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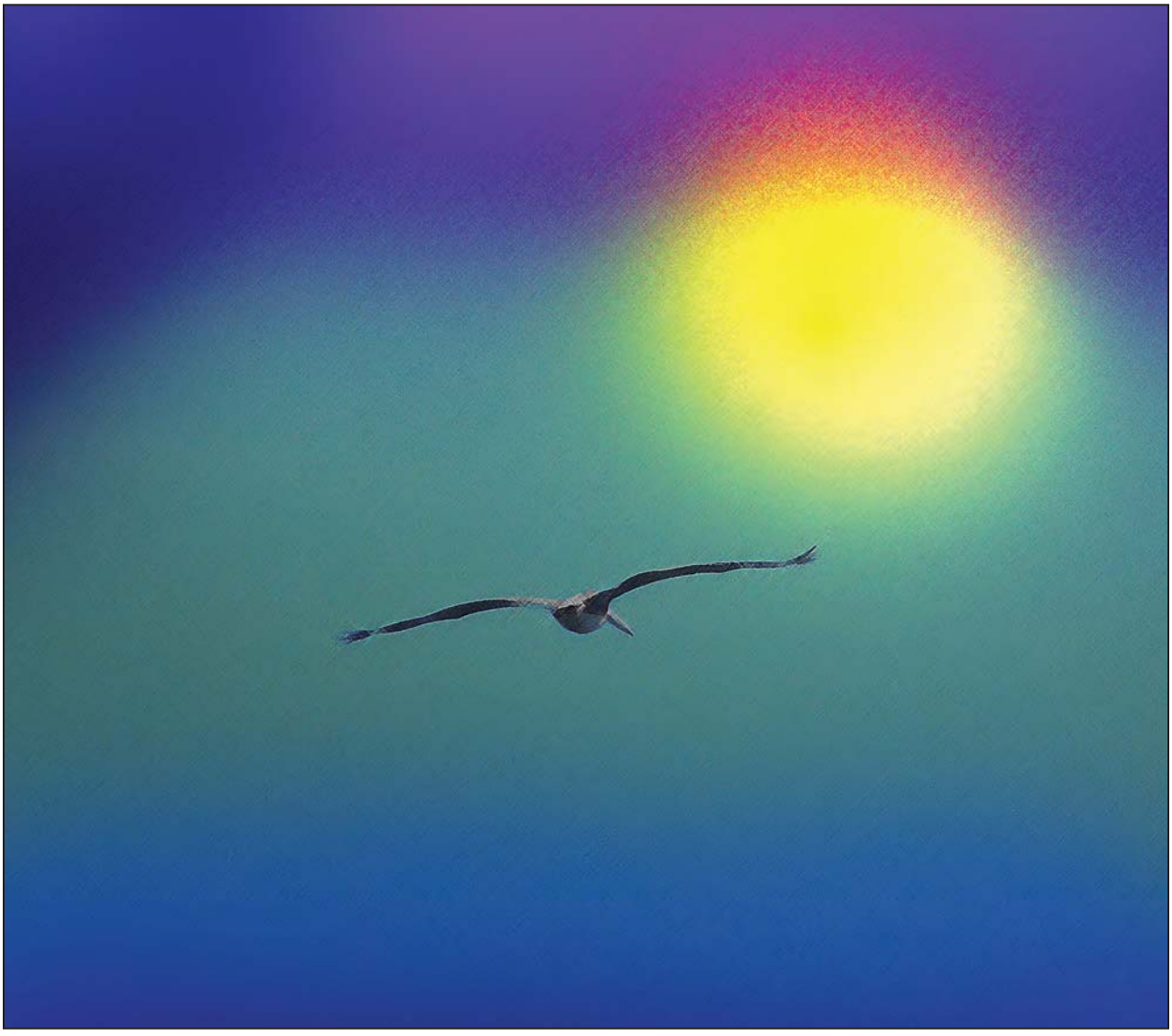

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IN THIS ISSUE / DANS CE NUMÉRO

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REVIEWS / RECENSIONS

The Flight of the Pelican
Photograph with digital enhancement in Photoshop, 26" × 25", by Kyle T. Amber
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"My desire was to combine the organic beauty of nature with the vibrant but sometimes inorganic colours seen in certain neo-impressionistic pieces. I use photography as a medium for capturing the composition's subject, with digital enhancement as a means of introducing complex colors and textures."

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How can you manage DKA without an ABG?

Peter Hutten-Czapski, MD
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When I first started in rural practice, I worked in a small 6-doctor hospital in northern Ontario. I had a patient with an acetylsalicylic acid overdose, and I remember ordering an arterial blood gas (ABG) analysis, only to be told that we didn't do them at the hospital. How could this be?

In the teaching hospital where I had trained the year before, the ABG analyzer ran 24 hours a day, and we were always running samples to it. How could I be expected to properly manage such a case without access to ABG?

I was all set to put forward a petition to have the hospital purchase a blood gas analyzer. Then I discussed the case with my colleagues, who told me that "you young types always say that we need blood gasses to manage, until you have managed without ABGs for a few months."

A few months later I realized that, as predicted by my colleagues, I could manage. This was true not only for acetylsalicylic acid toxicity, but also for diabetic ketoacidosis (DKA), asthma and a myriad of other conditions, now done without the comfort of an ABG determination.

Perhaps experience taught me to pay better attention to the respiratory rate, urinary ketones or the gestalt of how the patient looked, and I became a better doctor for it. That's what I hope. What I fear is that the number needed to make a difference for blood gasses was larger than my experience, and that I became a worse doctor by merely accepting the opinion of my colleagues that ABGs were not needed.

I have subsequently worked in hospitals that had no on-site laboratory and had a visiting radiology technician 1 day a week, that still did obstetrics and some surgery, and I've worked in a hospital that, temporarily, had it all on site around the clock. I now have no question that rural doctors can function very well with vastly different levels of supporting diagnostic tools and other health professionals. Having said that, I admit that I am not good at taking radiographs myself and am glad to have the technician do it.

What are the inadequacies of personnel or equipment that actually limit patient care, and which resources are merely nice to have? Are we limiting students and residents by teaching them to function without these big-city staples, or are we expanding their knowledge and abilities?

The disturbing thing is that 20 years later, there is still a paucity, if not outright lack, of evidence of the clinical advantage (or absence thereof) of common medical tests, especially in the rural environment.

Comment traiter une ACD sans GSA ?

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Lorsque j'ai commencé à pratiquer en milieu rural, je travaillais dans un petit hôpital de 6 médecins, dans le nord de l'Ontario. J'avais un patient qui avait une surdose d'acide acétylsalicylique et je me rappelle avoir prescrit une analyse des gaz sanguins artériels (GSA) simplement pour me faire dire qu'on n'en faisait pas à l'hôpital. Comment était-ce possible ?

À l'hôpital d'enseignement où j'étais en formation l'année précédente, l'analyseur GSA fonctionnait 24 heures par jour et nous y soumettions constamment des échantillons. Comment pouvait-on s'attendre à ce que je traite bien un tel cas sans analyse des GSA ?

J'étais tout prêt à présenter une pétition pour que l'hôpital achète un analyseur de gaz sanguins. J'ai ensuite discuté du cas avec mes collègues qui m'ont dit « vous les jeunes, vous passez votre temps à dire que nous avons besoin des gaz sanguins pour nous débrouiller jusqu'à ce que vous vous soyez débrouillés sans GSA pendant quelques mois ».

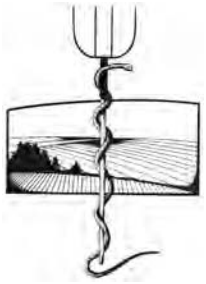
Quelques mois plus tard, je me suis rendu compte que, comme mes collègues l'avaient prédit, je pouvais me débrouiller. C'était vrai non seulement dans le cas de la toxicité de l'acide acétylsalicylique, mais aussi dans celui de l'acidocétose diabétique (ACD), de l'asthme et d'une multitude d'autres problèmes que l'on traite maintenant sans le réconfort qu'offre une analyse des GSA.

L'expérience m'a peut-être appris à accorder davantage d'attention à la fréquence respiratoire, aux cétones urinaires ou à l'ensemble de l'apparence du patient et je suis devenu un meilleur médecin. C'est ce que j'espère. Ce que je crains, c'est que le nombre nécessaire pour faire une différence dans le cas des gaz sanguins ait été plus grand que mon expérience et que je suis devenu un plus mauvais médecin simplement en acceptant l'opinion de mes collègues qui affirmaient que les GSA n'étaient pas nécessaires.

J'ai travaillé par la suite dans des hôpitaux qui n'avaient pas de laboratoire sur place et où un technicien en radiologie venait une journée par semaine, qui avait toujours un service d'obstétrique et pratiquait certaines interventions chirurgicales. J'ai travaillé aussi dans un hôpital qui avait temporairement tout sur place 24 heures sur 24. Je suis maintenant certain que les médecins ruraux peuvent très bien fonctionner en ayant recours à un nombre très différent d'outils diagnostiques et avec l'appui d'autres professionnels de la santé. Cela dit, j'admets que je ne suis pas très bon lorsqu'il s'agit de prendre des radiographies moi-même et que je me réjouis de laisser le technicien s'en charger.

Quelles sont les lacunes du personnel ou du matériel qui limitent actuellement le soin des patients et quelles ressources il est simplement bon d'avoir ? Limitons-nous les étudiants et les médecins résidents en leur apprenant à fonctionner sans ces nécessités de base de la grande ville ou élargissons-nous leurs connaissances et leurs aptitudes ?

Ce qui est troublant, c'est que 20 ans plus tard, il y a toujours peu, voire même pas du tout, de données probantes qui démontrent les avantages cliniques (ou leur absence) des examens médicaux courants, particulièrement en milieu rural.



President's message. *Quo vadis?**

Braam de Klerk, CM, MB ChB
Inuvik, NT

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With the end of my first year as president of the SRPC approaching, it is time to take stock. During this year, I've had the opportunity to speak to the leadership and members of the SRPC and many other medical organizations while attending conferences such as the WONCA World Rural Health Conference, and meetings of the Canadian Medical Forum and the GP Forum. At these meetings, I often meet people who have very specific ideas about what our mandate should be. *Quo vadis*, SRPC?

Our grassroots origin is well known, and our original mandate is clearly formulated, but how do we implement our goals in 2013 and beyond? What should our next steps be in keeping rural and remote Canada populated by physicians (general practitioners and specialists) who can do the job well, have healthy lives and not burn out?

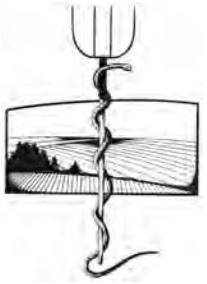
Should we concentrate on doing the things we do really well, or should we be more ambitious? We can continue to organize the best rural conference in the world every year, provide support for rural physicians through RuralMed, do a lot of very valuable liaison and committee work, and peck away at a few small projects, but I think we can, and should, have more impact on the selection and training of rural physicians. Countries such as Britain, Australia and South Africa have taken massive steps in promoting generalism (e.g., with longer residency training) to achieve these goals. Are we ready to attempt something similar? How should we proceed?

Whatever we decide, as a society, will have many implications for us as a smallish grassroots organization with a shoestring budget and a tiny (but awesome) administrative staff. All of our members have very full day (and night) jobs, and to ask them for a sizeable time commitment is not realistic. We will have to find, appoint and manage staff to do a lot of the work. That will have financial implications. Other medical organizations have CEOs, health specialists and consultants. We have none of these; neither do we have the financial resources of other medical organizations.

I propose that we talk among ourselves and with other organizations about the future, as well as poll our members officially by mail, to reach a few consensus goals. It will be an enormous undertaking for us to start a project such as this, raise funds and then follow through. I think we can and should do it. It is our raison d'être.

This president's message is intended to be provocative and to stimulate thought and discussion, so start thinking and talking!

*Where are you going?



Message du président. *Quo vadis ?**

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Inuvik (Nunavut)

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Comme ma première année à la présidence de la SMRC tire à sa fin, le moment est venu de faire le point. Au cours de l'année, j'ai eu la chance de parler aux dirigeants et aux membres de la SMRC et à beaucoup d'autres organisations médicales tout en assistant à des conférences comme la Conférence mondiale sur la santé dans le monde de la WONCA, ainsi qu'à des réunions du Forum médical canadien et du Forum des OP. Au cours de ces réunions, je rencontre souvent des gens qui ont des idées très précises au sujet de ce que devrait être notre mandat. *Quo vadis*, SMRC ?

Notre origine locale est bien connue et notre mandat initial est clair. Comment toutefois atteindre nos buts en 2013 et par la suite ? Quelles devraient être nos prochaines étapes pour que les régions rurales et éloignées du Canada gardent des médecins (omnipraticiens et spécialistes) capables de bien faire le travail et de mener une vie saine, sans s'épuiser ?

Faudrait il nous concentrer sur ce que nous faisons vraiment bien ou devrions-nous être plus ambitieux ? Nous pouvons continuer d'organiser la meilleure conférence sur la médecine rurale au monde chaque année, appuyer les médecins ruraux par RuralMed, faire beaucoup de travail très précieux de liaison et en comité et essayer de réaliser quelques projets modestes, mais je pense que nous pouvons et devrions avoir un impact plus important sur la sélection et la formation des médecins ruraux. Des pays comme la Grande-Bretagne, l'Australie et l'Afrique du Sud ont pris des mesures massives pour promouvoir le généralisme (p. ex., en prolongeant la formation en résidence) afin d'y parvenir. Sommes-nous prêts à essayer de les imiter ? Comment procéder ?

