Med Educ* 2004;38:259-61.
12. Senf JH, Campos-Outcalt D, Kutob R. Factors related to the choice of family medicine: a reassessment and literature review. *J Am Board Fam Pract* 2003;16:502-12.
13. Tolhurst HM, Adams J, Stewart SM. An exploration of when urban background medical students become interested in rural practice. *Rural Remote Health* 2006;6:452. Available: [www.rrh.org.au/publishedarticles/article\\_print\\_452.pdf](http://www.rrh.org.au/publishedarticles/article_print_452.pdf) (accessed 2008 Mar 7).
14. Somers GT, Young AE, Strasser R. Rural career choice issues as reported by first year medical students and rural general practitioners. *Aust J Rural Health* 2001;9(Suppl.):S6-13.
15. Canadian Resident Matching Service. Available: <http://carms.ca> (accessed 2008 Mar 7).
16. Rourke J; Task Force of the Society of Rural Physicians of Canada. Strategies to increase the enrolment of students of rural origin in medical school: recommendations from the Society of Rural Physicians of Canada. *CMAJ* 2005;172:62-5.
17. Colquitt WL, Zeh MC, Killian CD, et al. Effect of debt on US medical school graduates' preference for family medicine, general internal medicine, and general pediatrics. *Acad Med* 1996;71:399-411.
18. Senf J, Campos-Outcalt D, Kutob R. Commissioned by the American Academy of Family Physicians. Study of factors influencing medical students in their choice of family practice as a specialty (Arizona Study). 2002. Available: [www.aafp.org/online/en/home/aboutus/specialty/specialtychoice.html](http://www.aafp.org/online/en/home/aboutus/specialty/specialtychoice.html) (accessed 2008 Mar 7).
19. Szafran O, Crutcher RA, Chaytors RG. Location of family medicine graduates' practices. What factors influence Albertans' choices? *Can Fam Physician* 2001;47:2279-85.
20. Stilwell NA, Wallick NM, Thal SE, et al. Myers-Briggs type and medical specialty choice: a new look at an old question. *Teach Learn Med* 2000;12:14-20.

## Read the Rural News

A bonus to all RuralMed listserv subscribers is the *Rural News*, an email newsletter about rural medicine.

Subscription to RuralMed is by request. Send an email to [admin@srpc.ca](mailto:admin@srpc.ca) or access the subscription form at [www.srpc.ca](http://www.srpc.ca)



# THE PRACTITIONER

## LE PRATICIEN

---

### The occasional intraosseous infusion

N. John Bosomworth,  
MD, CCFP, FCFP

Princeton, BC

Correspondence to: Dr. John  
Bosomworth, Box 887,  
Princeton BC V0X 1W0;  
john.bosomworth@interior  
health.ca

*This article has been peer  
reviewed.*

#### INTRODUCTION

Long bones in infants are filled with marrow that contains vascularized sinusoids. These sinusoids eventually drain into the systemic venous circulation. The marrow cavity acts as a rigid vein and so will not collapse, even in the face of severe volume loss. No matter how dehydrated or volume-depleted the child is, there is always a rigid tube that can be punctured to replace the required fluids.

The marrow is very vascular in infants. At about age 5, this marrow is replaced by less vascular marrow, and, although the intraosseous (IO) route is still available in older children and adults, it is a more difficult route for rapid volume replacement, compared with venous access. It is, however, still a good route for giving medications if peripheral access is not possible, and advanced cardiac life support protocols now prefer IO access over the endotracheal route for drug administration.<sup>1,2</sup>

Although bolus medications are rapidly effective, it is necessary to do a saline flush after each drug, and to administer volume under pressure using syringe and stopcock, infusion pump or pressure bag. Maximum rate of administration is equivalent to a # 21 peripheral cannula.<sup>3</sup>

#### INDICATIONS

1. Vascular access is difficult or unsuccessful. Peripheral vein access tends to be difficult in small children, for whom this procedure is used most. Older children and adults have a denser bony cortex, making IO procedures more difficult, while peripheral venous access is simpler.

