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## EDITORIALS / ÉDITORIAUX



## ORIGINAL ARTICLES / ARTICLES ORIGINAUX



## THE PRACTITIONER / LE PRATICIEN



## OFF CALL / DÉTENTE

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*Acrylic, 14"×18"*
*by Brian Buckrell © 2011*
*"A winter view of the town of Collingwood, Ontario, from the top of the Blue Mountain."*
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# Moving to a new office

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The shiny new rural doctor recruit who comes to town, the older doctor who moves away to be closer to a family in the city, and the doctor who moves within town to a new building all share in the excitement of a move.

There will be new opportunities for sure. There may be a new group of colleagues or new relationships with an existing group. There will be the chance to bring best practices to the new space and to leave behind limitations of the old.

I moved to a municipal building early in my career. Some unnamed southern architect had designed it with single-pane windows and electric heat, neither of which was up to northern Ontario winters. One of my colleagues brought his dog to his office (we think to warm his feet) and had to thaw the dog dish, as it would freeze overnight. I doubt the fire chief would have approved of all the space heaters in use before central heating was installed.

A few years later, I moved my office to a private home. It was warmer and had the additional advantage of centripetal examining rooms, and I happily walked in circles for years. The design and the space were by no means perfect, however. I never did use the central dictating nook, and I did do a minor renovation to add space for a nurse. Now I am moving back to the municipal building to join the rest of the "team" (but not before the town replaces the windows!). The team is the draw, but there are other buildings available.

Rural real estate pricing, such as it is outside the penumbra of commuting distance to the city, makes for all sorts of options. New can be done, and sometimes has to be done, but renovating an underused space is often the most cost-efficient choice. Then the rural doctor, generalist that he or she is, runs directly into a thousand questions that are at the limits of his or her abilities and potentially at the limits of anyone else in town. What is an efficient office design? Are the walls soundproof? (Staggered-stud construction is a good start… I think.) How can we ensure that our charts (be they paper or digital or both) remain accessible for the next 10–28 years (as statutes dictate)?

Sometimes (often) we ask an experienced colleague. The Internet is a fountain of free advice, usually good and sometimes rather terrible. There is always the consultant from the city, who just might need to be reminded about things such as snow loading in your part of the country. We muddle through. In that way it's perhaps not that different from our day job.

# Les grands déménagements

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Le tout nouveau diplômé qui entame sa carrière en milieu rural, le médecin d'expérience qui déménage en ville pour se rapprocher de sa famille, le médecin qui emménage dans un nouveau bureau à proximité... Ils ont tous un point commun : la fébrilité qui accompagne un déménagement.

De nouvelles possibilités s'ouvriront à eux, c'est certain. Une nouvelle équipe de travail, peut-être, ou encore le développement d'une relation nouvelle avec une équipe existante. Ils auront la chance de mettre en place des pratiques exemplaires dans leur nouveau lieu de travail, tout en abandonnant sans regret les restrictions de leur ancien espace.

Au début de ma carrière, j'ai travaillé dans un édifice municipal. C'est un architecte anonyme venu de cieux plus cléments qui l'avait conçu, avec des vitres à simple épaisseur et un chauffage électrique, ni l'un ni l'autre adapté aux rudes hivers du Nord de l'Ontario. J'avais un collègue qui amenait son chien avec lui au bureau — comme chauffe-pieds, selon la rumeur. Le bol du chien gelait pendant la nuit, et il fallait le faire dégeler chaque matin. Je doute que le chef des pompiers eût approuvé le nombre de chaufferettes branchées dans nos locaux avant l'installation du chauffage central…

Quelques années plus tard, j'ai établi mon bureau dans une maison. Il y faisait plus chaud, et mes salles d'examen étaient agencées en cercle. J'ai passé des années à tourner en rond avec joie. Bien sûr, l'espace et son organisation étaient loin de la perfection. Je n'ai jamais pu utiliser l'alcôve centrale pour le dictaphone, et j'ai eu à faire des rénovations mineures pour faire de la place pour une infirmière. Et maintenant, je retourne au bâtiment municipal, où je retrouverai le reste de l'équipe (mais pas avant que la Ville ait remplacé les fenêtres!). Je reviens pour les gens, même si d'autres bâtiments sont disponibles.

Les prix de l'immobilier en milieu rural, hors de la zone où la grande ville est encore accessible pour les navetteurs, ouvrent une foule de possibilités. On peut construire en neuf, et on doit parfois le faire, mais il est souvent plus rentable de rénover des locaux sous-utilisés. Mais c'est alors que le médecin en milieu rural, tout généraliste qu'il soit, se retrouve aux prises avec des milliers de questions qui dépassent ses capacités, voire celles des habitants de la région. Quel serait l'aménagement de bureau le plus efficace? Les murs sont-ils insonorisés? (Des cloisons à poteaux en chicane sont un bon début… je pense.) Comment veiller à ce que les dossiers (papier, numériques ou les deux) restent accessibles pour les 10 à 28 prochaines années, comme la loi l'exige?

Parfois — souvent —, on fait appel à un collègue plus expérimenté. Internet est une source intarissable de conseils gratuits, généralement bons, parfois terribles. On peut aussi retenir un consultant de la grande ville, à qui il faudra toutefois rappeler les impératifs de la vie dans notre coin de pays — l'accumulation de neige, par exemple. On se débrouille tant bien que mal. D'une certaine façon, ce n'est pas si différent de notre quotidien comme médecin.

# President's message. New horizons for rural surgery

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Canada's programs in Enhanced Surgical Skills (ESS) and operative delivery provide rural and remote communities with access to surgical, maternity and trauma care. The SRPC has been a strong advocate for these programs and has been a home for these practitioners. Among our ranks, there are many people who deserve mention, but, for brevity, I will identify only the most persevering of the champions. Dr. Stuart Iglesias, representing the SRPC and our Council, has been working tirelessly and tenaciously on this file for decades. Owing to his dedication, this program has now gained a much greater level of acceptance from the Canadian Association of General Surgeons (CAGS), the Society of Obstetricians and Gynaecologists of Canada and the College of Family Physicians of Canada. This program will soon be elevated to the Category 1 level (similar to Family Practice Anesthesia and Emergency Medicine), offering its graduates a Certificate of Added Competence.

These programs train rural family physicians in a broad scope of general and emergent surgical procedures, including cesarean delivery, endoscopy and surgical sterilization, as well as orthopedic and ear, nose and throat procedures. Some learn only operative delivery skills, depending on the needs of their community. According to Rural Coordination Centre of BC data, there are currently about 150 ESS physicians practising in 55 communities across this country. The landmark "Joint position paper on rural surgery and operative delivery" affirmed the benefits and safety of accessing surgical services close to home.[1] Its overarching recommendation was to integrate these small rural programs into formal surgical networks that integrate our ESS physicians with the regional specialist surgeons.

In September, ESS physicians and the SRPC participated as full collaborators in the Rural Surgery Summit organized by CAGS. We also participated in an ESS program review hosted by the University of Saskatchewan that assembled leaders in general surgery from Canada and Australia. This review examined current training and made recommendations for future directions. Strategies were recommended for continuing professional development and for establishing surgical networks to support family practitioners with operative skills.

The need for these services in rural primary care is shared by both high- and low-resource countries. The World Health Organization has identified access to essential surgical services at local hospitals as the backbone of rural primary care.[2] Some in global health believe that this initiative, led, in part, by the SRPC, will be of considerable interest internationally.

It is with considerable pride that I predict that our ESS programs will continue to flourish and expand, to provide these needed services to rural and remote communities and to help to fulfill the SRPC's commitment to advancing rural family medicine in Canada.

Thanks, Stu!

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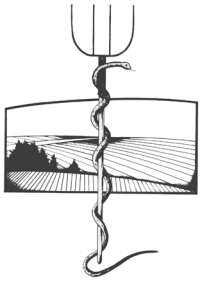

# Message du président. De nouveaux horizons pour la chirurgie en milieu rural

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Les programmes canadiens sur les compétences avancées en chirurgie (CAC) et en accouchement chirurgical permettent aux collectivités des régions rurales et éloignées d'avoir accès à des soins de chirurgie, de maternité et de traumatologie. La Société de la médecine rurale du Canada (SMRC), qui défend vigoureusement ces programmes, est devenue un phare pour les médecins de ces régions. Elle compte parmi ses rangs de nombreuses personnes qui méritent une mention spéciale, mais par souci de concision, je ne nommerai que le plus persévérant d'entre tous : le Dr Stuart Iglesias. Représentant la SMRC et notre Conseil, ce médecin déterminé travaille sans relâche sur les programmes de compétences avancées, et ce, depuis des décennies. Grâce à son dévouement, ces programmes sont aujourd'hui bien reconnus par l'Association canadienne des chirurgiens généraux (ACCG), la Société des obstétriciens et gynécologues du Canada et le Collège des médecins de famille du Canada, et appartiendront bientôt à la catégorie 1 (comme les programmes de compétences avancées en médecine d'urgence et en anesthésie en médecine familiale), ce qui permettra aux diplômés d'obtenir un certificat de compétences additionnelles.

Les programmes de CAC offrent aux médecins de famille des régions rurales une formation sur différentes interventions chirurgicales générales et émergentes, comme la césarienne, l'endoscopie et la stérilisation chirurgicale, ainsi que sur les interventions orthopédiques et oto-rhino-laryngologiques. Selon les besoins de leur collectivité, certains médecins choisiront de ne développer que leurs compétences en accouchement. D'après des données du Centre de coordination rurale de la Colombie-Britannique, le Canada compte environ 150 médecins détenant des CAC, répartis dans 55 collectivités. Le fameux *Joint position paper on rural surgery and operative delivery* a exposé les avantages et la sécurité que procure l'accès à des services chirurgicaux à proximité[1]. Cet article recommandait principalement de faire de ces programmes ruraux de petite envergure des réseaux chirurgicaux officiels, qui réuniraient les médecins détenant des CAC et les chirurgiens spécialisés régionaux.

En septembre, les médecins détenant des CAC et la SMRC ont participé au Sommet sur la chirurgie en milieu rural de l'ACCG en tant que collaborateurs à part entière. Nous avons également pris part à l'évaluation du programme de CAC organisée par l'Université de la Saskatchewan, qui rassemblait des leaders canadiens et australiens en chirurgie générale. Cette évaluation a examiné le programme de formation actuel et formulé des recommandations pour l'avenir. Les stratégies recommandées portaient sur le développement professionnel continu et l'établissement de réseaux chirurgicaux chargés de soutenir les médecins de famille ayant des compétences en chirurgie.

La présence de ces services augmentés pour épauler les soins primaires en milieu rural est cruciale, que ce soit dans les pays qui disposent de ressources limitées ou dans ceux qui disposent de ressources importantes. L'Organisation mondiale de la Santé a d'ailleurs reconnu que l'accès à des services chirurgicaux essentiels dans les hôpitaux régionaux constituait la pierre angulaire des soins primaires en milieu rural[2]. Selon certains professionnels du monde de la santé mondiale, cette initiative, en partie menée par la SMRC, présente un intérêt considérable pour le monde entier.

C'est donc avec beaucoup de fierté que je fais la prédiction suivante : les programmes de CAC se développeront et s'épanouiront davantage, de façon à offrir aux collectivités des régions rurales et éloignées les soins dont ils ont besoin et à aider la SMRC à respecter son engagement, qui est de faire progresser la médecine familiale canadienne.

Merci beaucoup, Stuart!

