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DANS CE NUMÉRO



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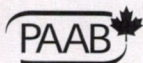
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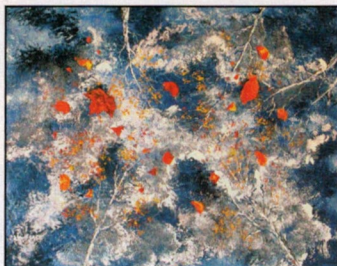
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Who are the rural doctors?

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[The true medical generalist] physicians are common, indeed essential, to rural areas. — Dr. Keith MacLellan, SRPC past president: personal communication, 2001.

Since 1994 Australia has had 5 levels of “rural” that have been defined for purposes of policy planning. In Canada we don’t even have a single level. Statistics Canada has arbitrarily defined urban as a population of 10 000 or more,¹ leaving those who care about rural with what’s left. But is less than 10 000 a useful acid test for rural medicine? Do the doctors in Whitehorse, YT, (population about 22 000) practise urban medicine?

There is no argument that areas with populations of less than 10 000 are the “rural small.” Our head office is located in Shawville, Que., population 1587. It’s so rural that the nearest Tim Hortons is a summer camp 20 km away at Quyon.

The “rural medium” communities have about 25 000 people. Without question, they are rural too. Williams Lake, BC, (population 18 760) even has Tim Hortons. But the presence of the eponymously named donut emporium is not why it is or isn’t rural. It’s also not about the presence or absence of specialists. Williams Lake has about 6 specialists, balanced by more than 3 times as many general practitioners (GPs). Ultimately, rural is all about what the doctors do.

In Williams Lake all the doctors are generalists. All the anesthetics are given by GPs and most of the 400 annual births are attended by GPs. Even the specialists in Williams Lake are generalists, with surgeons who are not limited to working between the pelvis and diaphragm, but who are truly “general” surgeons who do bits of other specialties.

How about those hospitals in larger

regional towns, say with about 50 000 people? Is Timmins, Ont., (population 42 997) rural? They have 3 Tim Hortons and a fair number of specialists there, even a couple of psychiatrists and a radiologist. However, in communities with populations between 10 000 and 100 000, the majority of GPs treat inpatients.² In fact, GP involvement is essential not only to the care of inpatients and outpatients, but also to emergency departments and nursing homes.

When you think about it, it’s only in communities with populations of around 100 000 where the subspecialists start getting good toe holds and large numbers of GPs subspecialize themselves into their offices. In Peterborough, Ont., (population 116 570) there are 3 gastroenterologists. The specialists outnumber the GPs. A population of 100 000 is, more or less, where Australians have traditionally drawn the line for the large regional centre meeting the metropolis.

In Canada, if we defined rural as a population of less than 50 000 or even 100 000, most of the communities would still have less than 10 000 people. Yet by defining rural in such a fashion there would be room for the inclusion of a number of practitioners involved in a spectrum of generalist medical and surgical service that binds rural doctors together.

What do you say?

REFERENCES

1. Statistics Canada. Urban core, urban fringe and rural fringe. Available: www12.statcan.ca/english/census06/reference/dictionary/geo050.cfm (accessed 2009 Sept 11).
2. Hutten-Czapowski P, Pitblado R, Slade S. Short report: scope of family practice in rural and urban settings. *Can Fam Physician* 2004;50:1548-50. Available: www.cfpc.ca/cfp/2004/Nov/vol50-nov-research-1.asp (accessed 2009 Sept 4).



Qui sont les médecins ruraux?

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Les [véritables] médecins généralistes sont nombreux en région rurale. Ils y sont même indispensables. – Dr Keith MacLellan, ancien président de la Société de la médecine rurale du Canada : communication personnelle, 2001.

Depuis 1994, l'Australie classe les collectivités dites rurales selon cinq niveaux, définis aux fins de la planification des politiques. Au Canada, nous n'avons même pas un seul niveau. Statistique Canada a arbitrairement défini une région urbaine comme un territoire comptant au moins 10 000 habitants¹, laissant ceux qui se soucient du terme «rural» avec le reste. Mais une population inférieure à 10 000 habitants constitue-t-elle une démarcation véritablement utile pour la médecine rurale? Est-ce que les médecins de Whitehorse, dans les Territoires du Nord-Ouest, où la population est d'environ 22 000 habitants, pratiquent une médecine urbaine?

Il ne fait aucun doute que les régions comptant moins de 10 000 habitants sont des «petites régions rurales». Notre siège social est situé à Shawville, au Québec, qui compte 1587 habitants. En fait, cette collectivité est si rurale que le Tim Hortons le plus près est un camp d'été situé à 20 km, à Quyon!

Les communautés rurales «moyennes» comptent environ 25 000 habitants. Encore là, il ne fait aucun doute qu'il s'agit d'une région rurale. La communauté de Williams Lake, en Colombie-Britannique, avec sa population de 18 760 habitants, a même un Tim Hortons. Mais ce n'est pas la présence de la chaîne éponyme de restaurants de beignes qui détermine la ruralité d'une région. Ce n'est pas non plus la présence ou l'absence de spécialistes. On retrouve à Williams Lake six spécialistes, et plus de trois fois plus d'omnipraticiens. En dernière analyse, le terme «rural» est fonction de ce que font les médecins.

À Williams Lake, tous les médecins sont des généralistes. Tous les anesthésiques sont administrés par des omnipraticiens, et la plupart des 400 accouchements par année sont pratiqués par des omnipraticiens. Même les spécialistes de Williams Lake sont des généralistes, les chirurgiens n'étant pas limités à la région

entre le bassin et le diaphragme, mais étant de véritables chirurgiens «généralistes» qui touchent à d'autres spécialités.

Et que dire des hôpitaux des grandes villes régionales d'environ 50 000 personnes? Dirait-on que Timmins, en Ontario, avec ses 42 997 habitants, est une région rurale? Il y a trois Tim Hortons à Timmins et un bon nombre de spécialistes, dont deux psychiatres et un radiologiste. Toutefois, dans les collectivités de 10 000 à 100 000 habitants, la majeure partie des omnipraticiens traitent des patients hospitalisés². En fait, les omnipraticiens sont essentiels non seulement pour prendre en charge les patients hospitalisés et externes, mais aussi les services d'urgence et les foyers de soins de longue durée.

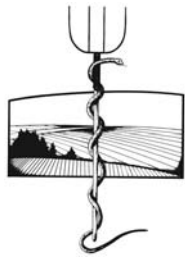
Quand on y pense, c'est seulement dans les collectivités d'environ 100 000 habitants que les surspécialistes commencent à apparaître et qu'un grand nombre d'omnipraticiens se surspécialisent. À Peterborough, en Ontario, ville de 116 570 habitants, il y a 3 gastro-entérologues. Les spécialistes y sont plus nombreux que les omnipraticiens. Les Australiens ont, grosso modo, toujours tracé la démarcation entre grand centre régional et métropole à 100 000 habitants.

Au Canada, si l'on définissait une région rurale comme un territoire comptant moins de 50 000 habitants, ou même moins de 100 000, la plupart des communautés qui répondraient à cette définition compteraient quand même moins de 10 000 habitants. Toutefois, si l'on définissait ainsi la région rurale, on pourrait inclure un certain nombre de praticiens qui dispensent un éventail de services médicaux et chirurgicaux généraux, mode de pratique qui distingue et unit les médecins ruraux.

Qu'en pensez-vous?

RÉFÉRENCES

1. Statistique Canada. Noyau urbain, banlieue urbaine et banlieue rurale. Disponible à : www12.statcan.ca/francais/census06/reference/dictionary/geo050.cfm (consulté le 11 septembre 2009).
2. Hutten-Czapski P, Pitblado R, Slade S. Short report: scope of family practice in rural and urban settings. *Can Fam Physician* 2004;50:1548-50. Disponible à : www.cfpc.ca/cfp/2004/Nov/vol50-nov-research-1.asp (consulté le 4 septembre 2009).



President's message. Physician mobility

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SRPC policy since 1995 has advocated physician mobility between provinces.¹ On Apr. 1, 2009, Canada's new Agreement on Internal Trade came into effect. Signed by the federal, provincial and territorial governments, this agreement says that workers certified in one province or territory are to be certified by all others, with no additional requirement for training, testing or evaluation.²

Our licensing bodies have expressed concern that a move to physician mobility will cause an exodus of rural physicians to cities, induce rural physicians to renege on return of service agreements,³ and result in the lowering of medical practice standards across the country.⁴

In the early 1990s, in response to physician maldistribution, provinces began to adopt policies to limit physician mobility, which included the restriction of billing numbers. Arguing that limits to physician mobility would not improve maldistribution, opponents at the time pointed out that such limits ran counter to the Agreement on Internal Trade, that they were short-sighted, would "damage our society by balkanizing a precious human resource," that the Canada Medical Act of 1912 was undermined by these "parochial provincial policies that are not anchored on medical need or data-based workforce policies but are being formulated in an ad hoc manner" and that they did "not serve the long-term interests of the public."⁵

Whether by provincial government policies or the policies of our provincial and licensing authorities, limiting physician mobility has done nothing to improve the distribution of physicians into rural communities. From 1986,

when 10% of physicians and 25% of our population were rural;⁶ to 1996, when 9.8% of physicians and 22.2% of the population were considered rural; to 2004, when 9.4% of physicians and 21.1% of the population were rural,⁷ anti-mobility policies have not altered the rural physician supply. Removing the policies will not cause the dire consequences predicted by those who wish to maintain the status quo.

Rather than forcing physicians into rural practice, our licensing bodies should focus on their core mandate: to protect the public by ensuring a consistent quality of medical care for all Canadians, urban and rural.

REFERENCES

1. The Society of Rural Physicians. Policy agenda/outline. III. Licensing of rural physicians. Available: <http://srpc.ca/policies.htm> (accessed 2009 Sept 18).
2. Government of Canada. *Agreement on Internal Trade* [Article 701]. Ottawa (ON): Industry Canada; 1994. Available: www.ic.gc.ca/eic/site/ait-aci.nsf/eng/il00008.html (accessed 2009 Sept 15).
3. Sullivan P. *New rules may strip rural, remote areas of their physicians, colleges warn*. Canadian Medical Association; 2009. Available: www.cma.ca/index.cfm/ci_id/10043185/la_id/1.htm (accessed 2009 Sept 15).
4. Huber J. Mobility risks patient health: regulators. *Ottawa Citizen* 2009 Aug 25. Available: www.ottawacitizen.com/health/Mobility+risks+patient+health+regulators/1925988/story.html (accessed 2009 Sept 15).
5. Kendel DA, Dauphinee WD. Barriers to inter-provincial physician mobility. *CMAJ* 1994;151: 1579-80.
6. Jennisen T. *Health issues in rural Canada*. Ottawa (ON): Health Canada; 1992.
7. Pong RW, Pitblado JR. *Geographic distribution of physicians in Canada: beyond how many and where*. Ottawa (ON): Canadian Institute for Health Information; 1995 Available: http://secure.cihi.ca/cihiweb/products/Geographic_Distribution_of_Physicians_FINAL_e.pdf (accessed 2009 Sept 15).

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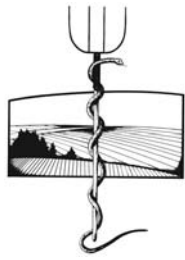
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Message du président. Mobilité des médecins

Depuis 1995, la Société de la médecine rurale du Canada (SMRC) préconise la mobilité interprovinciale des médecins¹. Le 1^{er} avril 2009, le nouvel Accord sur le commerce intérieur du Canada est entré en vigueur. Signé par les gouvernements fédéral, provinciaux et territoriaux, l'accord précise que les travailleurs agréés dans une province ou un territoire doivent l'être par tous les autres, sans avoir à se soumettre à une formation, à des examens ou à une évaluation supplémentaires².

Nos ordres professionnels craignent qu'une tendance à la mobilité des médecins entraîne un exode des médecins ruraux vers les villes, incite les médecins ruraux à ne pas respecter les contrats de services³ et fasse baisser les normes de pratique de la médecine d'un bout à l'autre du Canada⁴.

Au début des années 1990, face à une mauvaise distribution des médecins, les provinces ont commencé à adopter des politiques afin d'en limiter la mobilité, notamment en restreignant les numéros de facturation. Soutenant que la limitation de la mobilité des médecins n'améliorerait pas la mauvaise distribution, les adversaires de cette politique ont signalé à l'époque que ces limites allaient à l'encontre de l'Accord sur le commerce intérieur, qu'elles étaient myopes, qu'elles «endommageraient notre société en balcanisant des ressources humaines précieuses», que la *Loi médicale du Canada* de 1912 était minée par ces «politiques provinciales de clocher qui ne reposent pas sur le besoin en services médicaux ni sur des politiques factuelles régissant les effectifs, mais qu'elles étaient formulées à la pièce» et qu'elles «ne servaient pas les intérêts à long terme du public⁵».

