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VOLUME 19, NO. 3, SUMMER 2014

VOLUME 19, N° 3, ÉTÉ 2014

IN THIS ISSUE

DANS CE NUMÉRO

Recruitment and Retention in Saskatchewan

Invasive CA-MRSA in Northwestern Ontario

The Occasional ED Ultrasound: Abdominal Aorta

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[†] B2355: A 12-week, multicentre, randomized, double-blind, placebo-controlled, parallel-group study assessing the safety and efficacy of ONBREZ* BREEZHALER* 75 mcg once daily vs. placebo in patients with COPD (n=318).
^{††} From a subset of 239 patients in B2355, FEV₁ data shown is ONBREZ* BREEZHALER* vs. placebo, respectively: **5 min:** 1.56 vs. 1.39; **30 min:** 1.57 vs. 1.38; **1 hr:** 1.56 vs. 1.38; **2 hrs:** 1.56 vs. 1.37; **4 hrs:** 1.51 vs. 1.35; **6 hrs:** 1.48 vs. 1.33; **12 hrs:** 1.43 vs. 1.29; **16 hrs:** 1.39 vs. 1.24; **22 hrs:** 1.44 vs. 1.27; **24 hrs:** 1.48 vs. 1.34.
[§] B2354: A 12-week, multicentre, randomized, double-blind, placebo-controlled, parallel-group study assessing the safety and efficacy of ONBREZ* BREEZHALER* 75 mcg once daily vs. placebo in patients with COPD (n=323).
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EDITORIALS / ÉDITORIAUX

- 87 Why webinar CME and why not — *Peter Hutten-Czapski, MD*
- 88 Pourquoi ou non des webinaires de FMC — *Peter Hutten-Czapski, MD*
- 90 President's message. Collaboration, courage and conflict — *John Soles, MD*
- 91 Message du président. Collaboration, courage et conflits — *John Soles, MD*

ORIGINAL ARTICLES / ARTICLES ORIGINAUX

- 93 Medical practice in rural Saskatchewan: factors in physician recruitment and retention — *Kevin Wasko, MD; Jacqueline Jenkins, MD; Ryan Meili, MD*
- 99 Invasive CA-MRSA in northwestern Ontario: a 2-year prospective study — *Mike Kirlaw, MD; Sara Rea; Annette Schroeter, MA; Donna Makahnouk, MLT; Marsha Hamilton, RN; Nicole Brunton, BKin; Jill Muileboom; Yoko Schreiber, MD; Raphael Saginur, MD; Len Kelly, MD*

THE PRACTITIONER / LE PRATICIEN

- 103 The occasional ED ultrasound: abdominal aorta — *Kyle Sue, MD*
- 107; 114 Country cardiograms case 51 — *Michael Slatnik, MD*

COMMENTARIES / COMMENTAIRES

- 108 Learning from our Ethiopian colleagues: operative obstetrics for the generalist — *Anjali Oberai, MD; Ananya Solomon, MD; Ephrem Kassaye, MD; Birhanu Kebede, MD*
- 111 Self-help is no help: negative study results lead to important lessons — *Peter Cornish, PhD; Elizabeth Church, PhD; Terrence Callanan, MD; Cheri Bethune, MD; Lynda Younghusband, PhD*

116 SERVICE INFORMATION



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Oil on canvas, 44" x 33", by Ron Bolt

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117

INSTRUCTIONS FOR AUTHORS

118

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Why webinar CME and why not

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You get an email from your medical school, or perhaps it's a shiny brochure, advertising a continuing medical education (CME) webinar. You can complete another 20–30 activities (hey, they are accredited), which are easy to connect to electronically, either “live” (albeit not in person) or as a stored video. Hmm ... you can now tweet your questions. CME anywhere, anytime, usually at no cost whatsoever. Sometimes you can even Skype in, if at least your top half is dressed. What's not to like?

And yet, again and again, I am happy to pull out my charge card, struggle with northern roads and airlines that don't seem interested in serving me or my luggage, and head to the big smoke, which I publicly dismiss and privately just don't feel very comfortable in anymore.

I am not alone. The Rural and Remote Medicine Course, a premiere event for us rural doctors, keeps getting bigger every year. Other conferences that I register for are also well attended by people who could have stayed at home. Why is e-CME failing to disrupt the traditional CME industry among rural doctors, who should be an easy target?

I truly don't know, but there are several factors at work. On the simplest level, we know that most of the e-content, the talking head, is the least effective form of learning. The most effective learning requires content that is relevant to the participant. It's more visceral than a needs survey; it's the ability of the content provider to respond to your individual practice, and that requires a rich 2-way interaction between the participants and the provider. In the hierarchy of

CME, this means the best setting is a small room where the participants learn from themselves and the presenter really acts more as a facilitator.

Then there are the intangibles. Certainly, diversions such as going shopping, going skiing and seeing a show are welcome to hard-working rural doctors and their families. Then there is the networking with people who share similar interests and challenges.

This doesn't mean that e-CME is going to go away, but there's an opportunity to improve its quality. To make remote CME really effective, you need to turn the cameras around, and you have to draw participants into a community of practice. It's not easy to do, never mind do well, but there are examples that work exceptionally well.

One example is Project ECHO (Extension for Community Healthcare Outcomes), which helps rural providers in New Mexico manage the treatment of patients with chronic diseases (<http://echo.unm.edu/clinics/clinic-hepc-community.html>). It's instructive to consider how this project was built. Its mission was not to provide treatment to patients, but to improve the expertise of rural physicians in providing treatment to patients with chronic diseases, such as hepatitis C, and providing better care without requiring the patients (or doctors) to travel. It's a program that serves to build support for a community of practice.

Remote CME is a fledgling effort, and expanding involves a lot more work than providing the talking head. But rural doctors and their patients are worth that effort.

Pourquoi ou non des webinaires de FMC

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Vous recevez un courriel de votre faculté de médecine ou peut-être un dépliant rutilant annonçant un webinaire de formation médicale continue (FMC). Vous pouvez faire 20 à 30 autres activités (après tout, elles donnent droit à des crédits) auxquelles il est facile d'accéder par voie électronique, en direct (mais pas en personne) ou en format vidéo enregistré. Hum ... vous pouvez même poser vos questions par Twitter. La FMC n'importe où, n'importe quand, et souvent sans aucun frais. Parfois, vous pouvez même utiliser Skype si vous êtes convenablement vêtu en haut de la ceinture. Comment ne peut-on pas aimer cela?

Et pourtant, maintes et maintes fois, je suis heureux de sortir ma carte de crédit, d'emprunter les routes sinueuses du Nord et d'utiliser des compagnies aériennes qui ne semblent pas intéresser à me servir et à faire suivre mes bagages, pour me diriger vers la Grande-Ville, que je rejette en public et où, en privé, je ne me sens plus vraiment à l'aise.

Et je ne suis pas le seul. La conférence Médecine en milieu rural et éloigné, un événement important pour nous médecins en milieu rural, continue de prendre de l'expansion année après année. D'autres conférences auxquelles j'assiste accueillent aussi un nombre important de participants, qui auraient pu rester à la maison. Pourquoi la cyber-FMC ne parvient-elle pas à déloger l'industrie traditionnelle de la FMC chez les médecins ruraux? Ils devraient pourtant être une cible facile?

Je ne sais vraiment pas, mais plusieurs facteurs entrent en jeu. À la base, nous savons que pour la plupart des cybercours, la présentation à l'écran est la forme la moins efficace d'apprentissage. L'apprentissage le plus efficace requiert du contenu pertinent pour le participant. C'est plus viscéral qu'un sondage sur les besoins; c'est la capacité du fournisseur de contenu à prendre en considération les besoins de votre pratique individuelle et pour cela, il doit y avoir une interaction

bidirectionnelle fructueuse entre les participants et le fournisseur. Dans la hiérarchie de la FMC, cela signifie que le meilleur environnement d'apprentissage est une petite pièce où les participants apprennent d'eux-mêmes et le présentateur agit en fait comme un animateur.

Puis, il y a les intangibles. Certes, les divertissements comme le magasinage, le ski et les spectacles plaisent aux médecins ruraux — qui travaillent fort — et à leurs familles. Puis, il y a les occasions de rencontrer des personnes qui partagent vos intérêts et font face à des défis similaires.

Cela ne signifie pas que la cyber-FMC va disparaître, mais qu'il faudrait en améliorer la qualité. Pour que la FMC à distance soit vraiment efficace, il faut tourner les caméras à 180 degrés et attirer les participants dans une communauté de pratique. Ce n'est pas facile à faire, et encore moins à bien faire, mais dans certains cas, cela fonctionne exceptionnellement bien.

Un exemple est le projet ECHO (Extension for Community Healthcare Outcomes), qui aide les fournisseurs de soins de santé en milieu rural au Nouveau-Mexique à prendre en charge les patients atteints de maladies chroniques (<http://echo.unm.edu/clinics/clinic-hepc-community.html>). Il est instructif d'examiner la genèse de ce projet. Sa mission n'était pas de fournir des traitements aux patients, mais d'améliorer les compétences des médecins en milieu rural pour traiter les patients atteints de maladies chroniques, telles que l'hépatite C, et de fournir de meilleurs soins sans exiger que les patients (ou les médecins) aient à voyager. C'est un programme qui vise à renforcer le soutien d'une communauté de pratique.

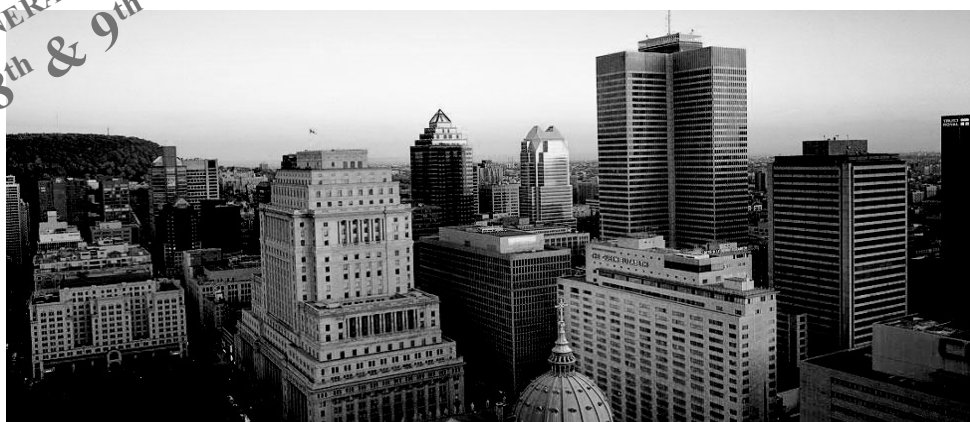
La FMC à distance en est à ses premiers balbutiements, et son expansion exigera beaucoup plus de travail que d'offrir un enseignement à l'écran. Mais les médecins en milieu rural et leurs patients en valent l'effort.

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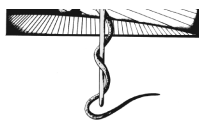
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President's message. Collaboration, courage and conflict

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The theme of our latest Rural and Remote Medicine Course, held in March in Banff, Alta., was "collaboration, courage and conflict." It was wonderful to meet old friends and new in the magnificent setting of the Banff Springs Hotel. Along with high-quality education, delivered mostly by rural doctors, there was a presentation by Lieutenant-General Roméo Dallaire that kept many attendees in the room long after the session was finished, an official beer ("The Occasional Ale") and the usual excellent social events. The skiing was pretty good too.