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# Original Article
# Article original

# Rural–urban differences in use of health care resources among patients with ankle sprains in Ontario

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*This article has been peer reviewed.*

**Introduction:** Ankle sprains can have a significant impact on the short- and long-term well-being of patients. We conducted a study to describe the demographic characteristics of people with an ankle sprain/dislocation treated at physicians' offices and emergency departments in Ontario, by rurality status; describe the use of health care services and the associated costs in this population, by rurality status; and investigate the relation between health care costs and rurality status by sex, age, income quintile and season of injury.

**Methods:** We obtained data on nonfracture injuries of the ankle, foot and toe (International Statistical Classification of Diseases and Related Health Problems, 10th revision, Canada diagnostic code S93) in Ontario between 2003 and 2011 from multiple databases linked through the Institute for Clinical Evaluative Sciences. We used the Rurality Index of Ontario (RIO) as a measure of the rurality level of communities. Demographic characteristics, use of health care services and physician billing costs were obtained and compared among 5 RIO categories.

**Results:** Data were available for 1 787 866 injury encounters. Patients in the most rural RIO category saw specialists least often and had the greatest number of emergency department visits. The mean cost for specialist visits was $141 in the most urban category and $157 in the most rural category ($p < 0.05$), and the corresponding mean costs for general practitioner visits were $37 and $18, respectively ($p < 0.001$).

**Conclusion:** The differences in use of health care resources between RIO categories may indicate a lack of access to specialist care in rural areas, thereby necessitating reliance on emergency care. These results may be useful in allocating future resources to better serve rural patients.

**Introduction :** Les entorses de la cheville peuvent avoir un effet important sur le bien-être à court et à long terme des patients. Notre étude avait trois objectifs : 1) décrire les caractéristiques démographiques des personnes traitées pour une entorse/luxation de la cheville dans un cabinet de médecin ou un service d'urgence en Ontario, par statuts ruraux; 2) décrire l'utilisation des services de santé et les coûts associés pour cette population, par statuts ruraux; 3) examiner le lien entre le coût des soins de santé et le statut rural selon le sexe, l'âge, le quintile de revenu et la saison au cours de laquelle la blessure est survenue.

**Méthodes :** Nous avons obtenu des données sur les blessures sans fracture de la cheville, du pied et de l'orteil (International Statistical Classification of Diseases and Related Health Problems, 10e révision, Canada code de diagnostic S93) en Ontario, entre 2003 et 2011, en interrogeant plusieurs bases de données par l'entremise de l'Institut de recherche en services de santé. Nous avons utilisé l'indice de ruralité de l'Ontario (IRO) pour mesurer le niveau de ruralité des localités. Nous avons comparé les données recueillies sur les caractéristiques démographiques, l'utilisation des services de santé et les coûts de facturation des médecins entre 5 catégories d'IRO.

**Résultats :** Des données étaient disponibles pour 1 787 866 consultations liées à une blessure. Les patients de la catégorie d'IRO la plus rurale consultaient des spécialistes

moins souvent et avaient le nombre le plus élevé de visites aux urgences. Le coût moyen des rendez-vous avec un spécialiste était de 141 $ dans la catégorie la plus urbaine et de 157 $ dans la catégorie la plus rurale ($p < 0,05$). Le coût moyen correspondant des rendez-vous avec un médecin généraliste s'élevait à 37 $ et à 18 $, respectivement ($p < 0,001$).

**Conclusion :** Les différences au chapitre de l'utilisation des ressources de soins de santé entre les catégories d'IRO pourraient indiquer un problème d'accès aux soins spécialisés en milieu rural qui créerait une dépendance à l'égard des soins d'urgence. Ces résultats pourraient s'avérer utiles à l'avenir pour l'allocation des ressources afin de mieux servir les patients des régions rurales.

## INTRODUCTION

Ankle sprains are common injuries with a high incidence among children (age 12 yr or less) and adolescents (age 13–17 yr). A recent meta-analysis showed that the pooled cumulative incidence rates of ankle sprain for these age groups are 2.85 and 1.94 per 1000 exposures, respectively, compared to 0.72 for adults.[1] Females have a higher cumulative incidence rate of ankle sprains (13.6 per 1000 exposures) than males (6.94 per 1000 exposures).[1] Sports and other forms of physical activity significantly increase the risk of this injury, with 10%–30% of all sport injuries related to the ankle joint.[2]

Although ankle sprains are often viewed as benign, self-contained injuries, their effects can last for months or even years.[3] The physical limitations of these injuries have a high economic impact on society. Ankle sprains account for 7%–10% of all emergency department visits in the United States,[4] despite reports that up to two-thirds of people with ankle sprains do not seek treatment in an emergency department.[5] Studies from Belgium, the United Kingdom and the United States show that the cost of diagnosis and treatment of an ankle sprain ranges from $496 to $4720 (2013 Canadian dollars) depending on the severity of the sprain and the treatment.[6–9] Furthermore, it has been reported that as many as one-quarter of those who experience an ankle sprain miss school or work for more than 7 days.[10] However, Canadian data on this topic are lacking.

Despite the presence of a universal health care system in Ontario, differences exist in accessibility and quality of health care across the province.[11,12] Although the number of physicians providing services in rural areas is increasing,[12] there are still instances in which patients have to travel far distances and may receive less care, depending on their level of rurality.[11] Research has been conducted measuring use, including medication uptake,[13] care of chronic ischemic heart disease[14] and cardiac rehabilitation, based on rurality in Ontario.[15] To our knowledge, no studies have assessed the differences in use of health care resources by patients with musculoskeletal injuries based on rurality.

Therefore, the objectives of this study were to 1) describe the demographic characteristics of people with an ankle sprain or dislocation treated at physicians' offices and emergency departments in Ontario, by rurality status; 2) describe the use of health care services, including the number of family physician, specialist physician and emergency department visits and the associated costs, by patients with ankle sprains or dislocations, by rurality status; and 3) investigate the relation between health care costs and rurality status by sex, age, income quintile and season of injury.

## METHODS

### Data sources

We obtained aggregate data on medical encounters for nonfracture injuries of the ankle, foot and toe from multiple linked databases accessible through the Institute for Clinical Evaluative Sciences. These were identified with the use of International Statistical Classification of Diseases and Related Health Problems, 10th revision, Canada (ICD-10-CA)[16] diagnostic code S93, representing "dislocation, sprain and strain of joints and ligaments at ankle and foot level" (hereinafter referred to as an "injury"). The databases included the Canadian Institute for Health Information Discharge Abstract Database,[17] the Ontario Health Insurance Plan,[18] the National Ambulatory Care Reporting System[19] and the Registered Persons Database.[20] These data sets were linked by means of unique encoded identifiers and analyzed at the Institute for Clinical Evaluative Sciences. All encounters reported between Apr. 1, 2003, and Mar. 31, 2011, among Ontario residents covered by the Ontario Health Insurance Plan were included.

### Study variables

Each injury record included information on the use of health care services and treatment costs for 6 months after the initial diagnosis date. Injury was the event of interest; therefore, a single patient with multiple ankle injuries could contribute numerous entries over the period under study as long as 6 months had elapsed between each event. The variables included in the aggregate data were patient sex, age and income quintile (determined from 2006 census data based on postal code of residence);[21,22] Rurality Index for Ontario (RIO) score;[23,24] season when the injury took place (defined by calendar date ranges); number of family physician, specialist physician and emergency department visits related to the injury; and the cost of physician visits, obtained from the Ontario Health Insurance Plan. Data from the Institute for Clinical Evaluative Sciences did not provide estimates for the direct costs related to the provision of care and costs of running the emergency department for treatment of an ankle sprain or dislocation. We estimated costs of running the emergency department (capturing nursing costs, material and overhead expenses of the hospital) using the Ontario Case Costing Initiative;[25] the cost amounted to $177.59 per injury. This amount included cost information on 19 different ICD-10-CM diagnostic codes, which together covered all variations of the S93 diagnostic code used in this study, from all years of Ontario Case Costing Initiative data available (2005–2011). All costs were adjusted for inflation and are presented in 2013 Canadian dollars.[26]

#### *Rurality Index for Ontario*

We determined rurality using the RIO, a standard, normalized scale ranging from 0 to 100 that indicates a community/region's degree of rurality.[23,24] A community with a score of 1 is considered to be the least rural, and a score of 100 represents the most remote rural community in the province.[23,24] The RIO represents a community's relative access to health care and is increasingly being used as a determinant for eligibility for programs that offer incentives for physicians to live and work in rural areas.[23,24,27] The RIO scores for the communities of residence for the injury encounters were grouped into 5 categories: 0–3 (communities with advanced referral centres), 4–14 (larger communities, most with basic referral centres), 15–39 (communities with smaller populations), 40–74 (small rural communities located mostly in southern Ontario) and 75–100 (remote rural communities located mostly in the north).[23] The last 2 categories fulfill the Rural Physician Eligibility requirements of Health Force Ontario.[28]

### Statistical analysis

We summarized the demographic characteristics of the injury encounters according to age, sex and income quintile for each of the 5 RIO categories. We determined the number of injuries seen by each health care option — general practitioner/family physician, other specialist physician or emergency department — for each of the RIO categories. We compared differences in proportions between multiple groups using Pearson $\chi^2$ analyses. We performed statistical analyses of the differences between health care costs using analysis of variance (ANOVA) and the Kruskal–Wallis methods using SAS version 9.2 (SAS Institute). We used the Tukey studentized range test for multiple comparisons.

### Ethics approval

This study was approved by the institutional review board at Sunnybrook Health Sciences Centre, and the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board.

## RESULTS

A total of 1 787 866 injury encounters for ICD-10-CA diagnostic code S93 were recorded between Apr. 1, 2003, and Mar. 31, 2011, in Ontario. The total costs billed by specialists and by general practitioners/family physicians during the study period were $64 million and $36 million, respectively. A further $116 million was spent on emergency department visits. The youngest patients (aged 14–24 yr) accounted for a greater proportion of injuries (24%–30%) than the oldest patients (55–64 yr) (14%–16%) (Table 1). Injuries were roughly uniformly distributed across income quintiles for the RIO categories 0–3, 4–14 and 40–74, but the categories 15–39 and 75–100 exhibited a higher proportion of injuries in the high-income quintiles than in the low-income quintiles. About 52% of all injuries involved female patients across all the RIO categories. There was a consistently smaller proportion of injuries in the winter season than in other seasons.