Quoi que nous décidions comme société, il y aura de nombreuses répercussions pour nous comme modeste organisation locale qui a un budget restreint et un personnel administratif minuscule (mais exceptionnel). Tous nos membres ont un travail de jour (et de nuit) très accaparant et il n'est pas réaliste de leur demander d'engager beaucoup de temps. Nous devrons trouver, nommer et gérer du personnel pour faire une bonne partie du travail, ce qui aura des répercussions financières. D'autres organisations médicales ont des chefs de la direction, des spécialistes en santé et des consultants. Nous n'en avons pas et nous n'avons pas les moyens financiers d'autres organisations médicales.

Je propose de discuter de l'avenir entre nous et avec d'autres organisations et de sonder nos membres officiellement par courrier afin de dégager quelques buts par consensus. Lancer un tel projet, réunir des fonds et y donner suite, ce sera une tâche d'envergure pour nous. Nous pouvons et devons le faire. C'est notre raison d'être.

Ce mot du président veut provoquer et stimuler la réflexion et la discussion, alors commencez à réfléchir et à discuter !

*Où allez-vous ?

ORIGINAL ARTICLE
ARTICLE ORIGINAL

Bedside ultrasonography performed by family physicians in outpatient medical offices in Whitehorse, Yukon

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This article has been peer reviewed.

Introduction: We sought to determine the current practices and opinions of family physicians in Whitehorse, YT, regarding bedside ultrasonography performed by family physicians in outpatient medical offices.
Methods: A paper survey was administered to Whitehorse family physicians. Only those who had worked for longer than 6 months in a community outpatient clinic in Whitehorse were invited to participate.
Results: The response rate of our survey was 44%. None of the respondents reported currently using bedside ultrasonography in their outpatient medical offices; however, 78% reported having training in ultrasonography and using it in another setting. Of the respondents, 94% stated they would consider using bedside ultrasonography in their outpatient medical office. Economics was the biggest reported barrier in the use of bedside ultrasonography in outpatient medical offices.
Conclusion: A wealth of experience in bedside ultrasonography already exists among family physicians in Whitehorse, and an overwhelming majority of physicians are ready to embrace its use in outpatient offices. However, the skills and willingness of family physicians have not translated into the use of bedside ultrasonography in outpatient medical offices.

Introduction : Nous avons voulu connaître les pratiques et les opinions courantes des médecins de famille de Whitehorse, au Yukon, en ce qui concerne leur utilisation de l'échographie dans des cliniques médicales ambulatoires.
Méthodes : Un questionnaire sur papier a été administré à des médecins de famille de Whitehorse. Seulement ceux qui avaient travaillé pendant plus de 6 mois dans une clinique ambulatoire communautaire de Whitehorse ont été invités à y répondre.
Résultats : Le taux de réponse à notre sondage a été de 44 %. Aucun des répondants n'a dit utiliser actuellement l'échographie à la clinique ambulatoire où il exerce. Toutefois, 78 % ont dit avoir suivi une formation en échographie et l'utiliser dans d'autres contextes. Parmi les répondants, 94 % ont affirmé qu'ils envisageraient utiliser l'échographie dans leur clinique médicale ambulatoire. Le facteur économique a été le plus important obstacle mentionné en ce qui concerne l'utilisation de l'échographie dans les cliniques médicales ambulatoires.
Conclusion : Les médecins de famille de Whitehorse ont une très bonne expérience de l'échographie et la grande majorité d'entre eux sont prêts à l'utiliser dans leurs cliniques ambulatoires. Toutefois, ces compétences et cette volonté ne se sont pas traduites par une utilisation concrète de l'échographie chez les patients des cliniques médicales ambulatoires.

INTRODUCTION

Bedside ultrasonography has been described as the "stethoscope of the future."[1] Many rural family physicians have been using ultrasonography in emergency departments and hospital obstetric wards for years, and the use of bedside ultrasonography has long been a topic of discussion among family physicians.[2,3] However, the practice of bedside ultrasonography by family

physicians in outpatient medical offices has been less common,[4,5] and, to our knowledge, there are currently no published data examining this practice in Canada.

This article presents the results of a survey of family physicians in Whitehorse, YT. Our goal was to determine the current practices and opinions of family physicians regarding the performance of bedside ultrasonography in outpatient medical offices.

METHODS

Background

Whitehorse (population 26 304) is the capital and the medical referral centre for the Yukon Territory (population 34 667). Although Whitehorse is not a rural location, it shares many characteristics with other Canadian rural locations because of its distance from major tertiary medical centres such as Vancouver, BC, and Calgary, Alta. At present, Whitehorse does not have a radiologist on site. All ultrasonography studies are performed by local ultrasound technicians and are interpreted remotely by a radiologist in Vancouver or Calgary. There is no established hospitalist program, and most family physicians provide care for their own patients who are admitted to the hospital. The emergency department is predominantly staffed by physicians who also work in the community outpatient medical offices.

The survey

A paper survey consisting of 8 questions (Appendix 1) was distributed to Whitehorse family physicians at 2 Yukon Medical Association events where most of the family physicians practising in Whitehorse were expected to attend. Only family physicians who had worked for longer than 6 months in a community outpatient clinic in Whitehorse were invited to participate. The physicians were asked to complete the survey only once. The University of Calgary Conjoint Health Research Ethics Board, with the consultation of the Yukon Medical Association, approved the survey.

RESULTS

At the time of the survey's distribution, 41 family physicians were practising in Whitehorse. We collected 21 completed surveys from the 2 events. Three surveys were excluded because respondents did not meet the inclusion criteria. The response rate of our survey was 44% (18/41).

Ten (56%) of the respondents had practised family medicine for longer than 15 years, 4 (22%) for less than 5 years and 4 (22%) for between 5 and 15 years. None of the respondents used bedside ultrasonography in their outpatient medical setting at the time of the survey. However, 1 respondent had used bedside ultrasonography in an outpatient medical office in the past. Fourteen respondents (78%) had previous training in ultrasonography, with most having received the training through a continuing medical education course such as the Emergency Department Echo course. Although no respondent used bedside ultrasonography in their outpatient medical offices, they did use it in other settings. The specific areas in which bedside ultrasonography was being used are summarized in Figure 1. Fourteen (78%) of the respondents thought the results of bedside ultrasonography would change their clinical decision, whereas 3 (17%) respondents were not sure. One respondent stated "not applicable" for the question. Thirteen (72%) respondents thought the use of bedside ultrasonography in an outpatient medical office would improve patient care, and 5 (28%) respondents were not sure. Seventeen (94%) respondents would consider using bedside ultrasonography in the outpatient medical office if training and equipment opportunities arose. The respondents rated economics (i.e., equipment cost and remuneration) as the biggest barrier to the use of bedside ultrasonography in the outpatient medical office, followed by confidence, reliability and skill maintenance.

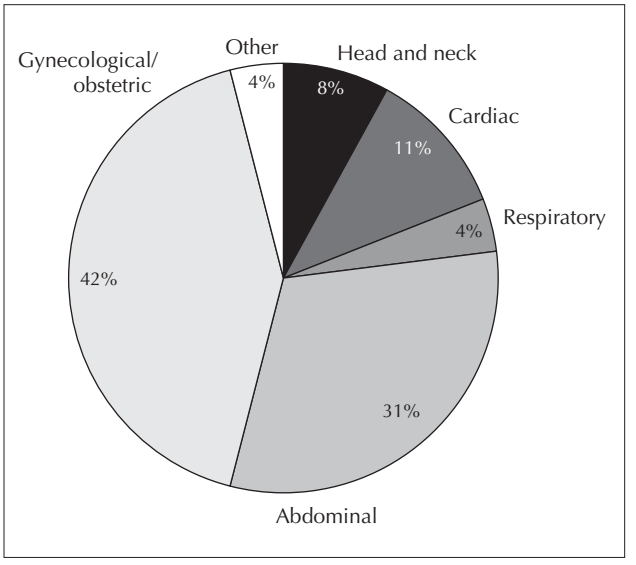

Fig. 1. Areas of clinical application for which family physicians reported using bedside ultrasonography.

DISCUSSION

Although access to ultrasonography is not an issue in Whitehorse because of the availability of ultrasound technicians and diagnostic imaging support, there may be advantages to family physicians performing bedside ultrasonography. Ultrasound technicians are a scarce resource in many remote and rural locations because of the difficulty of recruitment and retention. Although the best way to manage this scarce resource is appropriate referral, bedside ultrasonography performed by family physicians may lessen the workload of ultrasound technicians. Bedside ultrasonography performed by family physicians will most often be focused in scope and used to answer a specific clinical question (e.g., is there an intrauterine pregnancy?). With this extra and instantaneous information, family physicians may then be in a better position to decide whether the patient requires a referral for ultrasonography.

Because Whitehorse is the medical referral centre for the entire Yukon Territory, many patients must travel significant distances for their medical appointments. It would certainly benefit the patient if the required information could be obtained by bedside ultrasonography in the outpatient medical office during the same appointment, instead of the patient needing to return to Whitehorse several times for the ultrasonography appointment and to obtain the result. Among patients in whom follow-up and adherence is poor, the use of bedside ultrasonography may facilitate timely diagnosis and prevent the patient from being lost to follow-up.

In rural communities where formal ultrasonography is not available, focused bedside ultrasonography could enhance clinical decision-making regarding patient transfer and management. One example would be a woman who presents with mild pelvic pain and is found to be pregnant, incidentally. If the patient were at very low risk for heterotopic pregnancy and bedside ultrasonography revealed a normal intrauterine pregnancy, the clinician would probably not urgently transfer the patient based on a presumptive diagnosis of ectopic pregnancy. On the other hand, bedside ultrasonography that showed a distended appendix with fat-stranding in the appropriate clinical context would help the clinician make the referral quickly and appropriately. Since the 1980s, the use of bedside ultrasonography by family physicians in gynecology and maternity care has been investigated. Ultrasonography performed by family physicians was deemed to accurately predict delivery date and diagnose fetal anomaly in several studies.[6–9] Many potential uses of bedside ultrasonography in outpatient medical offices have been investigated, including screening for abdominal aortic aneurysm,[10] musculoskeletal diagnosis and procedural guidance,[11] and focused echocardiography.[12–14] However, there is no consensus on how family physicians can safely use bedside ultrasonography in outpatient medical offices, and further research is needed.

Ultrasonography performed by family physicians was found to be cost-effective in studies in the United Kingdom and the United States.[3,15] In Canada, physician remuneration differs depending on the jurisdiction. Whereas some may argue that the use of bedside ultrasonography is an elaborate extension of the bedside stethoscope physical examination, others may insist that bedside ultrasonography is an appropriate office-based investigation (similar to electrocardiography or 24-hour blood pressure monitor), where fee-for-service physicians could bill for interpretation and a technical fee. This may be a discussion physicians need to have among themselves and with the health authorities.

Limitations

Limitations of this survey include the moderate response rate, the small sample and the small geographical area. Despite sharing some similarities with rural communities, Whitehorse is not a rural community, and its physicians' experiences may not be generalizable to rural settings. Future research on this topic may survey more rural physicians in a greater geographical area.

CONCLUSION

Although rural family physicians have been using bedside ultrasonography in emergency and inpatient wards for many years, its use in the outpatient medical office is limited. From our survey, we found that a wealth of experience in bedside ultrasonography already exists among family physicians in Whitehorse. An overwhelming majority are ready to embrace its use in outpatient medical offices. Most of the physicians surveyed believe that bedside ultrasonography would improve patient care. However, the skills and willingness of family physicians have not translated into the use of bedside ultrasonography in outpatient medical offices. The barriers identified are economic (i.e., equipment cost and remuneration) and training issues (i.e., confidence,

reliability and skill maintenance). Although the results of this survey may not be generalizable to rural and remote communities, they serve to initiate dialogue on future research and discussion on the role of bedside ultrasonography in outpatient family medicine clinics.

Competing interests: None declared.

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Appendix 1. Survey distributed to family physicians in Whitehorse, Yukon

Please circle all the appropriate answers.

1. Do you use bedside ultrasonography in your outpatient community clinic (i.e., nonemergency setting such as family practice clinic, walk-in clinic, nursing stations)?
   Yes No
2. Do you have any ultrasonography training?
   Continuing education course (e.g., EDE course) Official diploma Component of residency/prior training
   Ad-hoc preceptor/mentor Self-taught Other, please specify
   None
3. How do you use bedside ultrasonography in your outpatient community clinic?
   Procedure guidance Diagnostic Both Other, please specify
4. What area of clinical application do you use bedside ultrasonography for?
   Head and neck Cardiac Respiratory Abdominal Gynecological Obstetric
   Other, please specify
5. Do you think bedside ultrasonography will change your clinical decision?
   Yes No Not sure
6. How do you think bedside ultrasonography in your outpatient community clinic will affect patient care?
   Improve No change Worsen Not sure
7. If training and equipment opportunities arise, would you consider using bedside ultrasonography in your outpatient clinic?
   Yes No
8. What do you think are the barriers to general practitioners using bedside ultrasonography in outpatient clinics?
   Training availability Economics (equipment cost/remuneration) Lack of evidence Other, please specify

EDE = Emergency Department Echo.

Original Article
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Perceived preparedness for family practice: Does rural background matter?