I am always amazed at how this conference, which in the last several years has grown from about 300 attendees to more than 900, is organized and run by only a small group of people. This is a reflection of how the Society of Rural Physicians of Canada (SRPC) itself operates. The national office in Shawville, Que., is staffed by less than a handful of regular employees. Most rural physicians in Canada are not members of our society. (I'd like to hear from readers who are not members about why they aren't.) The SRPC is, however, much more influential than these numbers suggest. In the past year, we have been involved with the World Summit on Rural Generalist Medicine in Australia and the National Working Group on Enhanced Surgical Skills. We have also continued to collaborate with The Society of Obstetricians and Gynaecologists of Canada, the Canadian Association of Midwives, The College of Family Physicians of Canada (CFPC) and others regarding obstetric services in Canada. We have

also been actively involved with several international projects.

In the past 2 decades, rural physicians have seen significant improvements in their lifestyle and compensation, as well as in the recognition and respect they receive. We are recognized as teachers, researchers and innovators. The SRPC has been involved in this process at various levels. Twenty-five years ago, my peers' response to my decision to practise in a rural location would likely have been, "Why would you want to go there? I wouldn't want to do that." If you ask a newly qualified physician now, the response would more likely be, "I couldn't do what you do." Better, but not quite what we need. How do we create physicians who are capable and eager to work in our rural communities? This is a complex question. Part of the answer must lie in our training programs and in how we determine competency.

The CFPC and the SRPC have been discussing this issue. We have now agreed to a joint 2-year initiative called The Collaborative Rural Education & Advocacy Task Force. The goal of this task force is to enhance rural medical education so that more family physicians are confident to practise comprehensive family medicine in rural and remote Canada. I look forward to this collaboration with great optimism. With no lack of respect for my internationally trained colleagues, who are currently the backbone of rural health care in Canada, I look forward to the day when graduates of Canadian medical schools will increasingly fill these positions with competence and confidence.

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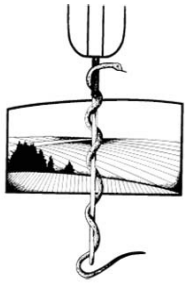
Message du président. Collaboration, courage et conflits

La dernière conférence sur la médecine en milieu rural et éloigné, qui a eu lieu en mars dernier à Banff, en Alberta, a eu pour thème « Collaboration, courage et conflit ». C'était merveilleux de rencontrer de vieux amis et de faire de nouvelles connaissances dans le cadre magnifique de l'Hôtel Banff Springs. En plus des cours de haute qualité, donnés principalement par des médecins ruraux, on a pu entendre à cette occasion une présentation du lieutenant-général Roméo Dallaire, qui a gardé de nombreux participants dans la salle longtemps après la fin de la séance. Il y avait aussi une « bière officielle » et d'excellents événements sociaux. Le ski était plutôt bien aussi.

Je suis toujours étonné de voir comment cette conférence qui, depuis quelques années, accueille de plus en plus de monde, étant passée de 300 à plus de 900 participants, est organisée et gérée par un petit groupe de personnes. C'est un reflet de la façon dont la Société de la médecine rurale du Canada (SMRC) fonctionne. Son siège social, à Shawville, au Québec, ne compte que quelques employés réguliers. La plupart des médecins en milieu rural au Canada ne sont pas membres de notre société. (J'aimerais que les lecteurs qui ne sont pas membres nous disent pourquoi.) La SMRC exerce cependant beaucoup plus d'influence que ces chiffres ne suggèrent. Au cours de la dernière année, nous avons participé au Sommet mondial de la médecine générale en milieu rural en Australie et au Groupe de travail national sur les compétences chirurgicales améliorées. Nous avons également poursuivi notre collaboration avec la Société des obstétriciens et gynécologues du Canada, l'Association canadienne des sages-femmes, le Collège des médecins de famille du Canada (CMFC) et d'autres organismes concernant les services d'obstétrique au Canada. Nous avons en outre participé activement à plusieurs projets internationaux.

Au cours des 20 dernières années, le mode de vie et la rémunération des médecins ruraux se sont grandement améliorés. De plus, ils et elles reçoivent davantage de reconnaissance et jouissent d'un plus grand respect. Les médecins ruraux sont reconnus comme des enseignants, des chercheurs et des innovateurs. La SMRC a participé à cette transformation à différents niveaux. Il y a 25 ans, si j'avais dit à mes collègues que je voulais exercer la médecine dans une région rurale, ils auraient probablement dit : « Ce n'est pas moi qui ferais cela! » Aujourd'hui, un médecin nouvellement certifié répondrait plutôt : « Je ne pourrais pas faire ce que vous faites. » C'est mieux, mais pas tout à fait ce dont nous avons besoin. Comment pouvons-nous former des médecins capables et désireux de travailler dans nos collectivités rurales? C'est là une question complexe. Une partie de la réponse doit se trouver dans nos programmes de formation et dans la façon dont nous déterminons les compétences.

Le CMFC et la SMRC ont discuté de cette question. Nous avons convenu de lancer une initiative conjointe de 2 ans, le « Groupe de travail collaboratif sur la formation en médecine rurale et la promotion de ses intérêts ». L'objectif de ce groupe de travail est d'améliorer la formation médicale en milieu rural afin que davantage de médecins de famille soient convaincus de pouvoir pratiquer tous les aspects de la médecine familiale dans les régions rurales et éloignées du Canada. Je me réjouis de cette collaboration et l'envisage avec un grand optimisme. Sans vouloir manquer de respect à l'égard de mes collègues formés à l'étranger, qui sont actuellement la pierre angulaire des soins de santé en milieu rural au Canada, j'ai hâte au jour où les diplômés des écoles de médecine canadiennes seront de plus en plus nombreux à pourvoir ces postes avec compétence et confiance.



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Medical practice in rural Saskatchewan: factors in physician recruitment and retention

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Introduction: The recruitment and retention of physicians in rural communities is a challenge throughout Canada and across the globe. In 1976, a group of medical students profiled rural communities with medical practices and produced a summary report entitled *Medical Practice in Saskatchewan*. Our objective was to repeat the 1976 study and to identify factors that motivate physicians to select rural locations for practice.

Methods: Physicians practising in rural Saskatchewan were interviewed in 2011 and 2012. Through qualitative, inductive analysis, we identified themes that drove the recruitment and retention of physicians.

Results: Sixty-two physicians were interviewed and 105 communities profiled. Of the physicians interviewed, 21 noted that the ability to practise full-scope family medicine and having the freedom to practise as they desire was important for recruitment, and 43 reported that these factors influenced their decision to remain in a community. Attraction to a rural lifestyle (cited by 17 physicians), having a rural background (13) and having ties to a specific community (12) were important for recruitment. Feeling appreciated by patients (45), one's spouse and/or family enjoying the community (41), and integration into the community (38) were important factors for retention.

Conclusion: The decision to practise in a rural location correlates with a desire for a broad and varied scope of practice, being attracted to a rural lifestyle and having rural roots. Once physicians establish a rural practice, they are more likely to stay if they can continue a broad scope of practice, if they feel appreciated by their patients, and if their spouses and family are happy in the community.

Introduction : Le recrutement et la fidélisation des médecins dans les communautés rurales présentent un défi partout au Canada et ailleurs dans le monde. En 1976, un groupe d'étudiants en médecine a dressé un profil des communautés rurales dotées de pratiques médicales et produit un rapport sommaire intitulé *Medical Practice in Saskatchewan*. Notre objectif est de répéter l'étude de 1976 et de relever les facteurs qui motivent les médecins à choisir de pratiquer en région rurale.

Méthodes : Nous avons interrogé des médecins exerçant en milieu rural en Saskatchewan en 2011 et en 2012. Par analyse inductive qualitative, nous avons recensé les facteurs qui ont favorisé leur recrutement et leur fidélisation.

Résultats : Soixante-deux médecins ont été interrogés et le profil de 105 communautés a été dressé. Parmi les médecins interrogés, 21 ont mentionné que la capacité d'exercer pleinement dans toute l'envergure de la médecine familiale et la liberté de pratiquer comme ils le souhaitaient avaient joué un rôle important dans leur recrutement et 43 ont mentionné que ces facteurs avaient influé sur leur décision de demeurer dans une communauté. Les facteurs suivants ont aussi été jugés importants pour le recrutement : l'attrait du mode de vie rural (mentionné par 17 médecins), provenir d'un milieu rural (13) et les liens avec une communauté en particulier (12). En ce qui concerne les facteurs de fidélisation, le sentiment d'être apprécié par les patients (45), le fait que les conjoints et(ou) les proches apprécient la vie dans la communauté (41) et l'intégration dans la communauté (38).

Conclusion : La décision d'exercer en milieu rural est en corrélation avec le désir d'avoir une pratique dont l'envergure est vaste et variée, l'attraction pour un mode de

vie rural et des racines rurales. Une fois que les médecins s'établissent en milieu rural, ils sont plus susceptibles d'y rester s'ils peuvent continuer d'avoir une pratique diversifiée, s'ils se sentent appréciés par leurs patients et si les conjoints et les familles se plaisent dans la communauté.

INTRODUCTION

Rural Saskatchewan has a long history of struggling to provide physician services, and it is a problem that is currently gaining a great deal of attention. According to the Canadian Institute for Health Information, Saskatchewan has the lowest number of physicians per 100 000 population of any province in Canada and the highest percentage of international medical graduates.¹ However, as Rourke² has pointed out, the pool of qualified international medical graduates is shrinking, and this has, and will continue to have, a profound impact on rural health services. Further, the Canadian Institute for Health Information found that in 2009, graduates from the University of Saskatchewan were the least likely to practise within their home jurisdiction compared with graduates of other Canadian medical schools.¹

The shortage of physicians in rural areas is a global phenomenon in both developing and developed nations. If physician services are to be preserved in rural Saskatchewan, it is important to understand why physicians choose to practise in rural settings. In 1976, a group of medical students profiled rural communities with medical practices and produced a summary report entitled *Medical Practice in Saskatchewan*.³ In 2011, The College of Medicine at the University of Saskatchewan and the Physician Recruitment Agency of Saskatchewan (SaskDocs) began working in partnership to repeat the study.³ The overarching goal of this updated study was to elucidate factors that motivate physicians to select rural locations for practice and factors that result in long-term retention.

METHODS

In 1976, a project entitled *Medical Practice in Saskatchewan*³ studied the state of practice in smaller centres throughout the province. Three medical students toured communities and reviewed community characteristics, health care delivery and the physician experience. The study provided a snapshot of the provision of medical services in Saskatchewan. An analysis of recruitment and retention factors was not done for the 1976 study.

In 2010, the dean and faculty members at the University of Saskatchewan's College of Medicine sought to repeat this snapshot of medical practice in Saskatchewan. In the same year, the Government of Saskatchewan announced the creation of SaskDocs with the mandate to support recruitment and retention of doctors in Saskatchewan. SaskDocs sponsored the project.

Standardized, direct interviews were conducted with physicians practising in rural Saskatchewan. Medical students at the University of Saskatchewan who were participants in the Physician Recruitment Agency of Saskatchewan Rural Externship Program, as well as 2 residents in the university's rural family medicine training program in Swift Current, Sask., conducted direct in-person interviews with rural physicians across Saskatchewan. Consent was obtained before conducting the interviews. The interviews lasted about an hour and were most often conducted at the physician's clinic. The interview was recorded and then transcribed by the interviewer. Interviewees were provided with a transcribed summary of the interview and signed a transcript release form acknowledging that the transcript was accurate. The family medicine residents conducted interviews in the remaining communities from the fall of 2011 until the spring of 2012. The students and residents were paid a stipend to complete the interviews and were reimbursed for mileage.