Resource use for each RIO category, summarized as the proportion of injuries with 1 or more visits to each of the health care options, is displayed in Figure 1. The proportion of injuries seen by a specialist was 25.9% in the most urban group, compared to 15.2% in the most rural group ($p < 0.01$,

**Table 1: Cohort demographic characteristics by Rurality Index of Ontario category, 2003–2011**

| | RIO category*; no. (%) of injuries | | | | |
|---|---|---|---|---|---|
| Characteristic | 0–3 *n* = 838 634 | 4–14 *n* = 528 456 | 15–39 *n* = 248 271 | 40–74 *n* = 156 128 | 75–100 *n* = 16 377 |
| **Age, yr** | | | | | |
| 14–24 | 202 446 (24.1) | 143 000 (27.0) | 71 030 (28.6) | 45 824 (29.4) | 4903 (29.9) |
| 25–34 | 155 231 (18.5) | 95 968 (18.2) | 38 755 (15.6) | 23 482 (15.0) | 2720 (16.6) |
| 35–44 | 174 520 (20.8) | 111 610 (21.1) | 49 083 (19.8) | 30 008 (19.2) | 3040 (18.6) |
| 45–54 | 178 797 (21.3) | 105 638 (20.0) | 51 442 (20.7) | 31 991 (20.5) | 3382 (20.6) |
| 55–64 | 127 640 (15.2) | 72 240 (13.7) | 37 961 (15.3) | 24 824 (15.9) | 2334 (14.2) |
| **Income quintile** | | | | | |
| 1 (lowest) | 173 178 (20.6) | 99 614 (18.8) | 31 828 (12.8) | 28 368 (18.2) | 2340 (14.3) |
| 2 | 172 591 (20.6) | 100 935 (19.1) | 40 071 (16.1) | 32 865 (21.0) | 2836 (17.3) |
| 3 | 164 540 (19.6) | 106 907 (20.2) | 51 293 (20.7) | 32 927 (21.1) | 3303 (20.2) |
| 4 | 159 760 (19.0) | 114 199 (21.6) | 64 401 (25.9) | 32 740 (21.0) | 3164 (19.3) |
| 5 (highest) | 168 565 (20.1) | 106 748 (20.2) | 60 677 (24.4) | 29 227 (18.7) | 4731 (28.9) |
| **Sex** | | | | | |
| Female | 435 586 (51.9) | 274 110 (51.9) | 128 282 (51.7) | 79 469 (50.9) | 8477 (51.8) |
| Male | 403 048 (48.1) | 254 346 (48.1) | 119 989 (48.3) | 76 659 (49.1) | 7900 (48.2) |
| **Season** | | | | | |
| Fall | 200 098 (23.8) | 130 317 (24.6) | 60 156 (24.2) | 38 517 (24.7) | 4058 (24.8) |
| Spring | 223 831 (26.7) | 145 008 (27.4) | 67 108 (27.0) | 43 497 (27.8) | 4400 (26.9) |
| Summer | 230 121 (27.4) | 151 878 (28.7) | 69 541 (28.0) | 45 277 (29.0) | 4518 (27.6) |
| Winter | 184 667 (22.0) | 101 252 (19.2) | 51 467 (20.7) | 28 837 (18.5) | 3400 (20.8) |

RIO = Rurality Index of Ontario.
*0–3 = communities with advanced referral centres, 4–14 = larger communities, most with basic referral centres, 15–39 = communities with smaller populations, 40–74 = small rural communities located mostly in southern Ontario, 75–100 = remote rural communities located mostly in the north.[23]

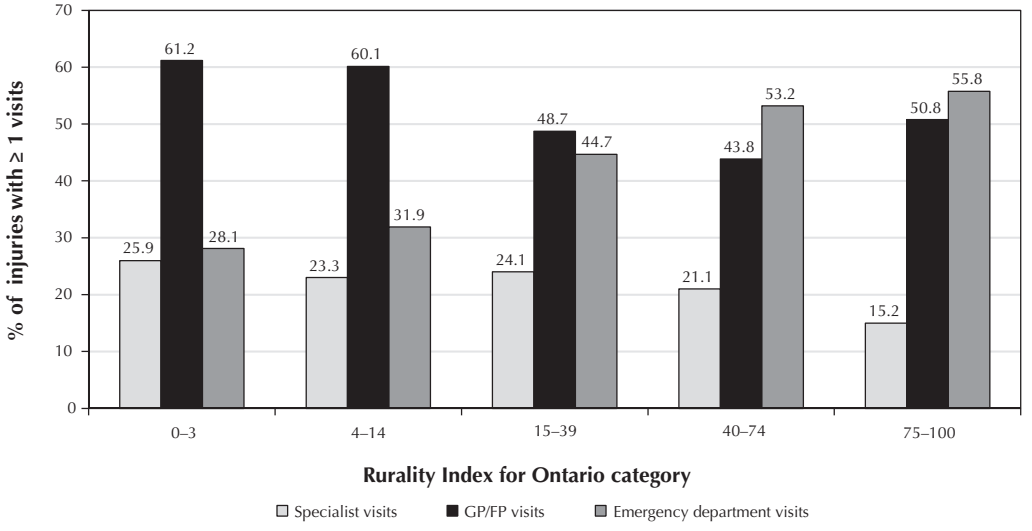


**Fig. 1: Proportion of injuries seen by specialist physicians and general practitioners/family physicians (GPs/FPs) and at emergency departments in Ontario by Rurality Index for Ontario category, 2003–2011. 0–3 = communities with advanced referral centres, 4–14 = larger communities, most with basic referral centres, 15–39 = communities with smaller populations, 40–74 = small rural communities located mostly in southern Ontario, 75–100 = remote rural communities located mostly in the north.[23]**

Pearson $\chi^2$ test). The corresponding values for emergency department visits were 28.1% and 55.8% ($p < 0.001$, Pearson $\chi^2$ test). The proportion of injuries seen by a general practitioner/family physician was 61.2% in the most urban group and 50.8% in the most rural group; however, the value for RIO category 76–100 was higher than that for category 40–75 (43.8%).

The mean cost per injury for general practitioner/family physician and specialist visits by RIO category are presented in Figure 2. These values represent the mean cost spent on an injury for all visits to the given health care option and exclude patients who did not receive any visits of that type. The mean cost for specialist visits was $141.19 in the most urban category, compared to $157.29 in the most rural category ($p < 0.05$, ANOVA). The corresponding values for general practitioner/family physician visits were $37.21 and $17.73 ($p < 0.001$, ANOVA). Detailed cost information on emergency department visits was not available in the data set.

We further assessed the relation between RIO category and the mean cost per injury for general practitioner/family physician and specialist visits after stratification by patient sex, age and income quintile, and season of injury (Fig. 3). For specialists, the mean cost per injury increased with increasing age for all RIO categories, the cost was statistically significantly higher for male patients than for female patients for all except the most rural category, and the cost was higher in the winter than in other seasons for all RIO categories. For general practitioners/family physicians, the mean cost per injury increased with increasing age for all RIO categories, and the cost in winter was significantly greater than that during other seasons only for the 2 most urban categories, by a small margin (in the RIO category 4–14, $34.50 in fall, compared to $36.11 in winter); there were no significant differences in costs between the sexes. The relation between RIO category and costs associated with general practitioner/family physician and specialist visits did not differ statistically across income quintiles. Overall, the patterns observed in the mean costs per injury for specialist visits, namely, higher costs with increased age, male sex and winter, were not observed in the mean costs for general practitioner/family physician visits.

## DISCUSSION

A smaller proportion of rural patients than urban patients saw specialists, whereas a higher proportion visited an emergency department; however, specialist visits were associated with higher costs than general practitioner/family physician visits. Specialist costs were also higher among male patients than female patients, among older patients and in the winter months. These trends were not observed to the same extent in general practitioner/family physician costs.

Most relevant to this study's objectives are the differences in resource use and cost in rural areas. In particular, the decreased proportion of injuries seen by a specialist and the increased proportion seen in the emergency department may indicate differences in accessibility to care. These differences may be due to a multitude of factors, including

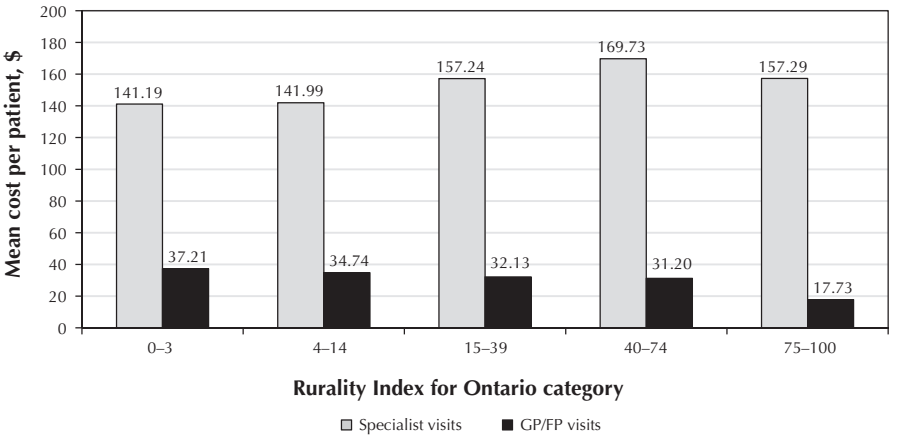


**Fig. 2: Mean cost per injury for specialist and general practitioner/family physician (GP/FP) visits by Rurality Index for Ontario category. Injuries that did not require a visit were excluded from the mean calculation.**

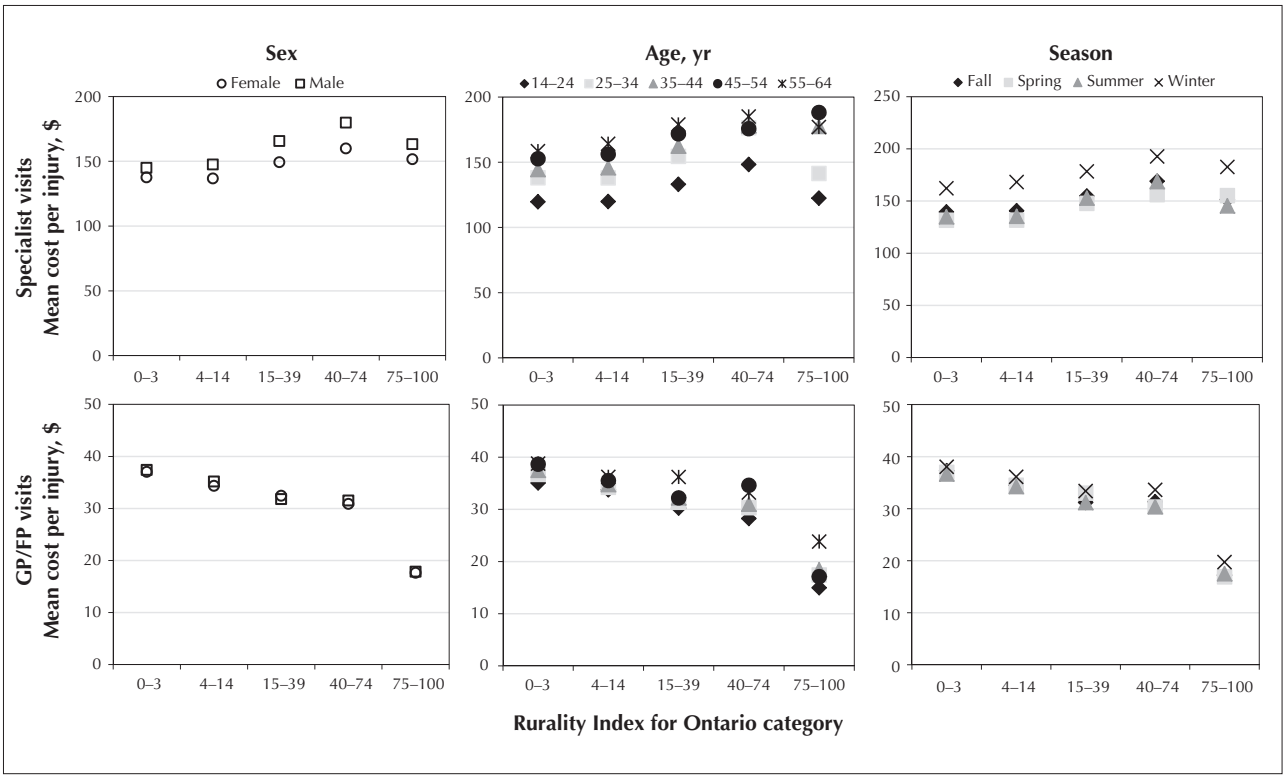


**Fig. 3: Mean cost per injury for specialist and general practitioner/family physician (GP/FP) visits by Rurality Index for Ontario category and by sex, age and season of injury (2013 Canadian dollars).**

physician shortages, the unavailability of sufficient options for after-hours care, long travel distances or the necessity of using complex modes of travel (for example, by air from remote northern communities). In terms of physician attachment, 2016 data showed that residents aged 16 years or more living in the North West Local Health Integration Network had the lowest proportion of people with a general practitioner/family physician or other primary care provider, at 84.3%.[29] In comparison, the provincial average was 94.3%.[29] The higher mean cost for specialist visits in more rural areas may indicate that rural patients are being referred to a specialist for more severe injuries than their urban counterparts, but such a hypothesis would need to be confirmed by a study assessing injury severity as well as costs at the individual level.