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Introduction: Rural background and the ability to adjust to rural practice are strong predictors of recruitment and retention of rural physicians. The degree to which rural background and being prepared for practice interrelate may provide insight into efforts aimed at increasing the supply of rural physicians. The purpose of this study was to examine the association between family medicine graduates' rural or urban background and their self-reported preparedness for practice.
Methods: This was a retrospective, cross-sectional survey of family medicine graduates who completed the 2-year family medicine residency program at the University of Alberta or University of Calgary from 2001 to 2005. Self-rated preparedness was examined on a 4-point Likert scale for 18 elements of clinical family practice, 8 interdisciplinary issues, 10 practice management issues and 8 nonclinical aspects of family practice. Rural background was defined as having been brought up mainly in a rural community (population < 25 000), and urban background was defined as having been brought up mainly in an urban community (population ≥ 25 000).
Results: A significantly greater proportion of rural- than urban-background graduates felt prepared for 3 nonclinical aspects of rural practice: time demands of rural practice (95.0% v. 79.3%, $p = 0.03$), understanding rural culture (92.5% v. 70.2%, $p = 0.005$) and small-community living (92.5% v. 70.2%, $p = 0.003$).
Conclusion: Rural background was associated with physicians feeling prepared for the nonclinical and cultural aspects of rural family practice, which suggests that focused rural exposure facilitates an understanding of rural culture. Urban-background physicians were reportedly less prepared for the nonclinical aspects of rural practice. Increased exposure of urban-background residents to the cultural aspects of rural practice may improve recruitment and retention of rural family physicians.

Introduction : Des origines rurales et la capacité de s'adapter à une pratique en milieu rural sont de solides prédicteurs du recrutement et de la rétention des médecins en milieu rural. Le degré d'interconnexion entre des antécédents ruraux et une préparation à la pratique pourrait appuyer les efforts visant à faire augmenter les effectifs médicaux en milieu rural. Le but de cette étude était d'analyser le lien entre les origines rurales ou urbaines des diplômés en médecine familiale et leur perception de leur degré de préparation à la pratique.
Méthodes : Il s'agit d'un sondage rétrospectif transversal mené auprès de diplômés en médecine familiale qui ont terminé un programme de résidence de 2 ans en médecine familiale à l'Université de l'Alberta ou à l'Université de Calgary entre 2001 et 2005. On a examiné le degré de préparation autoperçu au moyen d'une échelle de Likert en 4 points appliquée à 18 éléments de la pratique en médecine familiale, 8 questions interdisciplinaires, 10 questions de gestion de la pratique et 8 aspects non cliniques de la pratique. Les origines rurales se définissaient par le fait d'avoir été élevé principalement dans une communauté rurale (population < 25 000) et les origines urbaines se définissaient par le fait d'avoir été élevé principalement dans une communauté urbaine (population ≥ 25 000).
Résultats : Une proportion significativement plus grande de diplômés d'origine rurale

plutôt que d'origine urbaine se sont dit préparés pour 3 aspects non cliniques de la pratique en milieu rural : contraintes de temps associées à la pratique en milieu rural (95 % c. 79,3 %, p = 0,03), compréhension de la mentalité rurale (92,5 % c. 70,2 %, p = 0,005) et vie dans une petite communauté (92,5 % c. 70,2 %, p = 0,003).

Conclusion : On a établi un lien entre les origines rurales et le fait que les médecins se sentent préparés pour les aspects non cliniques et culturels de la pratique de la médecine familiale en milieu rural, ce qui donne à penser qu'une exposition à la ruralité facilite la compréhension de cette mentalité. Les médecins d'origine urbaine étaient, selon les rapports, moins préparés aux aspects non cliniques de la pratique en milieu rural. Exposer davantage les résidents d'origine urbaine aux aspects culturels de la pratique en milieu rural pourrait améliorer le recrutement et la fidélisation des médecins de famille en milieu rural.

INTRODUCTION

The shortage of physicians in rural areas is a widespread problem. An understanding of factors that affect recruitment and retention of family physicians into rural practice is important to rural medicine and rural communities. Rural background[1–6] and the ability to adjust to rural practice[7] are strong predictors of recruitment and retention of rural physicians. Whereas rural background is a key determinant of practice location in a rural area,[1–6] little is known about why physicians with a rural background are more likely to practise in rural areas. Medical students from a rural background appear to have a more positive attitude toward health services in rural areas.[8] Physicians who have family members living in rural areas or a spouse from a rural location,[5,9] or who feel prepared to be a rural community leader[6] are also more likely to practise in a rural location.

Retention of physicians in rural practice is a challenge. Physicians' ability to adjust to rural practice and rural life plays a key role in retention. Primary care physicians who are prepared for living in a rural community tend to stay longer in rural practice.[7] Being prepared for rural life entails not only being prepared for the medical issues that arise in rural practice, but also being prepared for small-town living in the social sense. It is unknown what impact, if any, rural background has on being prepared for practice. To our knowledge, the published literature is lacking in studies examining the association between rural or urban background and preparedness for practice.

Preparedness for practice has many dimensions, including readiness for both clinical and nonclinical aspects of practice. Rural clinical practice differs from urban clinical practice. Although an increasingly broad spectrum of urban-based clinical opportunities exists, in general, urban family physicians tend to provide more office-based practice, whereas those in rural areas provide more in-hospital care.[10,11] Further, more family physicians in rural areas perform procedures than those in urban practice.[12] Nonclinical aspects of practice are also distinct between rural and urban areas. Being prepared for rural practice entails being skilled at dealing with the professional and personal opportunities and challenges of life as a physician in a rural community. Given that "the most intensive 'rural experience' is to have grown up in a rural environment,"[13] intuitively, physicians with a rural background would be expected to be better prepared for the nonclinical aspects of rural practice.

There is no unanimity on the definition of rural location or rural background. Frequently used definitions of rural background have included either having grown up in a rural area, having grown up in a town with a population of less than 10 000, having graduated from a high school located in a town with less than 10 000 residents, being born in a rural area or self-declared rural residence.[14] Despite differences in the definition of rural background, the effect of having a rural background on future rural practice is purported to exist.[15] A sense of rural background has been found to develop at about 5 years of upbringing in a rural area; intent for a rural career is high among people with more than 8 years of rural upbringing.[16]

The purpose of this exploratory study was to examine the association between family medicine graduates' rural or urban background and their self-reported preparedness for the clinical and nonclinical dimensions of medical practice. A positive relation between rural background and preparedness for rural practice would provide additional support for recruiting students from rural areas into medicine, as well as the importance of exposing medical students and residents to rural life in the ongoing effort to recruit family physicians to rural areas.

METHODS

Study design, sample and procedures

This was a retrospective, cross-sectional, self-administered, mailed survey of 377 graduates who completed the family medicine residency training program at the University of Alberta or University of Calgary from 2001 to 2005. Each university conducted the mail-out to its own graduates. Graduates' contact information was obtained from the Alberta Medical Directory of the College of Physicians and Surgeons of Alberta or the 2006 Canadian Medical Directory. The survey package consisted of a study information letter, questionnaire and return postage-paid envelope. Nonresponders were initially mailed a reminder notice and were subsequently contacted up to 5 times by telephone, fax and/or email. Participants were also given the option of completing a Web-based version of the questionnaire. The administration of the survey began Nov. 1, 2006, and responses were accepted until May 31, 2007. The study was approved by the Health Research Ethics Board Health Panel, University of Alberta, and by the Conjoint Health Research Ethics Board, University of Calgary.

Setting

Family medicine residency training at the University of Alberta and University of Calgary is 2 years in duration. Medical degree programs across Canada, including that of the University of Alberta, are typically 4 years in duration; the University of Calgary has an intensive 3-year program. The postgraduate residency programs at the University of Alberta and University of Calgary have similar curricula, and both are fully accredited by The College of Family Physicians of Canada. Both programs include a minimum of 8 weeks of clinical training in rural family medicine. Both programs include elective opportunities that may be undertaken in rural or remote locations.

Questionnaire survey

The overall purpose of the survey was to examine graduates' educational experiences during residency and practice patterns after completion of residency. The survey included questions related to various dimensions of medical education, career history and residency program evaluation, including preparedness for practice. Graduates were asked to indicate the degree to which the program prepared them for 18 elements related to clinical family practice, 8 interdisciplinary practice issues, 10 practice management issues and 8 nonclinical aspects of family practice. Preparedness for practice was self-rated on a 4-point Likert scale (1 = very prepared, 2 = somewhat prepared, 3 = somewhat unprepared, 4 = very unprepared). Preparedness was not explicitly defined, but was rather assessed as respondent perceptions.

The survey included a question on rural background that asked, "Prior to your 18th birthday, what type of community did you live in?" The response options were as follows: small rural community (< 10 000 population), medium rural community (10 000–24 999 population), urban community (25 000–49 999 population), regional community (50 000–200 000 population) and metropolitan centre (> 200 000 population). Respondents were asked to indicate the length of time they lived in each of the community types.

Data analysis

The length of time lived in a community before respondents' 18th birthday was used to categorize graduates into 2 groups: rural or urban background. The number of years lived in rural areas was calculated as the sum of the number of years lived in small or medium rural communities. Similarly, the number of years lived in urban areas was calculated as the sum of the number of years lived in urban, regional or metropolitan communities. A graduate was defined as having a rural background (i.e., brought up mainly in rural community with a population of < 25 000) if the number of rural years were greater than the number of urban years. Similarly, if the number of urban years was greater than the number of rural years, the graduate was classified as having an urban background (i.e., brought up mainly in an urban community with a population of ≥ 25 000). Graduates who spent an equal number of years in rural and urban areas were excluded from the analysis. Also excluded were respondents for whom a classification of urban or rural background could not be determined owing to missing data. Preparedness for practice was categorized as prepared (somewhat or very prepared) or unprepared (somewhat or very unprepared).

We analyzed study data descriptively using SPSS 17 for Windows. The χ^2, Fisher exact and Student t tests were employed, as appropriate. We estimated effect size using phi (0.10 = small, 0.30 = medium, 0.50 = large). We used an α level of 0.05 to test for statistical significance.

RESULTS

The survey response rate was 64.2% (242/377). A total of 171 (70.7%) respondents provided sufficient data on the length of time that they had lived in a community before their 18th birthday for them to be classified as having a rural or urban background. As such, 40 (23.4%) were classified as having a rural background and 131 (76.6%) as having an urban background. The mean age of the 171 graduates was 34.2 years, 56.1% were female and 78.9% were married (Table 1). There was no significant difference between respondents of rural or urban background in age, sex, marital status or years since completion of the residency program. Rural-background graduates had spent a mean of 16.1 (median 18) years in a rural community, and urban-background graduates had spent a mean of 16.9 (median 18) years in an urban community. Although 30.0% of rural- and 17.2% of urban-background graduates were practising in a rural location at the time of the survey, the association between practice location and rural or urban background did not reach statistical significance.

Preparedness for clinical practice

One statistically significant difference was observed between rural- and urban-background graduates in preparedness for clinical practice: more graduates from a rural (60%) than urban (39.5%) background felt prepared for practice management (p = 0.02, phi = 0.18). Most graduates (range 75%–100%) felt prepared for the vast majority of elements related to clinical family practice (Fig. 1). Graduates felt less prepared for family practice research and practice quality improvement.

Preparedness for interdisciplinary issues

Respondents' reported preparedness for elements of interdisciplinary issues was relatively high, except for preparedness for health care reform. A significantly greater proportion of graduates from a rural (60.0%) than urban (39.7%) background felt prepared for dealing with issues related to health care reform (p = 0.02, phi = 0.17; Fig. 2).

Preparedness for practice management

Reported preparedness for issues related to practice management overall was quite low, except for clinical records. Significantly more rural- than urban-background graduates felt prepared for issues related to establishing a practice (55.0% v. 35.9%, p = 0.03, phi = 0.17), and financial management and business records (40.0% v. 18.9%, p = 0.006, phi = 0.21; Fig. 3).

Preparedness for nonclinical aspects of rural practice

Although reported preparedness for nonclinical aspects of rural practice varied, a significantly higher proportion of rural- than urban-background gradu-

Table 1. Characteristics of respondents by rural or urban background

Characteristic	No. (%) of respondents		
	Rural, n = 40	Urban, n = 131	Total, n = 171
Sex			
Male	16 (40.0)	59 (45.0)	75 (43.9)
Female	24 (60.0)	72 (55.0)	96 (56.1)
Age, yr			
25–29	4 (10.0)	13 (9.9)	17 (9.9)
30–34	24 (60.0)	74 (56.5)	98 (57.3)
35–39	7 (17.5)	19 (14.5)	26 (15.2)
40–44	2 (5.0)	14 (10.7)	16 (9.4)
45–49	1 (2.5)	7 (5.3)	8 (4.7)
≥ 50	1 (2.5)	1 (0.8)	2 (1.2)
Not recorded	1 (2.5)	3 (2.3)	4 (2.3)
Marital status			
Single, no children	5 (12.5)	30 (22.9)	35 (20.5)
Married or common law, no children	13 (32.5)	29 (22.1)	42 (24.6)
Married with children	22 (55.0)	71 (54.2)	93 (54.4)
Not recorded	0 (0.0)	1 (0.8)	1 (0.6)

ates felt prepared for 3 nonclinical aspects of rural practice: time demands of rural practice (95.0% v. 79.3%, $p = 0.02$, phi = 0.18), understanding rural culture (92.5% v. 70.2%, $p = 0.004$, phi = 0.22) and small-community living (92.5% v. 70.2%, $p = 0.004$, phi = 0.22; Fig. 4). There were no statistically significant differences in being prepared to be a community leader, handling a "fishbowl" lifestyle and choosing a suitable community. Subanalysis of responses from urban-background graduates revealed that a significantly greater proportion of those who did a rural family medicine rotation ($n = 109$) versus those who did not do a rural rotation ($n = 15$) during residency felt prepared for the time demands of rural practice (83.0% v. 53.3%, $p = 0.02$), understanding rural culture (74.3% v. 40.0%, $p = 0.01$) and small-community living (74.3% v. 40.0%, $p = 0.01$).

Preparedness and practice location

Overall analysis of reported preparedness by practice location revealed that a significantly greater proportion of respondents who were in rural practice, compared with those who were in urban practice, felt prepared for rural practice ($p = 0.001$) and for small-community living ($p = 0.02$).

