

Canadian Journal

Journal canadien

of
**Rural
Medicine**

de la
**médecine
rurale**



The official journal of the Society of Rural Physicians of Canada

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

VOLUME 15, NO. 3, SUMMER 2010

VOLUME 15, N° 3, ÉTÉ 2010

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Recruitment Trumps Retention

Bounce-back ED Visits

The Occasional Endometrial Biopsy



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Canadian Journal of Rural Medicine (CJRM) is owned by the Society of Rural Physicians of Canada (SRPC). It appears in Winter, Spring, Summer and Fall. It is printed by Dolco Printing, Ottawa, Ont.

Address all correspondence to: Editor, CJRM, P.O. Box 4, Station R, Toronto ON M4G 3Z3; 416 961-7775, fax 416 961-8271, cjrm@cjrm.net

CJRM is indexed in *Index Medicus* and *MEDLINE*.

Publications Mail Agreement no. 41387051; Return undeliverable Canadian copies and address changes to: CMA Member Service Centre, CJRM, 1870 Alta Vista Dr., Ottawa ON K1G 6R7; 888 855-2555; cmamsc@cma.ca

ISSN 12037796

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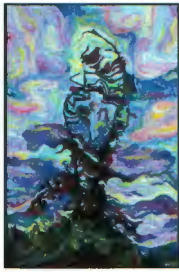
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Oil, 36" x 24" by Rob Elphinstone

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Socially responsive schools of medicine

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What does it take to be a socially responsive school of medicine that attempts to meet the needs of the disadvantaged rural population? Last month, the SRPC awarded the Northern Ontario School of Medicine (NOSM) the SRPC Rural Education Award. There are multiple criteria for the award, but the most telling measure this year was the Canadian Resident Matching Service (CaRMS) match results. In the first iteration of the 2009 match results,¹ the students of NOSM far out-matched any other school to rural family medicine (47.3%). They also had the highest percentage of family medicine residents going into rural practice — 68.4% (Nominations and Awards Committee Report to SRPC Council: unpublished data, 2010).

So how do you do as well as NOSM? It is hard to get any rural results at all if you do not try to admit rural-origin students, as they are 2 to 3 times more likely to end up practising in rural areas. NOSM accepts 90% of the students from northern Ontario and 40% of the rural-origin students. The other Ontario schools accept only 8% of the rural-origin students.²

The second greatest impact is made through rural exposure in the undergraduate curriculum. Every NOSM student spends 48 weeks living and learning in rural and regional settings. Other schools would do well to increase the rural exposure of all of their students.

What we call a rural family medicine program is important, but the postgraduate side has the least impact on career choice. Paradoxically, this area has received the greatest attention at medical schools, with all family medicine

programs offering at least 2 months of “rural” placement.

It is more than just months in the sticks, though. There are so many ways to undermine a rural curriculum. Generalism can be undervalued. The “expert” beams in on the teleconference. Bad cases come from the small hospital up river. Rural role models are overworked.

Most medical schools are working on distributed medical education, sometimes for social advancement. The extensive regional campuses of McMaster University have approaches that play to rural origin and/or rural curricula.

In Alberta there are regional networks developing with real rural placements for some students at the University of Calgary and University of Alberta. If these networks are successful we should hope that they can be expanded and offered to a greater proportion of the class. The Northern Medical Program at the University of Northern British Columbia, like NOSM, had a spectacular initial year and has averaged double the results of the University of British Columbia for family medicine.³

The medical schools are changing, the fortunes of rural medicine are on the upswing and this is no time to be complacent. Congratulations, NOSM.

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Des facultés de médecine socialement responsables

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Comment devient-on une faculté de médecine socialement responsable qui essaie de répondre aux besoins de la population rurale désavantagée ? Le mois dernier, la SMRC a décerné à l'École de médecine du Nord de l'Ontario (EMNO) son Prix d'éducation rurale. De multiples critères régissent le prix, mais les résultats du jumelage effectué par le Service canadien de jumelage des résidents (SCJR) ont constitué le paramètre le plus révélateur cette année. Au cours de la première ronde du jumelage de 2009¹, les étudiants de l'EMNO ont obtenu de loin plus de jumelages en médecine familiale rurale que ceux de toutes les autres facultés (47,3 %). Ils ont aussi affiché le pourcentage le plus élevé de médecins résidents en médecine familiale qui se lançaient en médecine rurale — 68,4 % (Rapport du Comité des nominations et des prix au Conseil de la SMRC du Canada : données non publiées).

Comment donc faire aussi bien que l'EMNO ? Il est difficile d'obtenir quelque résultat que ce soit si l'on ne cherche pas pour commencer à admettre davantage d'étudiants d'origine rurale; en effet, ces étudiants sont de deux à trois fois plus susceptibles d'aller pratiquer en région rurale. Les étudiants acceptés par l'EMNO proviennent à 90 % du Nord de l'Ontario et à 40 % des régions rurales. Dans les autres facultés de médecine de l'Ontario, seulement 8 % des étudiants acceptés sont d'origine rurale².

L'exposition à la médecine rurale dans le contexte du programme d'études de premier cycle a produit le deuxième effet en importance. Chaque étudiant de l'EMNO passe 48 semaines

à vivre et à apprendre en milieu rural et régional. Les autres facultés feraient bien d'exposer davantage tous leurs étudiants au milieu rural.

Ce que nous appelons un programme de médecine familiale et rurale est important, mais l'aspect postdoctoral a le moins d'effet sur le choix de carrière. Or, c'est paradoxalement le domaine qui a reçu le plus d'attention dans les facultés de médecine, car tous les programmes de médecine familiale offrent au moins deux mois de « stages en milieu rural ».

C'est toutefois davantage qu'un simple stage d'une couple de mois dans un trou perdu. Il y a tellement de façons de miner un programme d'études rurales. Le généralisme peut être insuffisamment valorisé. « L'expert » intervient au cours de la téléconférence. Les cas difficiles proviennent du petit hôpital en amont. Les médecins qui donnent l'exemple du travail en milieu rural sont surmenés.

La plupart des facultés de médecine sont à préparer des programmes d'éducation médicale distribuée, parfois en faveur de l'avancement social. Les grands campus régionaux de l'Université McMaster appliquent des approches qui tiennent compte de l'origine rurale ou des programmes d'études en médecine rurale.

En Alberta, des réseaux régionaux font leur apparition et offrent de réels stages en milieu rural pour certains étudiants de l'Université de Calgary et de l'Université de l'Alberta. Si ces réseaux connaissent le succès, nous espérons qu'il sera possible de les étendre et de les offrir à un pourcentage plus important d'étudiants. Tout comme l'EMNO, le Programme médical du Nord de

l'Université du Nord de la Colombie-Britannique connaît une première année spectaculaire et affiche en moyenne des résultats deux fois plus élevés que l'Université de la Colombie-Britannique en médecine familiale³.

Les facultés de médecine changent, le sort de la médecine rurale s'améliore et ce n'est pas le moment de nous reposer sur nos lauriers. Félicitations à l'EMNO.

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Index Medicus et dans les bases de données MEDLINE et PubMed.

Le *JCMR* vise à promouvoir la recherche sur les questions de santé rurale, à promouvoir la santé des communautés rurales et éloignées, à appuyer et informer les praticiens en milieu rural, à offrir une tribune de débat et de discussion sur la médecine rurale, ainsi qu'à fournir de l'information clinique pratique aux praticiens en milieu rural et à agir sur la politique de santé rurale en publiant des articles qui éclairent les décideurs.

On étudiera la possibilité de publier des documents dans les catégories suivantes.

Articles originaux : études de recherche, rapports de cas et analyses critiques d'écrits en médecine rurale (3500 mots ou moins)

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Articles cliniques : articles pratiques pertinents pour la pratique en milieu rural. On encourage la présentation d'illustrations et de photos (2000 mots ou moins)

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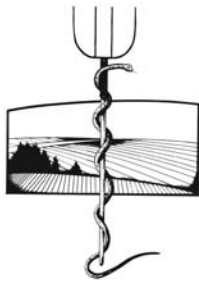
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President's message. Rural health strategy revisited: pitching in the Dragons' Den

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I am preparing for an appearance on the *Dragons' Den*. The SRPC has a rural health strategy for sale. Problem is, no one seems to want to buy it! This usually means that either the product is flawed, the demand has been overestimated or the wrong market is being targeted. How can I persuade them to invest?

Is the product flawed? The SRPC's rural health strategy was developed initially as a tool to present to the Romanow and Kirby commissions, and in this it was remarkably successful. Both those commissions borrowed heavily from it in their own reports, as did the report that was produced by the Ministerial Advisory Council on Rural Health. A billion and a half dollars was proposed as the amount needed to seriously address the issues. Politicians then and since have identified the SRPC as the legitimate source of expertise on the question. They have handled but they have not bought.

Is the demand overestimated? Ontario has had to restructure its rural incentive program to prioritize truly rural and truly remote communities, because the "underserved" virus has started to spread farther and farther south, into larger and larger communities. The competition between communities for medical human resources is fierce and expensive, and if anything the demand has grown rather than diminished.

Is the wrong market being targeted? In a recent *Maclean's* article Andrew Coyne, reporting on a strategy conference held by the Liberal Party of Canada, wrote the following:

Time and again, the conference heard of the need

for a "national strategy" to do X. Only, as often as not, X was in provincial jurisdiction: health care, education, housing and so on. Time was when Ottawa could worm its way into provincial jurisdictions via the federal spending power, but not only is there no money for this, but successive federal governments have promised not to do so without the provinces' approval.¹

Maybe he's right. Maybe all we can expect the federal government to do is to cherry pick the odd popular project to use as evidence of engagement, but to steer clear of anything that could annoy its provincial allies. Maybe they are right to do so.

My pitch to the Dragons must also persuade them that I have no competition in the field. No one else is clamouring to solve the rural health issues that plague rural Canada. The problems have been well defined (mostly by the SRPC):

- appropriate selection of rural students into medical school
- appropriate rural curriculum
- appropriate rural training sites
- appropriate incentives to rural practice
- appropriate support when in practice
- appropriate relief when it is time for a break

I suspect the Dragons will send us away to sharpen our pencils, that they will tell me that although the message is persuasive, we have not found the right place or way to shop it. What do you think? Come with me into the Dragons' Den and help me pitch!

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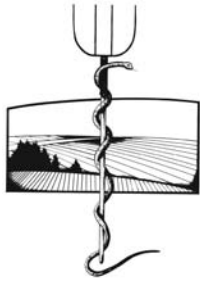
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Message du président. Retour sur la stratégie de santé rurale : dans l'ancre du dragon

Imaginons que je me prépare à passer à l'émission *Dragons' Den* (L'ancre du dragon) de la CBC. La SMRC a une stratégie de médecine rurale à vendre. Or, le problème, c'est que personne ne semble en vouloir ! On déduit habituellement d'une telle situation que, soit le produit est défectueux, soit la demande a été surestimée ou encore, on vise le mauvais marché. Comment persuader les investisseurs ?

Le produit est-il défectueux ? Quand elle a vu le jour, la stratégie de santé rurale de la SMRC se voulait un outil de présentation devant les commissions Romanow et Kirby. À ce titre, elle a connu un succès remarquable. Les deux commissions ont largement emprunté au document dans leur rapport respectif, tout comme le Comité consultatif ministériel sur la santé rurale. On a évalué qu'il fallait un milliard et demi de dollars pour s'attaquer sérieusement au problème. À l'époque et encore aujourd'hui, les politiciens se sont toujours entendus pour dire que la SMRC est indéniablement l'experte en la matière. Ils ont examiné la marchandise mais ne l'ont pas achetée.