The method used was consistent with grounded theory, seeking to discover the key factors through interviews rather than exploring a predetermined hypothesis. An inductive analysis was used to determine the various themes that drive rural family physicians to practise in rural Saskatchewan. According to Patton,⁴ "[i]nductive analysis involves discovering patterns, themes, and categories in one's data. Findings emerge out of the data, through the analyst's interactions with the data, in contrast to deductive analysis where the data are analyzed according to an existing framework." To generate the themes, identifying information about the communities was removed and the themes were coded from the various responses by consensus among the researchers to identify the final themes. The authors independently analyzed the transcripts and summaries of the physician interviews with particular

attention paid to responses to the open-ended questions: “What attracted you to rural medicine?”, “What attracted you to this community in particular?” and “Once you came to this community, what factors influenced you to stay?” The authors then compared their findings to elicit and articulate a set of common themes.

This project received ethics approval from the University of Saskatchewan’s research ethics board before data collection.

RESULTS

Of the 105 communities profiled, 99 communities were visited, and a physician interview was conducted in 66 communities. Five community interviews overlapped because the physician serviced multiple communities; therefore 62 interviews were included in the data analysis.

Themes that were identified from the interviews are shown in Box 1. Of these themes, the most prevalent for recruitment were the scope of practice

(34%), desire for a rural lifestyle (27%) and having a rural background (21%). As one respondent noted, “the variety, autonomy and cradle-to-grave philosophy attracted me to rural family medicine.” The full results of recruitment themes by frequency are listed in Table 1.

In terms of retention, the most prevalent themes were feeling appreciated by patients and getting to know them well (73%), scope of practice (69%), and spouse and/or family being happy in the community (66%). One interviewee remarked, “the enduring relationships with patients and the strong sense of community in a rural centre are what continue to attract me to rural practice.” Another interviewee noted, “working in a rural setting enables one to better understand illness in light of the cultural and social context. There is greater continuity of care in a rural practice. For instance, even in the emergency room we know a great deal about our patients the moment they walk in the door; more than you could ever possibly know in the city.” A positive work environment (32%) was also important. As an interviewee noted, “the camaraderie is much higher between physicians in a rural area. If help is needed, you can count on another physician offering a hand.” Retention themes by frequency are listed in Table 2.

Box 1. Factors that influenced recruitment and retention of rural physicians

Community

- Education system
- Leisure activities
- Proximity to larger centre
- Feeling appreciated by the community
- Integration into and enjoying the community

Personal

- Rural background
- Grew up/previously lived in specific community (physician or spouse)
- Spouse has rural background
- Attracted to rural lifestyle, safety
- Friends or family living in the area
- Spouse and/or family enjoy the community, spouse found employment

Practice

- Work schedule (i.e., vacation time, locum relief, manageable call schedule, opportunity for continuing medical education)
- Regional support (i.e., easy access to larger centres, specialist support)
- Group practice
- Positive work environment
- Scope of practice, able to practise as they desire
- Independence
- Feeling appreciated by patients and getting to know them well

Compensation

- Financial incentives, signing bonuses
- Adequate amount and mode of remuneration

Table 1. Recruitment themes by frequency, *n* = 62

Theme	No. (%)
Scope of practice, able to practise as they desire	21 (34)
Attracted to rural lifestyle, safety	17 (27)
Rural background	13 (21)
From that specific community (physician or spouse)	12 (19)
Leisure activities	11 (18)
Friends or family living in the area	11 (18)
Proximity to larger centre	10 (16)
Integration into and enjoyment of the community	10 (16)
Group practice	10 (16)
Positive work environment	10 (16)
Feeling appreciated by patients and getting to know them well	10 (16)
Feeling appreciated by the community	8 (13)
Spouse has rural background	8 (13)
Spouse and/or family enjoy the community, spouse found employment	8 (13)
Work schedule (i.e., vacation time, locum relief, manageable call schedule, opportunity for continuing medical education)	7 (11)
Independence	7 (11)
Adequate amount and mode of remuneration	6 (10)
Financial incentives, signing bonuses	5 (8)
Education system	4 (6)
Regional support (i.e., easy access to larger centres, specialist support)	3 (5)

DISCUSSION

A large body of literature suggests a correlation between rural background and propensity to subsequently practise in a rural location. In this study, rural background was important but not the leading factor in physician recruitment and was less important for retention. Growing up in a rural location and being from the specific community being profiled were the third and fourth most frequently provided reasons for choosing to practise in the community. Having friends or family in the community was the fifth most cited factor and one's spouse being from a rural community ranked seventh. Our results show that having a link to rural Saskatchewan does matter in terms of one's decision to initially practise there. Programs that encourage rural high school students to pursue medicine as a realistic and achievable career option may improve recruitment and retention.

Much research has been done on the factors affecting recruitment of physicians to a rural setting. Henry and colleagues⁵ concluded that "extensive literature" shows that "[a] period of rural residence of unspecified length prior to entry into medical school is the strongest predictor of a career in rural medicine after graduation."

The background of a physician's spouse is also important. Dunbabin and Levitt⁶ report that the strongest association with rural practice was having a partner who grew up in a rural area, with rural family physicians 3 times more likely to have a spouse from a rural background than their urban counterparts. This association was stronger than that of the physician having completed primary or secondary school in a rural location.

Whereas a focus on training rural residents to become doctors will likely result in more rural physicians in Saskatchewan, it may also be worthwhile to preferentially admit and train those whose end objective is to practise full-scope family medicine. In describing rural medicine, a physician in the study remarked, "there is a full spectrum of patients from kids, young adults, families, adults, elders and geriatrics, allowing for lots of variety." Previous research has shown that most rural physicians did not grow up in a rural location.⁷ However, the decision to practise in a rural area because one can practise full-scope family medicine was a common theme among interviewees, with 21 of 62 respondents citing it as an important recruitment factor. In terms of retention, 43 interviewees stated that their ability to practise full-scope family medicine was an important factor in deciding to remain in the community.

Rabinowitz and colleagues⁸ found that after growing up rurally, the second most important independent factor predicting rural practice was entering medical school with plans to become a family physician. Indeed, it is in a rural setting that full-scope family medicine is most often practised.

Yang⁹ surveyed urban and rural physicians in British Columbia and found that financial incentives played a limited role in recruitment. Jutzi and colleagues¹⁰ surveyed medical students at Western University and found the most important influences on recruitment to be family, professional development opportunities and physicians' partners. However, more than half of respondents still cited "signing bonuses" and "tuition reimbursement" as important in their decision to practise rurally.¹⁰

An important retention factor is for the physician and his or her spouse and family to enjoy and feel integrated into the community. Included in this theme is the physician's spouse finding employment. This theme is one that can vary among rural communities in Saskatchewan depending on how much effort is made to welcome and integrate the physician and family into the community, as well as the existence of viable employment options. This is an area where policy-makers could focus their attention to ensure that programs to address spousal employment

Table 2. Retention themes by frequency, *n* = 62

Theme	No. (%)
Feeling appreciated by patients and getting to know them well	45 (73)
Scope of practice, able to practise as they desire	43 (69)
Spouse and/or family enjoy the community, spouse found employment	41 (66)
Integration into and enjoyment of the community	38 (61)
Attracted to rural lifestyle, safety	33 (53)
Positive work environment	20 (32)
Leisure activities	18 (29)
Work schedule (i.e., vacation time, locum relief, manageable call schedule, opportunity for continuing medical education)	18 (29)
Group practice	16 (26)
Independence	14 (23)
Proximity to larger centre	13 (21)
Friends or family living in the area	12 (19)
Feeling appreciated by the community	12 (19)
From that specific community (physician or spouse)	12 (19)
Education system	11 (18)
Rural background	10 (16)
Spouse has rural background	10 (16)
Adequate amount and mode of remuneration	5 (8)
Regional support (i.e., easy access to larger centres, specialist support)	4 (6)
Financial incentives, signing bonuses	3 (5)

and integration of a physician's family members are in place during or immediately after recruitment.

Though not as important as community factors, a collegial work environment with a manageable call schedule and opportunity for locum tenens coverage was important to respondents in our study. Interviewees valued group practices where vacation requests would likely be granted and the call schedule would allow for time with family and leisure activities. This could be achieved by setting reasonable work expectations when a physician is recruited and ensuring locum relief programs are responsive to the needs of physicians practising in rural areas.

Retention of physicians in a community is a complex interplay among community factors, personal factors and work environment. A review of the literature conducted by Rourke² identified several factors that affect retention of physicians in rural practice: educational factors (e.g., access to continuing professional development and education, admission of students from rural areas to medical school); practice factors (e.g., arrangements for vacation time and locum relief, regional support); financial factors (e.g., financial incentives, return-of-service contracts); regulatory factors (e.g., practice restrictions, hospital privileges); community factors (e.g., children's education, leisure activities, isolation); and personal factors (e.g., rural background, spousal and family interest).

To improve retention, it is important that the community provide some framework of integration for the physician and his or her family. This includes assistance finding housing and spousal employment^{11,12} and facilitating social networking.¹¹ Physicians and families who feel a strong sense of connection to their patients and community stay in the community much longer than those who are not well integrated.¹³⁻¹⁵ Community participation correlates with a longer stay, and physicians and their families must enjoy the rural lifestyle and leisure activities available.¹⁴

Attraction to a rural lifestyle, and feeling a sense of safety there, was an often-cited theme in our study. Internationally trained physicians are common in rural Saskatchewan, and they often come from countries where personal safety is a real concern.¹ Moving to a place that can guarantee a quiet, safe life for them and their families is quite attractive when seeking to leave their country of origin, and it was an appreciated aspect among interviewees. This aspect of rural life could be emphasized to potential physicians, particularly those being recruited internationally.

Interestingly, training in a rural setting was not a recurrent theme identified in this study. The literature suggests that rural training programs have been a boon for recruitment and retention of rural physicians.⁵ Although much has been made of distributed medical education in Canada and elsewhere, this study's results do not indicate a large role. Rural medicine rotations during undergraduate medical training and in family medicine residency training have existed for decades. However, the push to train outside of an academic setting has certainly gained prominence over the past decade in Saskatchewan. Further, a study found that undergraduate rural experiences in Australia have the potential to be lost on the physician if these rural exposures are not continued throughout postgraduate training.¹⁶ A rural family medicine residency program based out of Prince Albert, Sask., has existed for the past decade but has only gained popularity relatively recently. As of 2010, there has also been a rural family medicine training program in Swift Current, and programs have now begun in La Ronge, North Battleford and Moose Jaw in Saskatchewan. It is too early to know how these programs will contribute to the supply of rural physicians in the province over the long term. It would be interesting to revisit this study a decade or more from now to see what their impact has been.

Chan and colleagues⁷ found that two-thirds of Canadian rural physicians were originally from an urban centre. These physicians rated exposure to rural medicine through electives and rotations as being very important to choosing rural practice. Henry and colleagues⁵ found that "a number of reports support the efficacy of rural experience during medical training," with the effect strongest in the later years of medical training and for "prolonged rural placements that are thought to increase opportunities for rural connectedness."

Although scope of practice ranked very highly for both recruitment and retention in our study, the importance of the other themes diverged. Rural origin was relatively more important in terms of recruitment than retention, and practice factors became more important for retention, as did the physician and his or her family's enjoyment of and integration into the community. This makes sense in that one's primary motive for practising in a rural community is likely to remain the reason to stay, if that goal can be satisfied. It also makes sense that one likely realizes the practice factors and community factors after having lived there and experiencing life in the community. Whereas wanting to live

in a rural locale and having a rural origin can bring someone to a rural community, it is the people living there, and how welcome the physicians feel, that influences retention.