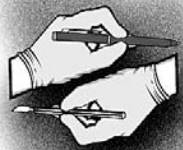
Que ce soit à cause des politiques des gouvernements provinciaux ou de celles de nos autorités provinciales et de nos ordres, la limitation de la mobilité des

médecins n'a rien fait pour améliorer la distribution des médecins dans les communautés rurales. De 1986, lorsque 10 % des médecins et 25 % de la population habitaient en milieu rural⁶, jusqu'en 1996, lorsque 9,8 % des médecins et 22,2 % de la population étaient considérés comme ruraux, et en 2004, lorsque 9,4 % des médecins et 21,1 % de la population étaient ruraux⁷, les politiques antimobilité n'ont pas modifié les effectifs des médecins ruraux. L'élimination des politiques n'aura pas les conséquences sombres prédites par ceux qui souhaitent maintenir le statu quo.

Au lieu d'obliger les médecins à pratiquer en milieu rural, nos ordres devraient se concentrer sur leur mandat fondamental, qui est de protéger le public en garantissant la qualité uniforme des soins médicaux pour tous les Canadiens, tant urbains que ruraux.

RÉFÉRENCES

1. Société de la médecine rurale du Canada. Policy agenda/outline. III. Licensing of rural physicians. Disponible à : <http://srpc.ca/policies.htm> (consulté le 18 septembre 2009).
2. Gouvernement du Canada. Accord sur le commerce intérieur [Article 701]. Ottawa (Ontario) : Industrie Canada; 1994. Disponible à : www.ic.gc.ca/eic/site/ait-aci.nsf/fra/il00008.html (consulté le 15 septembre 2009).
3. Sullivan P. Mise en garde des ordres professionnels : les régions rurales et éloignées pourraient perdre des médecins en raison d'une nouvelle règle. Association médicale canadienne; 2009. Disponible à : www.cma.ca/index.cfm/ci_id/10043185/la_id/2.htm (consulté le 15 septembre 2009).
4. Huber J. Mobility risks patient health: regulators. *Ottawa Citizen*, 15 août 2009. Disponible à : www.ottawacitizen.com/health/Mobility+risks+patient+health+regulators/1925988/story.html (consulté le 15 septembre 2009).
5. Kendel DA, Dauphinee WD. Barriers to interprovincial physician mobility. *JAMC* 1994;151:1579-80.
6. Jennisen T. *La santé dans le Canada rural*. Ottawa (Ontario) : Santé Canada; 1992.
7. Pong RW, Pitblado JR. *Répartition géographique des médecins au Canada : au-delà du nombre et du lieu*. Ottawa (Ontario) : Institut canadien d'information sur la santé; 1995. Disponible à : http://secure.cihi.ca/cihiweb/products/Geographic_Distribution_of_Physicians_FINAL_fr.pdf (consulté le 15 septembre 2009).



ORIGINAL ARTICLE ARTICLE ORIGINAL

Rural medicine interest groups at McMaster University: a pilot study

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Introduction: Although rural medicine interest groups (RMIGs) are prevalent in Canadian medical schools, there is little research on their contribution to rural education, training and careers.

Methods: We explored 2 broad questions by means of an electronic survey to people who were RMIG participants at McMaster University from 2002 to 2007: 1) What are the experiences of undergraduate trainees in an RMIG? 2) What are the features of RMIGs that contribute to an interest in rural medicine? The survey itself contained 35 questions broken down into sections detailing demographics, involvement in RMIGs, RMIG features, core and elective experiences, careers and Canadian Resident Matching Service.

Results: Of the 63 participants who completed the survey, 13 (20.6%) were in post-graduate training and 50 (79.4%) were in undergraduate training. The mean (standard deviation) age of participants was 28.4 (6.5) years and 71.9% percent were female. Respondents indicated that rural placements had the most influence on their choice of specialty and rural interest. Of all the features and activities of the RMIG, rural medicine special events contributed the most to an interest in rural medicine (e.g., "rural medicine days").

Conclusion: At McMaster University, the responses of participants suggested that RMIG participation had more influence on career choice than did the medical school attended. Communities, government organizations, residency programs and others interested in improving access to rural physicians, will note the importance of RMIGs and the importance survey respondents gave to rural medicine special events and rural electives.

Introduction : Bien que les groupes d'intérêt en médecine rurale (GIMR) soient répandus dans les facultés de médecine, on déplore une relative absence de recherches sur leur contribution à l'enseignement, à la formation et aux carrières en milieu rural.

Méthodes : Nous avons exploré deux dimensions générales des GIMR au moyen d'un sondage électronique auprès de personnes de l'Université McMaster qui ont participé à des GIMR entre 2002 et 2007 : 1) Quelles expériences les futurs médecins acquièrent-ils auprès des GIMR? 2) Quelles caractéristiques des GIMR suscitent l'intérêt pour la médecine rurale? Le sondage comportait 35 questions regroupées en sections, soit caractéristiques démographiques, participation à des GIMR, caractéristiques des GIMR, expériences obligatoires et au choix, carrières et Service canadien de jumelage des résidents.

Résultats : Parmi les 63 participants qui ont répondu au sondage, 13 (20,6 %) étaient inscrits en formation supérieure et 50 (79,4 %), au premier cycle. La moyenne d'âge (écart-type) des participants était de 28,4 (6,5) ans et 71,9 % étaient de sexe féminin. Les répondants ont indiqué que c'est leur stage au milieu rural qui a le plus influencé leur choix de spécialité et leur intérêt pour le milieu rural. De toutes les caractéristiques et activités des GIMR, ce sont les événements spéciaux en médecine rurale qui ont le plus contribué à susciter l'intérêt pour ce domaine (p. ex., «journées de médecine rurale»).

Conclusion : À l'Université McMaster, les réponses des participants donnent à penser que la participation aux GIMR a exercé plus d'influence sur les choix de carrière que

la faculté de médecine fréquentée. Les communautés, organismes gouvernementaux, programmes de résidence et autres qui souhaitent améliorer l'accès à des médecins en milieu rural noteront l'importance des GIMR et l'intérêt des répondants pour les événements spéciaux et les cours au choix en médecine rurale.

INTRODUCTION

It is well recognized that Canadians living in rural communities suffer a lack of regular access to family physicians.¹ Medical students in Canada demonstrate varying levels of interest in family and rural medicine. Methods for stimulating interest in rural medicine at the undergraduate level typically include electives in rural settings, mandatory rural placements, rural job fairs, mentorship with rural residents, and selection processes that note that a rural background is an indicator of future rural career choice.²⁻⁵ A more recent addition to the armamentarium is the rural medicine interest group (RMIG), found in most medical schools in Canada and in other countries such as Australia, where they are termed "rural health clubs."⁶ The mandates of these student groups appear to include providing a support network for medical students interested in rural medicine; providing rural educational opportunities outside the regular curriculum; providing mentorship connections with other students, residents and physicians; and overlapping with similar roles of family medicine interest groups (FMIGs).⁷

Although there is some literature available on the success of FMIGs,^{7,8} to date, there is little evidence in the literature to support or refute the contributions of RMIGs. It seems intuitive, however, that the existence of these groups is beneficial for rural training and rural communities. The literature seems to both support and refute the importance of early and more prolonged exposure of medical trainees to rural educational experiences.^{9,10} Easterbrook and colleagues⁹ surveyed all physicians who had graduated from the family medicine program at Queen's University from 1977 to 1991, and found that physicians who had been raised in rural communities were 2.3 times ($p = 0.001$) more likely than those from urban areas to practise in a rural community immediately after graduation. However, the authors found no association between exposure to rural rotations during undergraduate or residency training and the decision to practise in a rural community. Contrary to these findings, Woloschuk and Tarrant¹⁰ found that students (graduates of the family

medicine program at the University of Calgary) were more likely to do a rural locum as a result of rural educational experience (regardless of rural background). This study did support Easterbrook and coauthors' results regarding the impact of rural background. Participants in Woloschuk and Tarrant's study were significantly more likely to practise in a rural setting if they grew up in a similar rural community ($p < 0.001$). Regardless, it appears that much of what an RMIG does revolves around sharing and encouraging rural experiences early and throughout undergraduate training.

This pilot study explored whether the presence and activities of an RMIG at the Michael G. DeGroote School of Medicine at McMaster University encouraged rurally streamed residency training for undergraduate medical students from 2002 to 2007. We also explored the types of activities and their relative contributions to rural interest and career choice. In the interest of determining the benefits of RMIGs, the objectives of this study were to determine the extent of RMIG experiences within undergraduate medical training and the features of an RMIG that contributed to interest in rural training. We intended this research to assist with the development of further research into whether the presence of an RMIG increased the recruitment of students to rurally streamed residency training programs.

Study design

This was a descriptive study that employed a self-administered survey. The key questions explored in this study included participants' involvement in RMIGs and/or FMIGs, thoughts about exposure to rural electives, rural educational experiences, rural mentorship and rural specialty rotations. The survey also offered the participant the opportunity to rate the impact of certain experiences and of RMIG involvement on choice of specialty and a future rural career.

Sample

We included in the study all RMIG participants from 2002 to 2007. An RMIG consisted of a group

of undergraduate medical students who added their names to a membership list for such a group at McMaster University. We asked the RMIG president from each of the included years to generate this list. There were no explicit exclusion criteria. Using the lists of student names provided by the RMIG presidents, a research assistant emailed to each student both a study information letter and a link to the survey available via SurveyMonkey. In an effort to increase the response rate, 2 email reminders were sent to students at 2-week intervals and this was followed by a 1-time paper mail-out.

Measurement

We asked participants to complete a survey that had been developed for the purposes of our pilot study. This unvalidated survey included a mix of qualitative and quantitative questions about mentorship, skills acquisition, knowledge acquisition, rural focus in practice, and features of the RMIG that led to success or were deterrents to practising in a rural setting. Respondents answered questions related to the effect RMIG opportunities had on their interest in rural practice using a 9-point Likert scale with response options from 1 (greatly decreased interest) to 9 (greatly increased interest). Respondents answered questions related to the influence of RMIG participation, rural electives and their medical school on choice of specialty using a 7-point Likert scale with response options from 1 (not a factor) to 7 (major factor).

Analysis

We generated descriptive analyses, including means and standard deviations (SDs) for continuous data and proportions for categorical data, using SPSS version 15.0 (SPSS Inc.). Two research team members independently reviewed qualitative data gathered from the open-ended survey responses. Categories of responses were identified and then collated according to the themes derived. Illustrative quotes have been included below.

This study was approved by the Research Ethics Board at McMaster University.

RESULTS

Participants

Of the 147 RMIG participants from 2002 to 2007, 67 people responded (45.6% response rate) to our

study request. Three of the respondents were excluded from the study after they submitted incomplete surveys.

The mean (SD) age of included respondents was 28.3 (6.4) years and 71.9% were female. All respondents confirmed participation in an RMIG and 75.0% also participated in other interest groups available at McMaster University, including FMIGs. Of those who had finished medical school at the time of the study ($n = 14$), 10 of these were matched to a rural residency program in family medicine (defined as > 6 months of residency spent in rural placements). Complete demographic results are displayed in Table 1.

Effect of RMIGs on rural practice and career

The majority of participants found their experience in an RMIG to be beneficial (70.3%) or greatly beneficial (20.3%). However, participants indicated that rural electives and core rotations had the most influence on their interest in rural medicine and choice of specialty (mean [SD] rating of 7.2 [1.2] and 6.0 [1.2], respectively, on a 9-point Likert scale), as compared with influence of the university/medical school or RMIG.

Rural practice activities

Participants in the RMIG at McMaster University were offered a number of rural practice activities including a lecture series, clinical skills workshops, formal mentoring, presentations and special events (e.g., “rural medicine days”). Qualitative feedback obtained on the surveys indicated that residents enjoyed these opportunities. However, when asked quantitatively about the effect the opportunities may

Table 1. Characteristics of 64 rural medicine interest group participants who completed the survey

Characteristic	No. (%) of participants*
Mean age (SD)	28.3 (6.4)
Female sex	46 (71.9)
Currently in a postgraduate residency program	14 (21.9)
Family medicine — first choice in the CaRMS match†	10 (71.4)
Matched to a rural‡ residency program†	10 (71.4)
Grew up/spent most of childhood in a community with a population of < 10 000	19 (29.7)

CaRMS = Canadian Resident Matching Service; SD = standard deviation.

*Unless otherwise indicated.

†Only applicable to those currently in residency program ($n = 13$).

‡Defined as > 6 mo of residency spent in rural placements.

have had on their interest in rural practice, respondents indicated most activities had little effect on their interest level with the exception of the clinical skills workshops and rural medicine special events. The latter term was defined in the survey (e.g., orientation to community, rural medicine day, rural medicine week). Figure 1 shows the quantitative results related to the effect of each rural practice activity on participants' interest in rural practice.