2. The first vascular access in children in full cardiac arrest or severe shock should be IO infusion unless intravenous access is already in place. Establishment of airway and ventilation is always the first priority in these patients.<sup>2</sup>
3. Some sources suggest that failure to establish intravenous (IV) access within 90 seconds or 3 attempts mandates a switch to IO access.<sup>2</sup>

#### CONTRAINDICATIONS

1. Compromise of the insertion site by trauma, burn or infection
2. Ipsilateral laceration or fracture, which would divert the volume being given
3. Pelvic fracture
4. Abnormality of bone, such as osteogenesis imperfecta or severe osteoporosis
5. Previous failure to establish IO cannulation in the same extremity, which would increase the risk of compartment syndrome

#### COMPLICATIONS

1. Local cellulitis or subcutaneous abscess occurs in 1% of cases.
2. Hypertonic or irritating solutions can cause muscle necrosis if leakage occurs.
3. There is a risk of hematoma.
4. Osteomyelitis is rare.
5. There is a risk of growth plate or joint injury if the site of penetration is badly chosen. The risk is minimized by directing the needle away from the growth plate.
6. Compartment syndrome is reported. The risk rises with the length of time the infusion is employed.

7. Sepsis is rarely reported.
8. Fat embolism is rarely reported.
9. The risk of all complications increases with the length of time the infusion is employed, and is minimized by removal within 3–4 hours. The same site of penetration may be used for 72–96 hours if there is no alternative.<sup>4</sup>

## EQUIPMENT

The following equipment is required (Fig. 1):

1. Sterile bone marrow Sur-Fast (Cook Medical Inc., Bloomington, Indiana; Fig. 2) or Jamshidi (Baxter Corp., Mississauga, Ontario; Fig. 3) needle, 15–18 gauge, 2.5–5.0 cm length
2. Povidone-iodine and alcohol prep solutions
3. Lidocaine 2% (preservative-free if given by IO route)
4. One 10-mL syringe containing saline and 1 empty 5-mL syringe
5. One 60-mL syringe
6. IV fluid bag and primed administration set ready for immediate use



Fig. 1. Equipment includes a bone marrow needle, a 3-way stopcock, povidone-iodine prep swabs, lidocaine (preservative-free if used for an intraosseous route), needles for aspiration and anesthesia, 10-mL normal saline flush, 5-mL and 60-mL syringes, and saline with primed intravenous tubing set for immediate fluid administration.

7. Appropriate needles for local anesthetic administration and drawing up bolus fluids
8. 3-way stopcock
9. Saline solution for flushing lines
10. Tape and 4 × 4 gauze to secure IO needle

## PROCEDURE

1. Identify the insertion site.
  - For children, on the proximal tibia anteromedial flat surface 1–3 cm (width of 1–2 fingers) below and medial to the tibial tuberosity. Can be directed caudad 10–15 degrees to avoid the growth plate.
  - Alternate site for children — distal femur 2–3 cm above the epicondyles in the midline, directed cephalad at an angle of 10–15 degrees from the vertical.
  - For adults, an additional site is the distal tibia 1 cm above the superior margin of the medial malleolus or the sternum.
2. Position the patient and immobilize the limb. It may be helpful to place a small rolled-up towel under the knee.



Fig. 2. Sur-Fast intraosseous needle.



Fig. 3. Jamshidi intraosseous needle.

3. Prep using sterile technique with povidone-iodine. In a nonurgent situation, wait 2 minutes and remove with alcohol.
4. Infiltrate locally with lidocaine 2% to the periosteum.
5. Recheck landmarks.
6. Hold the limb firmly at the level of the knee. Do not put your hand behind the knee in the path of the needle at any time.
7. With the obturator in the bone marrow needle, puncture skin at the chosen site. Once the periosteum has been reached, direct the needle at a 10–15 degree angle away from the adjacent joint. Advance the needle by gently rotating it as you push it ahead. When the needle pops into the marrow space, a lack of resistance is detected (Fig. 4). To allow more stability in the procedure, hold the needle between the index finger and thumb, about 1 cm from the tip, with the cap of the obturator against the palm of your hand.
8. Remove the cap and obturator and see if marrow appears. If it does not, attach an empty syringe, and try to aspirate back marrow or blood (most physicians now omit this step because it may draw the bone plug back into the syringe).<sup>5</sup> This action can cause some visceral pain. A lack of marrow on aspiration does not necessarily mean poor placement. If you are in the right place, the needle should stand securely on its own. Any aspirated blood can be sent for chemistry or culture, type and screen, drug levels and hematology.<sup>5</sup>
9. Because marrow clots very quickly, immediately take a second syringe filled with 5–10 mL of sterile saline and flush the needle while checking the back of the limb for swelling, which would indicate leakage into the soft tissue or under the periosteum. There should be no resistance with proper placement. If fluid does not