Limitations

The interviews were done by a number of students and residents at different levels of training. This presents some potential variation in results depending on the skill of the interviewer, thoroughness of recording of responses and success in establishing a rapport with the interviewee. There may have also been reporting biases among the physicians. This was not accounted for. For example, it is considered nobler to comment on enjoying the variety and scope of practice rather than financial factors. We did not explore whether this effect may have been amplified in the context of interviews performed by junior versus more senior interviewers.

There was scarce mention of financial incentives and generous remuneration agreements motivating the physicians interviewed, in terms of both recruitment and retention. This finding should be viewed with some caution, as it is possible that interviewees were reluctant to admit to medical students the degree to which financial incentives and levels of remuneration played a substantial role in their decision to initiate and maintain rural practice. Indeed, research has shown that signing bonuses and tuition reimbursements are important in a physician's decision to practise in a rural location.¹⁰

CONCLUSION

A better understanding of the factors that influence physicians to establish and maintain rural practice must be better understood so that physician services in rural Saskatchewan can be sustained. Direct interviews with 62 physicians practising in rural Saskatchewan revealed that those most likely to practise in a rural location favour a broad and varied scope of practice, are attracted to a rural lifestyle and have rural roots. Once someone establishes a practice in a rural area, they are more likely to stay if they can continue a broad scope of practice, if they feel appreciated by their patients, and if their spouses and family are happy in the community. Future strategies for recruitment and support of physicians for rural Saskatchewan should take these factors into account.

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Invasive CA-MRSA in northwestern Ontario: a 2-year prospective study

Introduction: Northwestern Ontario has a documented high rate of skin and soft-tissue infections due to community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA). Recently, invasive illness from this common pathogen has become a serious clinical problem in the region. We sought to better understand this trend of invasive CA-MRSA.

Methods: We prospectively studied cases of positive CA-MRSA bacteremia in 2012 and 2013. We examined genetic typing, comorbidities and outcomes.

Results: Twenty-three cases of CA-MRSA bacteremia were treated during the 2-year study period. Intravenous drug use accounted for only 17% of cases. One death and 2 cases of endocarditis occurred.

Conclusion: High rates of CA-MRSA in skin and soft-tissue infections, combined with poor living conditions and poor access to potable water, may account for most of these cases of CA-MRSA bacteremia. Social determinants of health are relevant when common resistant bacterial isolates become associated with life-threatening illness.

Introduction : La région du Nord-Ouest de l'Ontario présente un taux élevé et documenté d'infections de la peau et des tissus mous causées par une souche de *Staphylococcus aureus* méthicillino-résistante d'origine communautaire (SARM-C). La maladie invasive causée par cet agent pathogène commun est récemment devenue un problème clinique grave dans la région. Nous avons voulu mieux comprendre cette tendance du SARM-C invasif.

Méthodes : Nous avons étudié de manière prospective des cas de bactériémie positive à SARM C en 2012 et 2013. Nous avons analysé le typage génétique, les comorbidités et l'issue des infections.

Résultats : Vingt-trois cas de bactériémie à SARM-C ont été traités au cours de la période de 2 ans. L'utilisation de drogues injectables a pu être incriminée dans seulement 17 % de cas. On a enregistré 1 décès et 2 cas d'endocardite.

Conclusion : Des taux élevés de SARM-C dans les infections de la peau et des tissus mous alliées à de piètres conditions de vie et à un accès limité à de l'eau potable pourraient expliquer la plupart de ces cas de bactériémie à SARM-C. Il faut tenir compte des déterminants sociaux de la santé lorsque des isolats bactériens communs et résistants deviennent associés à des maladies gravissimes.

INTRODUCTION

Community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA) is generally acknowledged to be increasing in community and hospital settings.¹⁻⁴ It typically is associated with skin or soft-tissue infections. Northwestern Ontario, home to many remote First Nations communities, has recently documented

one of the highest rates of CA-MRSA in Canada; 56% of all *S. aureus* isolates were found to be CA-MRSA.¹ The region has also experienced a recent rise in invasive illness, including bacteremia, caused by CA-MRSA. The purpose of this study was to document this trend of invasive CA-MRSA and identify the related strains in our catchment area of 28 000 people, most of whom are living

on remote reserves and served by the Sioux Lookout Meno Ya Win Health Centre.⁵

METHODS

We prospectively gathered clinical information regarding cases of sepsis and pneumonia from CA-MRSA infections during 2012 and 2013. We identified 23 cases over this 2-year period. Type and source of infection, demographics, comorbidities, treatment and outcomes were compiled for this study. We sent bacteremic CA-MRSA isolates for genetic and Pantón–Valentine leukocidin (PVL) testing. The study was approved by the Sioux Lookout Meno Ya Win Health Centre Research Review and Ethics Committee.

RESULTS

Among the approximately 100 annual positive blood cultures in our region, 8 cases of CA-MRSA bacteremia were diagnosed in 2012, and 15 cases were diagnosed in 2013. One death involving sepsis with renal failure was ascribed to a CA-MRSA infection (Table 1).

Osteoarticular infections accounted for 26% of the cases of bacteremia, followed by respiratory and abdominal sources (i.e., pancreatitis, cholecystitis,

pyelonephritis) at 22% each. Two cases of endocarditis were diagnosed (Table 2). Only 4 known intravenous drug users were among the 23 cases. About half of infected patients had type 2 diabetes mellitus (Table 1).

Sixteen of the 23 cases of MRSA bacteremia were genetically typed. Canadian epidemic strain MRSA (CMRSA) 10 and 7 were the common pathogens in 8 and 6 cases of the 16 known strains, respectively. Nine of these 16 strains tested positive for PVL. All CA-MRSA isolates were identified by their antibiotic susceptibilities, as well as genetic typing where available (16/23) (Table 3).

In addition to the 23 cases of CA-MRSA bacteremia reported here, there were 14 other patients with CA-MRSA invasive infections. During the study period, 8 urine, 4 sputum and 2 synovial fluid infections occurred.

DISCUSSION

Invasive MRSA has long been noted as a serious health care issue. In the past, health care–associated (HA)–MRSA was implicated in serious and invasive infections, and CA-MRSA infections were generally non–life-threatening soft-tissue infections. Bacteremia from CA-MRSA was a rare event.

In the Canadian Ward Surveillance Study (CANWARD) involving more than 12 Canadian

Table 1. Characteristics of 23 patients with CA-MRSA bacteremia diagnosed in 2012 and 2013

Characteristic	No. (%) of patients*
Age, mean, yr	39.3
Age category, yr	
0–10	1
11–20	3
21–60	15
> 60	5
Comorbidities	
Type 2 diabetes mellitus	11 (48)
Hepatitis B or C, or HIV	0
Intravenous drug use	4 (17)
Investigations	
Echocardiography	11 (48)
Viral serology	9 (39)
Treatment	
Vancomycin	18 (78)
Outcome	
Died	1 (4)
Transferred care	3 (13)
Treated locally	19 (83)

CA-MRSA = community-associated methicillin-resistant *Staphylococcus aureus*.

*Unless stated otherwise.

Table 2. Diagnoses and sources of infection in 23 patients with CA-MRSA bacteremia

Variable	No. (%) of patients
Diagnosis	
Osteoarticular disease	6 (26)
Respiratory disease	5 (22)
Abdominal organ infection	5 (22)
Endocarditis	2 (9)
Simple bacteremia	3 (13)
Skin or soft-tissue infection	1 (4)
Source of infection	
Central line	1 (4)

CA-MRSA = community associated methicillin-resistant *Staphylococcus aureus*.

Table 3. Genetic typing of 23 cases of CA-MRSA bacteremia

Variable	CMRSA 7	CMRSA 10	Other CMRSA	NA
Genetic typing	6	8	2	7
PVL positive	4	5	0	1

CA-MRSA = community-associated methicillin-resistant *Staphylococcus aureus*; CMRSA = Canadian epidemic strain of MRSA; NA = not available; PVL = Pantón–Valentine leukocidin.

hospitals during a 5-year period (2007–2011), only 89 bacteremic isolates of the 8245 positive blood cultures were found to be CA-MRSA,^{6,7} for a rate of 1.08% of all positive blood cultures. Our region has about 100 patients with positive blood cultures annually, and CA-MRSA constituted 12% of them during the 2-year study period. In 2012 at the Ottawa Hospital, only 12% of all cases of *S. aureus* bacteremia were CA-MRSA, and a slightly larger percentage was found in the 12 tertiary care hospitals participating in CANWARD in 2011, at 19%.⁷ Since 2010, we have encountered an annual doubling of CA-MRSA bacteremia: 2, 4, 8 and 15 cases annually. Of the 19 patients with *S. aureus* bacteremia, 58% (11/19) were CA-MRSA isolates.¹

In a study done in Calgary from 2000 to 2006, Laupland and colleagues⁸ found 2.2 cases of MRSA bacteremia per 100 000 population annually, and most of these were HA-MRSA. Only 11% were CA-MRSA, for an estimated rate of 0.24 per 100 000 population annually. Our incidence of 23 cases in 2 years in a catchment area of 28 000 gives us an annual population rate of 41.1 per 100 000 population, almost 20-fold the rate in Calgary.

Of the 16 cases with genetic typing, we had 8 isolates that were CMRSA 10, the most common Canadian strain and generally the cause of most hospital-related CA-MRSA infections.⁶ The second most common genetic type was CMRSA 7, which is the most common strain seen in northern Manitoba and Saskatchewan, our neighbouring provinces.^{2,9}

Panton–Valentine leukocidin was initially thought to be universally present in CA-MRSA strains and to be responsible for much of its pathogenesis.¹⁰ Now, only about 85% of CA-MRSA strains are usually positive for this marker, and other genetic attributes may be more closely associated with virulence.^{11,12} In our study, 9 of the 16 samples (56%) that were genetically typed were positive for PVL.

Issues with on-reserve housing such as overcrowding, poor sanitation and access to potable water are health risks associated with CA-MRSA infections.^{13–16} Our catchment area is made up of remote First Nations populations, which have documented deficiencies in these areas.¹⁷ Seventeen of Ontario's First Nations communities with boil water advisories are in our region.¹⁸ In one community with a population of more than 2000, 90% of the homes are not connected to a water source at all.¹⁹

We have previously documented high rates of CA-MRSA in our region.¹ Although illicit drug use is a serious issue, these cases do not appear to be primarily related to intravenous drug abuse. We may

be seeing a common isolate associated with skin or soft-tissue infections causing a high rate of invasive disease related to other factors. These factors may include the high burden of chronic illness, such as diabetes mellitus and skin disease, combined with overcrowding and limited access to potable water.

Clinicians in our region will need to be alert to concomitant cardiac or osteogenic infections, as well as viral pathogens associated with intravenous drug use (e.g., hepatitis B and C, and HIV) when faced with CA-MRSA bacteremia.

Limitations

The genetic typing was done on an ad hoc basis for CA-MRSA bacteremia isolates, and we were able to document the genetics on only 16 of our 23 samples. Our hospital, like most, could not automatically give us antibiotic susceptibilities on CA-MRSA isolates, and we had to manually determine these. Many similar studies were based in urban settings, where HA- and CA-MRSA values were combined into general MRSA estimates, limiting what studies we could use as comparators.

CONCLUSION

Our population in northwestern Ontario is experiencing a dramatic increase in invasive disease from CA-MRSA infections, particularly bacteremic sepsis, with at least one fatal outcome. The social determinants of health, long identified as problematic, take on greater importance when common, resistant organisms become life-threatening.

Competing interests: None declared.