The demographic data observed are largely consistent with previous research. Specifically, a higher proportion of ankle sprains was observed in younger versus older patients[1] and in female versus male patients[4] across RIO categories. Numerous studies examining differences in access to health care resources between those residing in urban versus rural parts of Canada have been conducted. Previous research among populations of pregnant women, people with diabetes and people with heart failure showed that patients residing in rural or remote areas experienced more complications and adverse outcomes than those residing in urban centres.[30–32] Furthermore, Finkelstein[33] used population-based Ontario data to explore access to care in the province and found that people residing in urban areas incurred higher health care expenditures than those residing in rural settings, which may have been attributable to greater ease of access to care and, hence, higher use of health care services among urban residents. Although we did not investigate adverse outcomes, we did find that patterns of use of health care resources varied among patients residing in rural areas, with these patients using fewer general practitioner/family physician and specialist services than did urban dwellers.

## Strengths and limitations

One of the main strengths of this study is the large sample (over 1.7 million injury encounters), which resulted in sufficient numbers of injury encounters in all 5 RIO categories. However, owing to the large sample, many relations that would not have been significant with smaller data sets were significant. It quickly becomes a lesson in recognizing the difference between statistical significance and clinical

importance. The analysis identified multiple areas of clinical importance, including a greater reliance on emergency department care among people residing in remote rural communities. From a patient perspective, this may indicate that those living in such communities have limited access to general practitioner/family physician services. From a health care system perspective, treating ankle sprains at the emergency department is more cost intensive than similar care provided by a general practitioner/family physician, as shown by our findings.

This study had several limitations, 1 of which was the case definition of ankle sprains. Because of the administrative nature of the data sets, these injuries were mostly coded as ICD-10-CA diagnostic code S93, which, in addition to ankle sprains, captures other nonfracture injuries to the foot and toe. Another limitation was the lack of a direct geographic variable to assess the underlying population demographic characteristics. In particular, this affected the conclusions that could be drawn from the finding that low-income people in rural areas accounted for a smaller proportion of injuries: the lowest income quintile in the most rural category accounted for only 14% of injuries instead of the expected 20%. The observed distribution of injuries may also have been confounded by the method used to assign income quintiles; connecting socioeconomic status from census data to forward sortation area codes has considerable limitations in rural populations and is prone to error.[34] Finally, using outside information from the Ontario Case Costing Initiative[25] for average emergency department costs allowed the calculation of an overall total attributable to injury care, although this also included indirect costs, whereas the general practitioner/family physician and specialist costs did not.

When discussing the relation between RIO categories and differences in access to care, it is important to note that the RIO is partially determined by geographic distance to primary or advanced care centres.[23,24] People who have to travel farther for care have a greater burden in accessing care, which, in turn, affects measures of accessibility.[35] Differences in resource use between RIO categories will likely always exist; the question becomes whether we are satisfied with the current differences or whether change is needed to help bridge the gap. A review of the literature from Canada, the United States, Australia, New Zealand and the United Kingdom showed that people residing in rural locations do not always experience disadvantages in terms of their health status compared to those who reside in urban centres.[36] Future research should therefore focus on the large disparities observed, including the higher proportion of people from rural areas accessing emergency care for ankle injuries, to determine the impact of these findings.

## CONCLUSION

The differences in use of health care resources between patients in different RIO categories may indicate a lack of access to general practitioner/family physician and specialist care for those residing in rural areas, thereby requiring these residents to rely on emergency services. In addition, the health care costs for treating ankle injuries among people from these areas tended to be higher than those for people in less rural areas, which indicates more resource-intensive injuries among the rural population. These results may be useful in allocating future resources to better serve rural patients.

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# Original Article
# Article original

# Rural physician supply and retention: factors in the Canadian context

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**Introduction:** Millions of Canadians are without a primary care provider, with rural areas being most affected. The primary objective of this article was to explore the factors surrounding the retention of rural physicians in Canada.
**Methods:** We conducted a critical literature review on rural physician retention. We searched PubMed, Embase, CINAHL and ERIC for relevant articles and completed a narrative synthesis.
**Results:** National challenges in physician supply have taken a disproportionate toll on Canadians living in rural regions and provinces. Nearly 75% of patients lack access to a regular physician in some areas. Current challenges in rural physician supply include prior reduced enrolment at Canadian schools, increased competition for international medical graduates in urban centres, longer postgraduate training times and migration from rural to more urban areas. Several evidence-based strategies exist to improve retention, such as early exposure to rural medicine during training and recruitment incentives. Cohort studies suggest that increasing enrolment for local medical students results in increased provincial physician supply.
**Conclusion:** Nationally there is both a shortage and maldistribution of the physician supply, with rural Canadians being disproportionately affected. Enhanced, forward-thinking retention strategies, including early rural exposure for trainees and training local students, will improve community health and help correct rural disparities for Canadians.

**Introduction :** Des millions de Canadiens n'ont pas de fournisseur de soins primaires, en particulier dans les régions rurales. Le but principal de cet article était d'examiner les facteurs de maintien en poste des médecins en milieu rural au Canada.
**Méthodes :** Nous avons effectué une recension critique de la littérature sur le maintien en poste des médecins en milieu rural. Nous avons interrogé les bases de données PubMed, Embase, CINAHL et ERIC afin de trouver des articles pertinents, et nous avons fait une synthèse narrative.
**Résultats :** Les défis liés à l'offre de médecins au Canada ont eu un effet négatif disproportionné sur les habitants des provinces et régions rurales. Près de 75 % des patients n'ont pas accès à un médecin attitré dans certaines régions. En milieu rural, les défis comprennent la réduction antérieure du taux d'inscription dans les facultés de médecine canadiennes; la concurrence accrue pour les diplômés internationaux en médecine dans les centres urbains; la durée accrue de la formation postdoctorale et la migration vers des régions urbaines. Il existe plusieurs stratégies fondées sur des données probantes visant à améliorer le maintien en poste, notamment l'exposition précoce à la médecine rurale dans le cadre de mesures incitatives de formation et de recrutement. Des études de cohorte donnent à penser que la hausse du nombre d'inscriptions d'étudiants en médecine locaux entraîne une augmentation de l'offre provinciale de médecins.
**Conclusion :** À l'échelle nationale, il existe à la fois une pénurie et une mauvaise distribution de l'offre de médecins qui touchent de façon disproportionnée les régions rurales. Des stratégies de maintien en poste améliorées et avant-gardistes, notamment la formation des étudiants locaux et une exposition précoce à la formation rurale pour les médecins en formation, favoriseront la santé communautaire et aideront à corriger les disparités.

## INTRODUCTION

At present, there is a critical shortage of physicians in Canada: more than 4.6 million Canadians are without a primary care physician.[1] Across the country, physician supply is in a constant state of flux, with rural areas experiencing the largest deficits and urban regions experiencing surpluses in certain disciplines.[2–5] The primary objective of this critical literature review was to examine the factors surrounding the retention of rural physicians in Canada. By examining these factors, improved programs and policies may be developed, thereby promoting efficiency within health care services, reducing regional inequalities and improving the health status of Canadians.

## METHODS

We searched PubMed, Embase, CINAHL and ERIC for peer-reviewed articles from 1995 to 2016. Search terms included physician(s), retention, rural practice, rural health, physician supply and regular doctor. Search terms were limited to the title or abstract. We also searched Google and Google Scholar for relevant reports on physician retention, physician supply and rural health inequalities.

## RESULTS

### Physician shortages

The figure of 4.6 million Canadians needing a regular doctor[1] is somewhat misleading, as it does not break down Canadians by whether or not they have looked for a physician. Based on Canadian Community Health Survey data, about 1.2 million people cannot find a physician, and 2.4 million are not actively looking for one.[1] Likewise, with only 228 physicians per 100 000 people, Canada has one of the lowest physician-to-population ratios among countries that provide universal health care.[2,6]

Although many Canadians are unable to find a family physician, this does not necessarily imply there is an absolute shortage, as the underlying geographic maldistribution of physicians has a substantial negative impact.[3,4] More than 20% of the Canadian population reside in rural areas, but only 9.3% of physicians practise there.[3] This is not due to a decreased need for medical services: more rural than urban residents lack a regular physician.[3] There is also significant interprovincial migration of physicians, which has resulted in net losses for rural provinces such as Saskatchewan and Manitoba.[2] This ultimately results in an increase in the urban/rural disparity in health care services. Although intraprovincial data are lacking, one can extrapolate that there is likely net migration within provinces, from rural to urban regions.

Historically, this shortfall has been largely mitigated through recruitment campaigns aimed at international medical graduates.[7] However, the practice of recruiting from outside Canada can lead to "poaching" of doctors from emerging nations.[8] There are an estimated 1700 physicians from South Africa and 1400 from India practising in Canada.[9] With the HIV epidemic spreading across Africa, such jurisdictions cannot afford to lose any of their physicians.[4] As a developed nation, it can be argued that Canada has a responsibility to ensure self-sufficiency in its physician supply, through targeted enrolment and improved retention in rural regions. Developing countries are now facing shortfalls in their health human resources, and this, coupled with changing immigration policies, has led to a decrease in the proportion of international medical graduates in the Canadian physician workforce, from 30% in the 1980s to 25.4% in 2015.[4,10] This re-emphasizes the importance for Canada to become self-reliant in its physician needs.

It is also important to consider that the overall number of primary care physicians in Canada has increased over the last 2 decades. In 1980, there were 76.4 family physicians per 100 000 people; this increased to about 115 family physicians by 2015.[2,4] For an era in which we perceive a physician shortage, this ratio does not seem congruent. Intergenerational differences in practice patterns and rising patient complexity also play a role. Although total numbers have increased since the 1980s, there is some suggestion that younger physicians are working fewer hours than older ones. National Physician Survey data showed that physicians aged 35–54 tended to work fewer hours than age-matched peers a decade prior.[11] It is also reported that female physicians may work fewer hours than male physicians, although most studies examining women's work hours have not adjusted for age and other confounders, and any effect is likely small.[12] As well, Kirby[10] pointed out that most studies examine only the total numbers of physicians and fail to account for productivity issues, such as inadequate operating room time for surgeons. It does appear that a component of the physician supply problem may actually be related to the change in productivity and is not simply a deficit in the total numbers.[10]

Some of the current difficulties in physician supply can be traced back to the 1991 Barer–Stoddart report, which raised a red flag on potential physician surpluses.[13] It recommended enrolment reductions across the country to reduce overproduction of physicians. Between 1991 and 2000, medical schools saw an overall 13.4% cut in the number of seats,[14] and the number of international medical graduates entering Canada was restricted. However, the report was flawed in several capacities. It examined only yearly averages, precluding a sophisticated analysis of the trends, and oversimplified the problem. It failed to account for several factors affecting the overall supply, namely, the aging workforce and decreased international medical graduate recruitment.[10,14] As well, longer postgraduate training has resulted in a decrease in the number of fully licensed physicians. In the 1990s, the minimum time to practise was increased from a 1-year internship to a 2-year residency in family medicine.[10] Furthermore, many family physicians are now completing additional "enhanced skills" programs to better serve increasingly complex patient populations. Similarly, there has been an increase in the number of medical students pursuing specialist training, and many specialist physicians now commonly complete a 1- or 2-year postresidency fellowship, further increasing time to practice.