- flow easily, try advancing the needle further.
- If these measures fail, or if swelling becomes apparent, try reinsertion in the other limb with less angulation. If reinsertion is done in the same limb because of suspected blockage, it must be at the same site, as the original site can leak and cause compartment syndrome.
10. If good flow is confirmed, attach a 3-way stopcock and the IV tubing. For conscious patients, 2 mL lidocaine 2% (preservative-free) will eliminate visceral pain during volume infusion.
- For volume resuscitation, 30–60 mL aliquots of fluid can be administered rapidly by syringe. Alternatively, a pressure bag or IV infusion pump can be used.
- After any drug administration, always do a 2–10 mL saline flush to avoid a depot effect.
11. The inserted needle will protrude at the penetration site. Secure it with sterile gauze and strapping. Do not tape circumferentially or obscure the site with dressings. Continue to check for extravasation or calf swelling.
12. As soon as volume replacement improves perfusion, obtain 1 or 2 reliable peripheral sites and consider removal of the IO access site.

#### ADULT INTRAOSSEOUS ACCESS

Because the success rate is high with occasional use, and the IO route is always available in circulatory collapse, this technique is being used more frequently in adults, particularly in prehospital, trauma or military settings. Higher bone density makes for more difficult access, therefore alternative techniques for bone penetration have been devised.

1. Standard IO needle use has had a 50% success rate by paramedics in the field with patients over age 10.<sup>6</sup>
2. The FAST-1 (Pyng Medical Corp., Richmond, British Columbia) device provides fast and accurate sternal placement. Emergency department trials have shown success rates of 74% for first-time users and 95% for experienced users. This may be particularly useful for patients with lower extremity or pelvic trauma.<sup>7</sup>
3. The Bone Injection Gun (WaisMed Ltd., Houston, Texas) is a compact spring-loaded device that places a pencil point needle at a preset depth into bone. It has been extensively used by the Israeli military.<sup>3,8</sup>
4. The EZ-IO (Vidacare Corp., San Antonio, Texas) device uses a battery-powered drill to place the IO needle at a specific depth. Prehospital

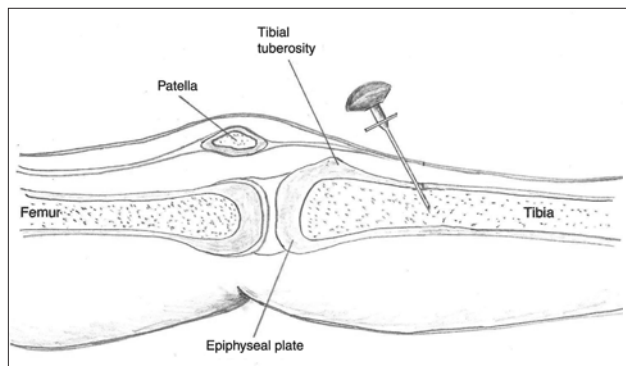


Fig. 4. The intraosseous needle is directed 10–15 degrees away from the growth plate with a gently twisting motion. Loss of resistance indicates entry into the marrow cavity.

trials show an 87% success rate. The FAST-1 device used in the same trial showed a success rate of 72%.<sup>9</sup>

#### IMPORTANT POINTS TO REMEMBER

1. This is the most rapid method of intravascular access in young children.
2. A vast variety of fluids can be administered by this route.
3. The technique can probably be done proficiently despite infrequent use.<sup>10</sup>
4. This is a temporary measure for fluid replacement until vascular access is possible by another route. Alternate access should be planned after a few hours.
5. Calf circumference should be followed carefully to detect fluid entering soft tissue compartments.

**Competing interests:** None declared.

#### REFERENCES

1. Field JM, ed. Advanced cardiovascular life support provider manual. Dallas (TX): American Heart Association; 2006. p. IV: 48.
2. American Heart Association. 2005 American Heart Association (AHA) guidelines for cardiopulmonary resuscitation (CPR) and emergency cardiovascular care (ECC) of pediatric and neonatal patients: pediatric advanced life support. *Circulation* 2005;112:IV-167-87.
3. Adult IO arrives: the solution to difficult vascular access. *JEMS* 2005;30(Suppl):S1-34.
4. Gluckman W, Forti RJ, Lamba S. Intraosseous cannulation. *eMedicine* 2006. Available: [www.emedicine.com/ped/topic2557.htm](http://www.emedicine.com/ped/topic2557.htm) (accessed 2008 Mar 13).
5. Bailey P. Intraosseous cannulation. UpToDate Patient Information. Available: [http://patients.uptodate.com/topic.asp?file=ped\\_proc/4947](http://patients.uptodate.com/topic.asp?file=ped_proc/4947) (accessed 2008 Mar 13).
6. Glaeser PW, Helmich TR, Szwecuga, et al. Five-year experience in pre-hospital intraosseous infusions in children and adults. *Ann Emerg Med* 1993;22:1119-24.
7. Macnab A, Christenson J, Findlay J, et al. A new system for sternal intraosseous infusion in adults. *Prehosp Emerg Care* 2000;4:173-7.
8. Curran A, Sen A. Bone injection gun placement of intraosseous needles. *Emerg Med J* 2005;22:366.
9. Frascione RJ, Jensen JP, Kaye K, et al. Consecutive field trials using two different intraosseous devices. *Prehosp Emerg Care* 2007;11:164-71.
10. Nijssen-Jordan C. Emergency department utilization and success rates for intraosseous infusion in pediatric resuscitations. *CJEM* 2000;2:10-4.