DISCUSSION

The new knowledge gleaned from this study is that the rural background of family medicine graduates is associated with self-reported preparedness for the nonclinical aspects of rural family practice, particularly the time demands of rural practice, understanding rural culture and small-community living.

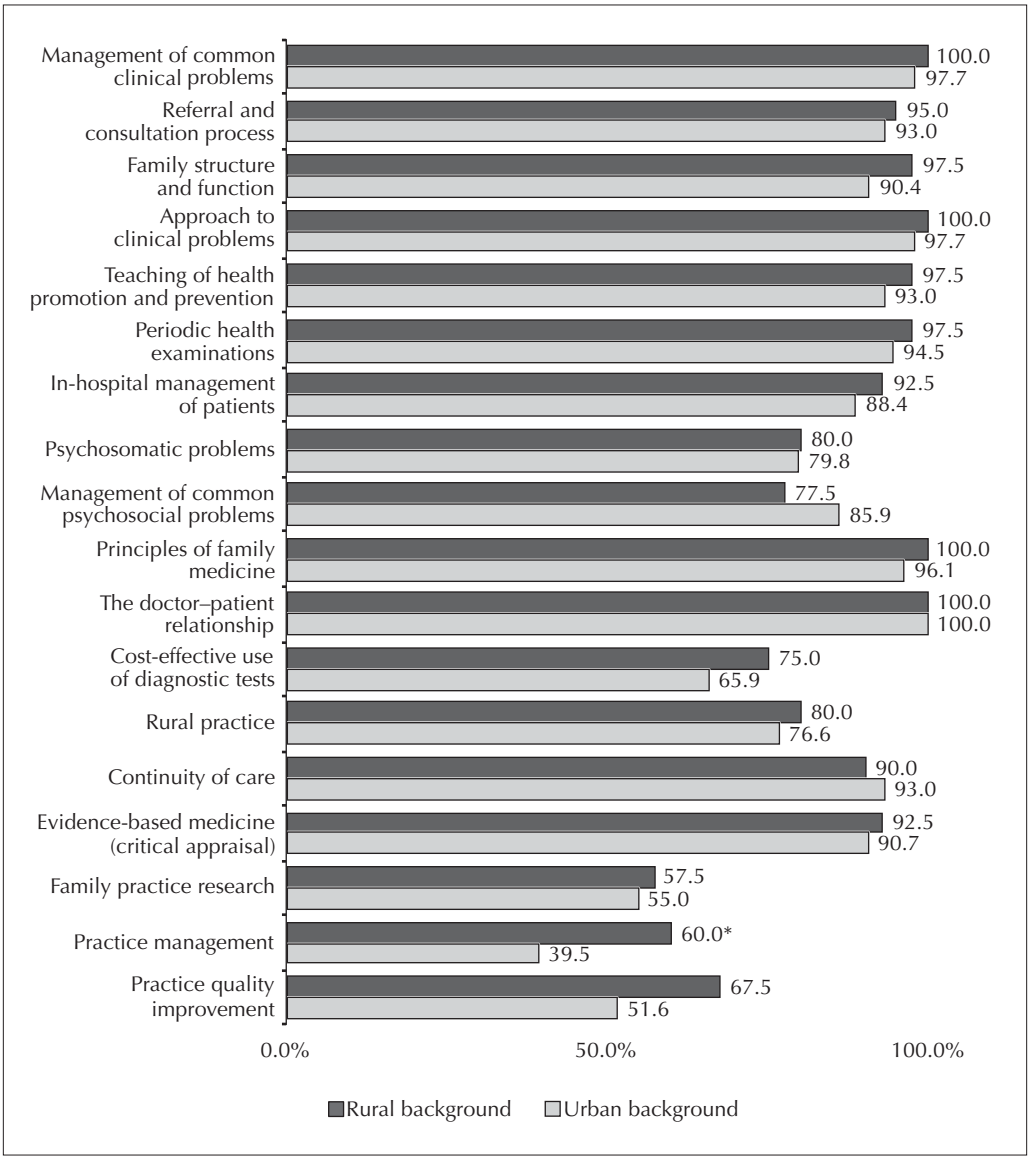

Fig. 1. Percentage of respondents who reported preparedness for 18 elements related to clinical family practice, by rural and urban background. *$p < 0.05$.

These 3 elements have been previously labelled as dimensions of "rural culture."[6] Intuitively, people of rural background would be expected to have a better understanding of rural culture and small-community living, because the lived rural experience should facilitate the acculturation and assimilation of rural life. All the rural-background graduates in our study lived 10 or more years in a rural area and, consistent with the findings of Somers and colleagues,[16] would be expected to have developed a sense of rural background.

The study findings also showed that graduates with an urban background felt less prepared for the nonclinical and cultural aspects of rural practice. This is not surprising given their lack of or limited exposure to rural life. Comparison of preparedness for practice between urban-background graduates who did and did not do a rural family medicine rotation during residency showed that rural training may have a positive influence on graduates with an urban background in helping them understand rural culture, small-community living and the time demands of rural practice. Although the analysis was limited by the small sample of those who did not do a rural rotation (n = 15), the findings are consistent with those of a US study that found that physicians who did rural rotations felt better prepared for both rural practice and small-town living.[7]

It is unclear why a significantly higher proportion of rural-background graduates felt prepared for issues related to establishing and managing a practice, financial management and business records, and health care reform. We postulate that graduates who have lived in a rural community may be more connected to the issues affecting the community at all levels, including health care reform, and thus feel more prepared to deal with these issues. Similarly, rural-background graduates may have always assumed that practising in a rural area would mean they would need to be directly involved in the business aspects of establishing and managing a practice, and thus have sought opportunities that would provide them with such skills. Moreover, medical students from rural areas appear to be more economically disadvantaged than their urban colleagues, with a higher debt load and increased financial anxiety.[17] Therefore, graduates with a rural background may be more likely to work during

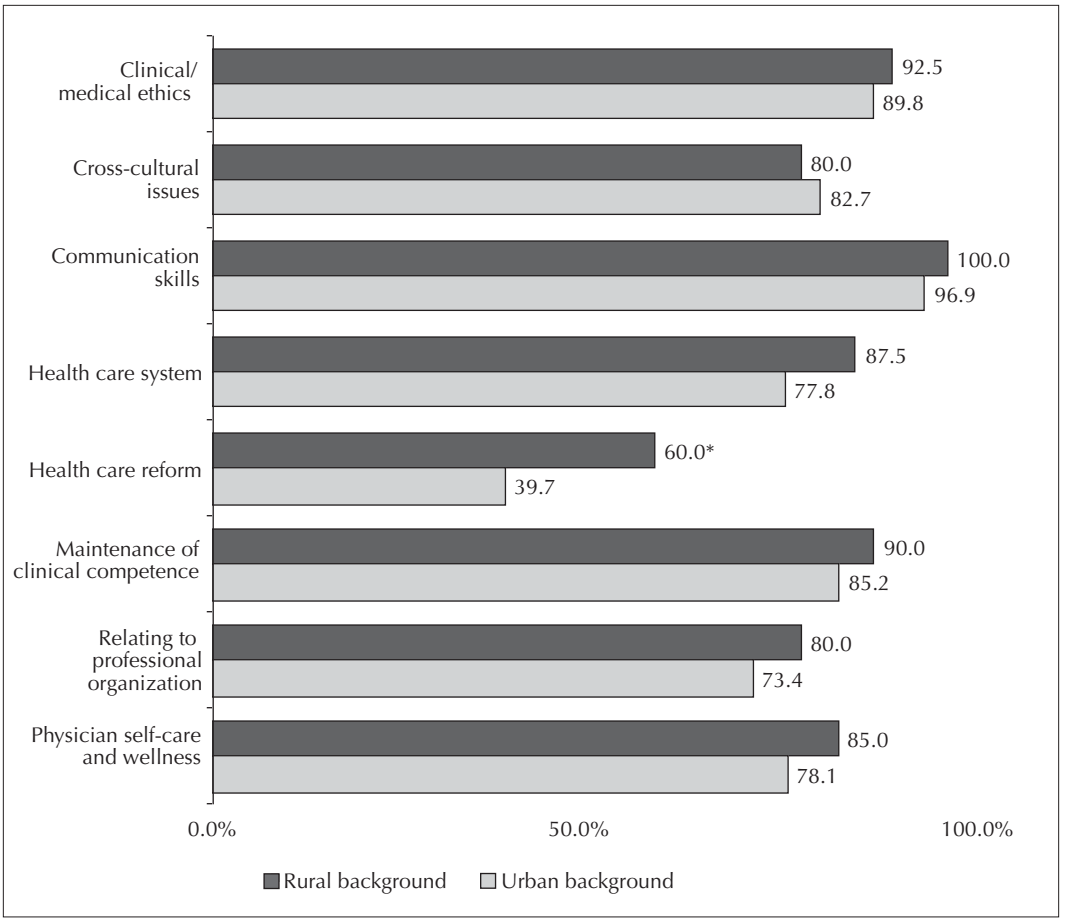

Fig. 2. Percentage of respondents who reported preparedness for 8 elements related to interdisciplinary practice. *p < 0.05.

high school and undergraduate years, and thus develop a heightened awareness of financial and business issues. It is also possible that graduates from rural areas possess character traits or political perspectives that differ from graduates from urban areas that might account for a unique understanding of practice management or health care reform.

Our study reveals that family medicine graduates tend to have an overall positive view of the quality of their residency training; the vast majority felt somewhat or very prepared for most elements of family practice, irrespective of rural or urban background. This high level of perceived preparedness is reassuring for residency programs that strive to duly prepare family physicians for practice and speaks to the outstanding quality of the postgraduate educational experience. These results are consistent with the self-reported high levels of preparedness of family practice residents in the United States.[18,19]

Preparedness for rural family practice is likely influenced by a combination of factors, including rural background and medical training experiences. The finding that rural-background residents, in general, and urban-background graduates who did rotations in rural family medicine, in particular, appear to be better prepared for the nonclinical aspects of rural practice has implications for family medicine residency training. Efforts aimed at ensuring that residents, particularly those with an urban background, receive focused exposure to the nonclinical aspects of rural practice may serve to increase their comfort with rural medicine. According to Henry and colleagues,[2] "interns with non-rural residency backgrounds seemed to need positive perceptions of country lifestyle in order to advance upon their developing positive dispositions about rural medicine." Rural preceptors should strategically involve urban-background residents in activities that would increase their awareness of issues related to rural lifestyle (e.g., cultural and recreational opportunities, housing, schools, professional and social networks and community leadership).

Future investigation of whether preparedness for nonclinical aspects of practice can be engendered is worthy of study. That is, is there a perceived difference in preparedness for nonclinical aspects of rural practice by urban-background residents who have varying amounts of rural training?

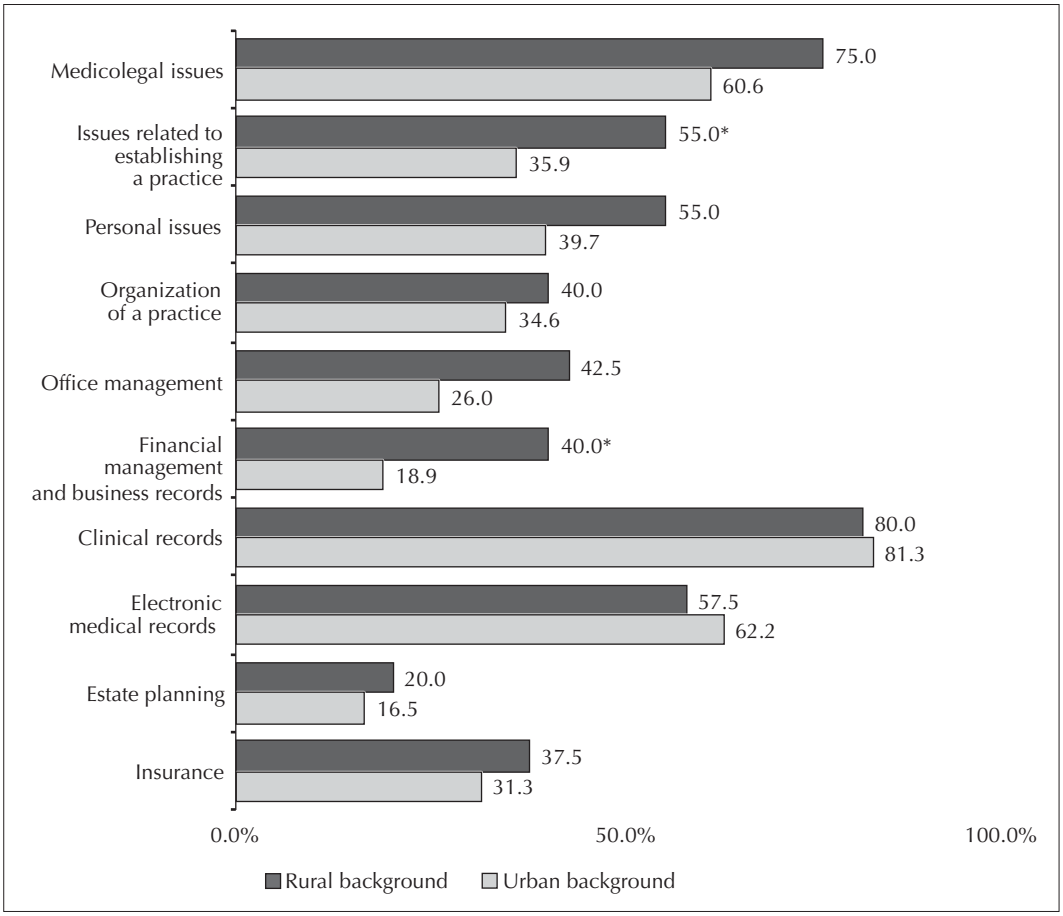

Fig. 3. Percentage of respondents who reported preparedness for 10 elements of practice management.
***p* < 0.05.**

Strengths and limitations

A strength of this study is the respectable response rate (64.2%), which provides a statistically representative sample; that is, there is a 99% degree of confidence that the responses of the 242 participants are representative of the population of graduates who were surveyed, within a 5% error level. The results, however, should be interpreted within the limitations of the study. The cross-sectional, retrospective nature of the survey provides only a snapshot in time. The wording of some questions assumed a general understanding by respondents. For example, "time demands (call, work hours) of rural practice" assumed that the time demands are higher in rural than urban practice. "Fishbowl lifestyle" was assumed to mean that one's actions are visible to and are being scrutinized to some degree by the community. Although we cannot be absolutely certain that all respondents interpreted the questions in this way, the results are based on the assumption that this interpretation was generally the norm. As such, the degree of insensitive measure bias is unknown. The time since completion of residency training varied between 1 and 6 years for the 2001–2005 graduates; thus, recall bias may influence perceptions of preparedness for practice. The study assessed only self-reported perceptions of preparedness and not externally observed or objectively assessed preparedness. Given that the questionnaire did not explicitly define preparedness for practice, respondents may have interpreted being prepared or unprepared differently. Perceptions of preparedness may also be influenced by the challenges at hand; that is, those who may have had few practice challenges may have felt prepared, thereby overestimating their actual preparedness, whereas those who have had numerous challenges may have felt overwhelmed and unprepared, thereby underestimating their level of preparedness. The overall self-assessed high levels of preparedness may also reflect a socially desirable response, thus overestimating the true level of preparedness. We were also unable to discern the confounding effect of certain factors, such as practice location or educational training, on preparedness, that is, to what degree preparedness is influenced by educational experiences within the program, versus other factors external to the program, such as rural background, life experience and personal self-efficacy. The number of graduates with a mainly rural background is relatively small; thus, a larger study with more rural-background respondents is recommended.