La demande a-t-elle été surestimée ? L'Ontario s'est trouvée dans l'obligation de restructurer son programme incitatif pour le milieu rural afin de prioriser les communautés véritablement rurales et éloignées et contrer ainsi la propagation de plus en plus méridionale du virus de l'appellation « sous-desservie » à des communautés toujours plus grandes. La rivalité entre les communautés pour l'accès aux effectifs médicaux est féroce et coûteuse et, au lieu de diminuer, la demande semble avoir augmenté.

A-t-on ciblé le mauvais marché ? Dans un récent article du magazine *Maclean's*, Andrew Coyne résumait ainsi une conférence du parti libéral du Canada en matière de stratégie :

« Encore une fois la conférence a mentionné la nécessité d'une "stratégie nationale" pour atteindre un but X. L'inconvénient, comme c'est bien

souvent le cas, c'est que le but X relève de la compétence provinciale : soins de santé, éducation, logement, etc. À une époque, Ottawa pouvait se faufiler dans les dossiers de compétence provinciale en faisant appel au pouvoir fédéral de dépenser, mais non seulement il n'a plus d'argent pour cela, mais à tour de rôle, les derniers gouvernements fédéraux ont promis de ne rien faire sans l'assentiment des provinces¹ ».

Peut-être a-t-il raison, peut-être que tout ce que nous pouvons attendre du gouvernement fédéral, c'est qu'il choisisse le projet populaire et singulier à utiliser comme preuve de son engagement, en se tenant loin de tout ce qui risquerait de lui aliéner ses alliés provinciaux. Et il n'aura probablement pas tort.

Ma présentation dans L'ancre du dragon devrait aussi persuader le panel de l'absence de toute concurrence dans le milieu. Personne d'autre ne prétend pouvoir solutionner les problèmes de santé qui affligent les campagnes canadiennes. Les solutions ont été bien définies (en majeure partie par la SMRC) :

- sélection appropriée d'étudiants ruraux dans les facultés de médecine
- programme d'études adapté à la médecine rurale
- centres de formation appropriés en milieu rural
- incitatifs appropriés pour la pratique rurale
- soutien approprié durant la pratique
- répit approprié lorsqu'une pause est nécessaire.

J'ai bien l'impression que le dragon nous renverrait à notre table à dessin en nous disant que même si le message est convaincant, nous n'avons encore trouvé ni la bonne tribune où nous vendre, ni la bonne façon. Qu'en pensez-vous ? Accompagnez-moi dans l'ancre du dragon et aidez-moi à nous vendre !

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ORIGINAL ARTICLE ARTICLE ORIGINAL

Recruitment trumps retention: results of the 2008/09 CMA Rural Practice Survey

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Introduction: In 2008, the Canadian Medical Association (CMA) conducted a survey of rural practitioners. The survey covered incentives to choose rural medicine, current satisfaction, plans for future migration and strategies for retention.

Methods: The CMA Canadian Collaborative Centre for Physician Resources, in collaboration with the Society of Rural Physicians of Canada, surveyed 1960 rural practitioners and received 642 responses (33% response rate). Because of similarities with earlier surveys, longitudinal analyses were possible.

Results: More than 70% of physicians older than 45 years received no incentives for setting up rural practice, compared with 41% of younger physicians. Younger physicians attached greater importance to financial incentives than older physicians, but personal incentives, such as accommodations in the community, were also important. The opportunity to practise one's full skill set was considered important (84%) as was liking the lifestyle (82%). One in 7 (14%) respondents planned to move from their communities within the next 2 years. They reported they might stay if they had a more reasonable workload, professional backup and locums.

Conclusion: Although increasingly common, cash incentives are not the main reason physicians choose rural practice. Practice and lifestyle factors are even more important. Communities need to focus as much on retention issues to protect their investment in the long term.

Introduction : En 2008, l'Association médicale canadienne (AMC) a effectué un sondage auprès des médecins qui travaillent en milieu rural. Le sondage abordait les motifs qui incitent les médecins à pratiquer en milieu rural, leur taux actuel de satisfaction, leur intention de quitter le milieu et les stratégies de rétention.

Méthodes : Le Centre canadien de collaboration sur les effectifs médicaux, en partenariat avec la Société de la médecine rurale du Canada, a interrogé 1960 médecins en milieu rural et 642 ont répondu (taux de réponse 33 %). Compte tenu de la similitude de ce sondage avec des sondages précédents, il a été possible d'effectuer des analyses longitudinales.

Résultats : Plus de 70 % des médecins de plus de 45 ans n'ont bénéficié d'aucune mesure incitative pour s'établir en région rurale, contre 41 % des médecins plus jeunes. Ces derniers ont semblé accorder plus d'importance aux mesures incitatives de nature économique que les médecins plus âgés, mais les motifs de nature personnelle, comme le milieu de vie communautaire, ont aussi paru importants. Les répondants ont en effet déclaré accorder de l'importance à leur capacité d'exploiter leur plein potentiel professionnel (84 %) et au style de vie (82 %). Un répondant sur sept (14 %) prévoyait quitter le milieu d'ici les deux années suivantes. Ces répondants affirmaient toutefois qu'ils resteraient peut-être plus longtemps si leur fardeau de travail diminuait et s'ils pouvaient compter sur une relève ou des médecins suppléants.

Conclusion : Bien que de plus en plus courantes, les mesures incitatives d'ordre économique ne sont pas la principale raison pour laquelle les médecins choisissent

d'exercer en milieu rural. Les facteurs liés à la qualité de la pratique elle-même et au mode de vie revêtent encore plus d'importance. Les communautés doivent donc accorder autant d'attention aux facteurs de rétention si elles veulent protéger leur investissement à long terme.

INTRODUCTION

The 2008/09 Rural Practice Survey was conducted by the Canadian Medical Association (CMA) in collaboration with the Society of Rural Physicians of Canada. One of its purposes was to monitor trends at the national level with respect to the most likely predictors of migration from rural to urban areas, and to determine what initiatives could perhaps mitigate the flow.

Studies from Canada, Australia, South Africa and the United States have shown that physicians originating from a rural community are 2.5 to 3.5 times more likely to be in a rural practice.¹⁻⁶ Training in rural settings at both undergraduate and post-graduate levels has been shown to be positively associated with the decision to practise in a rural community.^{5,7-12} The success of scholarships or bursaries with rural return of service agreements is highly variable, and these agreements have an impact mainly on recruitment and not retention.¹³⁻¹⁵

The CMA conducted surveys of physicians in rural practice in 1991, 1999 and 2001. The research showed that satisfaction levels of both personal and professional aspects of rural practice deteriorated between 1991 and 2001. A 2007 study showed that career satisfaction for small-town physicians was associated with being able to cope with the challenges of a variety of clinical conditions with little or no support.¹⁶

In the 1991 CMA study, more than half of the rural physicians who were planning to move felt that additional colleagues, locum tenens and alternative compensation might influence them to reconsider. In Australia, the top 3 issues determining retention of general practitioners in rural and remote areas were on-call arrangements, professional support and the variety of cases in rural practice.¹⁷ A 2003 study in Ontario came to similar conclusions with respect to limits on on-call requirements; better locum programs; sessional payment for emergency, anesthetic and obstetric services; and a network for specialist referral.¹⁸ The high levels of recruitment to rural practice of graduates from the Rural Clinical Schools in Australia occurred only when matched by a supportive clinical workplace environment.¹⁹

A study of graduates of northern Ontario family medicine programs who chose urban practice indicated that although there were multiple reasons for choosing to work in urban areas, family and personal factors were most frequently mentioned as reasons for deciding on an urban option.²⁰

METHODS

In 2008, CMA staff from the Canadian Collaborative Centre for Physician Resources, in collaboration with the Society of Rural Physicians of Canada, designed a survey instrument for rural physicians. The survey was approved by the Human Investigation Committee of Memorial University. The survey was sent to 1960 physicians in rural practice, randomly selected from those with a zero as the second digit of their business postal code. Although this method is not ideal for quantifying all rural physicians, it was believed to be adequate for a sample survey. The selected sample was checked for appropriate demographic representation. A filter-type question about geographic characteristics of the primary population served by the physician was used to further isolate an appropriate population for the study.

The survey was bimodal (paper and Web-based) and in the field from mid-October 2008 until the end of January 2009. There was an advance email invitation to identify invalid addresses and 2 full invitations for both paper and online surveys.

Because the questions in the 2008/09 questionnaire were very similar to those used in earlier surveys, some longitudinal analysis of the results was possible, particularly with respect to satisfaction, reasons for moving and factors that might have kept physicians in rural practice.

RESULTS

Of the physicians contacted, 642 responded to the survey, for a response rate of 33%.

Demographic representativeness of the sample

Using the January 2008 CMA masterfile of physician data,²¹ a comparison of the demographic compo-

sition of the rural survey respondents against those of the rural physician population in Canada in general was possible. In terms of sex, age group and broad specialty (i.e., family medicine or other specialty), the proportional breakdown of the survey respondents was representative of the rural physician population as a whole. Most jurisdictions were proportionally represented, with the exception of Quebec, Ontario and British Columbia. Quebec accounts for almost one-quarter of the rural physician population but only 16% of respondents. Ontario and British Columbia were slightly overrepresented, with 31% of respondents from Ontario and 19% from British Columbia, although these provinces comprise only 27% and 15% of Canada's rural doctors, respectively.

Incentive

Survey respondents were asked what, if any, incentives they received to encourage them to set up a rural practice, as well as what specific factors they considered were important in their decision to practise in a rural community.

When divided into 2 groups of "younger physicians" (≤ 45 yr) and "older physicians" (> 45 yr), a smaller proportion of older physicians received an incentive than younger ones, with 71% of older physicians reporting "no incentive" compared with 41% of younger physicians indicating the same.

Regardless of age, cash incentives were the most frequently offered inducement to encourage physicians to establish a practice in a rural location. More

than half (58%) of younger physicians who received an incentive indicated that they received cash, compared with 39% of older physicians.

Almost 1 in 5 (19%) younger physicians who received incentives were offered accommodations in their rural community and 14% benefitted from family-oriented, nonfinancial incentives such as paid vacation, assistance with finding their spouses employment, daycare and proximity to family. Tuition repayment was used to encourage 13% of younger respondents to settle in a rural community. Figure 1 compares the various incentives received, by age group.

Choosing rural practice

The factors that received ratings of positive importance (very or somewhat important) in terms of making the decision to practise in a rural area included the following: "opportunity to practise full skill set" (with 84% of overall respondents providing a positive rating), "liked the rural lifestyle" (82% positive), "practice opportunity was available" (79% positive), "community needs a good match with my career interests" (75% positive) and "overall preference for rural practice" (71% positive).