## RURALMED: THE SRPC LISTSERV MEDRURALE : LE SERVEUR DE LISTE DE LA SMRC

### RURALMED

Subscription to RuralMed is by request. Send an email message to: [admin@srpc.ca](mailto:admin@srpc.ca)

Include your full name and email address. If you include a short biography it will be posted to the list as your introduction. You can also access both the RuralMed archives and a RuralMed subscription form through the SRPC home page at: [www.srpc.ca](http://www.srpc.ca)

### MEDRURALE

Pour vous abonner au serveur de liste francophone, MedRurale, veuillez envoyer un courriel à l'adresse suivante : [lamarche@comnet.ca](mailto:lamarche@comnet.ca)

Donner votre nom au complet et votre adresse de courriel. Si vous ajoutez aussi une courte biographie, elle pourra être affichée sur la liste en guise de présentation. Vous pouvez aussi accéder aux archives de MedRurale et à un formulaire d'inscription au serveur de liste anglophone sur la page d'accueil du site de la SCMR, [www.srpc.ca](http://www.srpc.ca)



## Very rural obstetrics

Linda Johannson, MD,  
MSc, CCFP  
Nelson, BC

Correspondence to: Dr. Linda  
Johannson, 717 Hall St.,  
Nelson BC V1L 1Z5;  
ljohannson@yahoo.ca

**H**e came to the remote aid post early in the morning and was waiting outside when we opened the door. “Doctor saab, ownnoos,” “please come.” My medical partner at the Himalayan Rescue Association (HRA) aid post at Pheriche, Nepal (4272 m; population 100), and I followed him with our medical assistant–translator to a tiny stone hut nearby. His wife was in labour, he told us on the way, 4 days now and couldn’t take the pain. Could we please give her something? Our limited resources meant we couldn’t give what we were used to giving at home, but we could certainly give her something. The 4 of us entered the low-ceilinged dwelling, smoke-filled and chilly despite the wood and yak-dung fire burning in the corner, and promptly reduced the standing space by half.

Through the translator we determined that she was exactly on her 40-week due date, and had made the long trek down to the doctor at Kunde 3 times before in the pregnancy; everything was well. We also determined that this was the second child for this 21-year-old, and that the first delivery had been “difficult.” Details could not be obtained, but the happy 3-year-old running around, poking into everything, reassured us that it hadn’t been a disaster.

The contractions had started 4 days ago and now were regular, but only every 30 minutes. She had been lying in bed since the labour started, and the pain was getting very difficult. An ethnic Rai woman, she was extremely small, not sturdy and stocky like the local Sherpa women. The father was also a small man, and his job as a porter

took its toll on his young body. It registered that the Rai people, being from lowland Nepal, might not have the genetic advantage to altitude that might exist in the Sherpa people. However, the patient had become pregnant at this altitude and had had a previous successful pregnancy at high altitude, and she certainly wasn’t about to walk down to the Kunde hospital in this condition, so, as the Nepali people say, “ke garne?” — “what can you do?”

With a maternal mortality rate of 0.5% and an infant mortality of 8% in Nepal, we would do all we could. With all the men, husband and neighbours shooed out of the tiny 1-room home, I examined the mother and baby — small, as expected, but with cephalic presentation and an engaged head. Her complete lack of body fat made it easy to hear the fetal heart with the bell of my stethoscope — 130 and reassuring. With the male interpreter shouting through the door, I explained to the patient that I wanted to do an internal exam. Peeling back 4 layers of wraps and dresses, I discovered she was 4-cm dilated and that the fetal head was just at the ischial spines, so I figured we had some time. With the patient dressed again, the men came back in to hear the news. Still some time to go. I decided I would come back in about 4 hours to check on her progress. In the meantime, I suggested she try to go for a walk and let gravity help get things moving. From our meagre kit we were able to offer her a shot of meperidine, but no anti-nauseant. She accepted this and wrapped herself back up in her nest of blankets.