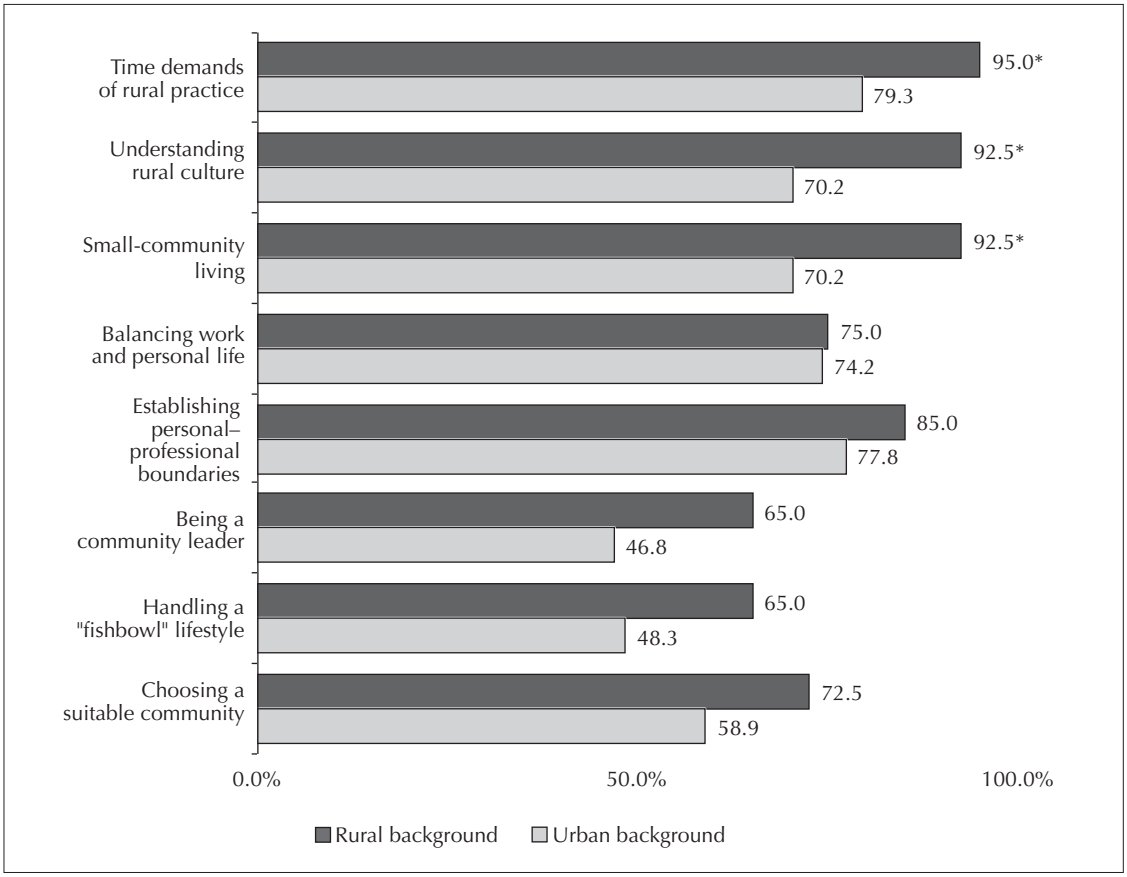

Fig. 4. Percentage of respondents who reported preparedness for 8 nonclinical aspects of rural practice. *$p < 0.05$.

CONCLUSION

This study provides new evidence that rural background is associated with perceived preparedness for the nonclinical aspects of rural family practice, specifically the time demands of rural practice, understanding rural culture and small-community living. Rural background is also associated with perceived preparedness in the areas of health care reform, issues related to establishing and managing a practice, and financial management and business records. Urban-background graduates felt just as prepared for the clinical aspects of practice, but felt less prepared for the cultural aspects of rural family practice. Efforts directed at increasing exposure of residents, particularly those with an urban background, to the nonclinical aspects of rural practice, including rural culture and small-community living, may increase their comfort with rural practice and improve recruitment and retention of rural physicians.

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Competing interests: None declared.

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Descriptive Article
Article descriptif

Patient advocacy by rural emergency physicians after major service cuts: the case of Nelson, BC

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This article has been peer reviewed.

Efforts at cost containment through regionalization have led to reduced services in several rural emergency departments (EDs) in Canada. As a result, questions have been raised about patient safety and equitable access to care, compelling physicians to advocate for their patients. Few published reports on physicians' advocacy experiences pertaining to rural EDs exist. We describe our experience of patient advocacy after major service cuts at Kootenay Lake Hospital in Nelson, BC. Despite mixed results, we suggest increased physician involvement in patient advocacy.

Les efforts de compression des coûts par la régionalisation ont abouti à une réduction des services dans plusieurs services d'urgence en milieu rural au Canada. En résultat, on s'est interrogé sur la sécurité des patients et sur l'accès équitable aux soins, ce qui a poussé les médecins à se porter à la défense de leurs patients. Il existe peu de rapports publiés sur les expériences des médecins en représentation des patients dans le contexte des services d'urgence ruraux. Nous décrivons notre expérience en représentation des patients après d'importantes réductions de services à l'Hôpital Kootenay Lake de Nelson (C.-B.). En dépit de résultats mitigés, nous suggérons que les médecins interviennent davantage en représentation des patients.

At 4 am, an elderly patient presented with abdominal pain. I (R.F.) performed bedside ultrasonography in search of an explanation for her pain. She had a large (6.5 cm) abdominal aortic aneurysm and urgently needed vascular surgery — only the service was 400 km away. While I explained the situation to her, she interrupted: "Doctor, by the way, I want to thank you for standing up for us. I have read you and your colleagues' articles in the newspapers about your opposition to the service cuts. We used to have a fabulous hospital here before all the cuts. I understand some of you may leave, and I don't blame you." Surprised and touched, I forged ahead with my explanation of her medical condition and arranged an urgent transfer. At the end of my shift (around 7 am), she told me unequivocally, "Doctor, if I don't see you again, promise me one thing: please continue the fight."

Unfortunately, her transfer did not go well. The plane was delayed several times, and she eventually was transferred by road ambulance — a 5-hour transport. She arrived unacceptably late, at about 6 pm. She died before surgery.

We wish to dedicate this article to the memory of this patient.

INTRODUCTION

Roughly 20% (6.3 million) of Canadians live in a rural area,[1] and a substantial proportion of emergency visits occur in rural settings.[2,3] Attempts to control spiralling costs of health care have lead several provinces to adopt a model of regionalized care, resulting in substantially reduced local health care

services in many rural areas.[4,5] The challenges of practising emergency medicine in rural settings with limited resources are implicitly acknowledged; yet, few studies on the subject have been published. Media reports of emergency department (ED) closures and service cuts suggest patient safety may be compromised.[6,7] They also point to the increased burden that travel consequently imposes on patients and their families, who often travel for time-sensitive emergency care.[7] Service cuts may contravene the accessibility clause of the Canada Health Act, a key feature of our universal health care system.[8]

In 2002, the BC government closed several rural hospitals and reduced support services to others. At Kootenay Lake Hospital in Nelson, BC, the general surgical program, intensive care unit (ICU) and inpatient mental health unit were eliminated; radiography as well as laboratory services were reduced. Consequently, to obtain these services, patients were required to travel 74 km (1 h 15 min by road) to Trail, BC, where the regional hospital is located. The health authority's decision to accept ICU coverage gaps at the referral hospital was the tipping point in our resolution to further advocate for patients. We had no previous experience or training in patient advocacy. However, we felt patient safety was at risk and that it was our duty to advocate under our code of ethics as physicians.[9]

METHODS

This is a qualitative case report by former ED physicians and a local obstetrician–gynecologist describing their advocacy experience at Kootenay Lake Hospital between 2006 and 2010. Information on interfacility transfers and specialist referrals was obtained from the hospital's medical records department, Interior Health Authority and BC Ambulance Service. Some information was released subsequent to a formal request under the Freedom of Information and Protection of Privacy Act.

Study site

Kootenay Lake Hospital is located in Nelson, BC (population 9255).[10] The hospital is a 30-bed acute care facility that serves a regional population of roughly 30 000 people. The ED receives 13 000 visits annually. It is staffed by solo physicians on a continuous basis. Between 2006 and 2009, it was attended by full-time ED physicians 60%–70% of the time, with local family physicians and locums covering the rest. At the time, there were no local specialists continuously on call except for a single obstetrician–gynecologist. A single pediatrician was on call 3 days per week.

THE PROBLEM

Need for interfacility transport and travel

Between July 2008 and July 2010, the regional hospital was unable to provide ICU coverage one-third of the time because of a lack of internal medicine specialists. On these days, the closest ICU was in Kelowna, BC (a 447-km distance).

From 2006 to 2009, between 1100 and 1600 interfacility ground or air transfers were required per year, with most occurring on an emergency basis. Most transfers were required for computed tomography (CT), surgical and mental health inpatient services, and ICU care. Most interfacility transfers were conducted by ambulance crews with limited scope of practice (i.e., basic life support). Just one critical care transport team (serving a regional population of 80 000) was available for transport of patients with critical conditions. At the time, air transport of patients was restricted to good weather and daylight via fixed-wing air ambulance from Vancouver, BC.

In addition to ambulance transfers, a substantial number of patients were required to travel by their own means at their expense for elective investigations and consultations. From 2006 to 2010, more than 2000 patients per year travelled for CT, and about 4000 per year travelled for nongynecologic surgical consultations.

Anecdotally and by letter, clinicians reported to the ED chair (R.F.) and to the health authority that patient transfers were increasingly delayed. They also complained of limited staff to care for critically ill patients over extended periods. Adverse events and near misses were reported.

THE SOLUTION

Patient advocacy efforts

After several ED meetings, we decided to focus on specific requests to improve patient safety. In the absence of evidence-based standards in rural emergency care, we based our requests on the most common reasons for interfacility transport and what levels of services were offered in similar communities in British Columbia. Most of the ED physicians had previously trained and worked in academic centres, and requests for services were mapped to generally accepted practice patterns in emergency medicine.

MAIN ADVOCACY OBJECTIVES

Acquisition of a CT scanner

Considering the high number of referrals and interfacility transfers for CT, in fall 2007, we requested authorization to fundraise for the purchase of a CT scanner. We stated that diagnostic uncertainty without this tool could lead to inappropriate transfers, delayed care and, ultimately, adverse patient outcomes. Physicians and community leaders had been unsuccessful in their requests for a CT scanner for the previous 15 years. The health authority had refused purchase for reasons related to operational and maintenance costs.

Recruitment of a general surgeon

Kootenay Lake Hospital is the only hospital in BC supporting this size population without a general surgeon. There have also been occasional threats of coverage gaps in surgery at the regional hospital in Trail. We requested that at least one local general surgeon be recruited, and we proposed that the general surgeon share call with surgeons at the regional hospital (as had been the case for 50 years before regionalization). The justification was that this would improve patient safety and minimize interfacility transport. A general surgeon would also support local ED physicians and the obstetrician–gynecologist. Recruitment was not an issue because at least 2 general surgeons lived in the city.

Addition of high-acuity care beds

We felt that the ED should have at least 2 appropriately staffed high-acuity care beds and that the regional ICU should not authorize coverage gaps. Most of the hospital's ED nurses were former ICU nurses, and certified ED physicians were comfortable with prolonged monitoring of critical care patients under adequate conditions and with the support of local internists. A similar model is used in the province of Quebec.[11] The alternative consisted of a situation of increased pressures on the critical care transport system, and inappropriately lengthy periods of care for unstable patients in inadequately staffed and monitored conditions.

Independent review

In the absence of evidence-based data on the level of services provided, we called for an independent review of the situation and suggested it be conducted by academic centres in emergency medicine.