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Country Cardiograms

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The occasional ED ultrasound: abdominal aorta

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INTRODUCTION

As a rural practitioner, one is often faced with situations of diagnostic uncertainty. Making the wrong decision could be disruptive and costly, or could lead to substantial morbidity and even mortality. Being comfortable with point-of-care ultrasonography as an adjunct to physical examination can therefore be practice-changing and life-saving. The purpose of point-of-care ultrasonography in an emergency setting is to allow the physician to quickly rule in or rule out suspected life-threatening conditions, such as an abdominal aortic aneurysm (AAA) as the cause of a patient's abdominal pain.¹ As an example, if a patient presents to a rural emergency department (ED) with sudden, severe abdominal pain, could the cause of it be a ruptured AAA? The patient may not necessarily have hypotension if the rupture is contained.² Conversely, if a patient presents to a rural ED with consistent abdominal discomfort that has been gradually worsening over the

past month, could the discomfort be secondary to an AAA?³ Your primary goal for the occasional ultrasound in a rural ED is to assess it safely. The key to safety is not the ability to call a scan positive or negative, but knowing when to call it inconclusive. If you are not sure, continue management as if you had never done the scan at all.⁴

EQUIPMENT

- Any ultrasound machine
- Low frequency (2–5 MHz) curvilinear probe (Fig. 1)
- Ultrasound gel or water-based lubricant

IMAGE GENERATION AND INTERPRETATION

Locate the spine

Identification of the aorta is easiest to do by first locating the spine. The spine appears as a bright, hyperechoic (white) curvilinear structure in the far field (bottom of screen). Because bone



Fig. 1. Low frequency (2–5 MHz) curvilinear probe.

does not conduct ultrasound waves, the spine casts an acoustic shadow (dark lines on each side) posteriorly, called the spine shadow.

Locate the aorta

The aorta is typically found just anterior and slightly right of the spine on the screen (left on the patient).

To differentiate the aorta from the inferior vena cava (IVC), consider the following:³

- The aorta is noncompressible. If you push the probe into the patient and the circle flattens and the black fluid disappears, that circle is the IVC.
- The aortic wall is thicker than the IVC wall, so it will show up as being brighter (more echogenic).
- The aorta has no respiratory variability. The IVC collapses slightly with inspiration owing to negative intrathoracic pressure.

You might not see both vessels, so you will need to use the above criteria to definitively identify the aorta. Not all aortas are on the patient's left (right side of screen). Do not identify the aorta simply based on it being large and pulsating — the aorta's pulsations can make the nearby IVC pulsate as well!

THE PROCEDURE

Ensure you have a good amount of ultrasound gel on the probe. Start with the probe held transverse with the probe marker to the patient's right, 90 degrees to the skin, at the xiphoid process (Fig. 2). While keeping the probe 90 degrees to the skin in transverse orientation, slowly bring the probe caudally with the aorta centred on the screen. When you reach the approximate location of the umbilicus, the aorta bifurcates into the right and left iliac arteries.⁴

To have a conclusively negative scan, you must be able to visualize continuously every segment of the abdominal aorta from the diaphragm to the bifurcation.³ However, you do not need to see the entire aorta to call a scan positive if you can visualize any segment that is aneurysmal.⁴ Do not worry about other vessels you see branching off the aorta (e.g., the celiac axis, the superior mesenteric artery), which are often difficult to visualize. Just be able to document how far between the diaphragm and the bifurcation (e.g., first third, second third, final third) the aneurysm is located.

Caveats

- Bowel gas can get in the way of visualizing the aorta in its entirety.⁵

- Ultrasound cannot be used by itself to identify aneurysmal ruptures; most ruptures are retroperitoneal and cannot be seen on a point-of-care ultrasound.⁶ However, if the ultrasound is positive for AAA, do a focused assessment with sonography in trauma (FAST) scan to look for free fluid.³

Troubleshooting for bowel gas

To get around bowel gas^{3,4} try moving the probe medially or laterally. As long as you still visualize the spine and the probe remains 90 degrees to the skin, it is okay to be off-centre. Try using the probe to displace bowel loops with downward pressure. If the assessment is not urgent, you could try the scan again later — the bowel gas may have moved by then. You can also tilt the probe cephalad or caudad so that it is no longer 90 degrees to the skin, but keep in mind that your diameter measurements will no longer be accurate when you are slicing the vessel on an angle. If you see the aorta but it is hard to follow, decrease the depth and increase the gain (make the vessel walls brighter).

To measure

Each machine is different, but generally you will need to freeze the image where you want it, and use calipers to measure from one side of the vessel wall to the exact opposite side.

Diagnosis

An aortic diameter of less than 3 cm is normal. A diameter greater than 3 cm is aneurysmal. Abdominal

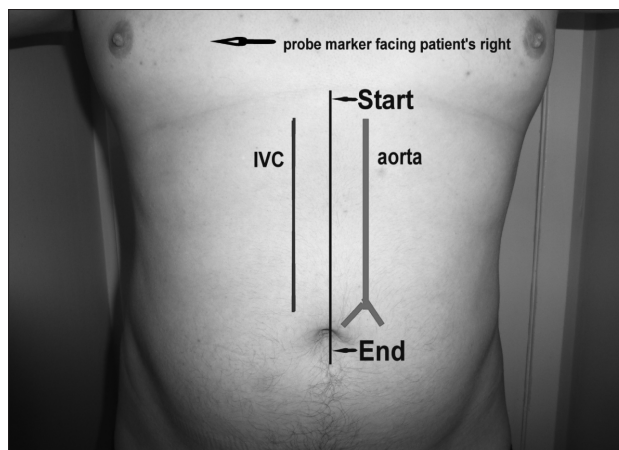


Fig. 2. Landmarks for using a point-of-care ultrasound for diagnosis of abdominal aortic aneurysm. Start centrally at the xiphoid process, and move probe caudally toward the umbilicus. IVC = inferior vena cava.

aortic aneurysm can be diagnosed if the aorta is enlarged at any point. (For iliac arteries, a diameter of less than 1.5 cm is normal.)^{3,4}

Measurements are from the echogenic outer wall to the echogenic outer wall on the opposite side. Do not simply measure the size of the lumen! There could be a thrombus that makes the lumen much narrower than the aortic diameter.^{3,4}

THREE CASE HISTORIES

Case A

A 25-year-old man presents to your rural ED with sudden-onset, severe central abdominal pain. The patient is afebrile, with no nausea, vomiting or diarrhea. He is diaphoretic, his blood pressure is 150/90 mm Hg and his heart rate is 102 beats/min. Physical examination of the abdomen reveals diffuse tenderness with no guarding or rebound tenderness. As part of your physical examination, you reach for the ultrasound probe to ensure the cause of his pain is not a ruptured but contained AAA (Fig. 3).

You measure the widest part of the abdominal aorta to be 2.4 cm. Therefore, an AAA is not the cause of this patient's pain.

Case B

A 65-year-old man with Marfan syndrome presents to your rural ED with severe abdominal pain, hypotension, back pain and diminished femoral

pulses. You highly suspect an AAA as a cause of his signs and symptoms, and you use the ultrasound probe to confirm (Fig. 4).

You discover an AAA measuring 8 cm in diameter. Therefore, the most likely diagnosis is a ruptured AAA. This patient is hemodynamically unstable and unlikely to survive.^{7,8} The diagnosis and prognosis should be discussed with the patient and family members, advance directives reviewed and spiritual care arranged if desired by the patient. Temporary supportive measures should include pain control, likely requiring generous analgesic use. Fluid resuscitation and blood transfusion can be considered^{9,10} if a transfer to a tertiary care centre with vascular surgery is planned. However, this is feasible only if the transfer times from your facility are short.¹¹

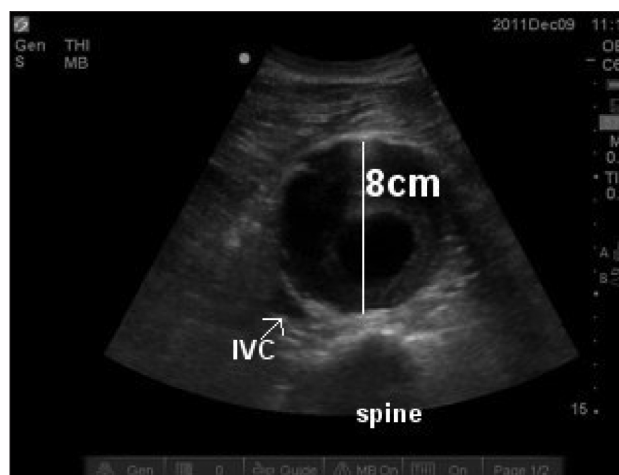


Fig. 4. Ultrasound showing an abdominal aortic aneurysm measuring 8 cm, the widest diameter measured wall to wall. IVC = inferior vena cava.

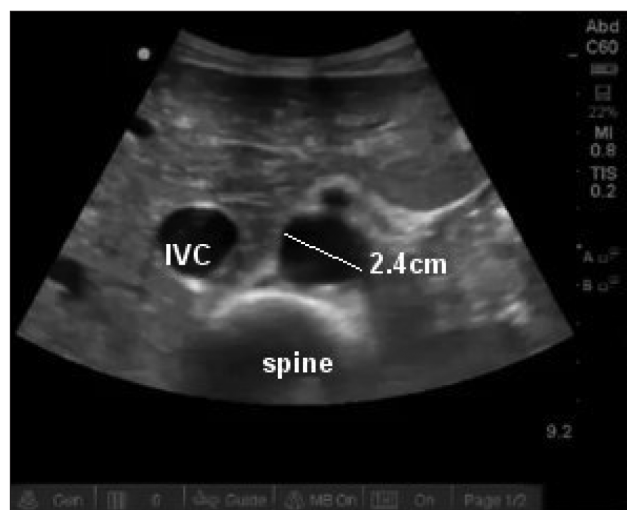


Fig. 3. Ultrasound showing a normal abdominal aorta measuring 2.4 cm. Note the thicker wall of the aorta versus the inferior vena cava (IVC). Unfortunately, in a still image, we cannot use the criteria of lack of respiratory variability and noncompressibility to differentiate the aorta from the IVC.

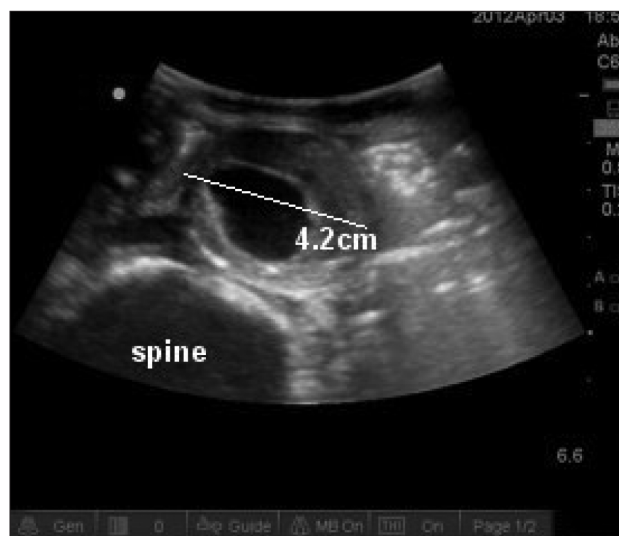


Fig. 5. Ultrasound showing an abdominal aortic aneurysm measuring 4.2 cm, the widest diameter measured from wall to wall. Note the lumen is much smaller than the aortic diameter.

Case C

A 42-year-old woman presents to your rural ED with severe abdominal pain in the right upper quadrant, unexplained hypotension and a temperature of 39.8°C. You suspect septic cholecystitis rather than a ruptured AAA. However, you happen to already have the ultrasound probe by the bedside and decide that spending a few seconds to do a quick abdominal scan will do no harm (Fig. 5).