Younger physicians attached greater importance to "financial recruitment/retention incentives" than did older ones. Almost half of younger physicians (49%) indicated that this factor was very or somewhat important (positive response) in their decision to practise in a rural location, compared with less

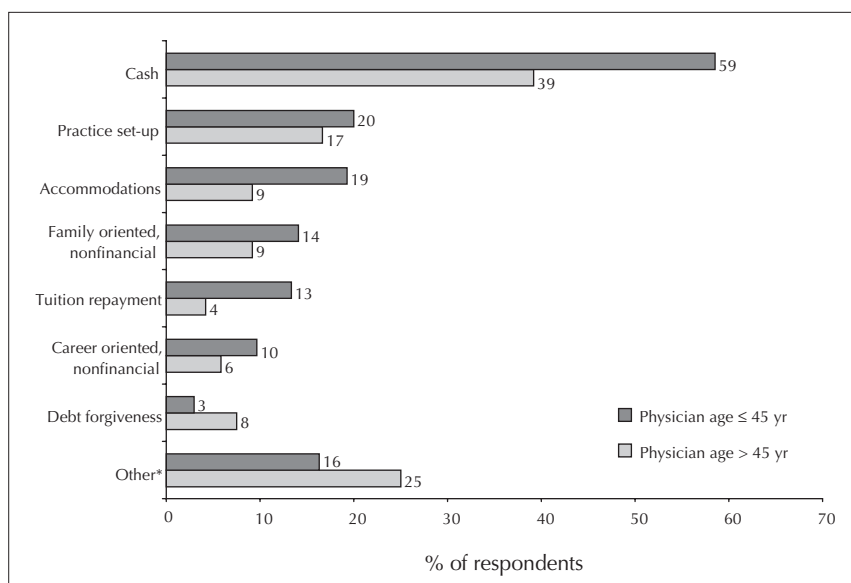


Fig. 1. Incentives received by the 255 physicians who were given incentives for practising in a rural setting, by age. *Other incentives listed by respondents included assistance with moving (including expenses), immigration assistance, vehicles, other financial benefits and other material tokens.

than one-third (32%) of their older colleagues. In fact, 38% of older physicians indicated this was very or somewhat unimportant (negative response), compared with 24% of younger physicians. Factors that were considered important in choosing a rural practice can be seen by age group in Figure 2.

A greater proportion of international medical graduates rated “financial recruitment/retention incentives” positively (56%) compared with 33% of graduates of Canadian medical schools. International medical graduates also attached greater importance to nonfinancial incentives than did graduates of Canadian medical schools (45% positive v. 21%). In addition, international medical graduates were significantly more likely to indicate that the availability of a practice opportunity was their number one reason for setting up a rural practice, with 18% selecting this option compared with 6% of graduates of Canadian medical schools.

“Rural experience in training” was more often rated positively by younger physicians (71%) than older physicians (40%). An absence of rural training experience by older physicians does not explain this difference, as these data excluded “not applicable” responses. However, younger physicians were far more likely to have done a rural rotation and they were also more likely to have spent more time in rural training. Younger physicians also expressed greater satisfaction with their level of preparation for rural practice, with 79% of younger physicians overall indicating they were very or somewhat satisfied, compared with less than two-thirds (64%) of older physicians.

Current personal and professional satisfaction

In general, rural physicians appear relatively satisfied with most aspects of their practice and personal lives in rural communities. Factors that drew the most dissatisfied responses were “ability to find locum tenens coverage” with well over half (60%) being very or somewhat dissatisfied (negative response) followed by “availability of professional backup” at 43%. Although the latter is less than half, only 40% gave this factor a positive rating and the rest remained neutral or did not respond. These 2 factors were also poorly rated in CMA surveys conducted in 1991²² and 1999²³ and appear to be rated more poorly over time. When asked about professional backup, 28%²² indicated they were very satisfied in 1991, compared with 14%²³ in 1999 and 11% in 2008.

Though a gradual decrease can be seen, “recreational opportunities” has maintained high rates of satisfaction over time with 51%,²² 44%²³ and 43% indicating they were very satisfied in 1991, 1999 and 2008, respectively.

Increased satisfaction over the past decade can be seen in numerous factors as well. For example, “availability of CME/CPD opportunities” had 53%²³ of respondents indicating they were very or somewhat satisfied in 1999 and 60% in 2008. Similarly, “availability of hospital facilities/services” got a positive response from 57% of respondents in 1999²³ and 65% in 2008. Improvements were also seen in satisfaction with “earnings potential” (63% positive in 1999²³ and 72% in 2008) and “regular work hours”

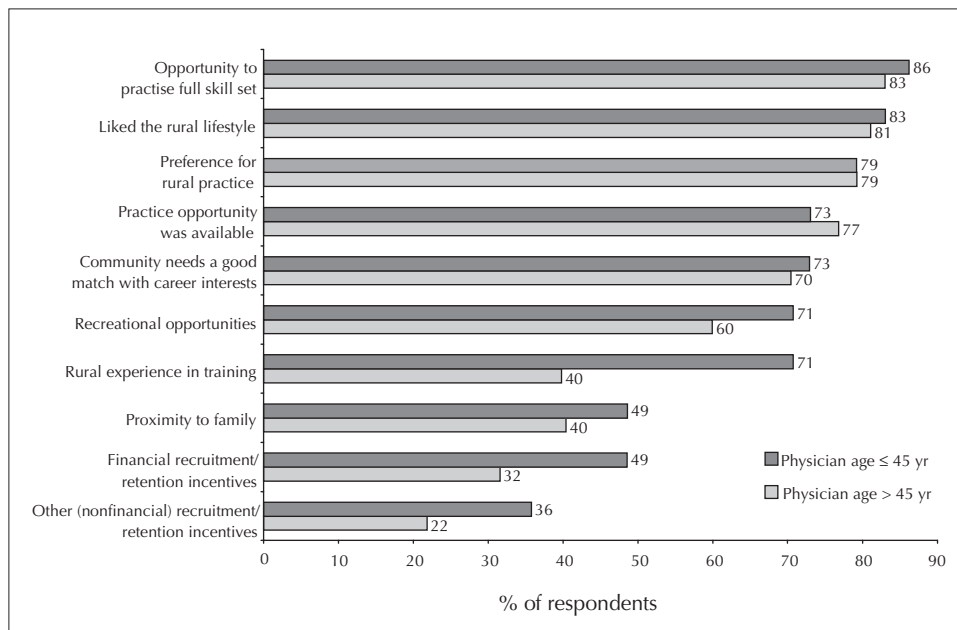


Fig. 2. Factors that were considered important (very or somewhat important) in choosing to practise in a rural area by 642 physicians, by age.

(53% positive in 1999²³ and 75% in 2008).

In 2008, the vast majority of respondents felt appreciated by the community (84%) and three-quarters (76%) had a positive sense of belonging to the community.

Despite these data demonstrating a relatively positive attitude toward their rural practices, 14% of respondents indicated a plan to move from their current communities within the next 2 years; 4% were planning on doing so within the next 6 months. About 41% of physicians planning a move within the next 2 years intended to set up practice in an urban location and 7% intended to do so in another country entirely.

Improvements that would most influence physicians to remain in rural Canada were as follows: "more reasonable hours of work" (66% of respondents), "availability of locum tenens" (63%), "availability of professional backup" (63%) and "educational opportunities for children" (63%) for those for whom this factor was applicable. The survey revealed no statistically significant differences between the age groups with respect to important factors that would influence physicians to remain.

Prospects of a more prestigious position or availability of academic/research opportunities were not seen as particularly tempting nor were improvements to emergency transportation services.

Rural training

Although having had at least one rural experience in medical education versus no rural rotations at all appears to have no bearing on intention to leave rural practice, this kind of experience may affect the attitudes of physicians.

As mentioned, younger physicians were far more likely to have done a rural rotation (89% v. 57% of older physicians), and were also more likely to have spent more time in rural training, with 36% having spent more than 6 months in rural rotations over the course of their education, compared with 14% of older physicians. Almost one-third of older physicians (29%) who had done a rural rotation indicated they had spent just a month or less in the rotation, and only 1 in 10 (9%) of younger physicians spent this shorter amount of time.

Rural physicians who had done at least one rural rotation were more likely to be satisfied with their level of preparation for rural practice (73%) than those who had never done a rural rotation (57%). However, 41% of those never having done a rural rotation indicated that they were not likely to take

advantage of financial support to train for additional skill sets for rural practice, compared with one-quarter of those with a rural rotation experience. Note, though, that the vast majority (95%) of that 41% were older than 45 years and therefore may be less likely to seek additional training in general.

Those having done at least one rural rotation were more than twice as likely to have had a return of service provision attached to their first rural practice, with 23% indicating so, compared with 11% of those with no rural rotation. They were also more likely to have received an incentive to set up rural practice. About 57% of those who had done a rural rotation indicated receiving no incentive at all, compared with 70% of those with no rural rotation experience. Of those who did receive an incentive, 56% with experience in rural rotations were offered cash, compared with 36% of those with no experience in rural rotations.

The single most important factor in choosing rural practice, indicated by physicians who did a rural rotation, was a preference for rural practice (23%), whereas those who never did a rural rotation most often indicated a desire to practise their full skill set (25%). Those with no rural rotation in schooling were more than twice as likely to indicate that their most important reason for setting up rural practice was because the opportunity was available (14% v. 6%). As mentioned earlier, international medical graduates were more likely than graduates of Canadian medical schools to be influenced by a practice opportunity.

DISCUSSION

The Rural Practice Survey conducted in 2008/09 yielded a modest 33% response rate; however, the respondent profile reflected that of the general rural physician population with respect to sex, age group and broad specialty. With respect to province, physicians in Quebec were underrepresented in the results, and physicians in Ontario and British Columbia were slightly overrepresented.

The response rate to the survey may also be biased toward those physicians who remain interested in rural medicine. It is likely that our sample is missing those who were planning to leave and had little vested interest in rural practice and thus were unlikely to complete a survey on the topic. The letter that accompanied the survey indicated that it would take about 15 minutes to complete and this may be too long for those who are very busy in their practice and those who have just started their career.

Given that the survey results showed that 14% of rural physicians intended to leave rural Canada within the next 2 years, communities will have to continue to create new and more effective recruitment and retention plans. The struggle to retain physicians in rural Canada is nothing new. This does not bode well for rural Canada and there is some urgency in responding to the crisis in rural physician human resources.

Strides appear to have been made over time in encouraging more physicians to settle in rural areas, as demonstrated by the fact that younger physicians are vastly more likely to have been offered enticements. Though cash incentives seem to be the most popular, it is noteworthy that financial incentives were not among the most influential reasons why physicians in this sample chose a rural practice.

Having the opportunity to practise a full skill set was the most important factor overall that attracted physicians to rural communities. Yet one respondent wrote, "I really enjoy rural practice, [but] more and more we lose privileges to do small surgical procedures, which narrows 'fun parts' of scope of practice."

It seems that the gradual increase of young physicians gaining rural experience in education is a step in the right direction, given the high importance attributed to the rural lifestyle and an overall preference for rural practice. Rural experience in training was important to the majority (71%) of younger physicians when they were making their decision to choose rural practice. Exposure to rural communities and practices during training not only helps young physicians decide whether this is the type of practice they would prefer, but also gives them the confidence to take on the realities of rural practice down the road. These data lend support to the continued establishment of specialized and comprehensive rural curricula for medical schools. The data also support the continuation of the mandatory 8-week rural rotation by The College of Family Physicians Canada for family medicine residency.²⁴ Perhaps a similar requirement should be considered for training programs for the general specialties.

Nevertheless, it seems that rural experience in training does not necessarily improve retention rates for communities. Physicians with this kind of educational background were equally likely to indicate a desire to move as those without. However, physicians who had a rural rotation in medical school felt better prepared for their practice and appeared more eager to continue to improve their skills. Physicians who participated in rural rotations in school, and who therefore may be more suited to

rural practice, were also more often offered enticements (e.g., return of service provisions, cash and various other incentives).

Of course, mentioning an intention to move does not necessarily cast this fate in stone. Respondents to this survey have informed us that improvements can be made to discourage migration to urban centres, especially where professional relief is concerned. With the availability of locums and professional backup rating poorly on the satisfaction scale and high with respect to the need for improvement, further work on streamlining the ease with which colleagues (even out of province) can provide locum tenens services, are needed. It is also necessary to optimize intraprofessional collaboration with formalized linkage between rural physicians and their colleagues in the referral centres, and use of technology to improve professional backup.