After lunch, the translator and I wandered over to the hut again. Still a good fetal heart, but just 6 cm and only



---

station + 1. She had not gone for the walk and the unbuffered meperidine had made her nauseous. Back at the aid post we converted our storage room into a delivery suite for the first delivery in HRA history. Elaborate preparations were made for every eventuality, including fetal intubation, cardiac resuscitation, lightning-quick fluid boluses, and even uterine prolapse and retained placenta. Our portable suction device was even modified to provide nasal and oropharyngeal suction of the baby at the perineum. We didn't have everything we needed, but everything we had was there. We were prepped and ready.

At 4 pm the patient came to the aid post. She felt it was time, but it was just 8 cm — still station + 1. No worry, now that she was safely here and could go as fast as she liked; we were ready. Five o'clock, 9 cm, station + 1; 6 pm, still 9 cm, station + 2 with bulging membranes. I didn't want to rupture them in that environment, but decided I wouldn't let her push with intact membranes. I'd made that mistake as a med student and received the inaugural amniotic fluid high-pressure shower. Nevertheless, I thought I had time for a quick bite of supper.

At 6:15 pm the quality of her screaming had definitely changed, so I rushed into our "delivery suite" to find mum squatting on a blanket on the floor with the baby's head already out. The others rushed in as I was collecting the newborn from the blanket, and they handed me towels and clamps and the like. We brought the newborn to our "baby table," a wooden bench padded with a Thermarest camping mattress, warm water bottles and a blanket. With no sterile towels and a 5°C room (the heating system at the aid post was broken), we wanted to move quickly. I was chilly in my down jacket and toque, so I knew he would be cold. His heartbeat was slow but perked up with stimulation, drying, warming and some blow-by oxygen. He cried only slightly, but was quickly examined and then brought back to the heat of his mother's chest.

The assistants had persuaded the patient to get up onto the table, and the placenta was easily delivered, followed by a gush of bright blood and clots. We had no oxytocin at the aid post, so this was indeed a "natural" birth. Vigorous uterine massage reduced the flow to a trickle, but the mother

adamantly refused to let me suture the 4 cm, second degree tear, and kicked at me and squirmed off the table. After long attempts at persuasion, I finally agreed to let it be, and, with her husband's help, she quickly rearranged herself on the floor with her baby bundled beside her in the blankets.

After making the lone inpatient room ready for the 2 of them, we transferred her over, but on the way I noticed her clothes and blankets were soaked in blood. I examined her again, and again the uterus expelled bright blood and clots when massaged, but it was rock hard and the flow stopped quickly. Nevertheless we started an IV and oxygen. We were changing the patient's dirty, wet clothes when she swooned. More fluids, and yet another exam. She was weakly resisting the exam this time, while trying to avoid fainting, but we felt we absolutely needed to see where the blood was coming from.

After a quick exchange with the translator and the husband convinced us that we had the patient's consent, my partner, an intensive care–internist–anesthetist by training, administered a very small dose of IV ketamine (our only sedative) and I was able to pack the vaginal vault, suture the tear and do a thorough examination.

The tear wasn't bleeding, the cervix wasn't lacerated and upon removing the packs, there was only a trickle from the uterus. She recovered from the anesthetic in a few minutes and continued to do well. We checked on her every hour or 2. The bleeding remained at just a trickle and her vital signs were favourable and stable all night. She even got up to use the bathroom a couple of times on her own.

In the morning all was well and she was doing fine off the oxygen and the IV. The baby was breastfeeding well and everyone was happy. Family and friends arrived to take the patient home, so we quickly weighed and measured the new arrival (2900 g, 46.5 cm). Some happy pictures were shot in front of the aid post and a hand-written birth certificate was issued. The charge for this intensive treatment and all-night vigilance by 2 doctors? Two hundred rupees or about Can\$4. The reward for being part of the miracle? Priceless.