Most students really enjoyed the rural medicine days organized by McMaster University's RMIG. Bus transportation to a rural community was arranged and the students connected with local physicians, practised procedures, toured a hospital and ended the day with a community event or dinner. They indicated that the experience was very informative and provided first-hand exposure to rural practice and lifestyle. As one respondent said, "The rural clinical skills days were a great way to get out and 'experience' medicine in a rural community and to chat with rural physicians about their career." These rural medicine days gave residents the opportunity to speak with rural physicians about what a career in rural medicine is really like: "Talking to and working with family docs who were practising rural medicine with a broad scope of practice was very helpful in deciding to do a rural family medicine residency program." The opportunity to speak with other learners (residents) currently working in a rural medicine setting was also appreciated: "Being able to speak with residents or staff who are working in a rural community to get a 'real' perspective on life as a rural family doc."

Other RMIG activities respondents found to be

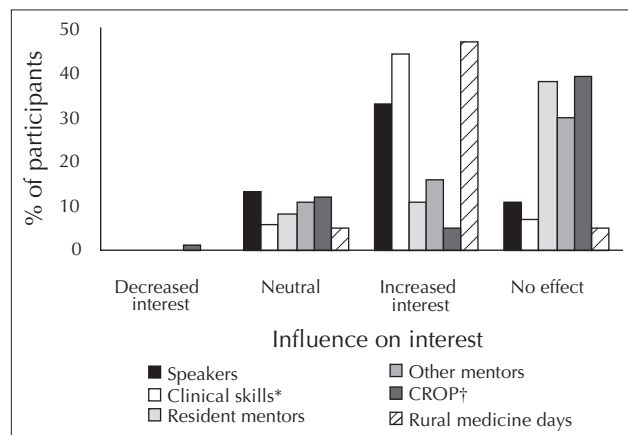


Fig. 1. Influence of rural medicine interest group activities on participants' interest in rural practice.

*Clinical skills: hands-on workshops offered at the university and organized by the rural medicine interest group.

†CROP = Canadian Residency Outreach Program. Residents placed in rural communities show a prepared PowerPoint presentation to local high school students.

useful included special events (social and educational), skills workshops (e.g., casting, suturing and injections), and more opportunities to practise procedures (in rural v. urban centres): "Practical hands-on experience at workshops and an emphasis on a wide scope of practice were very appealing to me."

When asked what features of the RMIG may have deterred respondents from rurally streamed training, there were few responses. Barriers to participation in RMIG activities included difficulties accessing and organizing rural placements, inability of undergraduate program administration to find northern rural preceptors, inadequate funding to attend rural electives, and popularity of the hands-on workshops meant that spaces were limited; also, one respondent found that some of the lecturers were not particularly interesting. Despite these barriers or frustrations, no respondent indicated that the experience had deterred them from rurally streamed training.

Benefits of informal mentorship relationships

Respondents found their formal and informal relationships with rural mentors to be very beneficial. The most significant benefit derived from these relationships was that residents saw their mentors as role models. Mentors were seen as dedicated and inspiring. Respondents stated that their mentor significantly influenced their decision to pursue a career in rural medicine. As explained by one participant,

The rural family doc who supervised me during a 6-month/1 day per week elective was instrumental in making me consider rural family medicine as a career. He had a wide scope of practice that included primary care clinics, emergency room shifts, surgical assist, obstetrics, managing inpatients and making home visits. This experience was a pretty close reflection of my idea of "real medicine" and I really enjoyed it.

Residents enjoyed the experience of working with preceptors on a one-on-one basis (seen as a key advantage in rural medicine because of the small community practice) as well as spending time with rural preceptors outside of the practice (in a more social setting): "Almost all of my clerkship core rotations and all of my elective rotations were in small community/rural locations. As a result I was able to work one-on-one with the preceptors, all of whom were very familiar with rural-streamed training." In many cases, mentors were seen as resources for the residents (e.g., helping with residency applications, giving advice about future electives and helping to prepare for CaRMS).

One respondent found that there were not enough opportunities to mentor with rural physicians.

Decision to choose an elective in a rural location

Qualitative responses indicated various reasons for choosing rural medicine electives. Many made their decision based on their desire to have a career in rural medicine, and some were unsure of their career path and wanted to see what rural medicine was like. Some respondents chose rural medicine placements to be closer to their families or based on peer advice.

Many respondents felt a rural medicine setting would provide more opportunity for hands-on involvement, one-on-one mentorship, diverse medicine, increased responsibility, more learning opportunities (fewer learners around) and more involvement in direct patient care. As one respondent noted, "I wanted to actually do things during my clerkship (i.e. suture, participate in surgery, deliver babies), rather than simply observe as is too often the case in the tertiary care centre." Respondents also enjoyed the atmosphere of a small community and rural setting (e.g., small town, friendly people, less stressful) and felt rural medicine electives presented a great opportunity to practise outside of the traditional academic environment.

How involvement with an RMIG assisted with setting up a rural core rotation or rural elective

Qualitative responses indicated that when setting up a rural rotation or elective, participants found their involvement with the RMIG was an excellent resource for rural contacts. A binder was developed by the RMIG that contained rural contact information across Canada. Respondents also felt attending the rural medicine days (e.g., "Fergus Day," a day spent in the community with local physicians learning hands-on skills, touring the locale and having a meal together) was a great help, as was attending the annual Rural and Remote Conference of the Society of Rural Physicians of Canada, and lectures (excellent opportunity to network and talk to other residents and preceptors). Some students found they received the peer support and advice they needed from their involvement with RMIGs.

DISCUSSION

This study demonstrates that student-led special-interest groups, such as RMIGs, represent a useful

means of encouraging interest in rurally streamed training. Consideration needs to be given to ensure mentorship, educational and practical activities that would encourage and maintain rural interest in medical trainees. Finding that at least some of our participants were frustrated by a lack of ability to access rural educational opportunities leads us to believe that more work needs to be done in this area. A strong connection between the rural family medicine program, government funding agencies and the undergraduate electives office, as well as improved funding and support, might mitigate these challenges (which could also frustrate those rural physicians who are willing to share their experiences with eager learners).

This study provides evidence to support investing the time and energy required to maintain rural interest groups, and provides information that can help improve the quality of delivery of education and networking through the RMIGs. As well, the information generated from this study can assist medical schools, organizations and governments in making decisions about resource allocation for RMIGs within medical schools. An example of support for these student-led groups would be administrative support, which could include the following: maintaining lists of communities willing to host rural medicine days and information pertaining to these events, maintaining lists of contacts for rural electives, facilitating communication between students in RMIGs, and connecting RMIGs with other student interest groups to prevent redundancy of workshops and events. This support would reduce the administrative load on medical students and improve their ability to find appropriate rural experiences, particularly in the early months of medical school when there is so much to which they must acclimatize.

This study's participants cited rural electives as an important influence on their interest in rural careers, and this seems to suggest there is benefit in financially supporting these experiences, a common practice seen in many, if not all, provinces in Canada. Current funding models, however, fund electives starting at 1 month in duration, but given that medical students have varying amounts of elective time, and that these experiences seem to be influential in eventual interest in rural practice, funding organizations may wish to consider funding rotations 2 weeks or more in length, where programs allow such rotations.

The scope of this study did not allow exploration of interest in training for future practice of a specialty

in rural settings. Given the advancing age of Ontario and Canada's rural specialists,¹¹ it would be important to look further at this issue as well as the capacity of RMIGs to promote and explore interest in rural specialty medicine.

Limitations of the study

This pilot study had a number of limitations. We sampled only from the RMIG participants at one university. Therefore, our findings are based on experiences centred within one program. We received completed surveys from less than one-half (45.6%) of the eligible RMIG participants; this could represent a biased sample of respondents who found the RMIG useful. We do not have any data regarding nonresponders. Students may attend RMIG sessions but be formally registered in an FMIG, and so, although they have participated in RMIG activities, they may not identify themselves as members of the RMIG. Sampling only RMIG participants meant we were unable to generate a control group; we are therefore unable to draw inferences about RMIG participation and residency choice. It is also worth noting that one-third of our respondents (29.6%) grew up in rural communities. As previously cited,^{9,10} studies have found rural background to be positively associated with future practice in rural settings. Therefore, our findings may not be totally attributable to participation in RMIG activities. Also, the results are based on respondents' subjective perceptions which may or may not always reflect the actual activities they undertook during their training or their pattern of eventual practice.

CONCLUSION

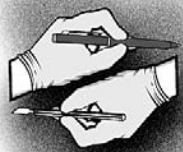
Given the prevalence of elective opportunities lasting less than 1 month in the undergraduate program at McMaster University and given the importance of rural electives in our findings, thought should be given to finding better funding and support for electives of less than 1 month duration. Commitment to

a broad and general education of our medical students must include a commitment to provide opportunities for rural experiences, such as rural medicine days, to all interested students. Also, administrative support for RMIGs should be a consideration for each medical school, if this is not already available. Further study is needed to fully explore the impact of RMIGs on medical students' training, education and careers.

Competing interests: None declared.

REFERENCES

1. Pong RW, Pitblado JR. *Geographic distribution of physicians in Canada: beyond how many and where*. Ottawa (ON): Canadian Institute for Health Information; 2005.
2. Hsueh W, Wilkinson T, Bills J. What evidence-based undergraduate interventions promote rural health? *N Z Med J* 2004;117:U1117.
3. Rourke J, Dewar D, Harris K, et al. Strategies to increase the enrollment of students of rural origin in medical school: recommendations from the Society of Rural Physicians of Canada. *CMAJ* 2005;172:62-5.
4. Rourke J. Increasing the number of rural physicians. *CMAJ* 2008;178:322-5.
5. Curran VR, Fleet L, Pong RW, et al. A survey of rural medical education strategies throughout the medical education continuum in Canada. *Can Sociol Demogr Med* 2007;47:445-68.
6. Kamien M. Rural student clubs and the social responsibility of medical schools. *Aust J Rural Health* 1996;4:237-41.
7. Baraka SM, Ebell MH. Family medicine interest groups at US medical schools. *Fam Med* 1995;27:437-9.
8. Rosenthal TC, Feeley T, Green C, et al. New research family medicine interest groups impact student interest. *Fam Med* 2004;36:463.
9. Easterbrook M, Godwin M, Wilson R, et al. Rural background and clinical rural rotations during medical training: effect on practice location. *CMAJ* 1999;160:1159-63.
10. Woloschuk W, Tarrant M. Does a rural educational experience influence students' likelihood of rural practice? Impact of student background and gender. *Med Educ* 2002;36:241-7.
11. *Comparative regional statistics*. Ottawa (ON): Society of Rural Physicians of Canada; 2005. Available: www.srpc.ca/numbers.html (accessed 2009 Sept 8).



ORIGINAL ARTICLE ARTICLE ORIGINAL

Use of intra-articular lidocaine as analgesia in anterior shoulder dislocation: a review and meta-analysis of the literature

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This article has been peer reviewed.

Introduction: The shoulder joint is the most commonly injured major joint in patients who present to the hospital emergency department today. In the community the incidence of shoulder joint injuries is 11.2 cases per 100 000 person-years. Traditionally, procedural sedation and analgesia (PSA) has been used to facilitate the reduction of anterior shoulder dislocations. However, there are risks of complication, such as respiratory depression, particularly in certain populations. As such, the use of intra-articular lidocaine (IAL) has been suggested as an alternative method of analgesia.

Methods: We searched EMBASE (Ovid) and MEDLINE (PubMed) databases using the keywords “shoulder, dislocation, and/or reduction” from the respective start dates of the databases until October 2008.

Results: Based on the current literature, it appears that the IAL method provides, at a minimum, the same level of pain control and reduction success as the procedural sedation method, while markedly reducing the time spent by the patient in the emergency department and the cost of treatment. The likelihood of complications is arguably less with the use of IAL.

Conclusion: Although more research in this area is merited, physicians may consider IAL as an alternative to PSA in the management of anterior shoulder dislocations.

Introduction : Parmi les blessures affectant des articulations majeures, ce sont celles de l'épaule qui amènent le plus de patients à se présenter à l'urgence d'un hôpital de nos jours. Dans la communauté, l'incidence des blessures à l'épaule est de 11,2 cas par 100 000 années-personne. On a généralement recours à la sédation-analgésie perthérapeutique pour faciliter la réduction des luxations antérieures de l'épaule. On note toutefois certains risques de complications, comme la dépression respiratoire, particulièrement dans certaines populations, d'où la suggestion d'utiliser de la lidocaïne intra-articulaire comme méthode analgésique de rechange.

Méthodes : Nous avons interrogé les bases de données EMBASE (Ovid) et MEDLINE (PubMed) à partir des mots clés «shoulder, dislocation et/ou reduction» (épaule, luxation et/ou réduction) pour la période allant de la date respective de mise en service des deux bases de données jusqu'à octobre 2008.