CONCLUSION

With cash incentives being more popular among younger physicians and international medical graduates, this type of incentive still has its place in bringing more physicians to rural practice. However, close attention should be paid to the practice and lifestyle factors that appear to have greater importance. Preserving these advantages of rural practice and improving awareness of them among younger physicians may serve to attract physicians and keep them practising in Canadian rural communities.

Competing interests: None declared.

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ORIGINAL ARTICLE ARTICLE ORIGINAL

Bounce-back visits in a rural emergency department

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*This article has been peer
reviewed.*

Introduction: The rate of return visits at urban emergency departments (EDs) has been reported as approximately 3% within 72 hours of discharge. However, the current literature does not indicate the rate of return visits for rural EDs. The purpose of this study was to determine the bounce-back rate at a rural ED and to characterize the visits.

Methods: A retrospective chart review was performed on all visits to the ED of the South Huron Hospital between Apr. 1, 2007, and Mar. 31, 2008. Charts were reviewed for patient age, Canadian Emergency Department Triage and Acuity Scale (CTAS) score, most common diagnoses and discharge disposition for each visit.

Results: Of the 9935 ED visits during this 12-month period, 289 (2.9%) were return visits within 72 hours. Median patient age was 46 years. The most common CTAS score for return visits was CTAS-IV (45.3%). The most common diagnosis was unspecified abdominal pain (4.0%). Most patients (88.6%) were treated in the ED and discharged home.

Conclusion: This study demonstrates that the bounce-back rate at a rural ED is similar to that at an urban ED. Most return visits are for low-acuity conditions, and unspecified abdominal pain represents the most common return diagnosis.

Introduction : Selon les rapports, le taux de retour pour consultation aux urgences en milieu urbain dans les 72 heures qui suivent un congé serait d'environ 3 %. Toutefois, la littérature actuelle ne mentionne pas le taux de retour aux urgences en milieu rural. Le but de la présente étude était de déterminer le taux de retour dans un service d'urgence (SU) rural et d'établir les caractéristiques de ces consultations.

Méthodes : Les auteurs ont procédé à un examen rétrospectif des dossiers pour toutes les consultations effectuées au SU de l'Hôpital South Huron entre le 1er avril 2007 et le 31 mars 2008. L'examen des dossiers a permis de noter l'âge des patients, le score sur l'échelle canadienne de triage et de gravité (ÉTG), le diagnostic le plus courant et les conditions du congé suivant chaque consultation.

Résultats : Parmi les 9935 consultations au SU au cours de cette période de 12 mois, 289 (2,9 %) représentaient un retour à l'intérieur d'une période de 72 heures. L'âge médian des patients était de 46 ans. Le score ÉTG le plus fréquent pour les retours était de niveau IV (45,3 %). Le diagnostic le plus courant était la douleur abdominale indéterminée (4,0 %). La plupart des patients (88,6 %) recevaient leur traitement au SU et repartaient ensuite à la maison.

Conclusion : Cette étude montre que le taux de retour pour consultation dans un SU rural équivaut à celui d'un SU urbain. La plupart des retours concernent des problèmes peu aigus et la douleur abdominale indéterminée représente le diagnostic le plus fréquent chez les patients qui reviennent consulter.

INTRODUCTION

Some patients presenting to emergency departments (EDs) for treatment do so unexpectedly, after having just received

treatment in the hours or days before. In the medical literature, these unscheduled return visits to the ED within a short period are referred to as "bounce backs." Bounce-back visits contribute to the

workload of ED staff, which usually includes a single physician for a 24-hour shift in rural areas. Determining the rate of return visits and trying to elucidate their causes may allow for strategies to be developed that would reduce the occurrence of bounce-back visits. Such an intervention could help ease the demands on ED staff and possibly reduce ED wait times.

Bounce-back rates are also used as indicators of the quality of ED care.¹⁻³ The bounce-back rate of urban EDs has been well studied and reported as approximately 3% within 72 hours after discharge from the ED.¹ The factors influencing bounce backs and the most common bounce-back diagnoses have been examined in urban hospitals but have yet to be studied in a rural centre.¹⁴ Previous studies have shown that changes in disease factors,⁵ improper follow-up and insufficient patient education contribute to patients returning to urban EDs shortly after discharge.^{2,6,7} Rural and urban EDs serve different patient populations.⁸ Studies have shown that delivery of emergency care in urban and rural centres differs on parameters such as patients' presenting acuity levels,⁸ pain management,⁹ time to thrombolysis in myocardial infarction¹⁰ and wait times.¹¹ These demonstrated differences in rural and urban emergency care highlight the importance of determining the bounce-back rate at rural hospitals. Because of a lack of literature on bounce-back visits to rural EDs, the purpose of the present study was to determine the bounce-back rate at a rural ED and to characterize the visits.

METHODS

South Huron Hospital is a small rural hospital in

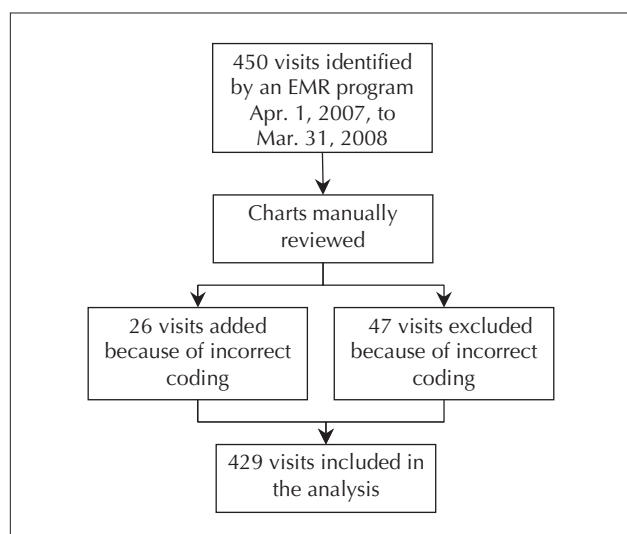


Fig. 1. Derivation of final sample of return visits to the emergency department. EMR = electronic medical records.

Exeter, Ont., that provides 24-hour ED care, with approximately 10 000 visits per year. Approval for the retrospective chart review was obtained from the South Huron Hospital Medical Advisory Board.

An electronic retrospective chart review was performed on all visits to the hospital's ED between Apr. 1, 2007, and Mar. 31, 2008. A database search of the patients' electronic charts was done using MED2020 (MED2020 Health Care Software Inc.) to identify all patients with 2 visits to the ED within a 7-day period during the specified 12-month period. The generated list was then manually verified to ensure the reason for the second visit was related to that of the first visit and that neither visit was scheduled (Fig. 1). The patient's demographic information, Canadian Emergency Department Triage and Acuity Scale (CTAS) level assigned by the triage nurse, admitting diagnosis and discharge disposition were obtained for each visit. The 10 most frequent diagnoses for return visits were determined.

A manual retrospective chart review was done for patients who either bounced back resulting in admission to hospital or were transferred to another facility as identified by discharge disposition. Charts were individually reviewed for age, admitting diagnosis, length of stay, triage time, time seen by emergency physician, vital signs, CTAS scores and diagnoses at both ED visits. This chart review was done following many of the chart review methods outlined by Gilbert and colleagues.¹² Specifically, a medical student was trained in chart abstraction and used a standardized abstraction sheet. Chart abstraction by the medical student was monitored.

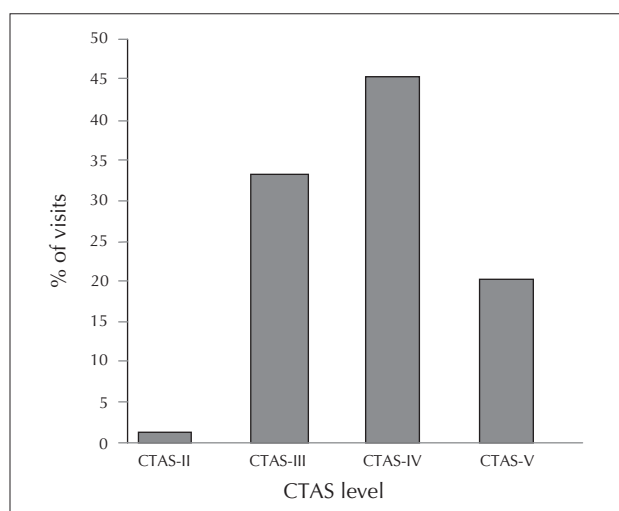


Fig. 2. Canadian Emergency Department Triage and Acuity Scale (CTAS) scores among patients returning to the emergency department.

RESULTS

Of the 9935 ED visits during this 12-month period, 429 (4.5%) were return visits within 7 days, and 289 (2.9%) were return visits within 72 hours. Patient age ranged from 3 months to 93 years, with a median age of 46 years, and 54% were male. The most common CTAS score for return visits to the ED was CTAS-IV (45.3%), followed by CTAS-III (33.3%), -V (20.2%) and -II (1.2%) (Fig. 2). The most common diagnosis was unspecified abdominal pain (4.0%), followed by acute upper respiratory tract infection (3.7%) and asthma (3.3%). The top 10 bounce-back diagnoses are provided in Table 1.

Most bounce-back patients (86.5%) received treatment in the ED and were discharged home. Seven percent were admitted and 3.7% were transferred to another facility. Complete discharge disposition information is provided in Table 2. The median age of bounce-back patients requiring admission was 65 years. The median age of patients requiring transfer to another facility was 33.9 years. There was a variety of diagnoses requiring admission, none of which occurred at a significantly greater frequency than the others.

DISCUSSION

The purpose of our study was to determine the bounce-back rate at a rural ED and to characterize the visits. We assessed a single ED in southwestern Ontario, which limits the extent to which the results may be generalized to other rural hospitals. Our study is limited by sources of error common to all retrospective chart reviews, such as incorrect recording of data on the initial chart, incorrect transfer of data into the electronic medical records system, missing chart information and difficulty interpreting documentation. We did not assess

whether the study patients had family physicians and, if so, whether appointments were easily accessible for the patient. Also, South Huron Hospital is 30 km from a very popular summer vacation town. Thus during the summer months the hospital's ED may service an additional temporary population that is away from its primary care providers.

Our study demonstrated a bounce-back rate of 2.9% within 72 hours after discharge from the ED, which is similar to the rate of 3% reported for urban EDs.^{1,2} Bounce-back rates are often used as indicators for quality assurance;¹⁻³ thus, our results suggest that the quality of care at our hospital's ED is comparable to urban EDs. However, not all bounce-back visits suggest a lack of proper care during the initial visit. Patients may be advised to return to the ED if symptoms worsen or for follow-up in some cases. Patients may also return to the ED when they would rather see their family physicians but are unable to access their physicians, which reflects poor access to primary care in the community rather than poor ED treatment.

Most unexpected return visits were for low-acuity conditions (CTAS-IV). This is an encouraging result for the study ED, as it suggests that serious conditions are not being overlooked. It has been demonstrated that a common reason for bounce-back visits is a lack of communication to patients about their diagnosis, treatment and follow-up.¹⁵ At the time of this study South Huron Hospital did not have a formal discharge protocol in place for patient education. The predominance of low-acuity visits may be because of patients who were not properly educated

Table 1. Top 10 diagnoses for 429 bounce-back visits

Diagnosis	No. (%) of visits
Unspecified abdominal pain	17 (4.0)
Acute upper respiratory tract infection	16 (3.7)
Asthma	14 (3.3)
Noninfectious gastroenteritis and colitis	12 (2.8)
Issue of repeat prescription	12 (2.8)
Urinary tract infection, site not specified	11 (2.6)
Unspecified renal colic	10 (2.3)
Constipation	8 (1.9)
Retention of urine	8 (1.9)
Examination and observation following other diagnosis	8 (1.9)

Table 2. Discharge dispositions for 429 bounce-back visits

Discharge disposition	No. (%) of visits
Discharged home	371 (86.5)
Patient triaged and registered, and then left the ED before further assessment by a service provider (e.g., physician, nurse, allied health provider)	7 (1.6)
Patient triaged, registered and assessed by a service provider (e.g., physician) and left without treatment	1 (0.2)
Admitted into reporting facility directly from the ambulatory care visit	30 (7.0)
Transferred to another acute care facility directly from an ambulatory care visit functional centre	16 (3.7)
Intrafacility transfer to clinic	2 (0.5)
Discharged to place of residence (institution; e.g., nursing or retirement home or chronic care, private dwelling with support of home care, VON or Meals on Wheels; or jail)	2 (0.5)

ED = emergency department; VON = Victorian Order of Nurses.

about follow-up during their initial ED visit.