**Rural challenges and physician retention**

The problems in physician supply have taken a disproportionate toll on Canadians living in rural regions and rural provinces. Rural Canadians already experience lower life expectancy, higher infant mortality, higher cancer mortality, higher cardiovascular disease mortality, higher accident rates and higher levels of disability.[4] From 1995 to 2001, the proportion of rural residents dissatisfied with the health care system increased from 9.5% to 25.6%.[3] In addition to these health problems, many lack appropriate physician care. In Newfoundland and Labrador, 75% of residents who lacked a regular doctor lived in rural areas.[3] To complicate matters, it is unlikely that an overall increase in physician supply will translate into increases in these communities.[4]

To quantify some of the hardships rural areas face, Ng and colleagues[5] conducted an analysis of the geographic difficulties with physician distribution. They used enumeration areas from census data to compare the average distance between residents and physicians among rural and urban areas. They found that there was fewer than 1 physician per 1000 people in rural areas, whereas there were more than 2 per 1000 people in urban areas. The mean travel distance to a physician was 10 km for rural residents, compared to 2 km for urban residents. Travel in rural and remote areas is a major barrier to receiving regular and more specialized medical care, especially with poor transportation infrastructure and high fuel costs. In this context, geography can be considered a determinant of health.[4]

Increasing the supply of rural physicians in a sustainable manner will likely require more complex measures, in addition to financial incentives. Sempowski[15] conducted a systematic review to examine the effectiveness of return-of-service agreements (financial incentives provided to undergraduate or postgraduate medical trainees intended to enhance rural recruitment). The review identified 8 studies, and, although the available data were weak, incentives appeared to increase short-term physician supply. However, it has been suggested that these programs tend to have poor results for long-term retention of rural physicians.[4,15] A more recent study in Newfoundland and Labrador showed that doctors under a return-of-service agreement were less likely to leave the province than were those who had not signed such an agreement (odds ratio [OR] 3.22 [95% confidence interval (CI) 1.41–7.14]).[16] As well, 90% of physicians with a return-of-service agreement remained in practice at 4 years, which indicates a possible role for such agreements in encouraging longer retention.[16] However, unlike many return-for-service agreements, those in Newfoundland and Labrador permitted practice anywhere within the province, not in a prespecified area.

One factor to consider in physician retention is geographic background. In a cross-sectional survey, Chan and colleagues[17] examined factors influencing Canadian rural family physicians' decision to enter rural practice. One-third of the 382 respondents grew up in a rural community (< 10 000 people). During medical school, the proportion interested in rural medicine increased from 28% in year 1 to 77% by the end of postgraduate training. The challenge of rural life was rated as an important factor in choosing a rural career. During medical training, physicians with an urban background rated exposure to rural practice as being important in final practice location. It is clear that interest in rural medicine is higher among those with a rural background. However, this study shows that physicians with an urban background make up two-thirds of the rural workforce and that exposure to rural rotations during medical training also substantially

influences those with an urban background to enter practice in rural areas.

Rourke and colleagues[18] also conducted a cross-sectional study assessing the relation between rural background, practice location and rural medical education. They found that rural physicians were more likely than urban physicians to have a rural background (OR 3.31 [95% CI 1.87–5.86]), to have received rural clinical training during undergraduate medical education (OR 2.46 [95% CI 1.53–3.96]) and to have received rural training during postgraduate education (OR 2.17 [95% CI 1.28–3.69]).

In a study comparing Ontario medical school applicants from rural and urban backgrounds in 2002 and 2003, Hutten-Czapski and colleagues[19] found that the 2 groups had similar grade point averages and Medical College Admission Test scores and were about equally as likely to be accepted. However, although the population of Ontario is 13% rural, only 7.3% of the applicants were of rural origin. Those authors hypothesized that this could be due to a number of factors, such as financial barriers and lack of role models. As Chan and colleagues[17] showed, rural background is associated with future rural practice; thus, increasing the number of rural students in medical schools should be a consideration.

Another study on the characteristics of medical school students gave similar results. Dhalla and colleagues[20] surveyed first-year undergraduate medical students across Canada (excluding Quebec) and found that only 10.8% were from rural Canada, compared to the 22.4% of the population who reside in rural communities ($p < 0.001$). With its high response rate (80.2%), this study adds to the evidence that rural students are underrepresented in medical schools. Reducing rural inequalities in access to health care may involve increasing admission of rural students into medical school. Although this was a national survey, it is limited by the exclusion of Quebec, owing to technical problems with email databases.

Rourke and colleagues[21] surveyed rural family physicians and family medicine residents to determine how they rated possible retention strategies for rural practice. A total of 276 physicians and 210 residents responded (response rate 46.6%). Family physicians rated not having to be on-call more than 1 night in 5 and having a supply of locums as being important. Rural physicians ranked funding for continuing medical education and paid time off for participating in these sessions as being important to ensuring adequate rural medical education. Residents rated enhanced locum payment plans, such as travel assistance, as being most important for recruitment. They rated a payment plan to allow time off to teach continuing medical education as being an important recruitment strategy. As with many survey studies, the response rate was somewhat low, which may have resulted in responder bias.

Many of the studies on rural recruitment and retention tend to focus on the physician's perspective. However, spousal factors play an important role in physicians' decision to practise in rural settings. In a qualitative study on spousal perspectives on recruitment and retention of rural doctors, Mayo and Mathews[22] contacted 23 rural physicians in the Burin Peninsula region in Newfoundland and Labrador; 13 spouses agreed to be interviewed. Eight were unemployed, 4 by choice and 4 because of a lack of opportunities. Five participants were spouses of physicians born and trained in the province, and 8 were spouses of international medical graduates. The respondents identified 2 major factors as having an impact on retention: physician workload and community integration. As those authors pointed out, limiting on-call time would help to alleviate the former problem. In a similar qualitative study, Wasko and colleagues[23] interviewed 62 rural physicians in Saskatchewan. Using grounded theory and inductive analysis, they generated multiple themes important for retention, including broad scope of practice, spousal enjoyment of the community and personal enjoyment of the community. In terms of recruitment, the most frequent themes were scope of practice, attraction to the rural lifestyle and having a rural background.

**Sociodemographic factors affecting retention**

Given the shortages and maldistribution of physicians, there is a need to identify factors that would improve retention. With significant interprovincial and international migration, there is a need for rural regions to hold onto their practising physicians. For example, in Newfoundland and Labrador, net losses from 2010 to 2014 ranged between 12 and 44 physicians per year.[2] Effective retention strategies will not only prevent losses but will also contribute to improving efficiency and sustainability within the health care system. Retention in rural and underserviced centres will help reduce overall costs related to the need to constantly recruit and orient new physicians, an expensive endeavour.[24] In addition, improved retention will contribute to

the length of doctor–patient relationships and improve patient satisfaction.[25]

Mathews and colleagues[26] conducted a cross-sectional study examining the retention of Memorial University medical graduates, both provincially and nationally. They linked 2014 data on 1864 medical graduates from the Faculty of Medicine class lists, alumni database and Scott's Medical Database to identify predictors of retention. They found that 88.1% of graduates were practising in Canada, 34.2% were practising in Newfoundland and Labrador, and 11.6% were practising in rural Canada. Using multiple logistic regression, those authors determined that rural background (OR 2.33 [95% CI 1.73–3.13]) and being a family physician (OR 3.61 [95% CI 2.62–4.96]) predicted rural practice in Canada. Predictors of working in rural Newfoundland and Labrador included rural background (OR 3.35 [95% CI 2.13–5.27]), being from Newfoundland and Labrador (OR 11.11 [95% CI 2.70–45.75]), postgraduate training in Newfoundland and Labrador (OR 3.55 [95% CI 1.89–6.66]) and being a family physician (OR 3.68 [95% CI 2.23–6.08]). Therefore, a potential strategy to increase the provincial physician supply may be to increase enrolment for local medical students. Memorial University recently implemented an expansion of its medical school with hopes of improving retention of local graduates.[27] As well, rural Newfoundlanders who graduated from Memorial's medical school were even more likely to practise in Newfoundland. Thus, policies to increase admissions for rural students may help alleviate rural shortages. This study, however, is limited by its cross-sectional design, which precludes information about practice locations before 2014 and length of practice. It is possible that Memorial graduates practised outside of Newfoundland and Labrador then returned home, but it is more likely that they spent much of their career within the province.

Although it is important to know the characteristics of local graduates who stay in a province, it is unclear what the differences are between locals, other Canadians and international medical graduates. In a retrospective study comparing the mean length of stay of these 3 groups, Mathews and colleagues[7] linked data from the College of Physicians and Surgeons of Newfoundland and Labrador, 2004 Scott's Medical Database and the Memorial University postgraduate database. They followed family physicians and general practitioners who started practising between 1997 and 2000 and tracked them until 2004. They found that, compared to local graduates, other Canadian graduates and international medical graduates were more likely to leave Newfoundland and Labrador (hazard ratio 2.15 [95% CI 1.29–3.60] and 2.03 [95% CI 1.26–3.27], respectively). As well, being a Certificant of the College of Family Physicians of Canada was associated with an increased likelihood of staying in the province (OR 1.47 [95% CI 1.04–2.13]). Local graduates stayed much longer than other Canadians and international medical graduates, with half staying 39 months, compared to 25 and 22 months for other Canadian graduates and international medical graduates, respectively. Mou and Rose-Olfert[28] reported similar findings among 3995 family physicians in a cross-sectional study using data from the 2010 National Physician Survey. They found that international medical graduates in rural areas were more likely to migrate than other Canadian graduates (OR 3.08 [95% CI 1.54–6.14]). This supports previous findings that Canadian and local graduates tend to remain in rural regions longer.

In a retrospective study, Fleming and Mathews[29] examined the retention of specialist physicians in Newfoundland and Labrador (180 physicians from 2000–2004 cohort and 211 physicians from 1993–1997 cohort). Physicians in the 2000–2004 cohort were less likely to leave than those in the 1993–1997 cohort (OR 1.6 [95% CI 1.23–2.08]). In the 2000–2004 cohort, medical graduates of Canadian universities, provisionally licensed international medical graduates and fully licensed international medical graduates were 3.19 (95% CI 1.47–6.89), 1.85 (95% CI 1.09–3.17) and 4.39 (95% CI 1.91–10.10) times more likely, respectively, to leave Newfoundland and Labrador than local medical graduates. Those authors also noted that provisionally licensed international medical graduates constituted about 30% of the local physician workforce, compared to a national rate of about 5%, which suggests a high reliance on international recruitment for local supply. Other rural provinces, such as Saskatchewan and Prince Edward Island, use high proportions of noncertified specialists. In contrast, less than 1% of Ontario's specialist workforce is noncertified.[30] Current data suggest that provisionally licensed international medical graduates often do not remain for long periods, with many leaving for urbanized centres within several years of starting practice.[8] This further reinforces the importance of training medical students locally.[8]

## DISCUSSION

It is apparent that, within Canada, there is both a shortage and maldistribution of the physician supply. This is most apparent within the rural setting, where there is a major disparity in access to the health care system. Owing to these tremendous socioeconomic inequities, rural communities face even greater difficulties than the rest of Canada. Many residents do not have basic medical care and face enormous geographic challenges in accessing it. Increasing the number of rural students in local schools will help combat shortages, and early exposure to the rural environment will attract students from urban backgrounds. Overall strategies to improve retention will ensure a stable physician supply and, therefore, will have benefits for population health over the long term. Locally trained physicians practise longer in their home province than out-of-province graduates and international medical graduates. It is important to ensure that there are rural educational opportunities for learners in undergraduate and postgraduate medical training.[31] Ultimately, enhanced, forward-thinking retention strategies will improve community health and help correct rural disparities for Canadians.