Résultats : Selon la littérature actuelle, il semble que la lidocaïne intra-articulaire procure au moins le même degré de contrôle et de soulagement de la douleur que la sédation-analgésie perthérapeutique, tout en réduisant nettement la durée des séjours à l'urgence et le coût du traitement. Il y a lieu de croire que la probabilité de complications serait moindre avec la lidocaïne intra-articulaire.

Conclusion : Il faudra approfondir la recherche dans ce domaine, mais les médecins peuvent d'ores et déjà envisager la lidocaïne intra-articulaire comme solution de rechange à la sédation-analgésie perthérapeutique pour la réduction des luxations antérieures de l'épaule.

INTRODUCTION

Shoulder reduction techniques date back to the ancient Greeks and Egyptians, with many of these techniques still being used in emergency departments today. The guiding principle of shoulder reduction is to free the humeral head from the anteroinferior glenoid and allow it to be relocated in a controlled fashion.¹⁻³ Traditionally, this has been performed by overpowering the muscles of the shoulder girdle, which are in spasm and preventing the easy reduction of the shoulder.

In emergency departments today, shoulder dislocations are the most common major joint injury.^{4,5} A Danish community-based study by Krøner and colleagues⁶ reported that the incidence was 11.2 cases per 100 000 person-years. Procedural sedation and analgesia (PSA), often a combination of opiates and benzodiazepines, is frequently used as a means to alleviate pain and facilitate reduction of the shoulder. Although this form of sedation has proven to be effective in facilitating techniques of shoulder reduction, there are risks and side effects, including central nervous system and cardiorespiratory depression. In some instances where these adverse effects are present, administration of a reversal agent may be required. Other side effects such as nausea, vomiting and postreduction lethargy may also be present. Aside from adverse reactions, the use of PSA also requires supervision by nursing and/or medical personnel and lengthened patient stays in the medical facility, particularly if there are complications arising from sedation.

The use of intra-articular lidocaine (IAL) is a possible alternative to analgesia during shoulder reductions.⁷⁻⁹ This method was mentioned in the *Manual of Rural Practice*¹⁰ and most recently published in the *Canadian Journal of Rural Medicine*.¹¹

A step-by-step description of the application of IAL is given in Box 1 (Fig. 1). Intra-articular lidocaine has long been used in the glenohumeral joint for management of pain, such as during arthroscopic examination, and also for pain relief in patients with chronic degenerative joint disease. The technique of shoulder injection is relatively straightforward and may be an attractive alternative to PSA.

METHODS

We searched EMBASE (Ovid) and MEDLINE (PubMed) databases using the keywords "shoulder, dislocation, and/or reduction" from the respective start dates of the databases until October 2008.

RESULTS AND DISCUSSION

Our search retrieved about 100 articles. Of those, 20 were related to the topic at hand. A review of the reference list from each article did not produce further appropriate papers.

Pain management

Shoulder dislocations, both traumatic and atraumatic, are excruciatingly painful. By the time the patient arrives in the emergency department, the musculature surrounding the shoulder is often in spasm and stiff. The aim of emergency management in this situation is 2-fold: 1) to decrease the patient's discomfort and anxiety, and 2) to induce muscular relaxation to facilitate reduction.

When compared with the traditional PSA method, IAL has been shown to offer similar pain relief and muscular relaxation. In all 6 randomized controlled trials (RCTs) that are summarized in

Box 1. Intra-articular lidocaine technique

1. Place the patient in a comfortable position (e.g., semirecumbent).
2. Palpate surface landmarks: posterior acromion, coracoid, humeral head and lateral sulcus (formed by the absent humeral head).
3. The full sterile technique is as follows: use a 20- or 22-gauge 3.5-cm needle; direct into the skin about 2-cm inferior and directly lateral to the acromion and in the lateral sulcus (Fig. 1).
4. Direct the needle caudally toward the glenoid cavity.
5. Upon aspiration of serosanguinous synovial fluid, inject 20 mL of 1% lidocaine without epinephrine into the joint for a period of 30 seconds.
6. Patients should note good analgesia 15 minutes postinjection.



Fig. 1. Shoulder landmarking in intra-articular lidocaine injection.

Table 1, overall pain scores were the same with the use of both PSA and IAL.

Ease of reduction and success rate

There have been no systematic outcome measurements taken to examine ease of reduction. Anecdotes from emergency physicians who participated in the RCTs detailed in Table 1, suggested that PSA

allowed for increased patient relaxation and, ultimately, easier reduction.^{12–15} The ease of reduction as perceived by the emergency physician is important on a practical level. This may be related to prior training and/or comfort in the use of intra-articular injections, which would alter their perception of ease of reduction. The common techniques for shoulder reduction used by physicians in the cited studies are detailed in Table 2.

Table 1. Studies comparing intra-articular lidocaine and procedural sedation and analgesia in the reduction of shoulder dislocations

Study	Patients (IAL/PSA)	Reduction technique	Outcome measures	Results	Adverse events
Orlinsky et al. ¹²	29/25	External rotation and traction–countertraction	Recovery time Prereduction pain score Overall pain reduction	Clinical significance only IAL superior No significant difference	None significant
Kosnik et al. ¹⁵	29/20	Traction–countertraction	Time delay Success rate Pain score Difficulty of reduction	No significant difference No significant difference No significant difference No significant difference	None significant
Suder et al. ¹⁴	26/26	Kocher, hippocratic and others ⁶	Success rate Pain score Difficulty of reduction	No significant difference No significant difference No significant difference	Respiratory depression in the PSA group (<i>n</i> = 10)
Matthews and Roberts ¹⁷	15/15	Traction–countertraction, Bosley, Milch and Kocher	Success rate Pain score Difficulty of reduction Complications ED time Costs	No significant difference No significant difference No significant difference No significant difference IAL superior IAL superior	None significant
Miller et al. ¹⁸	16/14	Stimson, with and without scapular manipulation	Success rate Pain score Time of reduction Complications ED time Costs	No significant difference No significant difference No significant difference No significant difference IAL superior IAL superior	None significant
Moharari et al. ¹⁶	24/24	Traction–countertraction	Pain score Success rate	No significant difference No significant difference	PSA group with more complications*

ED = emergency department; IAL = intra-articular lidocaine; PSA = procedural sedation and analgesia.

*Complications included drowsiness, respiratory depression, hypotension, headache, nausea and localized paresthesia.

Table 2. Common intra-articular lidocaine techniques for shoulder reduction used by physicians in the included studies

Technique	Description
Stimson method ^{20,21}	After adequate sedation or analgesia, the patient is placed prone on the stretcher with the affected arm hanging down, and traction weight (most often 10 lbs, or 4.5 kg) is applied to the affected extended arm.
Traction–countertraction method ²²	The patient lies on a stretcher, and the wheels of the stretcher are locked. An assistant pulls on a folded sheet wrapped around the patient's chest. A second practitioner pulls the affected limb down and laterally 45°. After the humerus is dislodged, slight lateral traction on the upper humerus may be needed.
Kocher method ^{23,24}	The patient's elbow is flexed at a 90° angle. Traction is applied in the same plane as the humerus. The arm is externally rotated and the elbow is pulled across the body. The arm is then internally rotated, allowing the humeral head to fall back into the glenoid.
External rotation	This is a modification of the Kocher manoeuvre that involves flexing the elbow to 90° and slowly adducting the arm to the patient's side. The arm is then carefully externally rotated, stopping every few degrees to wait for the muscle spasms to subside until eventual reduction is achieved.
Milch method ²⁵	For a right-sided dislocation, the physician places his or her right hand on the patient's right shoulder; the thumb is braced against the dislocated humeral head. The right hand fixes the head as the left hand gently abducts the patient's arm into the overhead position. Once the patient's arm has been brought into complete abduction in this overhead position, the humeral head can be gently pushed over rim of glenoid, and the dislocation reduced.

The objective success rate of a reduction using IAL is arguably one of the most important measures for considering it as a legitimate technique to facilitate reductions. In reviewing the literature, all 6 RCTs summarized in Table 1 reported that the success rate with the use of IAL is not significantly different when compared with traditional procedural sedation. In the study by Kosnik and colleagues,¹⁵ 5 of 29 patients in the IAL group did not have a successful reduction with the use of this technique. This study showed the greatest proportion of procedural failures with the use of IAL of all the RCTs. However, this was still not a statistically significant result ($p = 0.07$).

Side effect and adverse events profile

Based on the available data, there does not appear to be an increased risk of adverse effects with the use of the IAL technique. In fact, Moharari and colleagues¹⁶ observed greater complications with the use of PSA. The use of IAL does not carry the same risk of central nervous system and cardiorespiratory depression as that of procedural sedation. This is particularly noteworthy in the context of caring for patients who are at an increased risk of adverse reactions, such as the elderly and patients with multiple traumas. The major theoretical adverse event associated with IAL is septic arthritis. There were no reported cases of infection in the studies thus far, which suggests that perhaps joint sepsis is an uncommon occurrence.

The risk of systemic effects of lidocaine are likely minimal, since IAL is injected into the joint space. However, in the case of a traumatic shoulder dislocation, lidocaine may be able to leave the joint space from a tear in the capsule and potentially leak into the systemic circulatory system. Even if the entire dose leaked into the patient's circulation, the adult dose of 20 mL of 1% lidocaine intra-articularly represents 200 mg, which is well below the recommended 3–5 mg/kg dose (up to 7 mg/kg may be given) described in the cardiac literature. Although this complication is not entirely benign, there appears to be a minimal risk of lidocaine toxicity.

Cost profile

Given the budget constraints in the health care system, it has been a priority to maximize use of resources. Although the cost of using IAL versus conscious sedation will undoubtedly be different depending on the hospital and jurisdiction, we can

nevertheless comment on trends. In 2 studies, Matthews and Roberts¹⁷ and Miller and colleagues¹⁸ reported that IAL is significantly less expensive than PSA.

There are many reasons for the reduced cost of IAL. First, less equipment is required. Procedural sedation requires the administration of an intravenous line. A second clinician such as a physician, nurse or respiratory therapist is recommended to be present to help monitor and assist with airway management if necessary.¹⁹ This increases cost. In the study by Miller and coauthors,¹⁸ the cost of administration of IAL was \$0.52 compared with \$97.64 for PSA. Although other facilities will surely have other cost estimates, this study nevertheless shows an unequivocal cost benefit of IAL.

Discharge time

In the RCTs summarized in Table 1, 3 of the studies reported that the patient's time spent in the emergency department was reduced with IAL. In the study by Miller and colleagues,¹⁸ patients left the hospital 75 (standard deviation 48) minutes post-reduction with the use of IAL compared with 185 (standard deviation 26) minutes with the use of PSA. The study by Matthews and Roberts¹⁷ showed a similar result.

Time spent in the emergency department for sedated patients may have been longer in the above studies for various reasons. The aspiration of gastric contents is a rare but dangerous risk of sedation. The national guidelines detailed by Innes and coworkers¹⁹ recommend that patients, before receiving PSA, should not have had solid or liquid foods during the previous 6 and 2 hours, respectively. Therefore, patients who have just had a meal could be waiting at least 5–6 hours before the reduction with PSA is attempted.

CONCLUSION

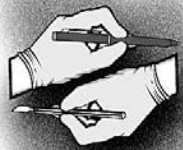
The current literature thus far strongly suggests that IAL is a safe and viable alternative to the traditional PSA technique for the reduction of the dislocated shoulder. A review of the literature has shown that in terms of success rate, pain relief and complications, lidocaine analgesia compares favourably to procedural sedation in the reduction of shoulder anterior dislocation, and has advantages in personnel requirements, cost and time spent by the patient in the emergency department. Although further research is still merited to answer other clinical

questions of interest, physicians can consider using IAL in their clinical practice for the treatment of anterior shoulder dislocation.

Competing interests: None declared.