As a result, you discover that this patient indeed has an AAA measuring 4.2 cm. However, given the fever, this should be low on your list of differential diagnoses for this patient's signs and symptoms. In this situation, it is important to notify the patient of your incidental discovery and ensure appropriate follow-up for the AAA in the future.

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Competing interests: None declared.

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Country cardiograms case 51

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A 54-year-old man presents to a rural emergency department with chest pain. At triage, his vital signs are as follows: temperature 37.0°C, heart rate 72 beats/min, respiratory rate 16 breaths/min, blood pressure 142/90 mm Hg and oxygen saturation 98%. At check-in, he becomes unresponsive, and a “code blue” is called. He has a weak, thready pulse with agonal respirations and a Glasgow Coma Scale score of 13 (eye response 4, verbal response 4, motor response 5). Vital signs are heart rate 45 beats/min, blood pressure 72/57 mm Hg and oxygen saturation 99%. He denies having chest pain but reports substantial shortness of breath. He is revived with prompt intravenous fluid resuscitation and supplementary oxygen, and vital signs return to normal.

A history is obtained of left-sided anterior chest pain radiating to the neck after a walk the previous night; the chest pain was intermittent throughout the night and is what brought him to the emergency department. He also reports new back pain concurrent with

the chest pain. He has never experienced symptoms like this. His medical history is unremarkable, and he takes no regular medications. He does not smoke and has no dyslipidemia. He has a positive family history of coronary artery disease: his father had a myocardial infarction at 38 years of age.

Physical examination shows him to be pale, diaphoretic and obese. Breath sounds are clear bilaterally, without adventitious sounds. Heart sounds are normal, without murmur. His abdomen is soft and nontender, neck veins are flat and calves are supple, without edema. Investigations show a normal initial 12-lead electrocardiogram (ECG); an unremarkable chest radiograph; normal complete blood count, renal function and electrolytes; and negative troponin ($< 0.01 \mu\text{g/L}$) and D-dimer ($450 \mu\text{g/L}$) assays. A second ECG performed 15 minutes later is shown in Figure 1. What is your interpretation?

For the answer, see page 114.

Competing interests: None declared.

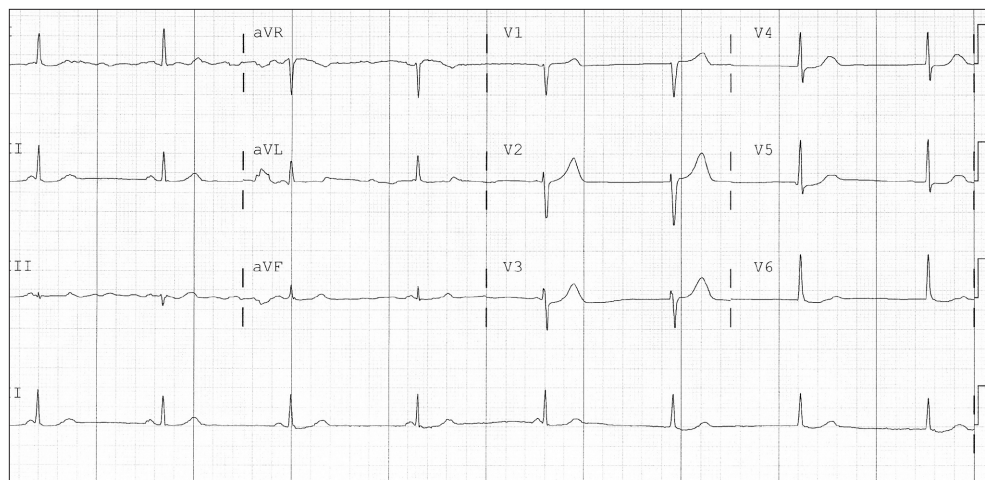


Fig. 1. Electrocardiogram of a 54-year-old man with chest pain.

Learning from our Ethiopian colleagues: operative obstetrics for the generalist

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There are many rural communities in Canada where hospitals do not have physicians skilled in advanced maternity care, including the ability to perform cesarean delivery. In rural Canada, family physicians are the main providers of maternity care. There may be a need to expand available training for these rural physicians to gain advanced maternity skills to meet the needs of these communities.

Most Ethiopian women do not have access to cesarean delivery or to health professionals trained in maternity care. The Ethiopian Federal Ministry of Health is working to increase access to skilled maternity care, partly in an effort to meet the fifth target of the United Nation's Millennium Development Goals, which is to reduce the maternal mortality ratio by 75% by 2015 from the 1990 value.

THE ETHIOPIAN AND CANADIAN CONTEXTS

In Ethiopia, the maternal mortality ratio (expressed per 100 000 live births; calculated as the maternal mortality rate divided by the general fertility rate) is among the highest in the world, with a rate of 676/100 000.¹ One major contributing factor is a lack of access to skilled maternity care, including timely access to operative delivery for labouring women. Only 10% of women in Ethiopia deliver with a skilled attendant present.¹ Eighty-five percent of Ethiopia's population lives in rural areas,¹ where access to medical care is severely limited.

Canada has one of the lowest maternal mortality ratios in the world at

12/100 000.² Most Canadian women have access to skilled maternity care. However, in rural Canada access to maternity services is declining. In northern Ontario, between 1981 and 1997 there was a 500% increase in the number of communities that lacked elective obstetric care.³

Fewer Canadian generalists are skilled in advanced maternity care. There has been a high rate of attrition among physicians who provide maternity care in rural areas. Many reasons for this have been cited, including lack of confidence by providers, lack of advanced (i.e., operative) skills and retirement of senior staff with advanced skills.⁴ As a result, many women in rural Canada must deliver far from their homes. This can put their babies at risk for adverse outcomes, including increased perinatal mortality, morbidity and increased rates of intervention.⁵ Mothers delivering far from home also experience substantial social and financial stress.⁵

Good outcomes can be sustained in rural Canada without access to surgical obstetrics.⁶ However, maintenance of rural surgical and anesthesia capabilities is desirable in rural communities,⁴ and availability of local cesarean delivery is associated with a greater proportion of women delivering locally.^{6,7}

A study that compared 2 similar hospitals in rural British Columbia showed that the hospital with cesarean delivery services had more local deliveries and a lower rate of preterm delivery than the hospital without cesarean capabilities.^{7,8} A generalist surgeon in Wawa, Ont., states, "[h]aving physicians trained to perform cesarean sections in smaller

communities is essential for the ability to continue viable obstetrical programs in these communities. Studies have shown that the first step in losing these programs is the loss of cesarean section capability, which serves to undermine the confidence of the remaining practitioners” (Dr. Erle Kirby, personal communication: 2013).

TRAINING OF GENERALISTS IN ETHIOPIA

In Ethiopia, the Federal Ministry of Health is working to address the issue of limited access to surgical obstetrics. The ministry has started formal training in comprehensive emergency obstetrical care (CEmOC). Although the situations in rural Canada and Ethiopia are different, there are enough parallels for Canadians to learn from Ethiopia’s generalist training. CEmOC training is specifically geared to generalists obtaining skills to manage obstetric surgical emergencies. By the completion of training, it is expected that trainees will have performed at least 20 cesarean deliveries independently. Generalists are taught by CEmOC-trained generalists and their obstetrician–gynecologist (OBGYN) colleagues.

One such training program took place at a district hospital in Addis Ababa, Ethiopia, over a 3-month period (Oct. 15, 2012–Jan. 14, 2013). The hospital serves a catchment population of 424 603. There are an average of 3500 deliveries per year, of which about 720 are cesarean deliveries (unpublished data, 2013).

Two practising generalists were trained by 2 OBGYNs and 1 generalist who previously received CEmOC training to perform cesarean deliveries and other emergency obstetric surgical procedures.

The training included focused didactic classroom teaching sessions and teaching in the surgical theatre. The CEmOC-trained generalist and 2 OBGYN trainers shared teaching duties in the classroom and in surgical theatre. The 3 trainers were paid a small stipend (per diem) for their teaching duties.

During the 3 months of training, a total of 191 procedures were done in the maternity unit at the hospital. Table 1 lists the procedures performed by the generalists at each stage of training. There was 1 reported maternal death, from presumed abruptio placentae, during the training period. This maternal death occurred in the labour ward, not in the surgical theatre. There were no reported surgical complications during the training period.

The newly CEmOC-trained generalists are now performing cesarean deliveries independently. At 4 months after training, they have performed a

combined total of 76 cesarean deliveries independently, and there have been no reported surgical complications.

These generalists are performing a higher volume of cesarean deliveries than Canadian rural physicians would likely be performing after training. However, it does not appear that high volume is needed to maintain competence. It has been shown that if generalists acquire competence through skilled training, competence can be maintained with relatively few cases per year.^{9–11}

In addition to the CEmOC training for generalists in Ethiopia, a family medicine residency program was launched at Addis Ababa University in February 2013. The family medicine residents are being trained by specialty medical staff at Addis Ababa University with support from family doctors from the University of Toronto and the University of Wisconsin–Madison, and medical volunteers from Cuso International. Surgical management of obstetric emergencies is integrated into the curriculum. It is hoped that all family medicine residents will graduate with the skills to manage obstetric emergencies. This will add to the cadre of Ethiopian generalists who are skilled in advanced maternity care.

DISCUSSION

In Canada, it can be difficult for rural generalists to obtain training. Advanced maternity care training is not integrated into the curriculum for rural family medicine residents. Although third-year training

Table 1. Surgical procedures performed by Ethiopian generalists during operative obstetric training

Training period; procedure	No. of procedures	
	Generalist A	Generalist B
Initial 30 days of training*		
Cesarean delivery	33	28
Laparotomy	2	2
Hysterectomy	—	—
Second 30 days of training†		
Cesarean delivery	37	27
Laparotomy	—	—
Hysterectomy	3	—
Last 30 days of training‡		
Cesarean delivery	38	29
Laparotomy	4	1
Hysterectomy	—	—

*Generalist acting as surgical first assistant with trainer acting as primary surgeon.

†Generalist acting as primary surgeon with trainer acting as first assistant.

‡Generalist acting as primary surgeon independently; trainer in house.

programs exist, not all contain a surgical component, and generalists are not usually included as trainers in these programs.

A 1999 position paper from The College of Family Physicians of Canada, the Society of Rural Physicians of Canada, and The Society of Obstetricians and Gynaecologists of Canada stated, “[t]he disciplines of family medicine and obstetrics and gynecology need to design and deliver formal, accessible training programs for advanced maternity skills.”⁴

A recent joint position paper published in the *Canadian Journal of Rural Medicine* states that “[a]ccess to additional training in advanced skills, including cesarean section and obstetric anesthesia, is essential.”¹²

It would seem that if rural maternity care is to continue in Canada, rural practitioners will need training in advanced maternity care. There are, of course, many other reasons that maternity services in rural Canada are declining, including fear of maintaining competency in low-volume settings, perceived medicolegal risks and occupational stress,⁴ and these factors need to be addressed. Anesthesia and surgical nursing skills are also needed to support advanced maternity care in the rural setting. Training for these skill sets will also need to be addressed. However, if we lose skilled practitioners and do not train adequate numbers of new practitioners, there may be little hope of advanced maternity care continuing in rural Canada.

Our Ethiopian colleagues were trained by both specialists and generalists. Including generalists as trainers in Canadian programs may be one way for generalists to maintain confidence in their skills, improve relationships between specialists and generalists, and provide role models for other generalists.

CONCLUSION

The situation with regard to maternal care is vastly different in Ethiopia than in Canada. The need to address the maternal mortality ratio in Ethiopia is urgent, and this drives the need to train more health care workers in advanced maternity care and operative obstetrics.

However, the Ethiopian model of accessible, supportive and collaborative advanced maternity

training for the generalist may be one from which Canadians could learn.