This particular community does not have a significant orphan-patient problem. A recent published study looking at nonurgent use of this rural ED showed that most people in the area using the ED have a family physician.¹⁴ In addition, this rural community also has a walk-in clinic run by the hospital for 3 hours every day of the year, including weekends and holidays. Better education with regard to follow-up may lower the bounce-back rate, because most patients were triaged as low acuity.

It has been demonstrated that most patients visiting an urban ED would prefer to be seen by their family physicians if they were able to access primary care.¹⁵ Patients may not be able to get timely appointments with their family physicians or may have problems accessing care outside of working hours. Our study did not examine the time of day of bounce-back visits to determine whether they occurred primarily after hours. A previous study in this ED showed that many patients with family physicians came to the ED for less urgent problems because they did not have immediate access to primary care.¹⁴ Patients in the area vary in terms of their access to after-hours primary care. There are 8 family physicians in Exeter: 5 are part of a family health team and 3 are part of a family health network. The towns in the surrounding areas have various primary care models. Our study did not examine whether the bounce-back patients had family physicians or, if so, the physicians' type of practice model. Furthermore, it has been demonstrated that patients in a practice providing around-the-clock coverage do not always realize that they have access to a physician 24 hours a day.¹⁵ In urban centres, practice models for primary care have been shown to affect ED visits. The effects that different practice models and access to primary care have on ED visits in rural areas represent potential areas for future research.¹⁶

A significantly lower number of bounce-back patients were admitted to hospital in this study compared with previous studies in urban EDs that demonstrated rates of bounce-back admissions ranging from 19% to 36.5%.^{1,4,17} One explanation for our markedly lower rate of bounce-back admissions may be that South Huron Hospital is not a tertiary care hospital. A higher percentage of patients visiting teaching hospitals are admitted when compared with community hospitals.⁸ As such, some of the patients that would have been admitted at larger hospitals with more services, may have been transferred from South Huron Hospital to a larger centre, and were thus represented in our "transfers to

another facility" category. The acuity level of our bounce-back visits may also contribute to our low rate of bounce-back admissions. Most bounce-back visits to our facility were of low acuity and were therefore less likely to require admission.

The median age of the admitted bounce-back patient was 65 years, which is significantly higher than the median age for all bounce-back patients of 46 years. This result is consistent with older adults' use of emergency services.¹⁸ It has been shown that older adults use emergency services at a higher rate, are more likely to have repeat ED visits and are more likely to be admitted to hospital, compared with younger adults.

Unspecified abdominal pain was the diagnosis most commonly seen in our bounce-back population. This may be because of the long list of differential diagnoses for presentation of abdominal pain. Our most frequent diagnoses of abdominal pain, asthma and urinary tract infection are among the diagnoses identified by Gordon and coauthors⁴ to be at the highest risk for an unexpected return visit to the ED. Our results demonstrate that these diagnoses are similarly prevalent in this rural population. Thus the initial ED diagnosis may be a useful predictor of an unanticipated early return to the ED, allowing ED physicians to be particularly vigilant when a patient presents with a "high risk for return" diagnosis. Communication of these diagnoses to ED staff is important because it has been demonstrated that ED staff may not correctly identify some high-risk diagnoses as such.⁴

Although our study did not examine the factors that contributed to patients returning unexpectedly, it has been repeatedly demonstrated that inadequate patient education contributes significantly to a patient's unexpected return to the ED.^{2,7,13} Wilkins and Beckett¹³ found that most bounce-back visits occurred because of several forms of inadequate communication, such as failure to explain duration of symptoms, failure to provide adequate explanation or reassurance, and failure to explain the need for ongoing management by the patient. Thus patient education represents a potential area for the development of interventions to reduce bounce-back visits. Patient education represents an area of future research for our group. In November 2008, South Huron Hospital implemented a new discharge protocol that includes a patient education component regarding diagnosis, treatment and follow-up. A follow-up study examining the effect of this new ED discharge protocol on the bounce-back rate at our hospital is currently underway.

CONCLUSION

Our study demonstrates that the 72-hour bounce-back rate of 2.9% at this rural southwestern Ontario ED is similar to the rate reported for urban EDs. Most bounce-back patients have low-acuity conditions and are discharged home. The most common bounce-back diagnosis was unspecified abdominal pain.

Competing interests: None declared.

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THE PRACTITIONER LE PRATICIEN

The occasional endometrial biopsy

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*This article has been peer
reviewed.*

INTRODUCTION

An endometrial biopsy is a safe and efficient office-based procedure for sampling the endometrium in a patient presenting with abnormal uterine bleeding.¹⁻³ The endometrial sample provides a tissue diagnosis for guiding further management. Insertion of an intrauterine contraceptive device and an endometrial biopsy share common steps, which can aid the rural practitioner when performing the occasional endometrial biopsy.

Endometrial biopsy has replaced dilation and curettage (D&C) as the initial procedure for sampling the endometrium because it is safer, more convenient, less costly and gives equally accurate results. Studies comparing endometrial biopsy and D&C have found excellent agreement of samples (83%–96%).^{4,5} Endometrial biopsy gives an adequate tissue sample in 84% to 91% of women when the polypropylene catheters are used.^{6,7} The procedure is highly sensitive for the detection of endometrial carcinoma. A meta-analysis that included almost 8000 women revealed that endometrial biopsy using a polypropylene catheter detected 99.6% of endometrial cancer in postmenopausal women and 91% of endometrial cancer in premenopausal women, along with 81% of atypical hyperplasia.⁸

INDICATIONS FOR ENDOMETRIAL BIOPSY

In the investigation of abnormal premenopausal bleeding, pelvic ultrasonography detects polyps and fibroids with a sensitivity of 80% and a specificity of

69%.⁹ However, there are no normal values for the endometrial thickness of premenopausal women on ultrasonography in ruling out endometrial hyperplasia or carcinoma. Guidelines from The Society of Obstetricians and Gynaecologists of Canada recommend that all high-risk patients with abnormal bleeding have an endometrial biopsy performed (high-risk criteria comprise age > 40 yr, weight \geq 90 kg, infertility, polycystic ovaries, tamoxifen therapy, and family history of endometrial or colonic cancer).¹⁰

There is some controversy in the order of investigations for the assessment of postmenopausal bleeding (pelvic ultrasonography and/or endometrial biopsy).¹⁰⁻¹² An endometrial thickness of 5 mm or greater on pelvic ultrasonography has a 7%–31% association with endometrial cancer.¹¹ These patients require an endometrial biopsy to obtain a histologic diagnosis. Consideration may be given to not performing an endometrial biopsy in postmenopausal women with an endometrial thickness less than 5 mm on ultrasonography, because their risk of endometrial cancer is less than 0.07%.¹¹⁻¹³ Despite a normal endometrial thickness (< 5 mm), patients with persistent postmenopausal bleeding may need further investigation with repeat ultrasonography or an endometrial biopsy to rule out endometrial abnormalities, including cancer.

PREPROCEDURE ASSESSMENT

1. A pelvic examination is performed to determine uterine size and position.
2. The patient's medical history is re-

viewed to clarify any contraindications: pregnancy, acute cervical or pelvic infections, cervical cancer, coagulopathy.

3. An explanation of the procedure is given to the patient.
4. Benefits of the procedure are discussed: obtaining a tissue sample to assist with diagnosis and treatment.
5. Risks of the procedure are discussed: potential pain and discomfort, inadequate tissue sample, infection, uterine perforation.
6. The patient's questions are answered and consent for the proposed procedure is obtained.
7. Instructions for any premedication are clarified.

PREMEDICATION

Patients will experience mild to moderately severe pain during an endometrial biopsy. Commonly, patients are advised to take a nonsteroidal anti-inflammatory drug (NSAID) 1 to 2 hours before an endometrial biopsy and to repeat the dosage several hours after the procedure, if needed, to reduce the pain associated with the procedure, along with post-procedure uterine cramping. The patient's acceptance of predictable discomfort with an endometrial biopsy is improved by a detailed explanation given before the procedure, along with psychologic support during the procedure.¹⁴ If more analgesia is needed, see "Practical tips."

EQUIPMENT

The most commonly used endometrial biopsy catheters consist of a polypropylene sheath with an inner plunger (Fig. 1). Negative pressure is produced within the uterine cavity by withdrawing the inner plunger. The outer sheath has a small circular curette that opens proximal to the distal tip. Endometrial tissue is sheared by the curette and drawn into the catheter by the negative pressure of the device. Biopsy catheters are produced by several manufacturers: the outer sheath diameter ranges from 2 to 4 mm with a length of approximately 25 cm.

In addition to the endometrial biopsy catheter,

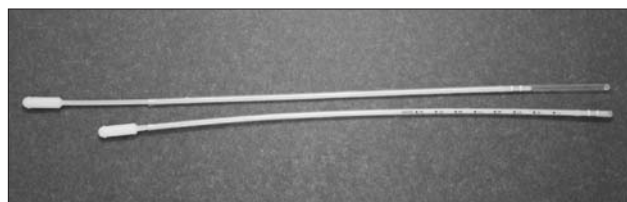


Fig. 1. Endometrial biopsy catheter.

other equipment required for obtaining an endometrial biopsy include the following (Fig. 2):

- sterile procedural tray
- gloves
- vaginal speculum
- basin with cotton balls or gauze soaked in povidine or normal saline
- ring forceps
- cervical tenaculum
- cervical dilators
- uterine sound
- scissors
- formalin container for biopsy sample

PROCEDURE

After reviewing the preprocedure assessment, place the patient in the lithotomy position.

1. After gloving, insert a sterile speculum and visualize the cervix.
2. Using the ring forceps, clean the cervix with cotton balls soaked in povidine or normal saline.
3. Slowly place the cervical tenaculum on the anterior lip of the cervix. Grasp a significant portion of the cervix to prevent the tenaculum from being pulled out during the procedure. (Use of a tenaculum is optional.)
4. Apply steady outward pressure to the tenaculum to straighten the cervical canal. Slowly insert the uterine sound through the cervical os with steady inward pressure. Obtain the depth of the uterine cavity by gently pushing the sound to the uterine fundus (average depth 5–8 cm).
5. If the uterine sound will not pass through the cervical os, try inserting the smallest cervical dilator or cervical os finder. If successful, use progressively larger dilators until the sound can be passed.



Fig. 2. Equipment tray: vaginal speculum, basin with cotton balls, ring forceps, cervical tenaculum, cervical dilators, uterine sound, scissors.