**Competing interests:** None declared.



# Researching rural: research interns in northern Ontario

*Len Kelly, MD, MClin  
Sci, CCFP, FCFP*

*Associate Professor, Clinical  
Sciences Division, Northern  
Ontario School of Medicine,  
Sioux Lookout, Ont., and the  
Department of Family Medi-  
cine, McMaster University,  
Sioux Lookout, Ont.*

*Natalie St. Pierre-  
Hansen, BA*

*Research Intern, Northern  
Ontario School of Medicine,  
Sioux Lookout, Ont.*

*Correspondence to: Dr. Len  
Kelly; lkelly@univmail.cis  
.mcmaster.ca*

## INTRODUCTION

Canada's newest medical school has developed an interesting way to promote community-based research and rural professional development. The Northern Ontario School of Medicine (NOSM) welcomed its charter class of 56 students in 2005. In 2006, the school initiated a community-based research internship program by partnering with government agencies.

## PROGRAM DESCRIPTION

Twelve recent university graduates have been placed in rural communities across northern Ontario through a partnership with FedNor (Industry Canada's economic development initiative for Northern Ontario)<sup>1</sup> and the Northern Ontario Heritage Fund Corporation (a provincial agency mandated to foster job creation in northern Ontario).<sup>2</sup>

The year-long internship is designed to provide the interns with valuable work experience and to help them develop relevant research skills applicable to their region. Many NOSM research interns had previously left the north to pursue a university education. This internship facilitated a return to the rural northern Ontario communities for these researchers, opening the door to a rich and diverse research experience valuable to future career development.

NOSM espouses interdisciplinary cooperation, community partnerships and an emphasis on the cultures and characteristics of northern Ontario.<sup>3</sup> A variety of projects from qualitative to clinical research involve a cross-section of health care workers and use community-driven approaches. Application of the

CIHR Guidelines for Health Research Involving Aboriginal People<sup>4</sup> and collaboration with community leaders and First Nation organizations lead to research processes that are truly community owned. The spinoff for local research initiatives can — and does — affect program development at local hospitals. Issues as focused as throat swabs and as in-depth as palliative care and obstetrical services can inform local and regional centres that face similar issues.

Cross-cultural and rural issues are often underrepresented in research funding. Rural physicians often lack the time, funding and expertise to examine questions that raise curiosity in clinical challenges. Previous summer-long research internships have had documented success in stimulating rural clinicians to increase scholarly activity.<sup>5</sup>

The presence of continuous, year-long research support in rural communities is both novel and exciting. In one community, more than 10 local physicians with limited prior research experience are working on a variety of meaningful projects. Their research intern has been able to participate in relevant workshops and report back to physicians unable to attend. Both the clinician and the local hospital have benefitted by looking at challenges in a more systematic manner: elaborate the question, perform a literature search, systematically gather the data, collaborate with the stakeholders and proceed toward solutions, including funding applications for further research.

## DISCUSSION

Other successful initiatives enabling community-based research are occurring

at the University of British Columbia, where the Department of Family Medicine recognized it was “an unrealistic expectation that family practitioners could devote themselves to research without pay while maintaining a clinical practice.”<sup>6</sup> They subsequently developed several 1- to 3-year clinical investigator programs with funding, in addition to program support for research coordination and statistical expertise. The 3-year Community-Based Clinician Investigator program has had over 20 graduates since 2000 and the R3 research clinical investigator positions support re-entry for experienced clinicians to develop research projects. Additionally, British Columbia’s newly minted Centre for Rural Health Research has focused on rural maternity care, combining research with networking with policy-makers and with patients and caregivers from 20 rural communities. With these multifaceted endeavours, a culture of primary care research is developing in rural areas.

There are research institutes in various provinces that are involved in primary care studies.<sup>7-10</sup> Their challenge is to reach out in a distributed fashion to the communities they study and to encourage healthy, supported nodes of excellence in community-based research. Some programs support family doctors by protecting 50% of their time and salary support to engage in research.

Performing literature searches is one of a rural researcher’s earliest tasks. As disparate as the definitions of “rural” that currently exist, so too are the medical subject headings (MeSH) terms and databases available for searching rural topics. Table 1 and Table 2 may be of use to others interested in rural research.

## CONCLUSION

Resourcefulness and creativity are key components of successful research and scholarly activity. These

**Table 1. Medical subject headings term searches for rural references**

MeSH terms* for rural	No. of references						
	HealthStar	MEDLINE	PubMed Central	EBMR	CINAHL	EMBASE	PsycINFO
Hospitals, rural	2928	3023	3016	13	745		
Rural area					5748	12 955	
Rural health	16 009	17 420	17 393	268	1793		
Rural health care						2898	
Rural health centres					40		
Rural health nursing					1150	5	
Rural health personnel					219		
Rural health services	4809	4900	4889	101	1893		
Rural population	23 429	25 239	25 103	364		4168	
Rural hygiene						110	
Urban rural difference						1588	
Rural environments							7062
Total distinct references (all MeSH terms combined with Boolean “OR”)	45 547	48 937	48 790	729	10 205	20 540	7062

CINAHL = Cumulative Index to Nursing and Allied Health Literature; EBMR = Evidence-Based Medicine Reviews; MeSH = medical subject headings.