ADVOCACY PROCESS

Based on the aforementioned description of the situation, we proceeded through the following steps to advocate for improved access to services.

Review the literature

We searched the scientific literature for reports of patient advocacy experiences by emergency physicians. In PubMed, we searched with the terms "patient advocacy" and "emergency medicine" (1990–2009). On a total of 165 articles, only 3 loosely pertained to our situation.[12–14] All called for increased advocacy by emergency physicians.

Address administrative channels

Throughout the process of service cuts, we wrote multiple letters to our local and regional health administrators (Interior Health Authority, BC) advising them of the risks and challenges. We also held several "emergency" meetings with them and members of the medical staff. We wrote an ED in-house position paper and proposed solutions.[15]

The position paper was widely approved by the hospital's medical staff in an open vote. However, the hospital's medical advisory committee, its highest level of local administrative authority, refused to officially consider the position paper or forward it to the regional medical advisory committee for further debate. The local medical advisory committee consists of representatives of the medical staff (from several departments), local hospital administrators and Interior Health Authority administrators from the region. Medical staff members on this committee are generally unpaid elected representatives (most often by acclamation). These members usually rotate on yearly terms. However, 2 physicians on this committee, the chief of the medical staff and the representatives from the regional medical advisory committee hold Interior Health Authority–paid positions and theoretically have competing interests between the health authority and medical staff. There are no patient or community representatives on these committees.

Address politicians

We discussed the ED position paper[15] with elected

officials (the mayor, city councillors, members of the legislative assembly, members of parliament), and it was submitted to Nelson City Council and other municipalities in the hospital's catchment area, where it received unanimous votes of support.

Address patient advocacy groups

Community advocacy groups were informed of the position paper.[15] These groups recommended that we urgently notify the public and offered to assist in the process. The Nelson and Area Health Task Force later submitted a petition to the BC legislature with more than 3000 signatures in support of the requests for services. Several members of an advocacy group wrote letters to newspapers, senior health authority administrators and the BC Ministry of Health. They held public forums with authors of the position paper and other local physicians. Hundreds of people and several politicians attended these forums.

Address the College of Physicians and Surgeons of British Columbia

We contacted the College of Physicians and Surgeons of British Columbia, describing the situation and asking for intervention. The college replied that "the distribution and allocation of healthcare resources are not a College mandate. The College Board will not be drawn into Health Authority and Ministry of Health Services resource allocation disagreements" (Dr. W. Robbert Vroom, senior deputy registrar, College of Physicians and Surgeons of British Columbia: personal communication, 2010).

Address the media

At advanced stages in our advocacy efforts and in view of failed discussions with the health authority, we informed the media. *The Globe and Mail* was first to report on Nelson.[7] Other print media and all local radio stations also reported on the situation. A local television production company posted an interview of local doctors on YouTube that earned more than 2000 views.[16]

RESULTS

We characterize the consequences of our advocacy efforts as having both negative and positive features and impacts on the situation.

Negative

Media quotations from the Interior Health Authority questioned the clinical judgment, practice patterns and experience of physicians, and minimized the impact of the level of services on risk to patients. Moreover, after initial media reports, physicians involved in the advocacy efforts perceived that the Interior Health Authority vigorously attempted to dissuade physicians from further public interventions and questioned the rights of physicians to challenge administrative decisions. The response by the health authority instilled fear in fellow physicians. Several physicians were concerned about possible consequences, such as additional service cuts and recruitment issues, and about being further ostracized.

Over a 1-year period following the media events, 5 full-time ED physicians and 1 internal medicine specialist resigned. In total, 4 physicians left BC for other provinces.

For an interval of about 1 year, the ED relied on locums to cover at least 50% of the shifts.

Positive

Advocacy efforts contributed to the approval in 2008 from the Ministry of Health and the Interior Health Authority to fundraise $1.5 million for a CT scanner, which became operational in December 2011. However, despite successful community efforts to raise the entire amount, the CT scanner is currently operational only on weekdays, 9 am to 4 pm. The health authority cited a lack of staff and funds to cover continuous operation.

An unexpected positive outcome was the development of a research program dedicated to the study of access to rural emergency care. To date, researchers from 5 Canadian universities have participated in this program that was, in part, inspired by the Nelson case (www.medecineurgence.ca).

DISCUSSION

To our knowledge, this is the first formal report on the experience of patient advocacy by rural emergency physicians after major service cuts to a hospital. We described how, over a 3-year period, we addressed administrative and political channels, consulted our professional college and, eventually disclosed our clinical concerns to the public. We believe the advocacy efforts raised awareness that resulted in the purchase of a CT scanner and the development of a research program. We were unsuccessful

in obtaining a local general surgeon and critical care beds. Our request for an independent review was also denied. Although the ICU coverage gaps were finally resolved at the regional hospital, the community-purchased CT scanner is functional only on weekdays.

Our initial rationale for requesting more services was based on our collective clinical experience in other rural and academic settings. At the time, we were unaware of any published standards or guidelines for rural ED care. The Canadian Association of Emergency Physicians' position statement on rural emergency care was informative, but it did not include specific guidelines for the provision of better access to advanced imaging services, general surgery and critical care coverage.[3] One article reported on the favourable experience of a rural community after it purchased a CT scanner.[17] Interfacility transfer data were useful to outline the potential costs incurred by the alternative to providing local services. Statistics on the level of services available in other communities with similar demographics were also beneficial. In summary, we perceived that the evidence provided to decision-makers, although limited, was useful in supporting our arguments in favour of the purchase of a CT scanner. Unfortunately, studies have yet to determine what sustainable level of services is required to provide safe care in rural communities.[18] In absence of standards, decisions on service attribution are not evidence-based.

Since the advocacy efforts in Nelson, in 2011, the Fraser Institute published its Hospital Report Card for BC.[19] The study used data from the Discharge Abstract Database and the Canadian Institute for Health Information. Nelson residents fell from fourth place (*4/47* municipalities in 2001/02, before health cuts) to last in the province in 2008/09 with respect to "failure to rescue," which is considered among the most important indicators of health care quality. This indicator describes mortality from complications that arose while a patient was admitted to hospital.[20] It is too early to estimate whether these new data from the Fraser Institute will help health advocates in their efforts to improve access to services.

In the face of equivocal results, a legitimate question is, why bother advocating? Is it the role of doctors to advocate for patients when it contravenes health authority policy? Certainly, the issue does not appear to be isolated to Nelson. Recently, the Canadian Medical Protective Association (CMPA) has commented on the challenging relationship between physicians and hospitals:

> The CMPA is very concerned by efforts to restrict healthcare providers from responsibly fulfilling the role of advocate. In the case of physicians, these restrictions are increasingly being seen in contractual arrangements, appointments or privileges processes or through the institution of physician "codes of conduct." In addition to posing a significant risk to patient safety, such restrictions are contrary to the lessons learned and the improvements adopted in safety-driven industries (such as the nuclear or airline sectors) where employees are encouraged to speak out to identify and correct unsafe practices.[21]

Furthermore, the role of advocate is encouraged by our professional credentialing colleges, and advocating is an obligation under physicians' code of ethics.[9] Community physicians who also hold positions as representatives of the health authority need to be cognizant of the potential risks for conflict of interest that would contravene our code of ethics. Physicians must be cautious, because their actions could be perceived as "rubber-stamping" health authority policy that compromises patient safety. These dual positions may hinder the patient advocacy process.

Finally, we ask, if front-line physicians, with their specific medical knowledge, do not advocate for their patients, who will?

Limitations

We have reported the experience of patient advocacy by a group of physicians. Recall bias, and professional and personal perspectives may have influenced our interpretation of the impact of the service cuts described herein. Nevertheless, the opinions of the ED physicians were reported in official institutional documents (minutes) and in the media at the time of the events, which would minimize recall bias. Furthermore, the opinions presented here were unanimously supported by the medical staff. The position of the ED physicians was also supported by community groups, politicians and at least the 3000 people in the community who signed the petition. Thus, opinions presented here are likely not only those of the authors.

CONCLUSION

Patient advocacy can be a complex, time-consuming experience with mixed results, and consequences of such action are to be considered. We still urge physicians to use their expertise to better inform health authorities, as well as the general public, when administrative decisions compromise emergency care. However, we suggest that formal training and support in patient advocacy would be bene-

ficial. Finally, without a continuously operational CT scanner, general surgeon, ICU and efficient critical care transport system, citizens of Nelson and the surrounding area continue to be at risk. Several universities are in the process of investigating issues of sustainable access to quality care in rural communities in Canada with the hope of improving care to rural communities.

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Country cardiograms case 47

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A 72-year-old woman presents to the emergency department with a 24-hour history of intermittent retrosternal chest pressure, worsening shortness of breath, nausea and diaphoresis. She describes more than 4 months of 4-pillow orthopnea and paroxysmal nocturnal dyspnea in the presence of long-standing pedal edema. Her cardiac history is significant for congestive heart failure and a remote myocardial infarction, for which she underwent primary percutaneous coronary intervention. The patient is receiving appropriate therapy to manage her cardiovascular risk factors, which include hypertension, type 2 diabetes mellitus and dyslipidemia. The patient is obese and has a positive family history of ischemic heart disease.

The patient's physical examination is significant for a fourth heart sound, elevated jugular venous pressure, mild pedal edema and crackles at the lung base. Laboratory investigations reveal an elevated N-terminal pro–B-type natriuretic peptide. Results of the patient's first troponin test are negative, but a repeat test is positive. The patient is placed on bilevel positive airway pressure and given diuretics in the emergency department. She is subsequently admitted to the coronary care unit. The patient's electrocardiogram (ECG) is shown in Figure 1. What is the ECG diagnosis? Is there anything about the ECG that might change acute management in this patient?

For the answer, see page 67.

Competing interests: None declared.

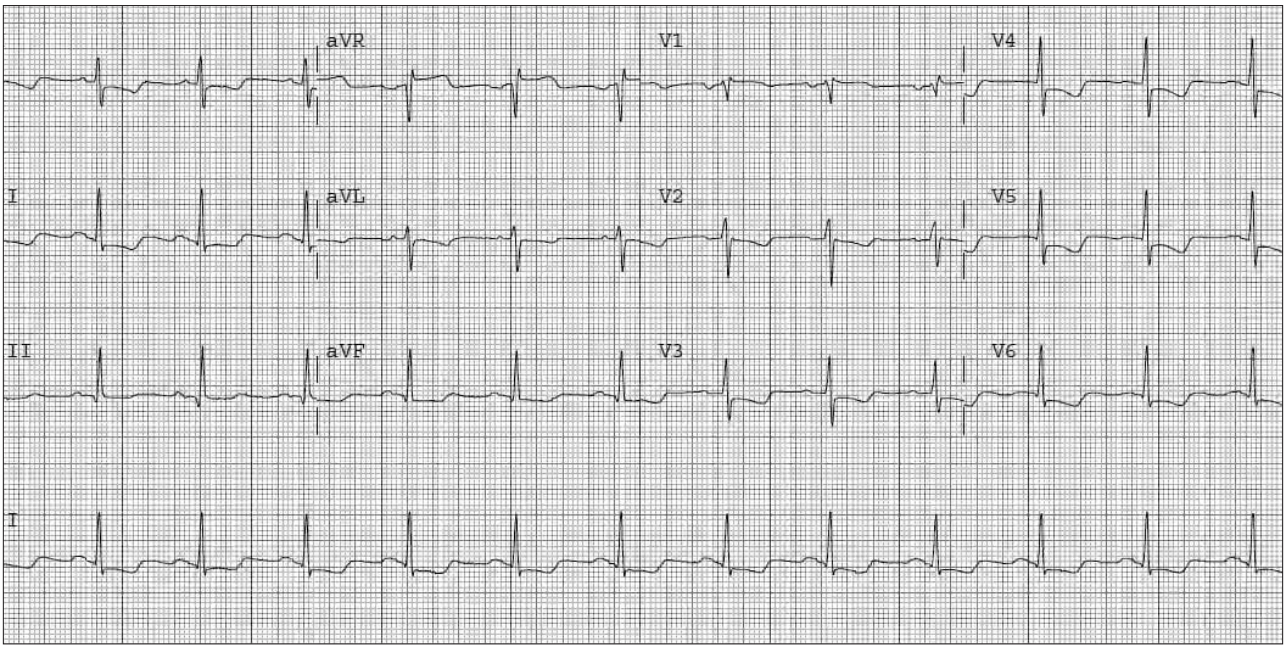

Fig. 1. Electrocardiogram of a 72-year-old woman with dyspnea and chest pressure.

The occasional external cephalic version

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You examine Ms S.A., who is 36 weeks pregnant, at your office. She is thin, so you are fairly sure the fetal head is at the xiphoid process, and it's the sacrum presenting to the pelvis. Her 4 previous deliveries were all vaginal, and she wants to avoid a cesarean delivery if possible. Assuming that the breech position is confirmed, what options can you, as a rural doctor, give her?

Although breech delivery can be supported in rural settings,[1] it would be nicer if the presenting part were vertex. External version, known from Aristotle's time, is the procedure by which one applies pressure to the maternal abdomen to encourage the fetus, in gentle stages, to rotate first to a transverse lie and then to a cephalic position.

PREREQUISITES

- Bedside ultrasound to confirm position
- Singleton pregnancy
- Fetal cardiotocograph
- Acoustic stimulator (optional, may improve success rates)
- Terbutaline for tocolysis (optional, may improve success rates)
- No contraindication to immediate delivery (e.g., placenta previa)
- Emergency cesarean capability on site
- Intact membranes
- Healthy pregnancy (contraindications include third-trimester vaginal bleeding, intrauterine growth restriction, placenta previa and major fetal abnormality)
- Informed consent

Based on meta-analyses, the success rate of the procedure is 50%–60%, with risks of maternal discomfort (which may be lessened by tocolytic medication to relax the uterus) and rupture of membranes, and remote risk of fetal distress, which might proceed to cesarean delivery.[2,3] There is no increased risk of antepartum fetal death, uterine rupture or placental abruption in the absence of general anesthetic.[2,3]

Because of the remote risk of imminent delivery, the procedure is usually attempted when the baby is at 36 weeks' gestation or more.