REFERENCES

1. Sineff SS, Reichman EF. Shoulder joint dislocation reduction. In: Reichman EF, Simon RR, editors. *Emergency medicine procedures*. 1st ed. Whitby (ON): McGraw-Hill; 2004. p. 593-613.
2. Kuhn JE. Treating the initial anterior shoulder dislocation — an evidence-based medicine approach. *Sports Med Arthrosc Rev* 2006; 14:192-8.
3. Cunningham NJ. Techniques for reduction of anteroinferior shoulder dislocation. *Emerg Med Australas* 2005;17:463-71.
4. Danzl DF, Vicario SJ, Gleis GL, et al. Closed reduction of anterior subcoracoid shoulder dislocation. Evaluation of an external rotation method. *Orthop Rev* 1986;15:311-5.
5. DePalma AF, Flannery GF. Acute anterior dislocation of the shoulder. *J Sports Med* 1973;1:6-15.
6. Krøner K, Lind T, Jensen J. The epidemiology of shoulder dislocations. *Arch Orthop Trauma Surg* 1989;108:288-90.
7. Gleeson AP, Graham CA, Meyer AD. Intra-articular lignocaine versus Entonox for reduction of acute anterior shoulder dislocation. *Injury* 1999;30:403-5.
8. Lippit S. Treatment of shoulder dislocations with lidocaine. *Anesthesiol Topics* 1991;10:6.
9. Socransky SJ, Toner LV. Case study: intra-articular lidocaine for the reduction of posterior shoulder dislocation. *CJEM* 2005;7:423-6.
10. Society of Rural Physicians of Canada. *Manual of rural practice*. Shawville (QC): 2006 The Society; 2006. p. 187-96.
11. Kelly L. The occasional shoulder dislocation. *Can J Rural Med* 2007;12:103-10.
12. Orlinsky M, Shon S, Chiang C, et al. Comparative study of intra-articular lidocaine and intravenous meperidine/diazepam for shoulder dislocations. *J Emerg Med* 2002;22:241-5.
13. Suder PA, Mikkelsen JB, Hougaard K, et al. Reduction of traumatic primary anterior shoulder dislocation under local analgesia [article in Danish]. *Ugeskr Laeger* 1995;157:3625-9.
14. Suder PA, Mikkelsen JB, Hougaard K, et al. Reduction of traumatic secondary shoulder dislocations with lidocaine. *Arch Orthop Trauma Surg* 1995;114:233-6.
15. Kosnik J, Shamsa F, Raphael E, et al. Anesthetic methods for reduction of acute shoulder dislocations: a prospective randomized study comparing intraarticular lidocaine with intravenous analgesia and sedation. *Am J Emerg Med* 1999;17:566-70.
16. Moharari RS, Khademhosseini P, Espandar R, et al. Intra-articular lidocaine versus intravenous meperidine/diazepam in anterior shoulder dislocation: a randomized clinical trial. *Emerg Med J* 2008; 25:262-4.
17. Matthews DE, Roberts T. Intraarticular lidocaine versus intravenous analgesic for reduction of acute anterior shoulder dislocations. A prospective randomized study. *Am J Sports Med* 1995;23:54-8.
18. Miller SL, Cleeman E, Auerbach J, et al. Comparison of intra-articular lidocaine and intravenous sedation for reduction of shoulder dislocations: a randomized, prospective study. *J Bone Joint Surg Am* 2002;84-A:2135-9.
19. Innes G, Murphy M, Nijssen-Jordan C, et al. Procedural sedation and analgesia in the emergency department. Canadian Consensus Guidelines. *J Emerg Med* 1999;17:145-56.
20. Lippert FG. A modification of the gravity method of reducing anterior shoulder dislocations. *Clin Orthop Relat Res* 1982;165:259-60.
21. Rollinson PD. Reduction of shoulder dislocations by the hanging method. *S Afr Med J* 1988;73:106-7.
22. Daya M. *Rosen's emergency medicine, concepts and clinical practice*, 5th ed. St. Louis (MO): Mosby; 2002.
23. Kocher T. Eine neue reductionsmethode fur schultterrenkung [article in German]. *Berliner Klin Wehnschr* 1870;7:101-5.
24. Thakur AJ, Narayan R. Painless reduction of shoulder dislocation by Kocher's method. *J Bone Joint Surg Br* 1990;72:524.
25. Milch H. The treatment of recent dislocations and fracture dislocations of the shoulder. *J Bone Joint Surg Br* 1949;31A:173-80.



ORIGINAL ARTICLE ARTICLE ORIGINAL

Does a rural residence predict the development of depressive symptoms in older adults?

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Objective: We sought to determine whether adults aged 65 years or older living in rural areas who are without depressive symptoms have a lower risk of developing depressive symptoms over 5 years than their urban counterparts, and to determine the factors that predict the development of depressive symptoms in older adults in rural and urban areas.

Methods: We conducted a secondary analysis of an existing data set, the Manitoba Study of Health and Aging (MSHA.) We studied a population-based random sample of 807 people without depressive symptoms or cognitive impairment who were residing in Manitoba communities in 1991/92 and 5 years later in 1996/97. We defined "rural" as a census subdivision with a population of less than 20 000, and "urban" as a population of 20 000 or greater. The MSHA investigators measured depressive symptoms using the Center for Epidemiologic Studies Depression scale, using the standard cut-point of 16 or more. Participants reported their age, sex, education, self-rated health, and functional status at the time of their first interview.

Results: Of adults aged 65 years or older living in urban areas, 13.3% developed depressive symptoms, versus 8.9% of those living in rural regions ($p = 0.047$). In multivariate analyses, a rural residence was not associated with the development of depressive symptoms. In rural areas, factors predicting depressive symptoms were female sex and poor self-rated health at the time of the first interview.

Conclusion: A rural residence is only weakly protective for the development of depressive symptoms over 5 years, and this association was not seen after we accounted for potential confounding variables. As well, these results underscore the strong association between poor health and depressive symptoms.

Objectif : Nous avons cherché à déterminer si des adultes de 65 ans ou plus vivant en milieu rural et n'ayant pas de symptômes dépressifs risquent moins d'avoir des symptômes dépressifs en cinq ans que leurs homologues urbains et à déterminer les facteurs prédicteurs de l'apparition de symptômes dépressifs chez les adultes âgés en régions rurale et urbaine.

Méthodes : Nous avons procédé à une analyse secondaire d'un ensemble de données existantes tirées de l'étude sur la santé et le vieillissement au Manitoba (ESVM). Nous avons étudié un échantillon aléatoire représentatif de 807 personnes qui ne présentaient aucun symptôme dépressif ni déficit de la cognition et qui habitaient des communautés du Manitoba en 1991–1992 et cinq ans plus tard en 1996–1997. Nous avons défini «rural» comme une subdivision de recensement comptant moins de 20 000 habitants et «urbain» comme une subdivision en comptant 20 000 ou plus. Les chercheurs de l'ESVM ont mesuré les symptômes dépressifs au moyen de l'échelle de la dépression du Centre d'études épidémiologiques et utilisé le point de démarcation habituel de 16 ou plus. Les participants ont indiqué leur âge, sexe, scolarisation, état de santé autoévalué et état fonctionnel au moment de leur première entrevue.

Résultats : Parmi les adultes de 65 ans ou plus vivant en milieu urbain, 13,3 % ont eu des symptômes dépressifs par rapport à 8,9 % de ceux qui vivaient en région rurale

($p = 0,047$). Des analyses à variables multiples ont révélé qu'il n'y avait pas de lien entre la résidence en milieu rural et l'apparition de symptômes dépressifs. En milieu rural, les facteurs prédicteurs des symptômes dépressifs étaient le sexe féminin et un état de santé autoévalué médiocre au moment de la première entrevue.

Conclusion : Le fait d'habiter en milieu rural protège faiblement contre l'apparition de symptômes dépressifs en cinq ans et on n'a pas constaté ce lien après avoir tenu compte de variables confusionnelles possibles. En outre, ces résultats soulignent le lien solide qui existe entre le mauvais état de santé et les symptômes dépressifs.

INTRODUCTION

Depressive symptoms are a concern for older adults, and have been shown to predict death,¹ admission to a nursing home² and functional decline.³ Since the urbanization of society, a rural lifestyle has been purported to lower the risk of depression. Features of urban life, such as overcrowding, poor working conditions and a disconnection from traditional supports, were thought to predispose urban residents to mental health problems. At present, there is little research into these factors.

A rural residence could have both positive and negative effects on the risks of depression. Contextual factors that could lessen the risk for depression in rural areas include the presumed idyllic physical environment, residential stability, close social ties and stable social networks. As well, individual characteristics of rural residents such as resilience, independence and self-sufficiency may reduce the risk of depression. However, other factors of rurality may increase the risk of depression. Notably, economic decline, long travel distances, limited services and amenities, and stark physical environments may lead to depression. Furthermore, individual characteristics such as low educational attainment or low income may predispose people in rural areas to depression.

Previous studies have revealed positive, negative and no effect of rurality on depression in later life. In our own cross-sectional analysis, we found no differences in the percentage of older adults with depressive symptoms in Manitoba among those who lived in small towns, cities and predominantly rural areas.⁴ These results are similar to the findings of the PAQUID [*Personnes Agées Quid*] study in France,⁵ and Kim and coauthors⁶ in South Korea. However, US researchers have found a lower risk of depressive symptoms in rural adults of all ages.^{7,8} These conflicting findings reflect, in part, varying methodologies, settings, and measures of depression and depressive symptoms. As well, rural regions and urban regions are not heterogeneous, and certain aspects of rural environments and rural residence may

predict depression in some societies, but not in others.

Much of the existing literature draws on cross-sectional studies, with only a small number of prospective studies. Even when prospective studies have been conducted, the data have often been analyzed in a cross-sectional manner. One exception is a recent study by Weich and colleagues⁹ who analyzed prospective multilevel data from the United Kingdom. In this 1-year cohort study of about 7600 adults aged 16 to 74, the effects of geographical location on depressive symptoms of the participants were small but statistically significant. Specifically, those living in rural areas had slightly lower rates of depressive symptoms. This study was limited to the United Kingdom, where rural areas are quite different from those in Canada. As well, the results, based on younger adults, may not be applicable to older adults who have had varied life experiences over a longer period. Other prospective studies of depression in rural regions have been conducted, but do not have an urban comparator group. These studies generally confirm that previously reported predictors of depression (poor health, poor functional status, low education and low social position) hold true in rural areas.⁴⁻⁸

Previous research has not investigated extensively the association between a rural residence and the development of depressive symptoms in a prospective manner. We therefore have conducted a secondary analysis of an existing data set, the Manitoba Study of Health and Aging (MSHA), to determine if there were differences in the development of depressive symptoms over 5 years in rural and urban older adults who were without depressive symptoms at the start of the study.

Our objectives were as follows:

- to determine whether adults aged 65 years or older living in rural areas who are without depressive symptoms are less likely to develop depressive symptoms over 5 years than their urban counterparts;
- to determine the factors that predict the development of depressive symptoms in older adults in rural and urban areas.

METHODS

We conducted a secondary analysis of the MSHA. This is a population-based cohort study conducted in the province of Manitoba, in conjunction with the Canadian Study of Health and Aging (CSHA).¹⁰ Unlike the CSHA, the MSHA sampled most areas of the province, including rural areas. As well, the MSHA investigators added supplementary questions and instruments, notably the Center for Epidemiologic Studies Depression (CES-D) scale.¹¹

The MSHA investigators drew a random sample of adults aged 65 years or older from the Manitoba Health Registry, one of the most comprehensive sampling frames available. The investigators stratified the sample into region, age and sex, with an oversampling of the “oldest old.” The study investigators drew samples from all health regions of the province. However, in the 2 remote northern health regions, they sampled only older adults living in the major population centres. Trained interviewers used standardized instruments to interview the study participants in their own homes. These initial interviews were conducted in 1991/92. In 1996/97, the interviewers contacted the participants again and conducted repeat interviews.

We included participants if they had completed both interviews, were cognitively intact at the time of the first interview, did not have depressive symptoms at the time of the first interview and did not live in the remote northern health regions.

Measures

Outcome variable

The MSHA investigators measured depressive symptoms using the CES-D scale.¹¹ This scale is a valid, reliable instrument for measuring depressive symptoms in older populations and consists of 20 items each scored from 0 to 3, yielding a total score of 60. We considered the standard cut-point of 16 or greater as indicative of depressive symptoms. Of note, the CES-D does not provide a clinical diagnosis of major depression but rather an indication of the presence of depressive symptoms.

Predictor variables

We defined rural and urban residence based on Beale codes modified for Canada.^{12,13} We classified census subdivisions according to the populations of the subdivisions reported in the 1991 Census of Canada¹⁴ as

follows: urban areas (population > 19 999); small-town zones (population 2500–19 999); and predominantly rural regions (population < 2500). We then assigned respondents into 1 of these 3 groups based on their place of residence. Since there were small numbers in some cells in logistic regression models, we further categorized these into rural (population < 19 999) and urban (population > 20 000) for most analyses.

Socio-demographic variables

Socio-demographic variables included age, sex, education, living arrangements, number of individuals providing companionship and perceived adequacy of income. The MSHA investigators measured companionship using the question, “How many people in total would you say visit you or provide companionship?” Those who reported more than 20 persons were recoded to 20, giving a range from 0 to 20. The investigators assessed perceived adequacy of income by asking participants to answer, “How satisfied are you that your income adequately meets your needs?” on a 5-point scale. For the current analysis, we dichotomized responses into very well/adequately (0) versus some difficulty/not very well/totally inadequate (1). We used the Older Americans’ Resource Survey Multidimensional Functional Assessment Questionnaire¹⁵ to assess activities of daily living and instrumental activities of daily living. We used a dichotomy of excellent/good functioning (0) versus mild/moderate/severe/total impairment (1). The MSHA investigators assessed self-rated health using the question, “For your age, would you say in general your health is excellent, good, fair, poor or bad?” We dichotomized responses as excellent/good (0) versus fair/poor/bad (1). We used the Modified Mini-Mental State Examination (3MS)¹⁶ as the cognitive measure. This is a modification of the original Mini-Mental State Examination¹⁷ with expanded scoring and extra items. It is scored on a scale of 0 to 100, with a score of 78 or greater considered normal.