\*The various databases have their own unique MeSH terms. Multiple MeSH within a database exist for a single term, yet each MeSH is distinct from others, therefore all relevant terms should be selected. For example, on MEDLINE there were 17 420 references found under the term “rural health” and 25 239 found under “rural population”; only 220 references were indexed under both MeSH terms.

**Table 2. Keyword search for rural references**

Text word*	No. of references						
	HealthStar	MEDLINE	PubMed Central	EBMR	CINAHL	EMBASE	PsycINFO
Rural	61 407	68 086	75 834	1783	13 440	34 729	16 327

CINAHL = Cumulative Index to Nursing and Allied Health Literature; EBMR = Evidence-Based Medicine Reviews.

\*A text word search retrieves articles that contain the word anywhere in the available text of the reference (title, abstract or main body).

essential ingredients can lead to quality community-driven research through sustainable networks and partnerships. Resources for rural researchers are much like the database tools: an understanding of how to access and use them to their full capacity can lead to rewarding outcomes. The much-needed infrastructure is just developing, and rural doors are being opened for meaningful research opportunities. Several key funding components for the clinician investigator and infrastructure support are needed to sustainably “research rural.”

**Competing interests:** None declared.

#### REFERENCES

1. FedNor. Youth internships — not-for-profit fund. Available: <http://fednor.ic.gc.ca/epic/site/fednor-fednor.nsf/en/fn02300e.html> (accessed 2008 Mar 13).
2. Northern Ontario Heritage Fund Corporation. Youth internship and co-op program. Available: [www.mndm.gov.on.ca/nohfc/program\\_yiacp\\_e.asp](http://www.mndm.gov.on.ca/nohfc/program_yiacp_e.asp) (accessed 2008 Mar 13).
3. Northern Ontario School of Medicine. At a glance. Available: [www.normed.ca/about\\_us/glance.htm](http://www.normed.ca/about_us/glance.htm) (accessed 2008 Mar 13).
4. Canadian Institutes of Health Research. *CIHR guidelines for health research involving Aboriginal people*. Ottawa (ON): Her Majesty the Queen in Right of Canada; 2007. Available: [www.cihr-irsc.gc.ca/e/documents/ethics\\_aboriginal\\_guidelines\\_e.pdf](http://www.cihr-irsc.gc.ca/e/documents/ethics_aboriginal_guidelines_e.pdf) (accessed 2008 Mar 13).
5. Kelly L, Rourke J. Research electives in rural health care. *Can Fam Physician* 2002;48:1476-80.
6. The University of British Columbia. The Vancouver Foundation (BCMSF) community-based clinician investigator salary award request for applications. Available: [www.familypractice.ubc.ca/research/documents/cbci\\_rfa\\_2007.pdf](http://www.familypractice.ubc.ca/research/documents/cbci_rfa_2007.pdf) (accessed 2008 Mar 13).
7. The University of British Columbia. Centre for Rural Health Research: Rural Maternity Care New Emerging Team (RMNET). Available: [www.familypractice.ubc.ca/documents/External\\_Review\\_2007/Unit\\_Self\\_Study\\_Reports\\_Spring2007/SelfStudyReport2007-Research-Rural\\_Maternity.pdf](http://www.familypractice.ubc.ca/documents/External_Review_2007/Unit_Self_Study_Reports_Spring2007/SelfStudyReport2007-Research-Rural_Maternity.pdf) (accessed 2008 Mar 13).
8. Centre for Rural and Northern Health Research. About CRaNHR. Available: [www.cranhr.ca/profile.html](http://www.cranhr.ca/profile.html) (accessed 2008 Mar 13).
9. Queen's University Centre for Studies in Primary Care. Available: [www.queensu.ca/cspc/index.html?jsessionid=6E8E05B50FD367E6F9786DB589899E9E](http://www.queensu.ca/cspc/index.html?jsessionid=6E8E05B50FD367E6F9786DB589899E9E) (accessed Mar 13).
10. Memorial University. Primary Healthcare Research Unit. Available: [www.med.mun.ca/phru/pages/welcome.html](http://www.med.mun.ca/phru/pages/welcome.html) (accessed 2008 Mar 13).