6. Insert the endometrial biopsy catheter tip through the cervical os until it reaches the uterine fundus (Fig. 3). You can then let go of the tenaculum. Pull back on the biopsy catheter plunger to produce suction.
7. By holding the biopsy catheter between the thumb and forefinger, make passes of the uterine cavity using a simultaneous pulling and rolling movement. To maintain negative pressure, ensure that the catheter is brought to the edge of the internal cervical os with each pass, but not through the os.
8. Systematically ensure that the entire uterine cavity is sampled, until the catheter fills with tissue.
9. Withdraw the catheter from the uterus and, while maintaining sterile technique, push the catheter plunger to expel the tissue into the formalin sample jar. Use scissors to cut off the tip of the catheter if there are problems with expelling the tissue sample.
10. Ask your assistant to hold the sample jar up to the light: endometrial tissue will have a white “worm-like” appearance (Fig. 4).
11. If insufficient tissue is present and the biopsy catheter is intact without formalin contact, consider inserting the catheter back through the cervical canal into the uterine cavity and repeating the steps to obtain a further tissue sample.
12. Slowly remove the tenaculum from the cervix. Visually inspect the cervix and vagina, wiping excess blood and povidine with sterile gauze. Finally, remove the speculum.
13. Instruct the patient to remain lying for several minutes before sitting slowly, to prevent the development of a vasovagal reaction.
14. Review aftercare instructions with the patient: contact office if bleeding is heavier than normal menses, cramping continues for longer than 48 hours, development of a foul vaginal discharge or fever. Clarify the need for analgesia along

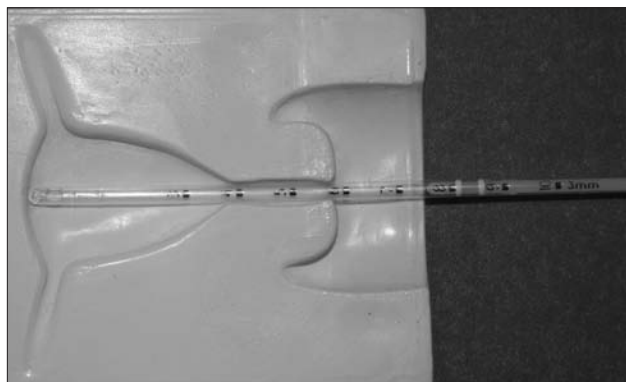


Fig. 3. Endometrial biopsy catheter inserted to uterine fundus.

with a follow-up appointment to discuss results and initiate further treatment.

15. Complete a procedural note and pathologic requisition.

PRACTICAL TIPS

Analgesia/anesthesia

An endometrial biopsy can be completed in most patients with the use of an NSAID before the procedure, although support from the literature is limited.^{15,16} A variety of medications have been used for the patient who experiences more severe pain. Literature findings have shown mixed results with single agents, which may be because of a complex sensory nervous system where the cervix and lower uterine cavity are richly innervated by a parasympathetic plexus, while the uterine fundus is supplied by sympathetic nerves via the ovarian plexus.¹⁷⁻²⁰ The best evidence for endometrial biopsy analgesia is a combination of an NSAID before the procedure and intrauterine lidocaine (3–5 mL of 2% injection solution) administered through the cervical canal with an angiocatheter before cervical manipulation.²¹ Preoperative or intraoperative narcotics are effective for reducing patient discomfort, although some combinations require monitoring equipment not present in most office settings.²² Oral, sublingual or intravenous benzodiazepams can be considered for the anxious patient. A paracervical block can be performed to reduce the pain experienced by application of the tenaculum or cervical dilation. However, this should be reserved for patients more likely to experience increased pain during this component of the procedure because of cervical stenosis.¹⁷



Fig. 4. Endometrial biopsy tissue sample.

Stenotic cervical canal

A tight or stenotic cervical canal is more likely to occur in young nulliparous or elderly postmenopausal patients. Although literature findings vary on its efficacy, many practitioners use misoprostol 400 µg, given at least 12 hours before the procedure, either orally or vaginally, to enhance cervical dilation.^{23,24} Patients should receive information on the potential for uterine cramping or diarrhea. An additional approach includes the insertion of a cervical osmotic laminaria the day before the procedure. Some practitioners use the biopsy catheter as a sound and stiffen the catheter by storing it in the freezer. If one cannot insert the sound or endometrial biopsy pipette through the cervical os, the use of the smallest cervical Hegar dilator or cervical os finders will address this problem in most cases. Cervical os finders (Fig. 5) are a flexible plastic device available in various sizes (one time use or repeat use after autoclaving), which can be used to initially “thread” and dilate the cervical os. If unsuccessful, the procedure can be rescheduled and attempted after the administration of preprocedure misoprostol. Intraoperative ultrasonography to assist in canalizing the cervical canal with a variety of instruments has been reported, although practitioners must take care whenever encountering a stenotic cervix to not create a false passage.²⁵ Infrequently, referral to a gynecologist or general surgeon, or general anesthesia may be necessary in the management of a stenotic cervical os.

Inadequate samples or ongoing uterine bleeding

Inadequate samples are more common in the postmenopausal woman with an atrophic endometrium. In these patients, along with patients with a normal endometrial biopsy and ongoing uterine bleeding, there is an approximate 10% risk of a missed lesion. Because there is a greater likelihood of focal pathology, further investigations may include hysteroscopy, endometrial brush cytology^{25,26} or endometrial sampling directed by ultrasonography.^{27,28}



Fig. 5. Cervical os finders.

Infection

Infectious complications after endometrial biopsy are rare. Using a sterile no-touch technique and cleaning the cervix with antiseptic may reduce the risk of infection. Evidence for antibiotic prophylaxis is lacking, including the prevention of infective endocarditis in patients with specific cardiac conditions.^{29,30}

Uterine perforation

Perforation of the uterus can occur with use of rigid devices for dilation of the cervical os or sounding of the uterus. Although the risk has been reported as 0.9% during D&C,³¹ the risk is much lower with the use of flexible polypropylene biopsy catheters. Patients in whom a perforation is suspected should initially be observed because most perforations will spontaneously close. Patients experiencing increasing pain, emesis or fever should be admitted to hospital under orders of nothing by mouth, started on intravenous antibiotics and further investigated.

CONCLUSION

An endometrial biopsy is an essential procedure in the investigation and management of abnormal uterine bleeding. Intrauterine contraceptive device insertion and endometrial biopsy share common steps, which can aid the rural practitioner when performing the occasional endometrial biopsy. Online videos may further assist the practitioner in attaining competency in this procedure.³²

Acknowledgements: The authors thank Lisa Kokanie for providing the photographs and Dr. Len Kelly for manuscript evaluation.

Competing interests: None declared.

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THE PRACTITIONER LE PRATICIEN

Country cardiograms case 37

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This article has been peer
reviewed.

A 44-year-old man presents to a rural emergency department with severe chest pain that started suddenly within the preceding hour. There is no previous electrocardiogram (ECG) for comparison. A 12-channel ECG is rapidly obtained (Fig. 1)

followed shortly by a 15-channel ECG, which includes leads V4R, V8 and V9 (Fig. 2). What is the ECG diagnosis?

For the answer, see page 127.

Competing interests: None declared.

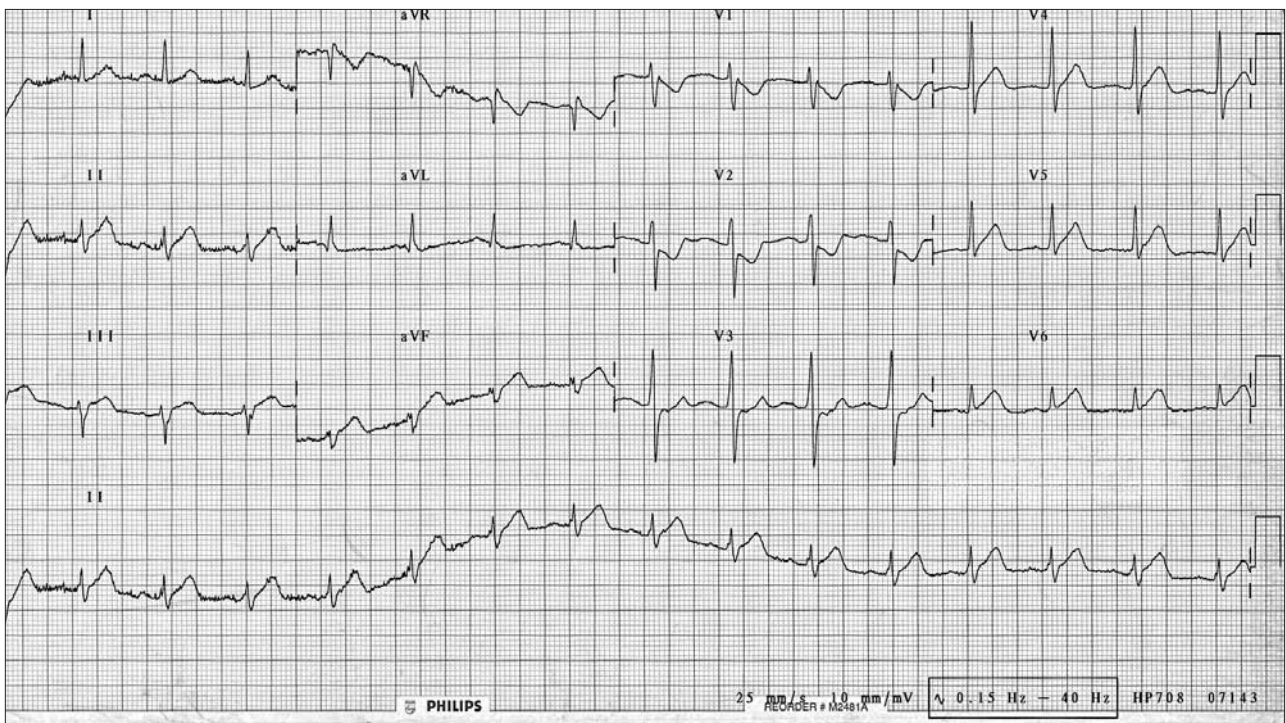


Fig. 1. Twelve-channel electrocardiogram of a 44-year-old man who presented to the emergency department with sudden-onset severe chest pain.

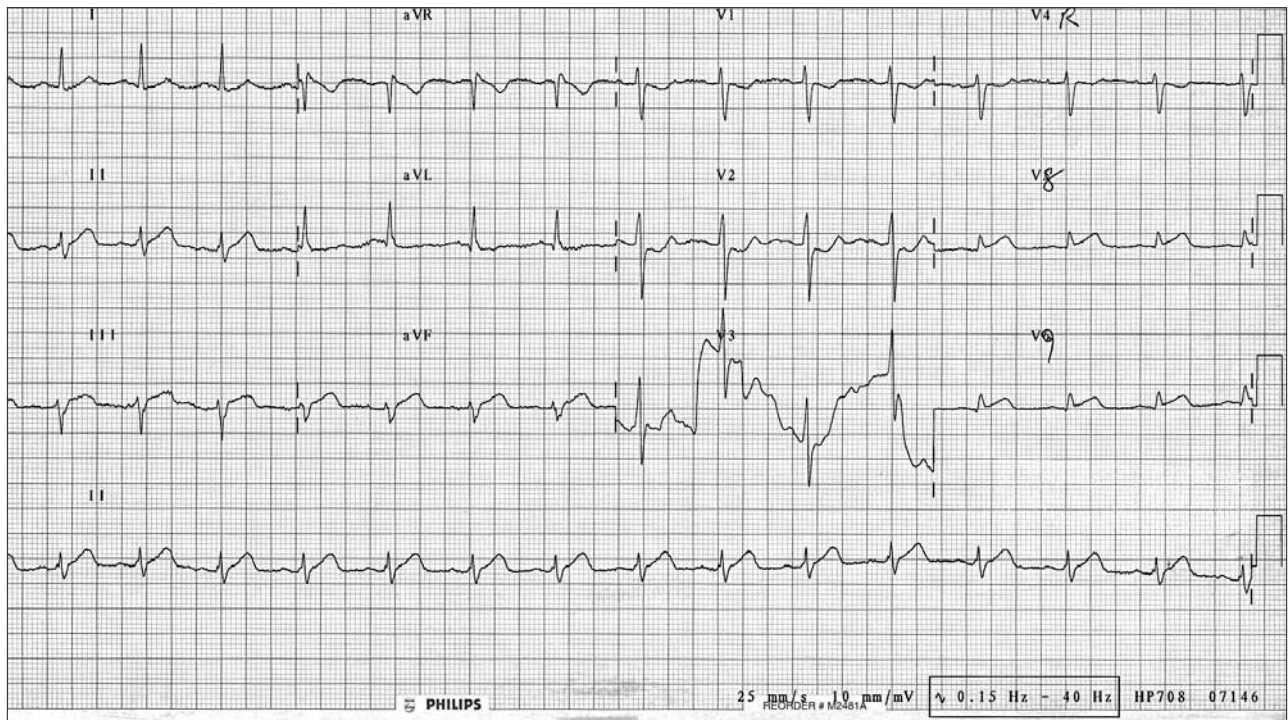


Fig. 2. Fifteen-channel electrocardiogram, including leads V4R, V8 and V9.