Analysis

We compared categorical variables using χ^2 tests and we compared continuous variables using t tests (assuming unequal variance) or one-way analysis of variance. We constructed logistic regression models, with the outcome variable of presence or absence of depressive symptoms. We constructed 3 separate models (total sample, rural only, urban only). Regression diagnostics revealed that living arrangement was highly colinear with sex, and the 3MS

score was colinear with education. We therefore excluded living arrangement and 3MS score from the regression models. We conducted a sensitivity analysis with living arrangement and the 3MS included in the models, and these models were similar to the models we present in terms of rural–urban differences. As well, since self-rated health was an extremely strong predictor, we constructed logistic regression models that did not include self-rated health. These models were also similar to the models we present. We analyzed all data using SPSS Version 11.5 (SPSS Inc.) software for windows.

Our study received approval from the Research Ethics Committee of the Faculty of Medicine of the University of Manitoba, and was in compliance with the Declaration of Helsinki.

RESULTS

Baseline characteristics of the sample participants are shown in Table 1. Of the 807 respondents, 59.5% resided in urban areas, 17.2% resided in small-town zones and 23.3% resided in predominantly rural areas. The proportion of people with depressive symptoms at the time of the second interview was lower in small-town zones and predominantly rural areas than in urban areas (Table 2, $p = 0.047$). However, this difference was not large and was of borderline statistical significance. In bivariate analyses for the total sample, sex, perceived income adequacy, self-rated health, and functional impairment at baseline were associated with the presence of depressive symptoms 5 years later. In the rural sample, sex, self-rated health, and functional impairment were significant, and in the urban sample, only self-rated health emerged as significant (Table 2).

The effect of a rural residence was not apparent in logistic regression models after we accounted for potential confounding factors (Table 3). Female sex and poor self-rated health at baseline predicted depressive symptoms at the time of the second interview. Both of these effects were statistically significant. These predictors were also the only significant predictors when considering the rural sample only. Among the urban respondents, self-rated health was the only statistically significant predictor, although sex approached significance.

DISCUSSION

Strengths and limitations

Our study has several strengths. First, our study

covers a large population of older adults from a geographically large and heterogeneous rural area. Second, the MSHA investigators used reliable valid measures and trained interviewers gathered the data. Third, the prospective nature of our study allows better examination of the temporal nature of the effect of rurality on depressive symptoms.

Our study also has several limitations. First, the measure of depressive symptoms was the CES-D scale. Although this is a reliable, valid measure of depressive symptoms, it is not a measure of major depression, which requires a clinical examination. Second, our definition of rurality was somewhat crude, being based on the population of a census subdivision. Rurality is a complex and multidimensional construct, which is hard to categorize distinctly. It is possible that different definitions of rurality would give different results. Also, our definition does not consider intra-rural or intra-urban differences. Rural areas are heterogeneous, and different rural areas may have different rates of depressive symptoms. However, the definition of rurality we used is commonly used, consistent with other studies and reports, and easy for others to replicate. A third limitation is the difficulty accounting for different rural factors (population density, distance to services, economic base, etc.), which may affect depressive symptoms. Some of these

Table 1. Characteristics of the 807 sample participants at the time of the first interview

Characteristic	% of participants*		
	Urban, [†] <i>n</i> = 480	Small town, [‡] <i>n</i> = 139	Rural, [§] <i>n</i> = 188
Male sex	38.5	39.6	43.6
Mean age, yr	73.9	73.7	74.5
Mean years of education	10.9	9.3	8.9
Living alone	38.8	38.1	36.2
Mean no. of companions	3.9	6.0	6.9
Perceived adequacy of income			
Very well/adequately	90.2	88.5	88.8
Some difficulty/not very well	9.8	11.5	11.3
Self-rated health			
Excellent/good	80.5	81.3	75.0
Fair/poor/bad	19.5	18.7	25.0
Functional impairment			
Excellent/good functioning	77.9	80.6	75.5
Mild/moderate/severe/total impairment	22.1	19.4	24.5
Mean 3MS score	91.2	90.3	89.5

3MS = Modified Mini-Mental State Examination.

*Unless otherwise indicated.

[†]Population > 19 999.

[‡]Population 2500–19 999.

[§]Population < 2500.

factors may be protective, and others may be detrimental. It is methodologically difficult to disentangle the effect of these different factors since they are difficult to measure and are often correlated. Another limitation is the 5-year interval between the survey waves. Depressive symptoms may vary over time, as can the risk factors for depression. Some of these factors, such as changes in agriculturally based economies may differentially affect rural or urban older adults, and thereby confound any rural–urban analysis. As well, attrition through mortality and

admission to nursing homes may occur during this time interval. However, the rates of death and admission to nursing homes did not differ significantly between rural and urban areas. To overcome many of these difficulties, long-term longitudinal studies with frequent interviews would be needed that included large groups of urban and rural seniors, and were linked to community-level contextual data from many varied communities. Understandably, such studies are rare. Finally, the data for these analyses were gathered some years ago, and it is possible that the effect of rurality on mood has changed during the intervening years.

Interpretation

We have found that older adults living in predominantly rural areas are less likely to develop depressive symptoms than older adults residing in urban communities. However, this effect is small, and of borderline statistical significance. Furthermore, the effect is not seen in models adjusting for potential confounding factors. This observation is consistent with our previous findings in cross-sectional analyses of no association between a rural residence and the presence of depressive symptoms.⁴ It is possible that our study lacks the power to detect a difference between rural and urban areas. However, even if this were the case, the effect of a rural residence is likely small.

We noted a strong association between self-rated health and depressive symptoms. Indeed, this association was so strong that it may have obscured the effects of other factors. Since the effect was so strong, we also constructed models without self-rated health. In these models, a rural residence was also not associated with depressive symptoms.

Our results are consistent with some of the previous research on rurality and depression. The PAQUID study in France also found a weak association between rurality and depressive symptoms, which was of marginal statistical significance and was not seen after other factors were accounted for.⁵ As well, other cross-sectional analyses have reported no association between rurality and depressive symptoms.¹⁸ However, some have reported an association. In younger adults in North Carolina, there was a lower prevalence of depressive symptoms in rural areas compared with urban areas.^{7,8} In Britain, a multilevel modelling study demonstrated that areas with a low population density have a lower rate of depression.⁹ However, rural and urban regions in the United Kingdom and southern United States are

Table 2. Bivariate associations between participant characteristics at the time of the first interview and depressive symptoms at the time of the second interview. The percent of participants with depressive symptoms is shown in the entire sample, and in those in rural and in urban areas

Characteristic at the time of the first interview	% of participants*		
	Total sample, n = 807	Rural, n = 327	Urban, n = 480
Geographic residence			
Rural	8.9†	N/A	N/A
Urban	13.3†	N/A	N/A
Sex			
Male	7.8‡	5.1†	9.7
Female	14.0‡	11.6†	15.6
Age, yr			
65–74	10.0	8.2	11.2
75–84	13.3	8.3	16.7
≥ 85	12.5	16.0	9.7
Education			
≤ grade 9	11.6	10.6	12.8
> grade 9	11.3	6.6	13.3
Living arrangement			
Lives with others	12.2	8.7	14.6
Lives alone	10.4	9.1	11.3
No. providing companionship			
0–3	12.8	9.0	14.4
4–20	9.1	7.8	10.7
Perceived income adequacy			
Very well/adequately	10.7†	8.0	12.5
Some difficulty/not very well	17.9†	16.2	19.1
Self-rated health			
Excellent/good	8.5§	5.9§	10.2§
Fair/poor/bad	23.6§	19.2§	27.2§
Functional impairment			
Excellent/good functioning	9.9‡	7.1†	11.8
Mild/moderate/severe/total impairment	17.3‡	15.1†	18.9
3MS score			
Below median (78–91)	13.9†	10.6	16.4
Above median (92–100)	9.2†	6.8	10.6

3MS = Modified Mini-Mental State Examination; N/A = not applicable.

*Unless otherwise indicated.

† $p < 0.05$.

‡ $p < 0.01$.

§ $p < 0.001$.

very different from rural and urban regions in Canada in terms of social, economic and cultural factors. As well, the population studied in both cases was younger than ours. In younger adults, different factors may predict depressive symptoms than in older adults.

Our findings are important for clinicians and for policy-makers. Clinicians working in rural areas should be aware that their patients have a similar risk of developing depressive symptoms as patients in urban centres. As well, our findings underscore the important and complex association between self-assessed poor health and depressive symptoms. Patients who report poor health are at a much higher risk of developing depressive symptoms, and should be assessed for the presence of major depression. For policy-makers, the finding of a similar risk of depressive symptoms in rural areas is also important. Older adults in rural areas face a similar risk of depressive symptoms. However, there are considerable barriers in the delivery of care to older adults with depression in rural areas. Access to primary and secondary care, as well as access to social and psychological services may be limited by travel distance, a lack of service providers, and cultural factors. Models of care for older adults with depressive symptoms require further research with special attention to rural areas.

Further epidemiologic research into the association between rurality and depressive symptoms is also needed. Specifically, there is a need for life course studies of rural residence over time and the risk of depressive symptoms. Kim and colleagues¹⁹ have shown that a prior history of a rural residence is not as important in predicting depression as a current history of rural residence. However, there are few other studies in this regard, so it is not clear whether this is true in other societies with different

rural and urban characteristics. Also, studies are required which incorporate community and regional level variables. Rurality is multidimensional, and rural regions are very heterogeneous economically, culturally and socially. Research into the factors of rurality that influence depression is needed.

CONCLUSION

Future studies into the association between rurality and depressive symptoms will need to measure both individual and community factors, and be carried out over a long time frame. Many previous epidemiologic studies of aging have been conducted in urban centres. The inclusion of older adults in rural areas is important.

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REFERENCES

1. Blazer DG, Hybels CF, Pieper CF. The association of depression and mortality in elderly persons: a case for multiple, independent pathways. *J Gerontol A Biol Sci Med Sci* 2001;56:M505-9.
2. St John PD, Montgomery PR. Depressive symptoms in older people

Table 3. Results of logistic regression model. A rural or urban residence was not associated with the development of depressive symptoms over 5 years. Women and those with poor self-rated health were more likely to develop depressive symptoms

Characteristic at the time of the first interview	OR (95% CI)		
	Total sample	Rural	Urban
Urban/rural [urban]*	0.62 (0.37–1.05)	N/A	N/A
Sex [female]*	2.07 (1.21–3.55)	2.90 (1.04–8.07)	1.80 (0.95–3.41)
Age, per year	1.03 (0.99–1.08)	1.05 (0.98–1.12)	1.03 (0.98–1.08)
Education, per year	0.98 (0.90–1.07)	0.96 (0.82–1.13)	0.98 (0.89–1.09)
Income adequacy [inadequate]*	1.20 (0.60–2.39)	1.32 (0.43–4.07)	1.11 (0.46–2.68)
Self-rated health [poor]*	3.24 (1.92–5.46)	3.52 (1.39–8.88)	3.20 (1.68–6.08)
Functional impairment [impaired]*	0.95 (0.54–1.67)	0.94 (0.35–2.57)	0.94 (0.47–1.87)
Number providing companionship, continuous	0.96 (0.91–1.01)	0.97 (0.89–1.05)	0.96 (0.89–1.03)

CI = confidence interval; N/A = not applicable; OR = odds ratio.
*Brackets indicate group at increased risk.