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Self-help is no help: negative study results lead to important lessons

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In training mental health professionals in rural areas across Newfoundland and Labrador over the past decade,^{1,2} we have learned that practitioners are in need of practical and realistic ways to address the mental health concerns of their patients. In one of our early pilot projects,³ we noted considerable community interest in accessing a small multimedia mental health library. We hypothesized that a self-help intervention involving bibliotherapy might be an effective means for addressing the high incidence of depression observed by health care providers throughout the province.

CLINICAL TRIAL

We decided to conduct a clinical trial involving a popular and proven self-help book for depression, *Feeling Good: The New Mood Therapy*, by psychiatrist David Burns.⁴ The book is a highly regarded self-help program for depression and has been evaluated favourably in controlled research settings.⁵ There is a lack of data on this type of intervention in rural practice settings. After receiving funding and ethics approval for our trial, we randomly assigned health professionals to either intervention or control conditions. Despite expressed interest in the study, none of the professionals succeeded in recruiting patients. In follow-up interviews, they explained that many of their patients had low levels of literacy, complex chronic mental health problems and/or were too elderly to participate. Some professionals indicated that by the time they saw patients with mental health concerns, the level of pathology was too severe for participation in the

self-help program. As well, several indicated that it was challenging to integrate the self-help program into their practices because of high service demands.

LESSONS LEARNED

When we attempted to publish an account of the negative results of the study, reviewers and editors rejected our submission on methodological grounds, arguing that a different intervention might have garnered greater participation. Fair enough. However, important lessons of interest to practitioners and researchers were learned through this study.

1. Given the high service demands and relatively low staffing levels in rural and remote regions, more structured administrative supports are needed. These could include involving and training community members and support staff in clinics to assist with identifying and preparing potential participants before depression becomes severe.
2. Given the low interest and capacity expressed by patients referred to our self-help program, we suggest that video, computer and telephone-based self-help modules be offered and evaluated in structured community settings where staff are available to assist patients who have low technical or computer literacy.
3. A different self-help approach may be better suited to rural Canadians. Over the past decade, innovative self-administered, Internet-based approaches have been developed and piloted in the United Kingdom and Australia for increasing access to

mental health resources for professionals and patients. Educational and self-help websites with varying levels of complexity have been launched in both countries.^{6,7} In the UK, an approach called “stepped care” has been advocated as a more efficient method for mental health care.⁸ Interventions range from watchful waiting, whereby a deliberate monitored delay of several weeks is allowed to enable spontaneous recovery, to intensive in-patient medical care.⁸ Brief screening assessments for mental health can be administered repeatedly during this period to assess for any changes in mental health. As the name implies, stepped care allows for a triage system of interventions graded by complexity, intensiveness and cost.

4. Guided self-help may be more appropriate for rural and remote populations. For example, hybrid Internet cognitive behavioural therapy programs, which include weekly telephone or email follow-up, are showing positive results in studies conducted around the world, including a program based at the University of Regina.⁹ A stepped care system including guided online self-help would require training and organizational support from centralized health authorities.

There may also be a need to partner with local libraries to encourage e-health literacy in the general population. Resources for patients and providers considering self-help for depression in rural and remote areas are summarized in Box 1.

CONCLUSION

Although our rural clinical trial turned out to be no help at all, lessons learned from it could be useful in helping patients with mental health issues who live in rural areas.

Acknowledgements: We acknowledge and appreciate the Newfoundland and Labrador Department of Health and Community Services for funding this project. In addition, we express our thanks to the regional health authorities across the province for their tremendous support. Finally, a special thanks to the participants in the rural communities.

Competing interests: None declared.

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Box 1. Resources for improving access to self-help materials for patients and health care providers in rural and remote areas

Patients

Increase availability of psycho-educational resources in the community:

- Pamphlets
- Videos (e.g., WebMD Depression tv, www.webmd.com/depression/depression-tv)
- CDs and MP3 files
- Websites (e.g., BluePages, bluepages.anu.edu.au)

Ensure books are not too text-intensive:

- *Mind Over Mood*¹⁰
- *Mindfulness and Acceptance Workbook for Depression*¹¹
- *Overcoming Depression One Step at a Time*¹²
- Audiobook versions of the above

Offer various levels of structure and guidance:

- Weekly telephone or email check-up
- Assign simple behavioural activation homework
- Arrange for a public speaking event on depression

Encourage access to Internet self-help format:

- The MoodGYM Training Program, <https://moodgym.anu.edu.au>
- Include Internet training
- Involve local library that provides Internet access

Providers

Obtain technology for waiting room mental health screening and psycho-education:

- Computer tablets
- Internet terminal
- Health promotion video screens

Support staff training:

- Mental health screening
- Psycho-education
- Self-help
- Computer tablets and Internet technology

Train providers in stepped care:⁸

1. Watchful waiting
2. Psycho-education
3. Bibliotherapy
4. Computer-based e-health
5. Group therapy
6. Individual therapy
7. Medication
8. Inpatient care

Lobby for access to therapist-assisted self-help program:

- Online Therapy USER, www.onlinetherapyuser.ca
- Beating the Blues US, www.beatingthebluesus.com
- CyberPsysc, cyberpsysc.com

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Country cardiograms case 51: Answer

Michael Slatnik, MD,
CCFP
Grand Forks, BC

The electrocardiogram (ECG) (Fig. 1, page 107) shows an initial sinus rhythm at a rate of 46 beats/min. The axis is normal with upright QRS complexes in leads I and aVF. Intervals reveal a normal QRS width (78 ms) and normal corrected QT interval (392 ms); PR interval shows beat-to-beat variation, which is evidence of complete (third-degree) atrioventricular (AV) block. There are minimal ST depressions in the lateral leads I, aVL, V5 and V6. There is a junctional escape rhythm noticed on the lead II rhythm strip after the fifth QRS complex. No P waves are present for the last 3 QRS complexes. Follow-up 15-lead ECG did not show any evidence of posterior ST elevation myocardial infarction (MI).

This patient was promptly transferred to a regional hospital. Because of the syncope and concurrent chest and back pain, computed tomography of the chest was

performed to investigate for aortic dissection; no evidence of this was found. A follow-up 6-hour troponin test was positive at 6.75 µg/L, and non-ST elevation MI was diagnosed. The peak troponin level the following day was 47 µg/L. The patient underwent angiography, which revealed a critical (90%) narrowing in the right coronary artery; this was successfully stented. Subsequently in hospital, he was persistently bradycardic with sinus pauses and presyncopal symptoms. In addition, he showed mild left ventricular dysfunction (ejection fraction 35%–40%), and because of the need for medical therapy for heart failure, a DDDR pacemaker was inserted. Electrocardiography was performed (Fig. 2).

The P wave on the electrocardiogram reflects atrial depolarization, initiated by pacemaker cells in the sinoatrial (SA) node. When sinus node dysfunction occurs, alternate pacemakers in the

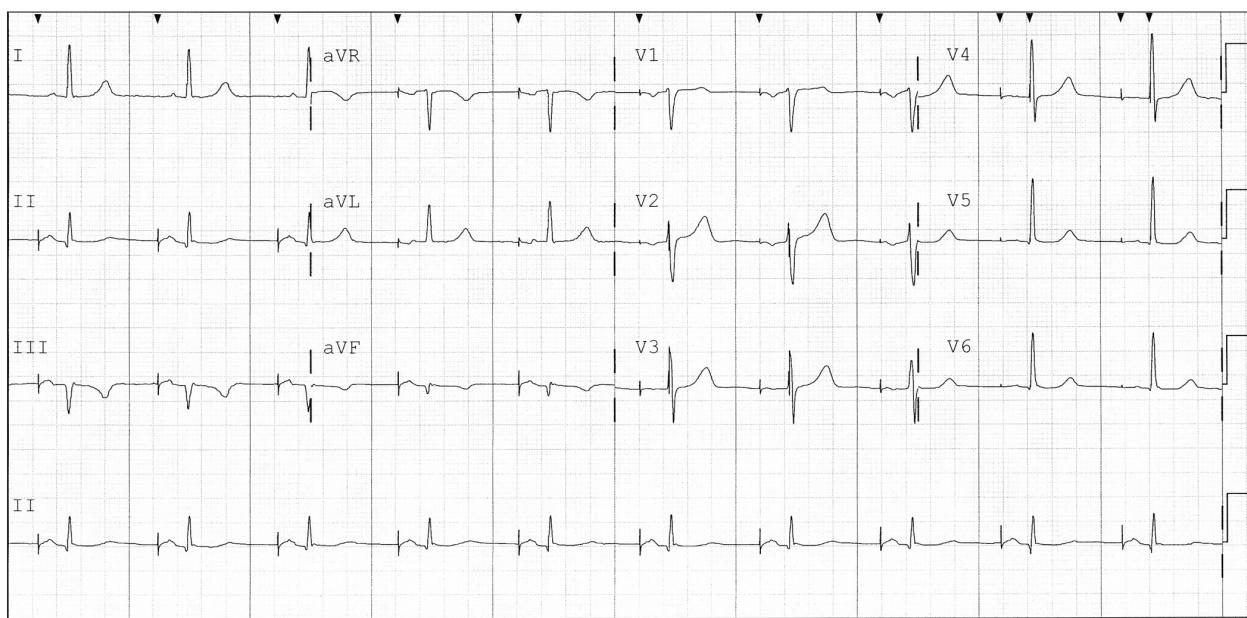


Fig. 2. Electrocardiogram after insertion of a DDDR pacemaker.

heart take over. Although almost any cardiac cell is capable of spontaneous depolarization, the most common secondary pacemakers are alternate atrial cells (60–80 beats/min), AV nodal or junctional cells (35–60 beats/min), His–Purkinje cells (25–35 beats/min) and ventricular myocytes (< 35 beats/min).¹ With junctional or AV nodal rhythms, the QRS complex is narrow because the ventricles are depolarized in a normal fashion and the atria are depolarized in a retrograde fashion, so the P waves are absent. However, negative P waves can be seen in leads II, III and aVF, with a positive P wave in lead aVR.¹ Blood to the SA node is supplied most commonly by the right coronary artery (60%) or the left circumflex artery (40%). Blood to the AV node is mostly supplied by the right coronary artery (90%) or the left circumflex (10%).² Acute inferior MI can result in conduction abnormalities such as sinus bradycardia and varying degrees of AV block, including complete heart block, and can be associated with narrow-complex escape rhythms.² Conduction abnormalities with inferior MI likely result from heightened vagal tone in addition to edema and infarction of the SA nodal and AV nodal arteries, and generally resolve within 2 weeks without the need for permanent pacing.² High-degree (second- or third-degree) heart block is seen in 15%–20% of cases of acute inferior MI, usually within the first 24 hours.³

Acute inferior MI results from occlusion of either the right coronary or left circumflex coronary arteries. Infarction of the right coronary artery is

associated with ST-segment elevation in lead III that is greater than ST-segment elevation in lead II, with concurrent ST-segment depression in leads I and aVL.² Infarction of the left circumflex artery is distinguished by ST-segment elevation in leads I, aVL, V5 and V6, and ST-segment depression in leads V1, V2 and V3.²

Unlike inferior MI, conduction abnormalities with anterior MI are generally due to necrosis of the conducting system, are often permanent and imply higher mortality, with complete heart block in anterior MI associated with up to 80% mortality.⁴

Conduction disturbances due to MI are important diagnostic and prognostic factors, and their recognition is essential to proper management.^{1–4}

For the question, see page 107.

Competing interests: None declared.