Country Cardiograms

Have you encountered a challenging ECG lately?

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

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

Please submit cases, including a copy of the ECG, to Suzanne Kingsmill, Managing Editor, *CJRM*, P.O. Box 4, Station R, Toronto ON M4G 3Z3; cjrm@cjrm.net

Cardiogrammes ruraux

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

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

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

Veillez présenter les cas, accompagnés d'une copy de l'ECG, à Suzanne Kingsmill, rédactrice administrative, *JCMR*, C. P. 4, succ. R, Toronto (Ontario) M4G 3Z3; cjrm@cjrm.net



CASE REPORT OBSERVATIONS DE CAS

Neck injury at a rural emergency department: perils, pitfalls and management considerations

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INTRODUCTION

Penetrating neck injuries account for up to 5%–10% of serious traumatic injuries in adults,¹ with an overall mortality rate of about 3%–10%.² The optimum management for blunt or penetrating neck injury is challenging, as the spectrum of injury ranges from minor to life-threatening. Rural emergency physicians should be well versed in neck anatomy, diagnostic evaluation of neck injuries and airway salvage techniques, as missed injuries can result in serious morbidity and mortality. We report a case of a patient with pneumocephalus and septic meningitis secondary to a dural tear from a stab wound to the neck.

CASE REPORT

A 32-year-old man presented to the emergency department (ED) at a rural hospital after being stabbed with a beer bottle in a bar fight. His stab wound was a 5-cm laceration to the upper left neck below the ear, just behind the tip of the mastoid process. His temperature was 36.2°C, heart rate was 86 beats/min, blood pressure was 112/69 mm Hg, respiratory rate was 16 breaths/min and oxygen saturation was 97% on room air. He was not actively bleeding from the wound.

The wound was explored and gently irrigated, and no obvious foreign bodies were found. The patient was given an intramuscular tetanus booster dose of 0.5 mL. Once hemostasis was achieved, the wound was sutured and the patient was observed for 2 hours before being discharged.

Several hours later the patient presented to a tertiary care ED with intractable swelling, severe headache and recurrent bleeding. On examination, his temperature was 36.9°C, heart rate was 90 beats/min, blood pressure was 98/65 mm Hg, respiratory rate was 16 breaths/min and oxygen saturation was 97% on room air. He had a Glasgow Coma Scale score of 15 and was maintaining a stable airway. There was a large hematoma at the wound site with active bleeding through the sutures. Neurologic examination revealed some numbness and tingling in the areas of C2–C3, and was otherwise normal.

Computed tomography of the head and neck showed penetration of the dura mater and pneumocephalus (Fig. 1). Magnetic resonance imaging was performed to rule out an epidural cord hematoma. The patient was admitted to

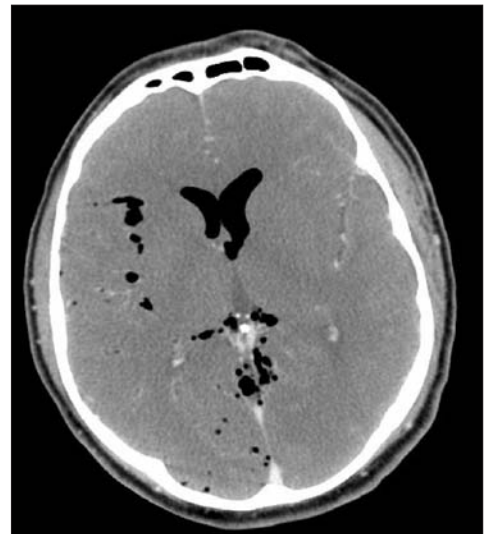


Fig. 1. Computed tomographic scan of the head of a 32-year-old man showing pneumocephalus.

hospital and seen by consultants from ear, nose and throat, and neurosurgery. The wound was explored for vascular injury, the hematoma was drained and the patient was discharged home 1 day later.

During the next couple of days, the patient developed intermittent fevers, headache and neck stiffness and presented again to the tertiary care ED. On examination, he was afebrile with a temperature of 37.0°C and his other vitals signs were stable. His neurologic examination was normal. He complained of some pain with neck flexion and a diffuse headache.

A collection of fluid near the wound site was aspirated and determined to be cerebrospinal fluid (CSF). The patient was admitted for intravenous antibiotics after a presumptive diagnosis of meningitis, pending a lumbar puncture to confirm. The patient received intravenous cefotaxime and vancomycin and was discharged home with a peripherally inserted central catheter line for continuation of antibiotic treatment.

The patient was seen at the trauma clinic of the tertiary care centre for follow-up 2 weeks later. At that time, his headaches had improved, his pain was well controlled and he had regained full range of motion in his neck. Results of blood work were normal, and the incision site was healing well.

DISCUSSION

Penetrating neck injuries, defined by platysma violation, account for up to 5%–10% of traumatic injuries in the United States, but are less commonly seen in Canada.⁵ These are particularly challenging injuries to treat because of the complex anatomy of the neck, with vital structures in close proximity to one another. The anatomic classification designed by Roon and Christensen⁴ is widely accepted as a means of guiding physicians in the management of penetrating neck injuries. This classification divides the anterior neck into 3 zones as follows:

- zone I: base of the neck; extends from the sternal notch and clavicles to cricoid cartilage
- zone II: midneck; area between cricoid cartilage and angle of mandible
- zone III: upper neck; angle of mandible to base of skull

Zone II is the most commonly injured area in penetrating neck injuries, followed by zones III and I.⁵ However, injuries to zone I are associated with the highest mortality because of the vascular injuries frequently sustained in injuries to this area.⁶

The neck can also be divided into anterior and posterior triangles. The anterior triangle is bordered anteriorly by the midline and posteriorly by the sternocleidomastoid muscle. The borders of the posterior triangle are defined by the sternocleidomastoid muscle anteriorly, the clavicle inferiorly and the anterior part of the trapezius muscle posteriorly. Our patient's injury was a posterior triangle injury, which is the least common location for a penetrating neck injury.⁵

Stab wounds to the neck account for 40% of all penetrating neck injuries and are usually low-velocity injuries compared with other mechanisms of penetrating neck injury, such as gunshot wounds.⁷ The leading cause of death is exsanguina-

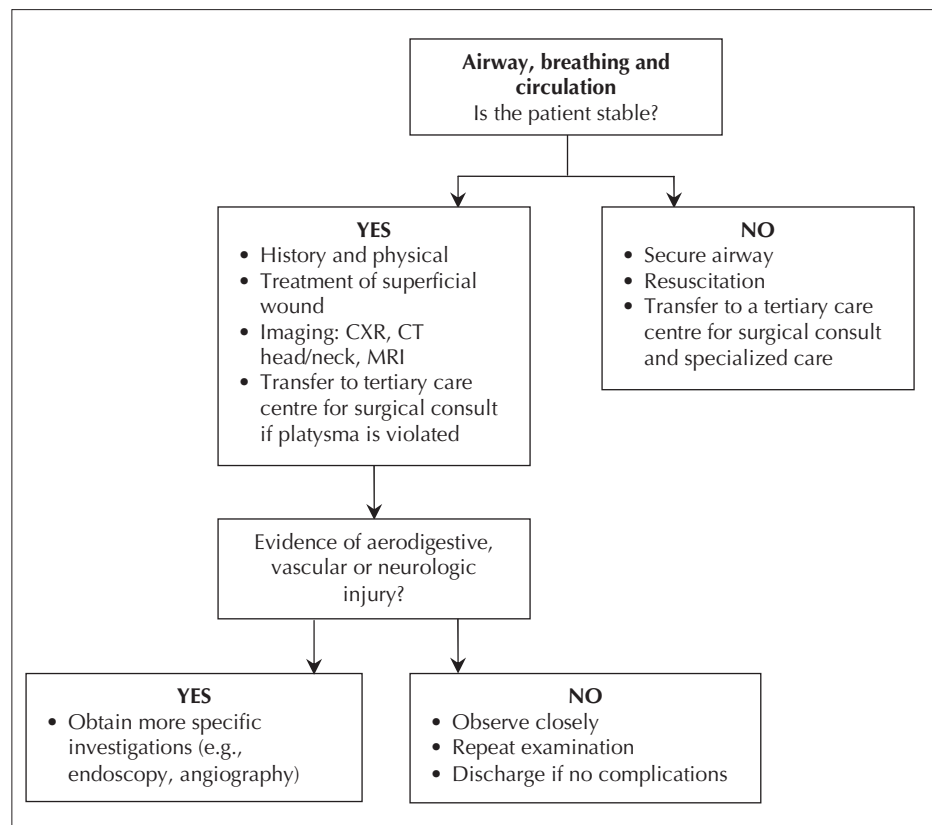


Fig. 2. Management algorithm for neck injuries. In the case of our patient, this approach would suggest early imaging and transfer to a tertiary care centre for surgical consultation. CT = computed tomography; CXR = chest radiography; MRI = magnetic resonance imaging. Modified, with permission, from Uptodate.¹⁵

tion due to injury of a major vessel, most often the carotid artery.⁶ Although our patient avoided damage to any major vessels, pneumocephalus and meningitis developed.

Pneumocephalus is defined as the presence of air in the intracranial cavity and is most often caused by head injury, although it is seen in only 1% of patients with head injury.⁸ Stab wounds to the neck represent a rare cause of this finding as only 4 cases have been reported to date (3 in adults and 1 in a child).⁹⁻¹² There are 2 theories as to how pneumocephalus develops.^{8,11,15} One is that penetration into the subarachnoid space causes a CSF leak, which subsequently creates a negative pressure gradient, allowing air into the intracranial cavity. The second theory is that a dural tear creates a ball-valve effect in that any air forced into the intracranial cavity by coughing or sneezing becomes trapped. Our patient's injury can be explained by the first theory, as the beer bottle that created the stab wound penetrated the subarachnoid space and resulted in a CSF leak that eventually developed into a meningocele. Pneumocephalus can present immediately after the injury or several days later. This was likely the main reason for our patient's presenting headache, although nausea and vomiting may also be present with pneumocephalus.¹² Traumatic tension pneumocephalus can result in rapid clinical deterioration due to increasing intracranial pressure.¹⁴

Meningitis is an infectious complication seen in 25% of patients with penetrating neck injury involving a tear in the dura.¹⁴ Penetration of the dura by a contaminated object (in this case, a beer bottle) leaves the patient vulnerable to infection of the meninges and CSF. Our patient presented with nuchal rigidity and severe headache several days after the injury that resulted in a dural tear. The absence of fever made this presentation slightly atypical; however, a high index of suspicion led to the patient's urgent admission for intravenous antibiotics and his quick recovery.