- predict nursing home admission. *J Am Geriatr Soc* 2006;54:1794-5.
3. Penninx BW, Guralnik JM, Ferrucci L, et al. Depressive symptoms and physical decline in community-dwelling older persons. *JAMA* 1998;279:1720-6.
 4. St John PD, Blandford AA, Strain LA. Depressive symptoms among older adults in urban and rural areas. *Int J Geriatr Psychiatry* 2006; 21:1175-80.
 5. Dufouil C, Dartigues JF, Fuhrer R. Depressive symptoms in elderly persons: comparison between rural and urban populations [article in French]. *Rev Epidemiol Sante Publique* 1995;43:308-15.
 6. Kim JM, Shin IS, Yoon JS, et al. Prevalence and correlates of late-life depression compared between urban and rural populations in Korea. *Int J Geriatr Psychiatry* 2002;17:409-15.
 7. Crowell BA Jr, George LK, Blazer D, et al. Psychosocial risk factors and urban/rural differences in the prevalence of major depression. *Br J Psychiatry* 1986;149:307-14.
 8. Blazer D, George LK, Landerman R, et al. Psychiatric disorders. A rural/urban comparison. *Arch Gen Psychiatry* 1985;42:651-6.
 9. Weich S, Twigg L, Lewis G. Rural/non-rural differences in rates of common mental disorders in Britain: prospective multilevel cohort study. *Br J Psychiatry* 2006;188:51-7.
 10. Canadian study of health and aging: study methods and prevalence of dementia. *CMAJ* 1994;150:899-913.
 11. Radloff L. The CES-D Scale: a self-report depression scale for research in the general population. *Appl Psychol Meas* 1977;1:385-401.
 12. Statistics Canada. *Profile of census divisions and subdivisions in Manitoba, part A*. Ottawa (ON): Supply and Services Canada; 1992.
 13. Statistics Canada. *Community profiles, 2001a*. www.statcan.ca (accessed 2002 Nov 29).
 14. Statistics Canada. *Statistical methods: definitions of concepts and variables, 2001b*. www.statcan.ca/english/concepts/definitions (accessed 2002 Sept 19).
 15. Fillenbaum GG. *Multidimensional functional assessment of older adults: the Duke Older Americans Resources and Services Procedures*. Hillsdale (NJ): Lawrence Erlbaum Associates; 1988.
 16. Teng EL, Chui HC. The Modified Mini-Mental State (3MS) examination. *J Clin Psychiatry* 1987;48:314-8.
 17. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;12:189-98.
 18. Kim JM, Shin IS, Yoon JS, et al. Prevalence and correlates of late-life depression compared between urban and rural populations in Korea. *Int J Geriatr Psychiatry* 2002;17:409-15.
 19. Kim JM, Stewart R, Shin IS, et al. Lifetime urban/rural residence, social support and late-life depression in Korea. *Int J Geriatr Psychiatry* 2004;19:843-51.

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THE PRACTITIONER LE PRATICIEN

The occasional Heimlich valve chest tube placement for pneumothoraces

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*This article has been peer
reviewed.*

INTRODUCTION

Pneumothorax occurs when air finds its way into the pleural space. There are many causes for this, but those that occur spontaneously can be divided into categories of primary and secondary.¹ Primary spontaneous pneumothorax (PSP) occurs in the absence of obvious lung pathology, and secondary spontaneous pneumothorax occurs with clinical lung pathology. Causes of secondary spontaneous pneumothorax are largely related to smoking habits, but other acquired and congenital conditions may be present. Secondary spontaneous pneumothoraces are commonly associated with chronic obstructive pulmonary disease and asthma. This article will deal only with the management of PSP.

Primary spontaneous pneumothoraces typically occur in adults aged 20–40, with a male prevalence.² Smoking does increase the risk proportional to the amount smoked, up to 2-fold.³ The patient typically presents with a sudden pleuritic unilateral chest pain and variable degrees of dyspnea and hypoxia, dependent on the size of the collapse. If the symptoms are significant then presentation is often prompt, but presentation several days later is not uncommon.⁴ Examination may demonstrate decreased breath sounds, mild to moderate hypoxia (oxygen saturation > 90%) but not hypercapnia. The diagnosis is made by chest radiography. Occasionally expiration and/or lordotic views are required.

The determination of the size of the PSP can be misleading based on the fact that a 2-dimensional image (chest

radiograph) is used to estimate a 3-dimensional volume. For this reason, pneumothorax size is often underestimated.⁵ Many protocols have been developed for accurate determination, but clinically the use of the “rim measurement” is common. For example, a 1 cm-rim PSP in a 70-kg adult represents about a 21% pneumothorax. This is the basis of many of the clinical management protocols developed.^{1,6}

The management of PSP has been discussed by the American College of Chest Physicians,⁶ the British Thoracic Society⁶ and a systematic review.⁷ Management options include observation, aspiration and various forms of chest tube placements with and without admission to hospital. However, there is a role for evacuation of a stable PSP with the use of a Heimlich valve procedure and good outpatient follow-up. Small to moderate PSP (≤ 4 -cm apical rim) have been managed this way.^{8–10} The following is a description of such a technique.

MATERIALS REQUIRED

- Heimlich valve pneumothorax kit (Fig. 1)
- 1% lidocaine
- povidone-iodine
- 50-mL Luer-Loc syringe (Becton, Dickinson and Company)
- waterproof tape
- skin tape
- monitoring equipment

TECHNIQUE

Place the patient in a semi-upright sitting position and with supplemental

oxygen. Monitoring should include oxygen saturation with heart rate and blood pressure cuff in place. Prepare the area to be entered, in the usual sterile fashion. The standard auxiliary approach is adequate; however, an anterior approach can also be used if the patient will accept the small scarring.

In the midclavicular line select the second or third intercostal space. Take care to avoid the internal mammary artery 2–3 cm lateral of the sternum (Fig. 2). Place a #8 catheter over the needle apparatus, from a standard Heimlich valve kit, in the selected line superior to the chosen rib and angled cranially about 30 degrees toward the lung apex. Perform a small skin nick if required, and then advance the catheter unit with gentle negative pressure until air is aspirated. At this point advance the catheter over the needle toward the apex, and remove the needle syringe (Fig. 3).

Once the catheter is in place attach the stopcock and turn it off. Aspiration of the pneumothorax, with stopcock control, is recommended using a

large Luer-Loc syringe. Maintain sterility, as several aspiration cycles will be necessary. The patient will often be uncomfortable as the lung is manipulated, and should be informed accordingly.

Once aspiration is complete, turn the stopcock off again and disconnect the syringe. The kit typically includes a sterile length of tubing; attach it to the stopcock and the other end to the Heimlich valve. Pay particular attention to the direction of airflow as indicated on the valve. The stopcock can now be turned on. With inspiration the valve should seal upon itself, and with expiration (increase of intrapleuritic pressure) a small amount of air will be seen escaping from the valve (Fig. 4).

Suture the catheter in place and seal the area with a sterile dressing. Leave the distal end of the stopcock free, as it should be sealed with waterproof tape. Also tape the Heimlich valve connection to the tubing to prevent loosening. It is convenient to loop the tubing under the axilla and place over the same area as the catheter placement (Fig. 5). Loosely



Fig. 1. Commercial pneumothorax kit.

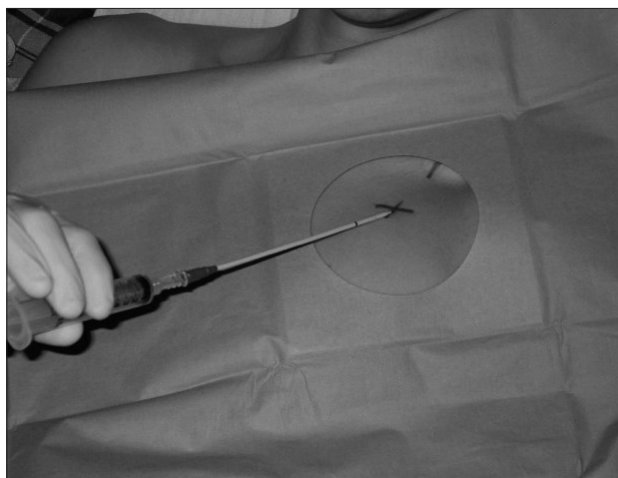


Fig. 3. Proper angle of the needle and catheter with syringe.



Fig. 2. Proper site selection in the second or third intercostal space in the midclavicular line.



Fig. 4. Tube in place, stopcock open and attached to the Heimlich valve.

secure it with skin tape. The patient can wear a nonocclusive garment, which is generally well tolerated. Before discharging the patient, obtain a chest radiograph to confirm good lung re-expansion and satisfactory catheter placement.

Perform radiography of the patient daily. After a minimum of 2 days of follow-up (longer with larger or recurrent PSPs, or if incomplete early re-expansion is evident), turn off the stopcock and perform repeat radiography in 4–6 hours. If re-expansion is maintained remove the catheter. Check the patient the next day, with or without radiography, before final discharge.

As smoking is strongly associated with PSP, this habit should be addressed if present. Furthermore, PSP is recurrent in up to 50% of patients, especially smokers.^{1,6} Finally, this technique is best used in the tall, slender patient who will accept a small anterior scar. The same outpatient technique can be used

with an axillary approach. However, patients who are obese, or who have significant chronic obstructive pulmonary disease should probably be managed with a large chest tube and admitted to hospital.

SUMMARY

Primary spontaneous pneumothorax can often be managed safely in a rural outpatient setting using a simple Heimlich valve procedure.

Competing interests: None declared.

REFERENCES

1. Baumann MH, Strange C, Heffner JE, et al. Management of spontaneous pneumothorax. An American College of Chest Physicians Delphi Consensus Statement. *Chest* 2001;119:590-602.
2. Light RW. *Pleural diseases*. 4th ed. Philadelphia (PA): Lippincott, Williams and Wilkins; 2001.
3. Bense L, Eklund G, Wiman LG. Smoking and the increase risk of contracting spontaneous pneumothorax. *Chest* 1987;92:1009-12.
4. Bense L, Wiman LG, Hedenstierna G. Onset of symptoms in spontaneous pneumothorax: correlations to physical activity. *Eur J Respir Dis* 1987;71:181-4.
5. Rhea JT, DeLuca SA, Greene RE. Determining the size of pneumothorax in the upright patient. *Radiology* 1982;144:733-6.
6. Henry M, Arnold T, Harvey J. BTS guidelines for the management of spontaneous pneumothorax. *Thorax* 2003;58:ii39-52.
7. Devanand A, Koh MS, Ong TH, et al. Simple aspiration versus chest-tube insertion in the management of primary spontaneous pneumothorax: a systematic review. *Respir Med* 2004;98:579-90.
8. Obeid FN, Shapiro MJ, Richardson HH, et al. Catheter aspiration for simple pneumothorax (CASP) in the outpatient management of simple traumatic pneumothorax. *J Trauma* 1985;25:882-6.
9. Mercier C, Page A, Verdant A, et al. Outpatient management of intercostal tube drainage. *Ann Thorac Surg* 1976;22:163-5.
10. Campisi P, Voitek A. Outpatient treatment of spontaneous pneumothorax in a community hospital using a Heimlich flutter valve: a case series. *J Emerg Med* 1997;15:115-9.



Fig. 5. Final preparation and positioning of the tubing and Heimlich valve.

Country Cardiograms

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THE PRACTITIONER LE PRATICIEN

Country cardiograms case 35

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This article has been peer
reviewed.

A 68-year-old man presents to the emergency department of a remote British Columbia diagnostic and treatment centre with a 15-hour history of chest discomfort. He has no preceding cardiac history and no risk factors for coronary artery disease. Vital signs are normal. His resting electrocardiogram (ECG) is shown in Figure 1. A previous ECG,

taken 5 months earlier, is available (Fig. 2). Troponin T is elevated at 1.30 µg/L (a level > 0.1 µg/L indicates myocardial damage).

What is your ECG interpretation and management plan?

For the answer, see page 166.

Competing interests: None declared.

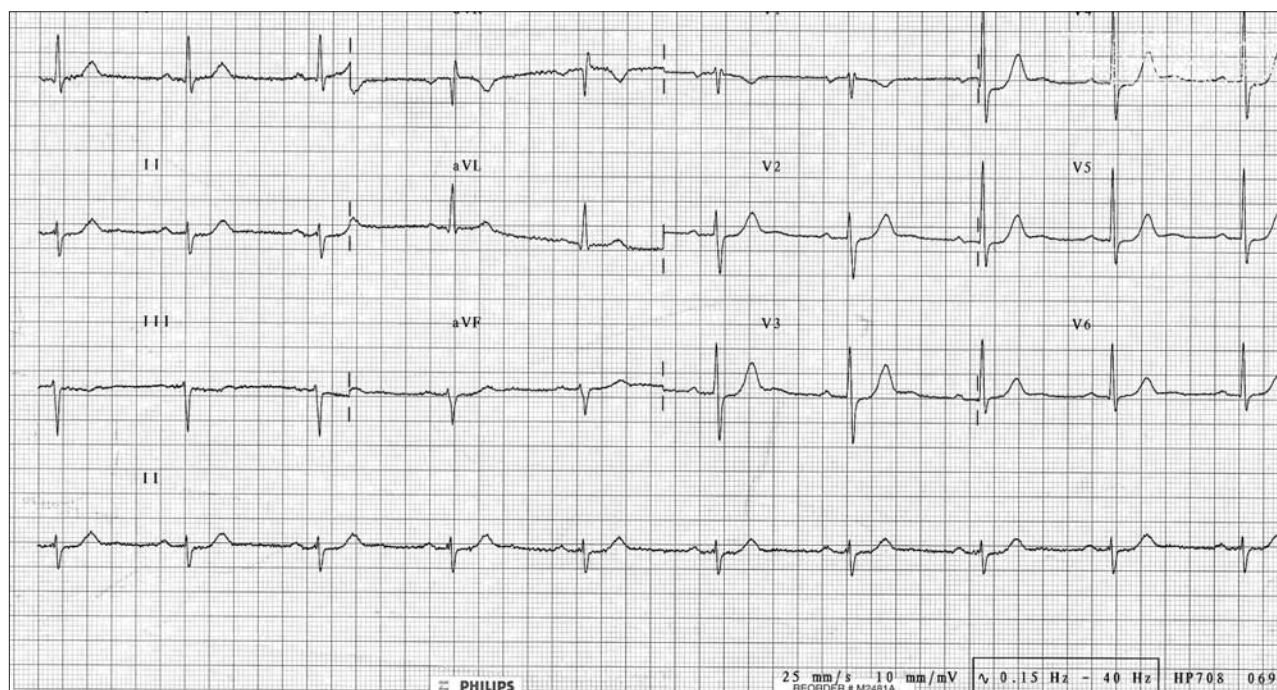


Fig. 1. Electrocardiogram of a 68-year-old man who presented to the emergency department with a 15-hour history of chest discomfort.