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# Country cardiograms case 61

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A 55-year-old man is brought to a remote British Columbia emergency department with a 1-hour history of crushing retrosternal pain accompanied by shortness of breath and sweating. The following vital signs are recorded: pulse rate 70 per minute, blood pressure 160/100 mm Hg, respiratory rate 18 per minute and oxygen saturation 99% on oxygen, 5 L per minute via face mask (a reading of 82% was obtained at the home by ambulance personnel). He is afebrile. There are no history or clinical examination features to suggest a diagnosis of aortic dissection or pulmonary embolism. His risk factors for ischemic heart disease include a strongly positive family history and a 40-pack-year smoking history. His electrocardiogram (ECG) is shown in Figure 1. An ECG recorded 3 months previously was normal. Is thrombolysis indicated?
**For the answer, see page 26.**

**Competing interests:** None declared.

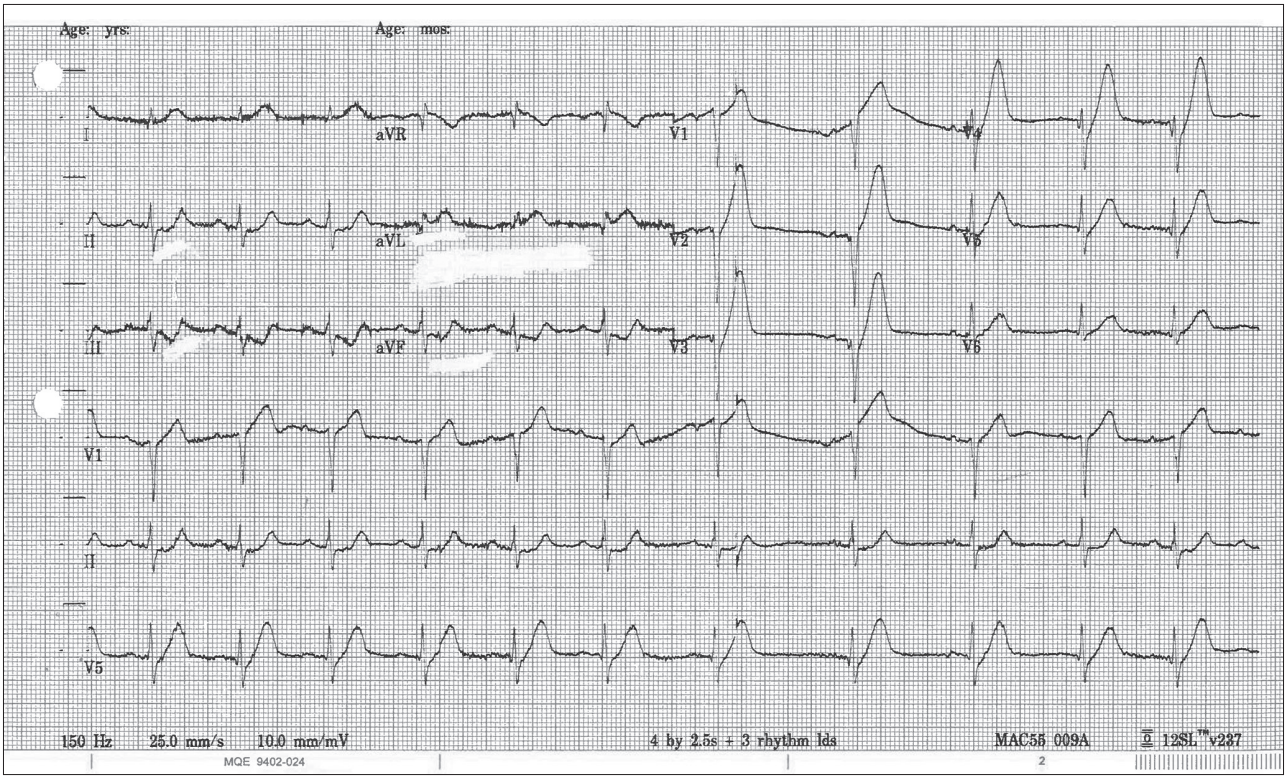


**Fig. 1: Electrocardiogram of a 55-year-old man brought to a rural emergency department with retrosternal pain, shortness of breath and sweating.**

"Country cardiograms" is a regular feature of *CJRM*. We present an electrocardiogram and discuss the case in a rural context. Please submit cases to Suzanne Kingsmill, *CJRM*, 45 Overlea Blvd., P.O. Box 22016, Toronto ON M4H 1N9; manedcjrm@gmail.com.

# The occasional HIV-infected patient

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## INTRODUCTION

HIV infection is an increasingly common diagnosis in rural and urban family practice. About 75 000 Canadians live with HIV/AIDS, 21% of whom are not aware of their HIV diagnosis.[1] As capable purveyors of patient-centred care and skilled managers of chronic disease, family physicians should play an integral role in the care of the HIV-positive patient.

Family physicians are often the front-line agents for the screening and diagnosis of HIV infection and must provide necessary counselling and support to patients with a new diagnosis. In areas where access to an infectious disease specialist may be difficult, family physicians can initiate a timely investigation for these patients. Also, as the disease has become simpler to manage in recent years and as life expectancies approach normal, long-term care of HIV infection is becoming similar to that of many other chronic diseases: family physicians will play a more central role in care over the patient's lifespan.

## DIAGNOSIS

The traditional "targeted" approach of identifying only high risk individuals is increasingly being replaced by a model of "routine" or "opt-out" screening.[2] The routine screening approach will be familiar to physicians who care for pregnant patients.[3] Family physicians are encouraged to review recent guidelines for full details on screening recommendations.[4,5] Brief but appropriate history-taking can identify at-risk populations, including sexually active adults (including, but not limited to, men who have sex with men) and intravenous drug users. The "window" period of up to 3 months between an initial exposure and HIV test positivity should be described, although, in most cases, current fourth-generation HIV tests can detect acute infection within about 6 weeks of exposure.[6] Explicit oral or written consent for an HIV test is no longer necessary. Testing for other sexually transmitted infections should be strongly considered.

Should a test give a positive result, a family physician is likely the best health care professional to relay this news and initiate investigation. The most critical message for patients with newly diagnosed HIV infection is that, given appropriate treatment, affected people have a life expectancy no different from that of the rest of the population[7] and that medication can often consist of a single tablet once daily.[8] It is vital to also inform the patient (and subsequently document in your chart) that nondisclosure of HIV-positive status to a sexual partner is a potential criminal offence.

The initial and follow-up tests that should be ordered by a family physician are listed in Table 1.

## TREATMENT

There are few reasons to delay treatment of HIV infection. All major guidelines now strongly recommend initiating antiretroviral therapy soon after diagnosis, regardless of the patient's CD4 count.[9,10] Early initiation of antiretroviral therapy has been associated with significant benefit in terms of reduced morbidity and mortality, even for patients

with CD4 counts greater than 500/μL, and also substantially reduces the risk of transmission to HIV-negative partners.[13,14]

If faced with a long wait time for in-person consultation, even family physicians without extensive experience with this infection should consider e-consultation with an HIV infection care provider and then initiate an initial treatment regimen. Typically, genotypic resistance testing is used to guide treatment selection. If a genotype is not available or if the practitioner is not experienced with interpreting a genotype, we recommend starting treatment with darunavir, 800 mg once daily, ritonavir, 100 mg once daily, and tenofovir disoproxil fumarate–emtricitabine (coformulated in 1 tablet), 300 mg/200 mg once daily, in the absence of known liver or renal disease. This combination of medications can be used successfully in nearly all patients and is accessible via most (if not all) provincial and federal drug formularies. Common side effects of this regimen include diarrhea, nausea, headache and rash. Severe side effects, including renal or hepatic toxicity or Stevens–Johnson syndrome, are rare. Inexperienced practitioners should review the use of these medications with a pharmacist.

The out-of-pocket cost of these medications can be prohibitive. We recommend consultation with a local AIDS service organization to discuss options for patient coverage. Pharmaceutical companies often consider compassionate release of medications for those who cannot pay or are in the process of organizing other private or provincial coverage.

After antiretroviral therapy has been started, repeat blood testing, including viral load and creatinine and liver transaminase levels, should be done after 2–8 weeks of treatment and every 3–4 months thereafter until the patient has attained an undetectable viral load for 2 years. Once genotype information is available, family physicians can consider switching to a simplified regimen with the guidance of an HIV infection care specialist.

**Table 1: Initial and follow-up laboratory investigations in HIV-infected patients[9–12]**

| Investigation* | Follow-up |
|---|---|
| **General** | |
| Complete blood count, differential, platelet count | Every 3–6 mo |
| Renal and liver tests: creatinine, estimated glomerular filtration rate, phosphate, urine albumin to creatinine ratio, urinalysis, aspartate aminotransferase, alanine aminotransferase, bilirubin, international normalized ratio | Every 3–6 mo |
| Lipids, blood glucose | Every 6–12 mo |
| Pregnancy test | Where appropriate |
| Mantoux test, chest radiography | Where appropriate |
| **HIV-specific** | |
| HIV diagnostic test: CD4 T-lymphocyte panel | Every 3–6 mo; optional if CD4 count consistently > 500/μL and viral load undetectable |
| HIV viral load | Every 3–6 mo |
| HIV genotype for resistance testing | At initiation of antiretroviral therapy and if regimen failure is suspected |
| HLA-B5701 testing | |
| **Other** | |
| Serologic testing for hepatitis A and B | Only as required to determine immune status |
| Serologic testing for hepatitis C | As required for screening at-risk patients |
| Cytomegalovirus IgG | |
| *Toxoplasma* IgG | |
| Sexually transmitted infection screening: gonorrhea and chlamydia (urine nucleic acid amplification test and swabs as required), syphilis | As required for screening at-risk patients |

*All performed at baseline.

## REGULAR LABORATORY INVESTIGATIONS

For patients taking antiretroviral therapy and for those in whom virologic suppression has been attained for greater than 2 years, blood testing can be done every 6 months by the family physician.[9] Determination of viral load (to ensure ongoing suppression), a complete blood count, urinalysis, and measurement of creatinine and liver transaminase levels should be ordered at least every 6 months. In cases of virologic failure, where viral load rises, resistance to antiretroviral therapy or nonadherence should be considered, and further expert advice should be sought.

## DRUG INTERACTIONS

HIV treatments can interact with commonly prescribed medications. Comprehensive drug interaction lists are available.[10,15] Careful drug interaction checks should be performed for all medications, including over-the-counter options. Although this list is not intended to be comprehensive, we suggest the family physician should be aware of the following interactions:

- Absorption issues: because HIV integrase inhibitors (elvitegravir and dolutegravir) bind with

polyvalent cations, these medications cannot be taken simultaneously with supplements, including antacids. As well, certain HIV medications (rilpivirine, atazanavir) cannot be coadministered with proton pump inhibitors, which reduce absorption.