PROCEDURE

Ms S.A. has an ideal presentation at 36 weeks. She has previously delivered and has an unengaged breech presentation, both of which are associated with positive outcomes.[4] The procedure takes place in the following sequence.

Do a baseline nonstress test for 20 minutes and bedside ultrasound to confirm the orientation of the fetal spine and head (Fig. 1). If the fetus is engaged in the breech position, you will need to dislodge the fetus, either transabdominally or from the vagina.

Push the breech laterally through the maternal abdomen. At the same time, push the head laterally in the other direction to have the fetus rotate to either somersault or backflip into a more favourable position (Fig. 2).

If the fetus is rotating, continue applying gentle pressure (Figs. 3–5). Successful versions are easy and usually take only a few minutes. If the version is not proceeding at that time, try pushing the fetus in the other direction or adding tocolysis.

After the version, do a repeat ultrasound to confirm the orientation of the fetus. Repeat the nonstress test, regardless of the success of the procedure.

Transient cardiographic abnormali-

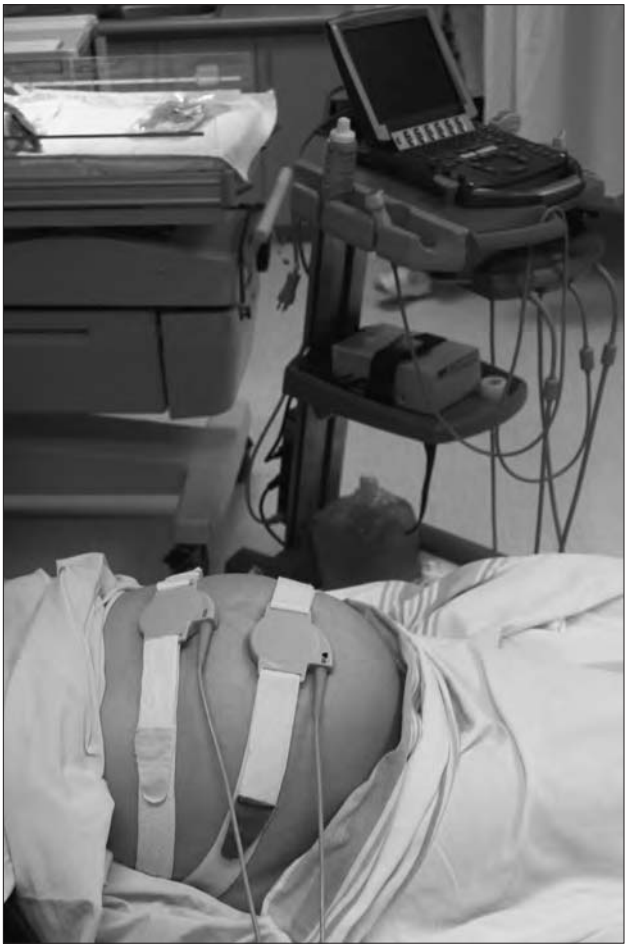

Fig. 1. Bedside ultrasonography and cardiotocography.

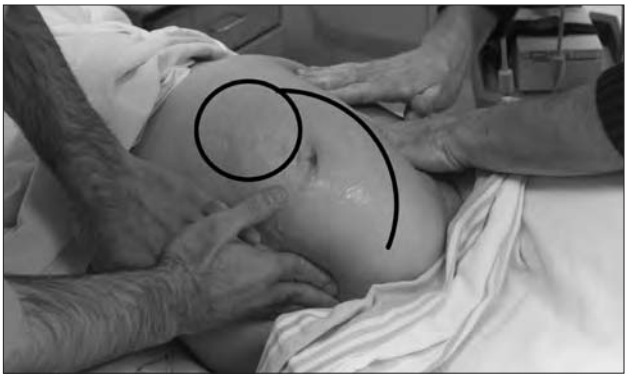

Fig. 2. Breech pushed laterally.

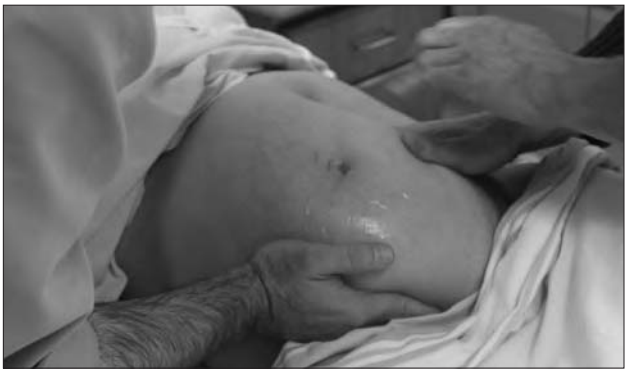

Fig. 3. Gentle ongoing pressure.

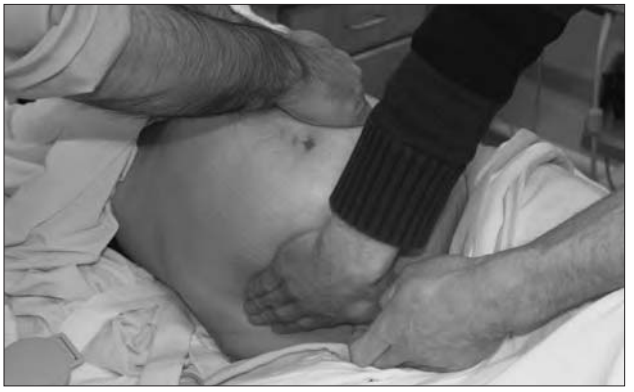

Fig. 4. The fetus slowly rotates.

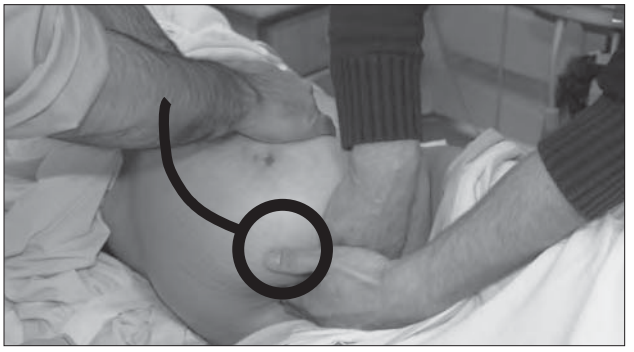

Fig. 5. Fetus in the cephalic position.

ties can be tolerated, but if they persist they require reversion to the breech position, tocolysis and/or emergency cesarean delivery.

Administration of Rh_O(D) immune globulin to Rh-negative mothers is advised. Otherwise, routine follow-up is appropriate.

The authors were successful in the version illustrated, and the patient delivered, after spontaneous labour, a healthy 4010-g baby girl.

CONCLUSION

Elective version of noncephalic presentation can be safely and successfully done by the rural doctor, potentially reducing the need for cesarean delivery.

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White coat in Whitecourt: reflections on a community clerkship

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I rolled over in bed to answer my phone: "Hello?" "It's Jane from the hospital. We have a lady about to deliver ..." I was already half out of bed and grabbing my scrubs. I dressed in one motion and ran across to the hospital. Within minutes, I was ready to go (or was I?). I stumbled through the motions of putting on greens and gloves and assumed "the position." A thousand thoughts ran through my mind as I prepared for my "first catch!". Luckily for me, this veteran mother knew what to do.

These late-night phone calls were one of many exciting experiences during my time as a Rural Integrated Community Clerkship student in Whitecourt, Alberta. Another student and I became citizens of the 9000-person community for 9 months, wearing different hats to learn how to become traditional rural doctors. In family clinic, wonderful mysteries presented, and we worked to get patients on target for preventative care. Tuesday evenings, we ran the Youth Clinic as a confidential place for talking about sexual, mental and general health issues. We spent time in the emergency department learning the urgent side of health care and cared for hospital patients to learn the complex side of health care. We scrubbed in on the occasional cesarean delivery and did "lumps and bumps" days. We even learned about the political and advocacy roles of rural physicians. Above all, these experiences exposed us to something we could never get with the traditional urban rotation clerkship: continuity of care!

In preclinical, we heard about what it's like to experience the death of a patient for the first time. I never realized how powerful it would be in reality. While hanging around the hospital one Sunday evening, I was told of a frail 75-lb woman in her 60s with metastatic cancer. She had moved to Whitecourt that day to be with family. She presented with a small bowel obstruction, was in distress and needed a nasogastric tube. I had inserted one only once on a classmate, and the nurse knew this was on my to-do list. I explained the procedure to the patient and admitted it would not be fun, but told her I hoped it would make her feel better. My heart sank as the first attempt failed (the tube coiled in her throat). Thankfully, the second attempt was successful. Amazingly, the next day her daughter said, "Oh, you're the student who inserted Mom's nose tube! She felt terrible for you that it didn't work the first time, but said that you did a great job!" I was shocked at how stoic the mother was in her final 2 days. She was surrounded by family and friends, laughing as they recalled fond memories. Late Tuesday evening, I got the call that she had slipped away to sleep and then died. I felt so privileged to have met this amazing lady, if only for a few days.

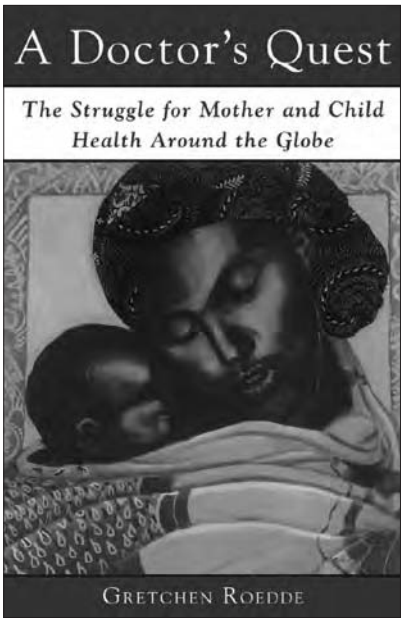
I miss a lot about Whitecourt! I miss my membership with the Whitecourt Pottery Guild and the work-outs at the community centre. Most of all, I miss the physicians, nurses, supportive staff and patients who I learned from on my journey toward becoming a rural doc.

Abridged version of the winning entry of the SRPC 2012 Medical Student Essay Contest.

Competing interests: None declared.

BOOK REVIEW

A Doctor's Quest: The Struggle for Mother and Child Health Around the Globe. Gretchen Roedde. 272 pp. Dundurn. 2012. Can$26.99 (paperback); $12.99 (e-book). ISBN-13: 978-1459706439



A Doctor's Quest speaks in the voice of birthing women from the rural regions of 15 of the poorest countries around the world. Their tales of bravery in the face of delivering without trained birth attendants and the joys and the complications that occur are the substance of the book. Weave in the public health perspective on interrelated themes of literacy, contraception, health care delivery, rural health worker shortage, social disruptions, sexual violence, inefficient health care systems and corruption, and the book becomes a compelling treatise on maternal health.

A Doctor's Quest is a tome that is hard to put down, but it is not an easy read. The faces of misogyny, violence, poverty, broken promises and lack of will are ugly ones that many would prefer not to see. Dr. Gretchen Roedde is not shy about shining a light in those areas she knows all too well.

Roedde, a rural doctor, activist and mother of 2, has spent the last quarter century dividing herself between practising in northern Ontario and evaluating development projects in countries in Africa and Asia. In the rich notes, references and appendices that accompany the narrative, it is clear that much has been done in that time to reduce maternal and child morbidity and mortality, and it is equally clear that much more must be done.

She doesn't spell out the solutions, although they are there, inferred in the text. Roedde's hope, for literacy programs, for microcredit to improve women's economic conditions, for contraception, for nongovernmental organizations to bypass government corruption, for direct funding to the rural areas that need care the most, for training for birth attendants, for antiretroviral drugs, for funded transport and cesarean, for fistula repair, for the developed world to have the will and the developing world to be able to receive, would seem wildly optimistic and naive if it weren't the work of more than 25 years. The author keeps these hopes alive through her determination and her compassion in the face of social injustice.

Gretchen Roedde and her book are an inspiration.

Peter Hutten-Czapski, MD
Scientific editor, *CJRM*

Country cardiograms case 47: Answer

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The electrocardiogram (ECG) shown in Figure 1 (on page 62) reveals a normal sinus rhythm at a rate of about 75 beats/min. A 2-mm ST-segment elevation (STE) is seen in limb lead aVR. There is diffuse ST-segment depression (STD) in limb leads I, II and aVL, and precordial leads V2 through V6. ST-segment changes appear in limb lead aVL; these changes were not seen in the patient's previous ECG. Based on these changes, the clinical history and the laboratory results, non-STE acute coronary syndrome (NSTE-ACS) complicated by congestive heart failure was diagnosed.