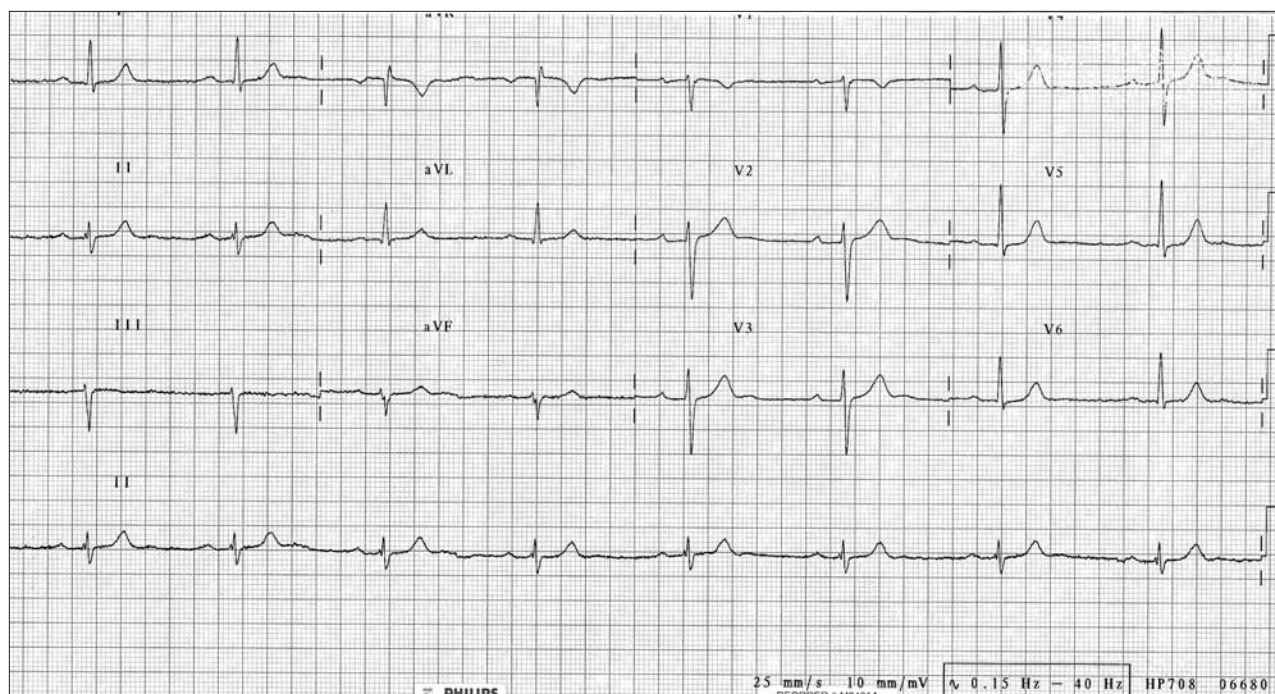


Fig. 2. Electrocardiogram taken 5 months before the patient's presentation to the emergency department.

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OUT BEHIND THE BARN DANS LE FEU DE L'ACTION

Email — from friend or foe?

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Despite the efforts of software companies and computer users, those sleazy folks who send out junk mail keep finding new ways to creep into our email inboxes. This article describes some of their current tricks and ways to minimize your risk.

CASE 1

For awhile, I was frequently receiving “advertising” messages from another physician’s email address. She didn’t send them and her other contacts reported the same issue. The problem persisted despite updates to her security software. Her computer had likely been infected with an undetected virus-like program that was sending junk mail to everyone in her email address book. Since the messages came from a personal computer, they were not identified as spam by my email security programs.

CASE 2

While investigating the first case, I learned from my system supervisor that some virus-like programs send email messages from one contact in an infected computer to another contact in the same address list. This makes it even more difficult to identify the real source of the problem.

CASE 3

I’ve also received fraudulent messages, supposedly from known physicians, asking me to become their “friend” in a social network website (such as Facebook). This trick is apparently used by companies that sell email address lists. If

you agree, they install a virus-like program that reads the email address book on your computer. I never reply to these messages directly, but do send a separate message to the physician to advise them that their computer may be infected.

PRACTICAL PARANOIA

To avoid virus infections, be suspicious of all incoming messages, even from friends. If available, use the “preview” feature of your email program to read messages without actually opening them. This reduces (but does not completely eliminate) your risk.

ADDRESS FIELDS

The address fields (From, To, CC) of your messages can give warnings. If a message was sent to several people, your risk may be greater. Messages from legitimate sources may be flagged as spam if sent to multiple recipients using the BCC (blind carbon copy) field, which is never displayed to the recipient. Some recent spam messages have been sent from a fictitious “Doctor Smith,” just to make them look more important. Putting blocks on messages from a given address is rarely effective, since the junk mail senders change the sending address frequently.

SUBJECT FIELD

Blank or vague subject fields may be clues to unwanted messages, but are often due to human error by the sender. Security programs may add a flag to the subject if they detect possible spam or fraudulent messages. Your email program may allow you to flag messages

as spam if they contain certain recurrent words such as “Viagra” or “male enhancement.”

MESSAGE TEXT

Most email users learn to recognize common junk mail themes, such as “get rich quick” schemes or dire warnings that their credit cards or bank accounts have security problems. Financial institutions are unlikely to use email to tell you about such problems.

MESSAGE LINKS

Don’t click on links in suspicious messages, even from friends. This is a common way for viruses to spread. It is safer to retype (or cut and paste) the address into your Internet browser program if you wish to visit the website mentioned. Security programs scan links to determine if the link matches the message text. This unfortunately can result in some legitimate messages being flagged as fraudulent.

ATTACHMENTS

Attachments are also a virus risk, particularly if they contain executable code, such as Microsoft Word or Excel files. Be suspicious about unex-

plained attachments in any message. While we’re discussing attachments, you can avoid overloading your email inbox by saving large attachments (e.g., photographs) to your hard drive and then deleting the message.

REPLIES

Don’t ever reply to junk email messages. That just confirms that your email address is still active. Unless you really trust the sender, never use message links that claim to remove you from the sender’s mailing list. If you receive a suspicious message from a friend, ask them to confirm that they actually did send it.

UPDATE YOUR SOFTWARE

Make sure that both your computer operating system and security programs are automatically sending you updates whenever new threats are detected. As an extra precaution, visit the vendor’s website occasionally to confirm that your software is current. One of the concerns about the recent “Conficker” virus was that it was designed to interfere with receiving such updates.

Competing interests: None declared.

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STUDENT ESSAY ARTICLE D'UN ÉTUDIANT

A November night in Whitehorse

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It was -25°C outside. I looked out the window of the doctor's lounge hoping to see the aurora borealis, but there were no bright green lights that night, only big snowflakes falling from the sky. It was 11:00 pm in the Whitehorse emergency department, and almost time to go home. It had been a busy night. A man partially amputated his thumb while chopping frozen meat for his sled dogs with an axe. A worried mother brought in her wheezy baby. An elderly man with heart problems had been transferred down to us from a small isolated northern community. Of course there were also the usual sore throats, vague abdominal pains and back injuries.

One last patient was waiting to be seen. "She's in the gyne room," my preceptor said. "Her vitals are normal." Grabbing my stethoscope, I walked through the department to the small examining room in the back corner. Just as I was about to open the door, a nurse came out holding a bottle containing very cloudy looking urine. We both looked at it, then looked at each other. She raised an eyebrow and said, "Good luck, I don't know what's going on." In my head I went through a quick differential: most likely a urinary tract infection or a sexually transmitted infection.

A pale young girl with long brown hair tied loosely in a ponytail was sitting on the examining table. Her friend, wearing dark eyeliner, was sitting on a chair in the corner. I introduced myself and sat down beside her. "What's going on tonight?" I asked in a casual voice. "I feel like I got kicked in the box," she said, very matter of factly. She sat quietly and did not look to be in pain. With my differential in mind I went

through a detailed history during which we clarified that she had not actually been "kicked in the box" (by which she meant her vagina). The pain had started earlier that day in her lower abdominal area. She had no discharge or unusual urinary symptoms. She said she had a normal menstrual period 3 weeks prior. She and her new boyfriend of 2 months always used condoms. She had never had a Pap test or been screened for sexually transmitted infections.

I did the pelvic examination first, and supported her back as she lay down on the bed. As I inserted the speculum I noticed some fluid sitting in the vagina. I advanced the speculum, and all of a sudden saw a round mass covered with hair. In a split second I realized what was going on. It did not even require medical training to diagnose. She was having a baby.

"Just stay right where you are," I said. "I'll be right back." I ran to the nursing station. My preceptor was in the process of ordering more blood tests on my patient. There was so much protein in her urine that he thought she was having serious renal problems. I said "Could you come help me out? This might sound crazy, but she's having a baby. Right now."

A quick ultrasound revealed a live fetus, its 4-chamber heart beating rapidly on the small screen. The mother was almost fully dilated already. She was in tears and covered her face with her hands, and her friend was at her side looking helpless. In the same sentence we had just told her that she was pregnant, and in labour. As the snow continued to fall outside, she delivered a healthy 8-lb 5-oz term baby girl later that night.

Although there has been an overall decline in adolescent pregnancy in Canada since the late 1970s, teenagers having babies continues to be a reality across the country. Following the Northwest Territories, the Yukon has the second highest rate of teenage pregnancy in Canada. What was going on in this young girl's life? How had she either not known about, or denied to herself, a major change going on in her body for 9 months? Did living rural-ly have anything to do with the situation she found herself in? It must be scary to find out that you are pregnant as a teenager, and further challenges

related to access to education, health care, resources and supports would make this life-changing experience even harder.

I finished my cup of tea and got ready to go home. In the next room, the young girl, holding her baby in her arms, set forth on her new life as a mother.

This essay was the winner of the SRPC Student Essay Award 2009.

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INSTRUCTIONS FOR AUTHORS

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

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

Material in the following categories will be considered for publication.

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

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

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

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

Cover: artwork with a rural theme

Manuscript submission

Submit 2 hard copies of the manuscript to the Editor, *Canadian Journal of Rural Medicine*, PO Box 4, Station R, Toronto, ON M4G 3Z3, and an electronic version, preferably by email to cjrm@cjrm.net, or on CD. The preferred electronic version is an older Word format (in doc format such as Word 2003 or older — not docx). Digital art and photos must accompany the manuscript in separate files (see "Electronic figures and illustrations").

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

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

Electronic figures and illustrations

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

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Country cardiograms case 35: Answer

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The previous electrocardiogram (ECG) (Fig. 2 on page 161), other than displaying left axis deviation, is essentially within normal limits. It forms a useful baseline for comparison with the current tracing (Fig. 1 on page 160), taken while the patient's chest pain was present.

The current ECG shows normal sinus rhythm, left axis deviation, and normal QRS complex and T wave morphology that is unchanged from before. However, there are subtle differences in the ST segments in leads V2 to V5. The normal, slightly upsloping ST contour shown in Figure 2 is distinct from the slightly depressed (0.5–1.0 mm) horizontal ST segments shown in Figure 1.

Without the previous ECG for comparison, these changes are subtle enough that they might prompt merely a comment of "nonspecific anterior ST segment changes with minimal depression." Taken in conjunction with the previous ECG, however, they suggest an ischemic pattern in the anterior leads. Coupled with the elevated troponin T level, a diagnosis of non-ST elevation myocardial infarction is suggested.

MANAGEMENT PLAN

In our remote diagnostic and treatment centre, without inpatient admission capability, we aim (despite an undependable airport) for direct transfer when possible to a tertiary care facility capable of revascularization, rather than interim admission to regional hospitals. Lengthening, prioritized wait lists for coronary angiography and revascularization are a regrettable reality, and we are aware of 2 fatal outcomes in the past 3 years of our myocardial infarction patients while they were waiting for such care. Paradoxically, our isolated, remote location, without hospital beds, may be a factor in our ability to achieve timely direct admission, compared with regional hospitals with small ICUs.

Appropriate treatment would include acetylsalicylic acid, analgesia, nitroglycerine, enoxaparin, atorvastatin and clopidogrel. The patient was flown to a tertiary care facility where he was successfully treated with angioplasty and stenting.

For the question, see page 160.

"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*, P.O. Box 4, Station R, Toronto ON M4G 3Z3.