- Mechanisms mediated by cytochrome P450: many antiretrovirals (including regimens containing ritonavir or cobicistat, and efavirenz) interact with commonly prescribed medications via P450-mediated mechanisms. Common medications to watch for include statins, methadone, clarithromycin,[16] α-blockers, estradiol-containing contraceptives, erectile dysfunction medications and St. John's wort.[10,15]
- Other: 1 commonly prescribed antiretroviral, dolutegravir, inhibits renal elimination of metformin. Management strategies include the use of an alternative orally administered hypoglycemic or reduction of the metformin dosage, with monitoring for loss of treatment effect and adverse effects.[15]

## SPECIAL CONSIDERATIONS

### Opportunistic infections

Patients with a CD4 count less than 200/μL are at high risk for contracting an AIDS-defining illness (which includes opportunistic infections as well as other, rare conditions, such as Kaposi sarcoma and wasting syndrome). It is important to screen for and provide prophylaxis against opportunistic infections. For example, patients may present with ongoing shortness of breath and indolent cough; this suggests *Pneumocystis jiroveci* pneumonia, and the case may warrant discussion with an expert. Table 2 highlights relevant therapies for prophylaxis of opportunistic infections; treatment of these infections requires consultation with an expert. For *P. jiroveci* pneumonia prophylaxis, single-strength trimethoprim–sulfamethoxazole tablets may be associated with fewer adverse effects than double-strength tablets, although hypersensitivity reactions are still common. A telephone or in-person consultation with an expert in HIV infection care is warranted in the case of any patient who is unwell and has a CD4 count less than 200/μL.

### Neurosyphilis

The diagnosis of syphilis in the presence of HIV infection may necessitate investigation for neurosyphilis by means of lumbar puncture. More specifically, if an HIV-infected patient has neurologic symptoms or signs, late latent syphilis, a CD4 count less than 350/μL or syphilis rapid plasma reagin of 1:32 dilutions or greater, or suboptimal decline in titres after penicillin treatment, lumbar puncture is warranted.[17]

### Early infection/seroconversion

Patients with acute HIV infection may present with influenza-like symptoms within a few weeks of exposure to the virus. Appropriate and rapid identification of patients at high risk may present an opportunity to provide an early diagnosis and treatment and may significantly reduce future morbidity.[13,14]

## VACCINATIONS

Immunocompetent (CD4 count > 200/μL) patients should be vaccinated with all available agents (Table 3). Family physicians should not neglect other recommended vaccines appropriate to any high-risk patient groups.

**Table 2: Treatment for opportunistic infections in HIV-infected patients[10,11]**

| Infection | Medication | Treatment threshold, CD4 count |
|---|---|---|
| *Pneumocystis jiroveci* pneumonia | Trimethoprim–sulfamethoxazole (single- or double-strength), 400/80 mg or 800/160 mg daily | < 200/μL |
| *Toxoplasma gondii* | Trimethoprim–sulfamethoxazole (double-strength), 800/160 mg daily | < 200/μL |
| *Mycobacterium avium* complex | Azithromycin, 1200 mg weekly | < 50/μL |

**Table 3: Recommended vaccinations in HIV-infected patients[11]**

| Vaccine | Timing |
|---|---|
| Hepatitis A | Baseline (if not immune) |
| Hepatitis B (typically higher dosage, 40 μg) | Baseline (if not immune) |
| Influenza | Yearly |
| Tetanus–diphtheria/tetanus–diphtheria–pertussis | Every 10 yr |
| Live vaccines as required (measles–mumps–rubella, shingles) | Baseline if CD4 count > 200/μL |
| Human papillomavirus (preferably 9-valent) | Baseline |
| Pneumococcal conjugate (PCV 13) | Baseline |
| Pneumococcal polysaccharide (PCV 23) | 8 wk after PCV 13, then second dose in 5 yr |

## OTHER PREVENTIVE CARE

Malignant disease may develop in people with HIV infection at about 4 times the rate among the average population.[18,19] Cervical cancer screening guidelines differ, and most HIV-infected females will require a normal Papanicolaou test result for 3 serial years before transitioning to a Papanicolaou test every 3 years. In centres that can offer it, anal Papanicolaou tests for men who have sex with men with warts due to human papillomavirus are supported by evidence.[18] Colon and breast cancer screening remain the same as for noninfected people. Those with HIV infection are also at increased cardiovascular risk, and family physicians are the best advocates for aggressive treatment of hypertension and hyperlipidemia and for smoking cessation.[9,10]

## CONCLUSION

Screening and management of HIV-infected people are increasingly within the scope of the primary care practitioner. In resource-limited settings, the family physician can initiate basic investigation and management of such patients while awaiting specialist consultation.

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# Country cardiograms case 61: Answer

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The electrocardiogram (ECG) obtained on admission (Fig. 1) shows sinus arrhythmia, with a mean rate of 69 per minute. The PR interval is 0.20 seconds, QRS duration 0.10 seconds and QT interval 0.39 seconds. There is abnormal R wave progression from lead V1 to lead V2, and abnormal Q waves are present in leads V2–V4. ST-segment elevation of 1 mm is present in lead aVL. Reciprocal ST-segment depression is present in leads II, III and aVF. Slight ST-segment elevation is present in lead aVR. The ST segments in leads V2–V5 slope steeply upward, from an initial depressed J point of –2 mm in leads V3–V5. Very tall, symmetric (but not narrow) T waves are present in leads V2–V4.

The patient was assessed as having an acute coronary syndrome. Oxygen, acetylsalicylic acid, nitroglycerine, morphine, clopidogrel, atorvastatin and enoxaparin were administered in accordance with standard protocols. The question that then needed to be addressed was, "Does the patient meet the criteria for thrombolysis?" In such a remote setting, every ST-elevation myocardial infarction (STEMI) presentation will far exceed the recommended 120-minute door-to-needle time for percutaneous coronary intervention (PCI).

STEMI is defined as myocardial ischemia requiring immediate reperfusion therapy. The specifics, which continue to evolve, are currently defined as:[1]

- Appropriate symptoms *and*
- ST-segment elevation of 1.0 mm or

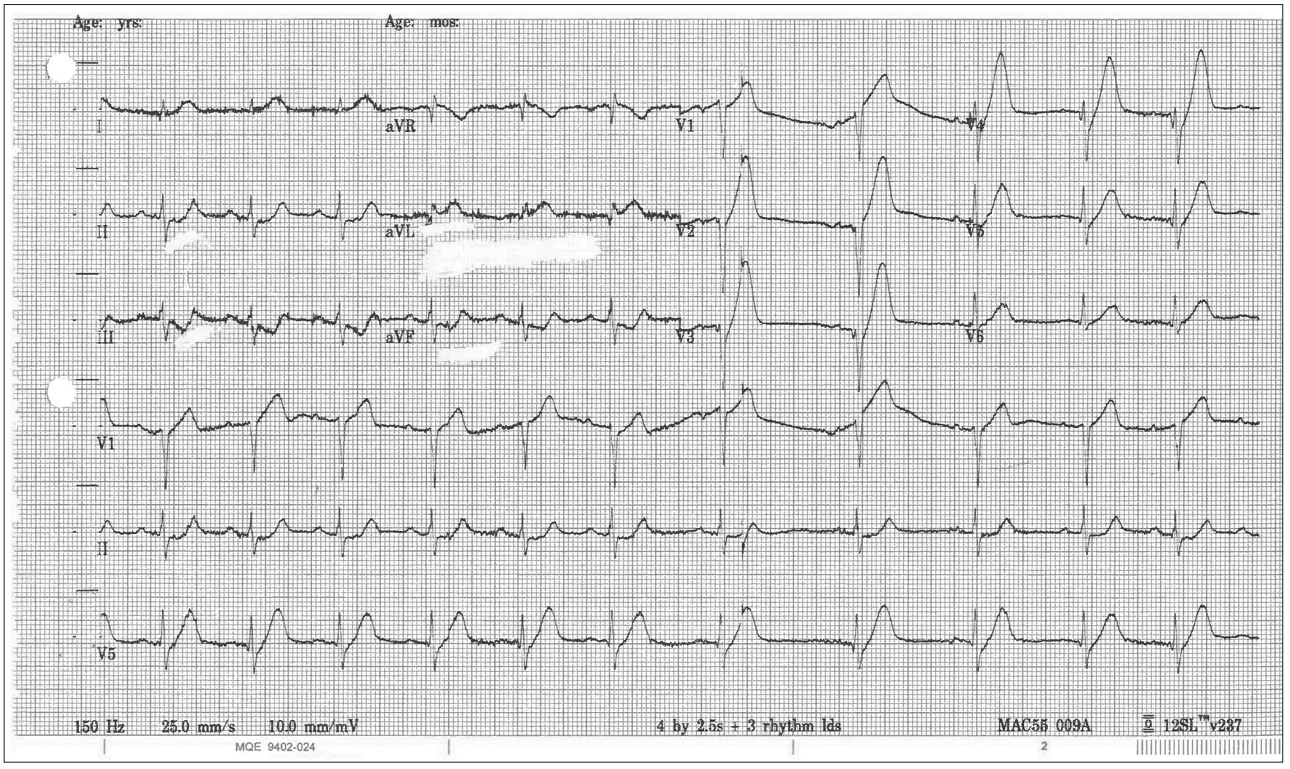


**Fig. 1: Electrocardiogram of a 55-year-old man brought to a rural emergency department with retrosternal pain, shortness of breath and sweating.**

greater in 2 contiguous leads, aside from leads V2–V3 (≥ 2.0 mm is required in men aged 40 years or more, ≥ 2.5 mm in men younger than 40 years and ≥ 1.5 mm in women).

Patients with ST-segment depression or abnormal T wave changes with elevation of myocardial enzyme levels are considered to have non-STEMI and are not candidates for emergent thrombolysis or PCI. ECG changes in the absence of enzyme level elevation represent unstable angina. New, or suspected new, left bundle branch block was removed from the 2012 criteria, given its documented low accuracy as a stand-alone ECG finding.[1]

In Figure 1, strict thrombolysis criteria, as defined above, are not met, yet the chest pain presentation, the ST-segment elevation in lead aVL, the reciprocal ST-segment depression in the inferior leads, the anterior Q waves and the very tall, "hyperacute" T waves in leads V2–V4 combine to suggest a significant event that probably involves the left anterior descending artery and may represent an evolving STEMI. Are there any so-called STEMI equivalents to be found in Figure 1 that might indicate the need for thrombolysis?

The earliest sign of myocardial ischemia has long been recognized as hyperacute T waves.[2] These have no formal definition but are generally symmetric, are abnormally large relative to the QRS complex and have broad peaks. This is in contrast to the T waves of hyperkalemia, which are typically more narrow and sharply peaked. (In this case, we rapidly obtained a serum potassium level of 3.2 mmol/L; the normal reference range is 3.5–5.1 mmol/L).