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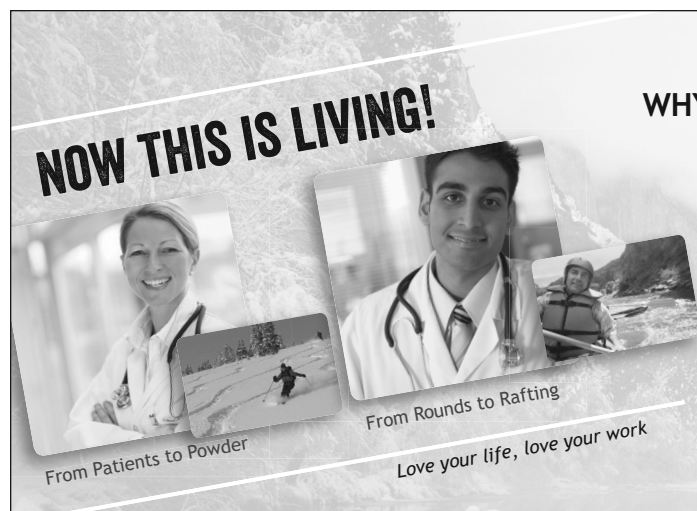
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ANESTHESIOLOGIST: BC – Cranbrook. The Rural Physicians for British Columbia are providing a one-time incentive payment of \$100,000 for a 3-year return of service for a permanent anesthesiologist for this 74-bed regional facility, serving a catchment area of approximately 80,000 people. Shared responsibility of workload within Anesthesiology Department. The hospital has on-site CT, US and traveling MRI, and offers internal medicine, obstetrics and gynecology, general surgery, orthopedics, ophthalmology, ENT, pathology, psychiatry and radiology. Hours of work are negotiable and the compensation is fee-for-service so open for discussion. Multiple incentives: recruitment incentive \$20,000; retention fee premium 14%; retention flat fee \$12,240; relocation reimbursement. Cranbrook is surrounded by stunning scenery and boasts the most sunshine of anywhere in B.C. with unlimited summer and winter activities. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-292b

FAMILY PHYSICIAN: BC – Ashcroft. Ashcroft Hospital and Community Health Centre is a Level 1 Community Hospital with four emergency beds, 24 extended care beds, and one respite care. Ashcroft (population: 1,664) rests along the banks of the Thompson River, deep in the heart of British Columbia's desert country. The town is set amid a spectacular recreational environment where hiking, golfing, and fishing thrive. Remuneration is fee-for-service \$300-350,000+/-, plus rural retention incentives and on-call availability payment. Overhead is around 20% and the office has a fully integrated EMR. For more information email physicianrecruitment@interiorhealth.ca or online www.betterhere.ca –RM-318

FAMILY PHYSICIAN: BC – Chase. Also known as the Gateway to the Shuswap, this lakeshore town offers an abundance of recreational opportunities. Located between Kamloops and Salmon Arm, Chase is a full-service community. You will be part of a multidisciplinary team providing primary care within an established electronic clinic. Hours of operation are Monday to Friday, 8 am – 4 pm, and the clinic is conveniently located across from the Health Centre. The three physicians rotate an on-call schedule for the emergency department. Remuneration is fee-for-service \$250-350,000+/-, plus RSA incentives and on-call availability payment. For more information email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-316

FAMILY PHYSICIAN: BC – Clearwater. Family physicians wanted to join the medical team in this beautiful community. Rural setting, relaxed pace of work, newer hospital, and an amazing provincial park as your backyard. Known for world-class recreation, enriched culture, and vibrant community life, Clearwater offers the balanced lifestyle you have been looking for. Enjoy working in a single group practice with electronic medical records, a modern acute care facility, and a 21-bed residential care facility. Payment structure is fee-for-service plus multiple incentives: The Rural Physicians for British Columbia incentive provides a one-time incentive payment of \$100,000 for a 3-year return of service; recruitment incentive \$20,000; retention fee premium 21.14%; retention flat fee \$18,482.40; and relocation reimbursement. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-281a

FAMILY PHYSICIANS: BC – Kaslo; 1.5 FTE family physicians (prefer CCFP). Flexible arrangements for 0.5-1.0 FTE for a total of 2.0 FTE. Service contract base \$219,830 (prorated if less

than full time); recruitment incentive plus multiple rural incentives; fully IH managed facility with EMR; no overhead. Multidisciplinary community health centre offering ER and a variety of health services; 20-bed residential facility. Clinic/ER hours: weekday 9 am to 5 pm. For more information email physicianrecruitment@interiorhealth.ca or view the full posting online www.betterhere.ca –RM-325

FAMILY PHYSICIAN: BC – Lillooet. Five-physician, unopposed fee-for-service practice seeks sixth family physician with ER skills. Clinic group focus is on balance of work and lifestyle. Easy access to lower mainland, Whistler and interior of province. Call currently 1-in-5. Regular schedule includes one week off every fifth week. Full Rural Physician Recruitment and Retention benefits eligibility, including 38 days rural locum coverage for holidays. World-class wilderness at your doorstep for skiing, hiking, fishing, whitewater kayaking and mountain biking. Full service rural hospital with GP Surgeon and Anesthetist on staff. For more information email physicianrecruitment@interiorhealth.ca or view online at Web site www.betterhere.ca –RM-282b

FAMILY PHYSICIAN: BC – Logan Lake is situated in the Heart of the Highland Valley; a pristine natural environment of mountains, lakes and forests. Logan Lake is a growing, progressive and family-oriented community. This is a full service family practice with acute care clinic coverage. We have a turnkey operation with Wolf EMR and no startup costs for a new physician. Also, only 60 km away is a tertiary level hospital, Royal Inland Hospital, Kamloops. Remuneration is fee-for-service \$300-500,000+/-, plus rural retention incentives and on-call availability payment. For more information email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-317

FAMILY PHYSICIANS: BC – Merritt. Rolling hills, sparkling lakes and over 2,030 hours of sunshine every year make Merritt a haven for four-season outdoor recreation. We have a need for family physicians in their choice of clinic. Nicola Valley Hospital and Health Centre is a 24-hour Level 1 community hospital with a 24-hour Emergency Room. Also, only 86 km away is a tertiary level hospital, Royal Inland Hospital, Kamloops. Remuneration is fee-for-service \$250-\$450,000+, rural retention incentives and on-call availability payment. For more information email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-311

FAMILY PHYSICIANS: BC – Nelson. The city of Nelson is seeking family physicians for their vibrant, active community. There are both part-time and full-time opportunities available in well-established clinics. With supportive colleagues to share the responsibilities of in-hospital patients, clinics operate with EMR systems, along with very efficient and friendly staff. Clinic physicians are very supportive to new colleagues establishing their practice and providing coverage for hospital inpatients. Specialist support is available at the local hospital, including internal medicine, ophthalmology, neurology and pediatrics, with additional services regionally. There is also the additional option of doing emergency room work and obstetric care. Room for growth! With its friendly people and scenic location among rivers, mountains, and lakes, the area offers a wide range of year-round outdoor recreational opportunities. Remuneration can be discussed when determining which clinic is a good match for you, plus multiple incentives: recruitment \$15,000; retention fee premium 11.62%; with a retention flat fee \$12,107.96. For more information email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-293

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(LS mean change in SGRQ total score vs. placebo, -3.32; $p < 0.001$)^{1,2†}



NEW ONCE-DAILY ^{Pr} **SEEBRI* BREEZHALER*** DEMONSTRATED 5-MINUTE ONSET AND 24-HOUR BRONCHODILATION

- FEV₁ improvement shown 5 minutes after first dose (0.093 L vs. placebo, $p < 0.001$, serial spirometry)^{1,3‡}
- Significantly greater LS mean FEV₁ vs. placebo demonstrated at all time points over 24 hours (LS mean FEV₁ [L] vs. placebo after first dose, $p < 0.001$; time points were 5 min, 15 min, 30 min, 1 hr, 2 hrs, 3 hrs, 4 hrs, 6 hrs, 8 hrs, 10 hrs, 12 hrs, 23 hrs 15 min, 23 hrs 45 min)^{4§}

Indication & clinical use:

SEEBRI* BREEZHALER* is indicated as a long-term once-daily maintenance bronchodilator treatment in patients with chronic obstructive pulmonary disease (COPD), including chronic bronchitis and emphysema.

- ▶ Not indicated for the relief of an acute deterioration of COPD
- ▶ Can be used at the recommended dose in elderly patients 65 years of age and older
- ▶ Should not be used in patients under 18 years of age

Relevant warnings and precautions:

- ▶ Not indicated for treatment of acute episodes of bronchospasm
- ▶ Not indicated for treatment of acutely deteriorating COPD
- ▶ Worsening of narrow-angle glaucoma
- ▶ Worsening of urinary retention
- ▶ In severe renal impairment, use only if the expected benefit outweighs the potential risk
- ▶ Paradoxical bronchospasm

For more information:

Please consult the Product Monograph at www.novartis.ca/asknovartispharma/download.htm?res=seebri%20breezhaler_scrip_e.pdf&resTitleId=665 for important information relating to adverse events, drug interactions, and dosing information which have not been discussed in this piece. The Product Monograph is also available by calling the Medical Information department at 1-800-363-8883.

LAAC: long-acting anticholinergic; COPD: chronic obstructive pulmonary disease; LS: least square; SGRQ: St. George's Respiratory Questionnaire; measures health-related quality of life in symptoms, activities and impact on daily life; FEV₁: forced expiratory volume in 1 second.

† GLOW2: A 52-week, randomized, double-blind, placebo-controlled parallel-group study of 1,060 patients with COPD. Patients received either SEEBRI* BREEZHALER* (glycopyrronium 50 mcg o.d.; n=525), placebo (n=268), or open-label tiotropium (18 mcg o.d.; n=267) as an active control. Primary endpoint was 24-hour post-dose (trough) FEV₁ following 12 weeks of treatment.

‡ GLOW1: A 26-week, randomized, double-blind, placebo-controlled parallel-group study to assess the efficacy, safety and tolerability of once-daily SEEBRI* BREEZHALER* (50 mcg) in patients with COPD (n=550); placebo (n=267).

§ LS mean FEV₁ (L) after first dose: SEEBRI* BREEZHALER* (n=169) vs. placebo (n=83), respectively: 5 min: 1.39 vs. 1.30; 15 min: 1.43 vs. 1.28; 30 min: 1.44 vs. 1.28; 1 hr: 1.47 vs. 1.28; 2 hrs: 1.53 vs. 1.34; 3 hrs: 1.53 vs. 1.35; 4 hrs: 1.52 vs. 1.35; 6 hrs: 1.48 vs. 1.33; 8 hrs: 1.47 vs. 1.33; 10 hrs: 1.47 vs. 1.32; 12 hrs: 1.45 vs. 1.31; 23 hrs 15 min: 1.37 vs. 1.27; 23 hrs 45 min: 1.39 vs. 1.31; $p < 0.001$ for all time points.

References: 1. SEEBRI* BREEZHALER* Product Monograph. Novartis Pharmaceuticals Canada Inc., October 12, 2012. 2. Kerwin E, Hébert J, Gallagher N et al. Efficacy and safety of NVA237 versus placebo and tiotropium in patients with COPD: the GLOW2 study. *Eur Respir J* 2012;40:1106-14. 3. D'Urzo A, Ferguson GT, van Noord JA et al. Efficacy and safety of once-daily NVA237 in patients with moderate-to-severe COPD: the GLOW1 trial. *Respir Res* 2011;12:156(1-13). 4. Data on file. Novartis Pharmaceuticals Canada Inc. 5. Jones P. St. George's Respiratory Questionnaire Manual. Available from: www.healthstatus.sgul.ac.uk/SGRQ_download/SGRQ%20Manual%20June%202009.pdf. Accessed December 5, 2011.



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