## 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*, Box 1086, Shawville QC J0X 2Y0; [cjrm@lino.com](mailto:cjrm@lino.com)

## 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*, BP 1086, Shawville (Québec) J0X 2Y0; [cjrm@lino.com](mailto:cjrm@lino.com)



## LETTERS / CORRESPONDANCE

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, Box / CP 1086, Shawville QC J0X 2Y0; fax 819 647-9972, cjrm@lino.com

### IUCD INSERTION

To the Editor:

I thought the article on intrauterine contraceptive device (IUCD) insertions in the *Canadian Journal of Rural Medicine*<sup>1</sup> was excellent. I share an IUCD clinic biweekly with a colleague for our local non-profit sexual health clinic and we do about 40 IUCDs each month. We are a referral service for our community and have a protocol where the patient first comes for an education session and pre-screening visit, during which we check for *Trichomoniasis vaginalis*, bacterial vaginosis, *Chlamydia trachomatis* and gonorrhoea of the cervix. Then they have their insertion visit 10–14 days later, and 3 weeks later we do a follow-up to assess patient satisfaction and to check for infection. Another device I use in my equipment list is something called an os finder, which is very helpful in nulliparous women. We also keep our emergency protocols up to date and have oxygen nearby. I have rarely had to use intravenous atropine 0.5 mg for a prolonged symptomatic bradycardia.

One thing that is different from your article is that we have followed the literature in the *CMAJ*<sup>2</sup> and rate the Flexi-T for 5 years. We have also communicated directly with the Prosan quality assurance department and they state that the duration of use on all 3 Flexi-T IUCDs (the 300, the +300 and the +380) is 5 years. If you have information that contradicts that I would

very much appreciate it so that we can change our recommendation.

**Anna Mason, MD**  
Victoria, BC

#### REFERENCE

1. Hutten-Czapski P. The occasional intrauterine contraceptive device insertion. *Can J Rural Med* 2008;13:31-5.
2. Fisher WA, Black A. Contraception in Canada: a review of method choices, characteristics, adherence and approaches to counseling. *CMAJ* 2007;176:953-61. "Two types of intrauterine devices and systems are currently available in Canada: copper intrauterine devices (Nova-T or Flexi-T 300) and a levonorgestrel-releasing intrauterine system (Mirena). Intrauterine devices and systems have multiple mechanisms of action, but the chief one appears to be prevention of fertilization (Table 1).<sup>35</sup> Both types are highly effective for up to 5 years."

#### [Dr. Hutten-Czapski replies:]

Thanks for the kind words, Dr. Mason.

Clearly, just like medications, IUCDs don't stop being effective the day after their licensed expiry. The effectiveness studies that I have found for the Flexi-T (also known as Cu-Safe 300) showed that at 1 year the product appears to have a favourable effectiveness rate, including an accidental pregnancy rate of only 0.5% and 0.6% in different studies. At 3 years the rate has been reported in different studies at about 2.8 cumulative pregnancies per 100 women (Pearl index of 1.0). There was no study retrieved in an Index Medicus search for evidence of effectiveness at 5 years, and thus the failure and complication rate at that time is unknown to me. The manufacturer's package insert at the time I wrote the article stated, "it is

recommended to replace the Flexi-T(+) by a new one after 3 years."

I had not noticed until now that the manufacturer has subsequently changed their packaging insert where the wording is now, "it is recommended to replace the Flexi-T(+)300/380 by a new one after five years." Thank you for correcting me on this important issue as the risks of the IUCD are almost entirely related to insertion — thus they should not be routinely replaced ahead of time. The only caveat is that it is not clear if the performance continues along the lines of the T 380A (2.2 pregnancies per 100 women after 12 years, yes 12) or along those of the Nova-T 200 (12.3 pregnancies per 100 women at 5 years).<sup>1</sup>

The irony is that a version of the T 380 (the Ortho Slimline) was developed in Canada and sold until 1999 when the Nova-T became our only remaining available IUCD. Currently the T-Safe 380A is available in the United Kingdom along with many other competitors, but not the Nova-T 200, which was taken off the UK market in 2001.<sup>2</sup>

**Peter Hutten-Czapski, MD**  
Haileybury, Ont.

#### REFERENCES

1. Special Program of Research. Development and Research Training in Human Reproduction. The TCu380A and TCu220C, Multiload 250 and Nova T IUD's at 3, 5 and 7 years of use — results from three randomized multicenter trials. *Contraception* 1990;42:141-58.
2. Dennis J, Hampton N. IUDs: Which device? *J Fam Plann Reprod Health Care* 2002;28.