Can hyperacute T waves be used as an ancillary criterion for thrombolysis when other criteria are not met, provided other causes for tall T waves (hyperkalemia, early repolarization pattern) have been excluded? Hyperacute T waves by themselves generally indicate impending STEMI, but most authors recommend repeating ECG and waiting for traditional STEMI criteria to evolve before proceeding to thrombolysis.[1,3]

However, hyperacute T waves may be seen in association with other findings that, according to some authors, call for reperfusion therapy.[3] These are known as the de Winter ST–T wave complex. The combination of J point depression, steeply upsloping ST segments leading into symmetric, tall, relatively wide T waves and the possibility of ST-segment elevation in aVR is consistent with this pattern, which was described in 2008.[4] It represents significant ischemia in the territory of the left anterior descending artery, although arterial occlusion may be incomplete. This pattern sometimes persists on the ECG until PCI is performed or it may evolve into a typical STEMI pattern.[5] The pathophysiologic features of the ECG waveform most likely lie in significant endocardial ischemia with epicardial sparing.[6]

The de Winter ST–T wave complex, which was identified retrospectively based on angiographic findings, has been postulated as a STEMI equivalent and may be present in up to 2% of anterior myocardial infarctions.[4] Other so-called STEMI equivalents include ST-segment elevation of 0.5 mm or greater in posterior leads (V7–9) with anterior depression,[1,3] ST-segment elevation of 0.5 mm or greater in right-sided precordial leads (V4R) with inferior ST-segment elevation[1] and meeting the Sgarbossa criteria in left bundle branch block.[3]

Pathologic Q waves are classically thought to represent completed transmural myocardial infarction. However, more than 50% of STEMI presentations have Q waves on the initial ECG, and these are potentially reversible with reperfusion.[7] Q waves per se are not recognized as criteria for reperfusion therapy, although they are an ominous prognostic sign in acute ischemia.

Thrombolytic therapy in a rural or remote setting can confer major benefits but can cause serious, potentially life-threatening complications. Expanding the criteria for thrombolysis therefore needs to be based on sound evidence that its benefits outweigh its risks. This would include information on the sensitivity and specificity of the changes seen in the de Winter ST–T wave complex. Until such high-quality evidence is available, it seems premature to advise thrombolysis in such cases.

Applying such considerations in this case, the de Winter ST–T wave complex is a cause for significant concern. While considering this, we repeated ECG (Fig. 2). Based on these recordings, the standard criteria for thrombolysis are now clearly met, with ST-segment elevation present in contiguous leads I and aVL, and leads V2–V4. Abnormal Q waves remain in leads V2–V3. The ST-segment elevation previously noted in lead aVR has resolved.

Tenecteplase was administered. Within minutes, there was evidence of effective reperfusion: the patient's pain resolved, reperfusion arrhythmia developed (accelerated idioventricular rhythm),

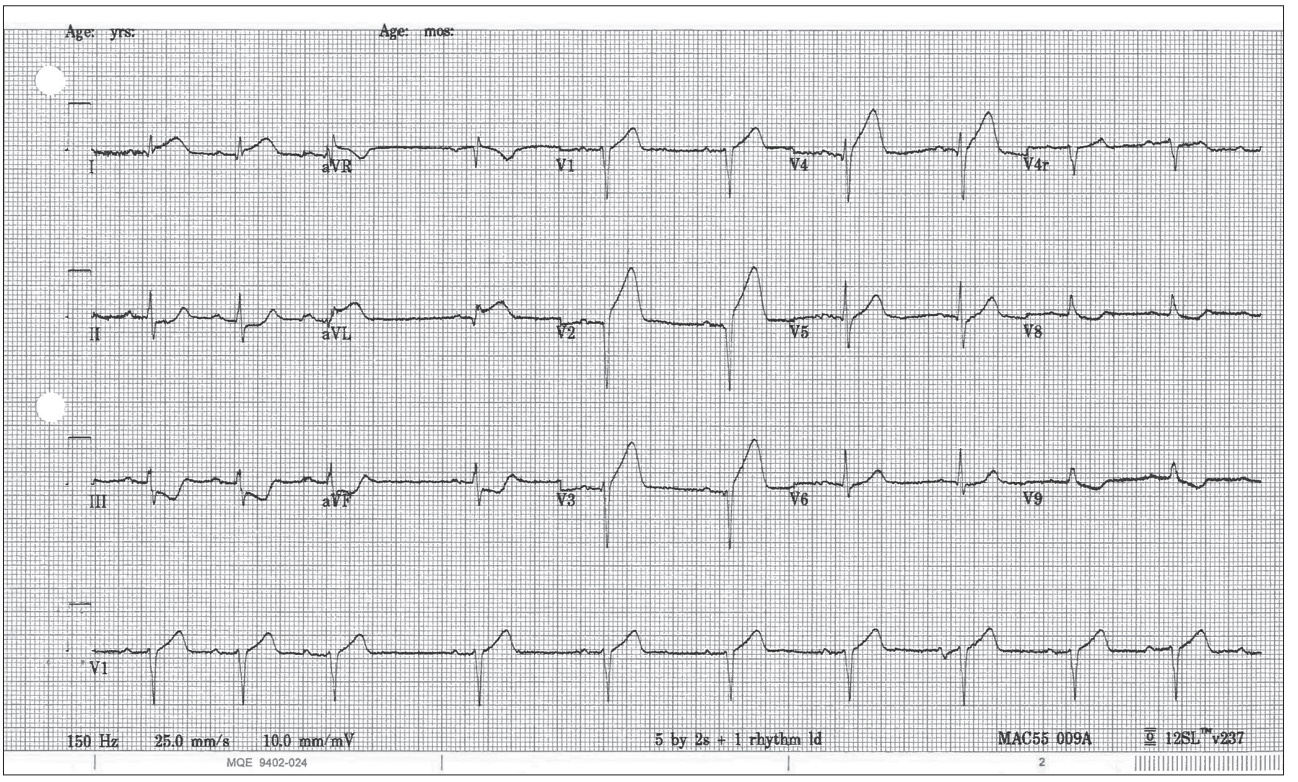


**Fig. 2: Repeat electrocardiogram, showing ST-segment elevation in contiguous leads I and aVL, and leads V2–V4. Abnormal Q waves remain in leads V2–V3. The ST-segment elevation previously noted in lead aVR has resolved.**

and the ECG returned to normal, with resolution of all ST segment and T wave changes and reappearance of normal R wave progression in leads V1–V4.

The troponin level was initially normal (< 50 ng/L); a level of 2192 ng/L was later obtained. On arrival at a tertiary centre several hours later, the patient underwent immediate PCI, and a single drug-eluting stent was placed in the left anterior descending artery. He was discharged 3 days later.

Criteria for immediate reperfusion continue to evolve. Hyperacute T waves by themselves generally indicate impending STEMI, but ECG should be repeated to look for traditional STEMI criteria before proceeding to thrombolysis.

Angiographic evidence suggests that reperfusion therapy may be indicated when de Winter ST–T wave complexes are seen. However, this opinion is dependent on having PCI capabilities, which the rural emergency department does not have access to. A cautious approach would require the publication of high-quality evidence showing the benefits of thrombolysis before expansion of its criteria is accepted. Given this uncertainty, frequent repeat ECG is advisable to look for the development of traditional STEMI criteria for thrombolysis, along with consultation with a cardiologist.

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**For the question, see page 21.**

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# Resident's page: family medicine in Britain's last outpost

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Just as spring was making its triumphant return to Ontario, I travelled to the opposite end of the world to experience my first South Atlantic winter. For the final 2 months of my family medicine residency, I was going to be working in and around Stanley, the capital of the Falkland Islands, about 4300 km from the South Pole.

Stanley is home to fewer than 3000 people living in colourful houses tucked in among narrow streets on the sloping southern shore of Stanley Harbour. Outside of the capital, the Islands are sparsely populated in various settlements and expansive farms. Farmers raise sheep for wool and meat, and sometimes cater to visitors looking for an escape into nature and solitude.

**The author during an off-roading trip up and around Mount Tumbledown and Mount Longdon. These mountains saw some of the heaviest fighting in the Falklands War. There are still many minefields and shell holes to navigate, and the latter could trap the wheel of even the toughest old Land Rover.**

Reminders of the Falklands War, ranging from aircraft carcasses and shell casings to cemeteries and memorials, dot the treeless landscape. In the back of my mind I feared I would end up feeling very isolated and bored in this remote outpost, but, thankfully, the opposite would be true. The day I arrived I was welcomed by a friendly group of young temporary work contractors — teachers and allied health care professionals among them — who immediately took me in as one of their own.

The winter is generally a quiet time for the hospital. No cruise ships were coming into port, and the fishing industry was on a brief winter break. The few fishermen I saw in casualty and on call needed only minor procedures. Of course, all of them were scheduled to return to sea very soon and would likely be away for weeks or months. Trusting a patient to return to the hospital in case of "signs of infection" is complicated when that involves traversing vast expanses of ocean. I did not learn of any fishermen I treated returning to casualty, but I will never forget the disturbing rumours I heard of some fishermen simply being thrown overboard if they were gravely ill or had died.

The medicine was largely what I expected for a remote locale. Drug shortages and lack of supplies were common, so we either substituted medications or simply did without. I did most of my own vital sign measurements and injections, and had to learn how to insert IVs and perform phlebotomy on the fly. Although the United Kingdom-trained chief medical officer was locally

raised, the other physicians were short-term locum tenens from such varied places as South Africa, Poland and Spain. Even after acknowledging the minor differences between UK and Canadian guidelines, the management habits and previous experiences of these doctors were very different from what I had seen or heard about so far in my training. Unfortunately, almost none of them stayed longer than a few months, and consequently, continuity of care was limited. A frustrating result of this arrangement was doctor shopping — among close colleagues whose offices were lined up along the same hallway.

Weekly visits to camp, a word taken from the Spanish *campo*, for countryside, were possible by Land Rover or by the cramped, short take-off and landing Islander airplane. With the rolling hills and absence of trees, I saw plenty of scenery from the road. However, from several hundred metres in the air, I could begin to appreciate the difficulties faced by the herding dogs who were tasked with corralling massive, surging flocks of sheep. Flying quickly became my preferred method of travel. I would take the copilot's seat and headset on all of my flights, and I listened eagerly to the pilot's running commentary as we passed over the southernmost suspension bridge in the world, the Mount Pleasant Royal Air Force base, various relics of the Falklands War 34 years earlier, penguin colonies and the ubiquitous peat and sheep.

Running a solo clinic at the West Falkland settlement of Fox Bay East was a valuable test of my training and confidence. It was an hour-long flight from Stanley across the sound to see around 10 patients in the kitchen of a family's house. I was plied with plenty of tea. Reasons for the visit were typical of those I would see at the hospital in Stanley: sore toes, annoying coughs, prescription renewals. I also did some standard diabetes checks, making sure I sealed the urine and blood samples tightly for the return flight. Patients would have to wait until the next plane could deliver mail to the settlement before they could carry out the changes in medication that I prescribed them. A referral had to be organized around a patient's next trip to Stanley. Thankfully, no one needed emergency attention, although if I had been worried about anyone, I could have simply taken them back with me on my return flight.

Medicine aside, everything I did in the Falklands was a brand-new experience: off-roading, swimming in the icy South Atlantic, shearing sheep, walking among penguins. My time in the Islands truly opened my eyes to the possibilities of remote and rural medicine and the ins and outs of living in such a tight-knit community. Sadly, the friends I made will likely have moved on by the time I ever get to return. This, I know, is just the way it often is in remote places. Until I do return, I will just have to continue my as yet unsuccessful search for British beer in Canada and work on removing the "posh" from my attempts at an English accent.

**Acknowledgements:** The author thanks Rebecca Edwards for her help with this article and for her mentorship and guidance during his time in the Falklands.

**Confidentiality note:** Patient details and stories have been altered, because any Falklander reading this would immediately know the patient's identity.

**Competing interests:** None declared.

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