Elevation of the ST-segment in lead aVR is common and has been reported to occur in 13.4%–32.2% of patients presenting with NSTE-ACS.[1–3] In a sample of 572 patients with NSTE-ACS who underwent coronary angiography, elevation in the ST-segment of lead aVR of 1 mm or greater was shown to be the strongest predictor of severe (i.e., requiring surgical intervention) left main and/or 3-vessel disease (LM/3VD).[2] The reported odds ratio was 29.1, with a sensitivity of 80% and a specificity of 93%.[2] By comparison, a positive troponin result was found to have an odds ratio of only 1.27, a sensitivity of 60% and a specificity of 69% for severe LM/3VD.[2]

Limb lead aVR has been called the disregarded lead in ECG interpretation, with most physicians found to be using 11-lead ECG in clinical practice.[4] The reason for this likely relates to the fact that the positive vector of aVR is directed opposite to the other limb leads toward the right upper side of the heart. As such, lead aVR looks into the lumen of the left ventricle.[5] Given this orientation, STE in lead aVR may reflect global subendocardial ischemia.[2,6]

In patients with NSTE-ACS, STE in lead aVR — with or without STD in other leads — has been shown to be predictive of both short-term (in-hospital and 90-day) and 1-year cardiovascular-related death when compared with other ECG changes.[1,3,7] Moreover, the degree of STE in lead aVR has been positively associated with a worse clinical outcome.[1,8]

When a patient presents to the emergency department, signs and symptoms suggestive of ACS with new STE in lead aVR should alert the treating physician to the likelihood of severe LM/3VD, even in the absence of a positive troponin result and other ST-segment changes. Whereas about 10% of patients admitted with ACS will require coronary artery bypass grafting (CABG),[9] patients with NSTE-ACS and STE in lead aVR are significantly more likely to require CABG during the index admission to hospital.[2,3,10]

With respect to the emergency management of NSTE-ACS, current Canadian[9] and American[11] guidelines recommend dual antiplatelet therapy with acetylsalicylic acid and clopidogrel be started at the earliest opportunity, owing to clear improvement in clinical outcomes. That said, the Canadian Cardiovascular Society states that "if it were possible to predict which patients with ACS, at the time of presentation and before coronary angiography, will likely require urgent CABG, it might be possible to withhold clopidogrel in these patients".[9] Historically, this prediction has been difficult to make with accuracy. However, based on some recent evidence[2,3] and prior experience,[10] consideration should be given to withholding clopidogrel if the hospital is equipped with cardiac catheterization, because the probability of these patients requiring in-hospital CABG is high. In the rural setting, NSTE-ACS should be treated in the

usual manner; however, an argument could be made in favour of giving these patients a higher priority for transfer to a cardiac catheterization centre.

This patient underwent coronary catheterization, which revealed critical 3-vessel disease including 80% stenosis of the left main coronary artery. She subsequently underwent CABG.

For the question, see page 62.

Acknowledgement: The authors thank Dr. Robert Stevenson for critically reviewing the content of this manuscript.

Competing interests: None declared.

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ZOSTAVAX®

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

Prescribing Summary

Patient Selection Criteria

THERAPEUTIC CLASSIFICATION

Live, attenuated virus varicella-zoster vaccine

INDICATIONS AND CLINICAL USE

ZOSTAVAX® is indicated for the prevention of herpes zoster (shingles).

ZOSTAVAX® is indicated for immunization of individuals 50 years of age or older.

SPECIAL POPULATIONS

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

CONTRAINDICATIONS

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

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

Active untreated tuberculosis.

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

Safety Information

WARNINGS AND PRECAUTIONS

General

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

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

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

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

Transmission

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

ADVERSE REACTIONS

Adverse Drug Reaction Overview

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

ZOSTAVAX® Efficacy and Safety Trial (ZEST) in Subjects 50 to 59 Years of Age

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

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

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

Table 1: Vaccine-Related Injection-Site and Systemic Adverse Experiences Reported in ≥1% of Adults Who Received ZOSTAVAX® or Placebo (1-42 Days Postvaccination) in the ZOSTAVAX® Efficacy and Safety Trial

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The numbers of subjects with elevated temperature (≥38.3°C [≥101.0°F]) within 7 days postvaccination were similar in the ZOSTAVAX® and the placebo vaccination groups [6 (0.2%) vs. 8 (0.3%), respectively].

Other Studies

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

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

Post-Marketing Adverse Drug Reactions

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

Gastrointestinal disorders: nausea

Skin and subcutaneous tissue disorders: rash.

Musculoskeletal and connective tissue disorders: arthralgia; myalgia.

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

Immune system disorders: hypersensitivity reactions including anaphylactic reactions.

If a patient experiences an adverse event following immunization, please complete the appropriate Adverse Events following Immunization (AEFI) Form and send it to your local Health Unit in your province/territory.

To report a suspected adverse reaction, please contact Merck Canada Inc. in any of the following ways:

– Call toll-free 1-800-567-2594
– Complete a Canada Vigilance Reporting Form and fax toll-free to 1-800-369-3090
– Mail to: Merck Canada Inc., Pharmacovigilance, P.O. Box 1005, Pointe-Claire – Dorval, QC H9R 4P8

DRUG INTERACTIONS

Overview

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

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

Use with Other Vaccines

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

Administration

DOSAGE AND ADMINISTRATION

(see Product Monograph for complete information)

Recommended Dose and Dosage Adjustment

FOR SUBCUTANEOUS ADMINISTRATION.

Do not inject intravascularly.

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

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

At present, the duration of protection after vaccination with ZOSTAVAX® is unknown. In the Shingles Prevention Study (SPS), protection was demonstrated through 4 years of follow-up. The need for revaccination has not yet been defined.

Reconstitute immediately upon removal from the freezer.

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

Vial of diluent:

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

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

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

Do not freeze reconstituted vaccine.

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

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

Needles should be disposed of properly.

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

OVERDOSAGE

There are no data with regard to overdose.

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

STORAGE AND STABILITY

Storage

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

Before reconstitution, protect from light.

DISCARD IF RECONSTITUTED VACCINE IS NOT USED WITHIN 30 MINUTES.

DO NOT FREEZE THE RECONSTITUTED VACCINE.

Supplemental Product Information

WARNINGS AND PRECAUTIONS

Special Populations

Geriatric: The mean age of subjects enrolled in the largest (N=38,546) clinical study of ZOSTAVAX® was 69 years (range 59-99 years). Of the 19,270 subjects who received ZOSTAVAX®, 10,378 were 60-69 years of age, 7,629 were 70-79 years of age, and 1,263 were 80 years of age or older. ZOSTAVAX® was demonstrated to be generally safe and effective in this population.

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

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

Pediatrics: ZOSTAVAX® is not recommended for use in this age group.

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

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

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

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

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

INTERIOR HEALTH OPPORTUNITIES

GENERAL PRACTITIONER/GP ANESTHETIST: BC – Creston. Two permanent family practice positions available in Creston. Come live among the cherry orchards and vineyards. This position would appeal to someone looking for the perfect mix of rural practice and country lifestyle. Small modern group practice facility. ACLS required. Anesthesia, surgical and obstetric skills are desired. Full-time, part-time or locum doctors guaranteed to be busy. Excellent remuneration, numerous incentives and reimbursements. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-278

FAMILY PHYSICIAN: BC – Nakusp. Come and live the peaceful life that you have always wanted on the shores of the pristine Arrow Lakes and surrounded by a hiker's paradise. Nakusp offers a close community and rural environment that you only read about. This friendly village of 1,524 is perfect for people who want a slower pace of life. Hiking through great cedars on the weekend, lounging on the beach with your family, taking in the spa with your partner, or visiting the local hot springs by yourself, Nakusp offers something for everyone. Eligible for MOCAP funding and numerous other incentives. Fee-for-service. Approximately $300,000 per annum. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-279

FAMILY PHYSICIAN: BC – Clearwater. Family physicians with ER skills wanted to join the medical team in this beautiful community. Rural setting, relaxed pace of work, newer hospital, excellent compensation and an amazing provincial park as your backyard; this is what Clearwater has to offer you. 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, the modern acute care facility, and 21-bed residential care facility. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-281

FAMILY PHYSICIAN: BC – Lillooet. Every fifth week you get a one week vacation! Further vacation negotiable! Excellent incentives and remuneration are only part of this opportunity. Wanted: family practitioner with ER skills to enjoy rural living and a magnificent wilderness playground. Lillooet is a rural town set against the beautiful backdrop of the Fraser River and spectacular B.C. Coastal Mountains. Located only 1.5 hours from Whistler, there are endless opportunities to enjoy fishing, canoeing, hiking, mountain biking, snowmobiling, ice-climbing, and skiing. Work with five other physicians in a single, unopposed practice. On call: 1-in-5. Fee-for-service. Numerous recruitment and retention incentives. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-282

FAMILY PHYSICIAN: BC – Enderby. Interior Health is seeking a full-time physician to join a well-established clinic located in the beautiful North Okanagan. Collaborative practice in multidisciplinary setting that includes laboratory, mental health, public health and community care. Contract includes guaranteed income and no overhead; and Enderby qualifies for benefits under the Rural Incentive Program. Year-round recreation includes access to lakes in the summer and skiing in the winter. For more information contact: email physicianrecruitment@interior health.ca or view us online at our Web site www.betterhere.ca –RM-284

FAMILY PHYSICIAN: BC – Princeton. The city of Princeton is seeking a permanent family physician for their vibrant active community. The successful candidate will work with a team of physicians who provide a full range of medical services in a six-bed community hospital. Scope of practice includes joining on-call for 24/7 Emergency Department. Princeton General Hospital provides emergency, general medicine and basic laboratory and diagnostic imaging services. Hours are 9 am – 5 pm plus on call, 1:4. With its friendly people, and scenic location amongst the rivers, mountains, and lakes, the area offers a wide range of year-round outdoor recreational opportunities. Additional relocation, recruitment and incentives are available. Please contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-269

FAMILY PHYSICIAN: BC – Elkford is located in the beautiful Elk Valley in the Rocky Mountains, close to Calgary. Recreational opportunities are limitless, including world-class mountain biking, fly fishing, and skiing at nearby Fernie Alpine Resort. Elkford seeks a full-time physician to fill a salaried, contract position in an EMR clinic with an integrated multidisciplinary team, laboratory and diagnostic imaging services, and ER (daytime only). Good regional specialist support. Generous signing bonus, relocation funding, rural retention bonuses, 43 paid vacation days per year, accommodation (6 months), and local recreation passes provided. For more information contact: email physicianrecruitment @interiorhealth.ca or view us online at our Web site www.betterhere.ca. –RM-265b

INTERNIST: BC – Cranbrook. East Kootenay Regional Hospital (EKRH) invites candidates to join their team in providing consultative internal medicine. EKRH is centrally located near downtown Cranbrook, serving a catchment area of approximately 80,000 people. This position entails joining two other full-time Internists with special interests in rheumatology and nephrology and a third part-time General Internist. (A strong family practice department – many of whom are hospitalists. Internists generally do supportive care.) Qualifications are: Fellow of the Royal College of Physicians and Surgeons of Canada (FRCPC) and Advanced Cardiac Life Support Certification (ACLS) combined with internist experience. Hours of work: Monday through Friday, 9 am – 5 pm (excluding calls). On-call requirements are 1:4, MOCAP Level 1. Remuneration: fee for service – estimated gross income $350 - 450,000; rural incentives: recruitment incentive $20,000, retention fee premium 14%, retention flat fee $12,240, and relocation assistance. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-290

PATHOLOGIST: BC – Trail. Nestled in the Selkirk Mountains and embraced by rolling hills and the shores of the Columbia River, Kootenay Boundary Regional Hospital (KBRH) seeks a permanent general pathologist with experience in clinical pathology. Main responsibilities of this role will be in anatomic pathology, hematopathology, chemistry and transfusion medicine. The oversight for microbiology is provided by microbiologists in Kelowna and Kamloops. Laboratory services are fully integrated with full professional support from the other pathologists in the health authority through various means including telepathology. There is no scheduled obligated on call; it is based on availability only. Eligible for additional remuneration including: 11.34% retention premium; $9,914.40 annual retention flat fee; significant recruitment visit and relocation reimbursements. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-283

www.betterhere.ca

Interior Health

FAMILY PHYSICIAN OPPORTUNITIES
Vancouver Island, B.C.

Your career can be a demanding one … so why not consider a location where the benefits are ***naturally distracting***?

Full-time Family Practice opportunities are available in both rural and urban locations, including **Port Hardy, Tofino, Lake Cowichan** and on the **Gulf Islands** of **Galiano, Gabriola, Quadra** and **Salt Spring**. The expansive natural beauty, access to amazing recreational activities, and one of the best climates in Canada – Vancouver Island is a mecca for outdoor enthusiasts and offers a quality of life second to none!

A range of attractive **Rural Benefits** for these communities include:

- $10,000 - $20,000 Recruitment Incentive
- $5,000 Relocation Reimbursement
- Fee-for-Service Premium
- Annual Retention Payment
- Annual CME Allowance
- Rural GP Locum Program provided in designated communities

View all our current opportunities at **www.viha.ca** or contact us directly for more information.

Sheila Leversidge, Physician Recruitment Coordinator
Tel 250 740-6972 • Email physicians@viha.ca

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VANCOUVER ISLAND health authority
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RM-289

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RM-287

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RM-285

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IT IS ESTIMATED THAT NEARLY

1 IN 3

CANADIANS WILL EXPERIENCE HERPES ZOSTER IN THEIR LIFETIME, AND THE RISK INCREASES AFTER THE AGE OF 50.[1]

FOR SOME, IT CAN MEAN EXCRUCIATING AND POTENTIALLY DEBILITATING PAIN.[1,2,*]

SELECTED IMPORTANT SAFETY INFORMATION

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

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

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

References: 1. Data on file, Merck Canada Inc. Product Monograph. ZOSTAVAX®, 2011. **2.** Clinical Manifestations: Chickenpox. In: Mandell G, Bennett J, Dolin R eds. Principles and Practice of Infectious Diseases, 6th ed, vol 2. Philadelphia: Elsevier; 2005.

ARE YOUR PATIENTS PROTECTED?

ZOSTAVAX®

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IN INDIVIDUALS 50 YEARS OF AGE OR OLDER.

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See prescribing summary on page 69