Figure 2 presents a management approach to treatment of neck injuries.¹⁵ This approach emphasizes that early imaging and surgical consultation in relatively stable patients can reveal many of the complications associated with an injury to an area with such complex anatomy.

CONCLUSION

Penetrating injuries to the posterior neck require thorough evaluation, and one must consider that

stab wounds to the upper neck may lead to intracranial lesions such as pneumocephalus. Although head injuries still account for the majority of cases of pneumocephalus, stab wounds to the neck are an alternate etiology. Penetrating neck injuries that puncture the dura could also lead to life-threatening meningeal infections. This case stresses the importance of a low threshold for referral to a tertiary care centre for prompt diagnostic imaging and surgical consultation in penetrating neck injuries, so as to recognize clinically important complications, such as pneumocephalus and meningitis.

Competing interests: None declared.

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OUT BEHIND THE BARN DANS LE FEU DE L'ACTION

Internet Explorer 8

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Internet Explorer 8 (IE8) is part of the latest version of Microsoft Windows. It is also available as a free download for older versions of Windows at www.microsoft.com. This article reviews some of the most useful features of the program.

ADDRESS BAR

As you type in the address bar, IE8 displays suggestions based on your browsing history or favourite websites. Type single words into the address bar, and they will be matched to simple domain names, making Web surfing more efficient.

MENU BAR

The classic menu bar containing the "File," "Edit," "Favorites," "Tools" and "Help" menus is not displayed when you first install IE8. You can make it appear by pressing the Alt key.

FAVOURITES BAR

The favourites bar can display links to sites that you visit frequently. To add a website to the favourites bar, type its address in the address bar, then click the "Favorites" tab in the main menu bar. There is an option to add the site to your main favourites list or to the favourites bar itself. You can shorten the titles of tabs on the favourites bar by right-clicking on the tab and selecting the "Rename" option.

TAB BAR

Internet Explorer 8 allows you to have multiple pages open in the same win-

dow. You can navigate between them by clicking on their tabs at the top of the main window. This makes it easy to compare 2 different pages or even different versions of the same page. At the left end of the tab bar are links to the "Quick Tabs" and "Tab List" functions, which are useful if you have a large number of tabs open at once. An individual tab can be closed by pressing the Ctrl-W key combination or clicking on the "X" on the current tab.

OPEN A NEW TAB

Click on the small blank tab that is displayed to the right of the tab list or press Ctrl-8. The new tab automatically displays a list of your most frequently visited sites. To create a duplicate of the current tab, press Ctrl-K.

COMMAND BAR

The new command bar appears to the right of the tab bar, just above the main window. It is the new home of the "Home," "Print," "Safety," "Tools" and "Help" icons.

HOME ICON

Click the "house" icon to return to your personal home page, which is displayed when you first open Internet Explorer. You can change your home page by clicking the down arrow beside the icon, or by selecting "Internet Options" from the "Tools" menu.

PRINT ICON

Click the "printer" icon to print the current page. Click the down arrow beside

the icon to display the “Print,” “Print Preview” or “Page Setup” menus. The “Print” menu (Ctrl-P) allows you to select a range of pages to print and to print multiple copies.

PAGE MENU

This new menu displays options to control the display of the current page. An important one is the “Compatibility View” option, which properly displays older sites that were designed for earlier versions of Internet Explorer.

SAFETY MENU

This new menu displays options to control your browsing history and privacy. There is also an option to check for updates to the program.

TOOLS MENU

This new menu provides quick access to many of

the most common tools available in IE8. More options are available using the “Tools” menu in the classic menu bar.

FIND ON PAGE BAR

If it is not already visible, you can open the “Find on Page” menu by pressing Ctrl-F. After you enter a search term, this feature highlights each occurrence of the term. Use the “Previous” or “Next” links to browse forward and back through the highlighted terms. Options are available to limit your search to whole words or to match upper or lower case characters.

HELP FILES

Help files are available by pressing the F1 key or by clicking the “?” icon in the command bar. Browsing through these files is a good way to discover other new or useful features of the program.



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Portable head computed tomography for rural centres

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Medical decisions are often based on diagnostic imaging, but computed tomography (CT) is still rare in rural areas. The Alberta Provincial Stroke Strategy (APSS) found that the 40% of Alberta's population living outside the tertiary centres of Calgary and Edmonton needed a series of full-time rural primary stroke centres for early intervention. Two comprehensive centres, 5 regional hospital centres and 4 other primary stroke centres were set up through the APSS and the Alberta Stroke Council. The Alberta Stroke Council was comprised of the health regions, the Heart and Stroke Foundation and Alberta Health and Wellness. They were supported by a \$20 million, 2-year grant. Each site has a CT scanner, picture archiving and communication system (PACS), transmission of digital images and videoconferencing with a stroke neurologist who decides the need for thrombolytic therapy (a service known as "TeleStroke").

Wainwright, Alta., was selected as the second of 2 primary stroke centres in the former East Central Health (now Alberta Health Services) because we are central to the eastern underserved part of the former health region. The whole former region has a population of about 3 people/km² for each of the 38 000 km²: a total population of about 110 000. Wainwright lies 200-km southeast of Edmonton, and has 5500 permanent residents and a 20-bed primary care facility staffed by 8 rural family physicians. We are home to a large infantry training base where thousands of Canadian, US and British soldiers have completed manoeuvres.

Like many rural facilities we had all the "usual problems": limited funding, very limited space to house a machine and no local CT technicians. Mr. Pat Crumley, medical services coordinator, Medical Services in East Central Health, realized that the CereTom head and neck CT scanner would allow us to become a primary stroke centre for about one-third of the cost of a full-body scanner: in rural terms this is the cost of a combine harvester! Our 3 medical radiation technologists can operate the user-friendly machine, and Wainwright now has the first rural portable CT scanner in the world. We serve about 35 000 people for stroke from communities up to 1 hour away, including all out-of-hours strokes from Lloydminster, Sask. (they have a full scanner working 9–5).

The portable scanner can fit in just 4 ft beyond a patient's bed and has built-in shielding. There is no weight limit because patients stay on their emergency department (ED) stretcher — we scanned a 480-lb man sent specifically from southern Alberta because no other scanner could accommodate him. Initial findings by Mr. Crumley show that Wainwright has an average door-to-scan time for stroke-protocol patients of about 15 minutes. Each scan takes 2–3 minutes and about 5 minutes for transmission. About half of our 170 scans to date are for transient ischemic attack or stroke patients, with 7 patients treated with recombinant tissue-type plasminogen activator. We have a 94% reduction in transfers from emergency medical services for stroke because only those needing tertiary care are sent to Edmonton



Mrs. Helen Buzik, medical radiation technologist, with the CereTom in our radiography department.

(a road ambulance transfer costs about Can\$1200 and air ambulance is about 3 times the cost). We have a reduction in our use of local beds because of the rapid testing, treatment and rehabilitation. With the advent of 24-hour digital radiography reporting we have also been able to sometimes use the scanner for emergency nonstroke applications.

A case report shows the capabilities of the system.

CASE

- 8:56 am Call to 911: Independent 71-year-old smoker had 10-minute loss of consciousness
- 9:00 am Emergency medical technicians found patient obtunded and paralyzed in his left leg
- 9:18 am Arrived at ED. Patient was asymptomatic, with some residual amnesia, but was otherwise neurologically intact (amnesia cleared within minutes)
- 9:31 am CT request
- 9:57 am CT scan
- 10:08 am Critical care call to stroke neurologist, intraventricular blood seen on the scan
- 10:18 am Call from the radiologist, confirmed subarachnoid hemorrhage and developing hydrocephalus

The CereTom

- is small: about the size of a portable radiography machine
- is portable: can be moved by 1 person (there is a motorized option)
- is fast: 2-minute scan and 3–5-minute transmission
- is detailed: 8-slice CT, variable thickness, 512 × 512 image resolution
- is shielded: technicians need to be only 20 ft away or have extra shielding
- has no weight limit: patients use an ED stretcher
- uses regular power: a normal wall socket
- is low cost: about Can\$340 000
- is easy to use: video clips of the CereTom are available on YouTube and Facebook: www.youtube.com/watch?v=pJJO2v32HtQ; www.facebook.com/video/video.php?v=253732611479

- 10:33 am Call from neurologist after reviewing scan on PACS, links though critical care line arranging transfer, angiogram and air ambulance dispatch from Edmonton
- 10:50 am Patient complained of a 3/10 headache, but was still neurologically intact
- 12:20 pm Air ambulance left Wainwright Health Centre

Later that day, the patient had an angiogram and surgery at University Hospital, Edmonton. His tube was removed the next morning, and he was reading the newspaper within days. At about 6 weeks he was home, living independently, with only minimal short-term memory loss and no personality changes.

Portable head CT scanning gives rural physicians the ability to provide advanced treatments for some of the most devastating conditions our patients face. Nevermind “changing” the face of rural medicine in North America ... now we can scan it!

Competing interests: None declared.



THE PRACTITIONER LE PRATICIEN

Country cardiograms case 37: Answer

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Figure 1 (on page 118) displays normal sinus rhythm, with a rate of 92 beats/min. The ST segments are disturbing: there is significant ST segment depression in leads V1 and V2, and a pattern of slight coved elevation in the inferior leads (II, III and aVF) and lateral leads (V5 and V6). In combination, these are suggestive of a pattern of inferolateral ST elevation myocardial infarction (STEMI). There are no reciprocal changes in leads I or aVL; if present, such changes would have supported this diagnosis.

Given the patient's young age and the relatively short duration of pain, this patient would be an ideal candidate for thrombolysis in a rural setting if electrocardiogram (ECG) criteria were met. Figure 1 provides us with a strong suspicion of STEMI. However, up to 40% of inferior myocardial infarctions (MIs) are complicated by posterior wall infarction or right ventricular infarction, with an associated increase in complications and mortality.

Inferior STEMI changes therefore mandate a 15-lead ECG, using, in addition to the standard 12-lead ECG, the 3 additional leads V4R, V8 and V9. Lead V4R is placed as a "mirror-image" of lead V4, that is, in the fifth intercostal space in the midclavicular line, but on the right side of the chest. Leads V8 and V9 are placed on the posterior aspect of the chest wall by extending the imaginary line from lead V4 through V5 and V6, such that V8 is in the left midscapular line, and V9 is in the left paraspinous line (V7 is not used in a 15-lead ECG but would be along this same imaginary line, in the posterior axillary line). It is necessary when using older ECG machines to mark these leads correctly by hand on the ECG printout; many newer models

have the capacity to print complete 15-lead ECGs.

In this patient, Figure 2 (on page 119) provides further evidence that eases the decision to proceed with thrombolysis. It displays no interval changes in the inferior leads, but interesting interval changes have occurred in V1 and V2. In these leads, ST depression is not as dramatic as before, but an upright T wave has emerged in V2, which could correspond to the familiar T-wave inversion of an evolving MI. Leads V4, V5 and V6 have been replaced in this tracing with V4R, V8 and V9. The normal ST segment in V4R reassures us that significant right ventricular involvement (which always needs to be considered with an inferior MI) is unlikely. However, the coved, elevated ST segments in V8 and V9 provide definite evidence of a pattern of posterior STEMI.

These findings are significant, not only in clinching the diagnosis, but also in implying that a considerable area of myocardium (inferior wall, lateral wall and posterior wall) is involved. In this case, thrombolysis with tenecteplase was rapidly effective, leading to a resolution of all ST segment changes as well as patient symptoms.

Another trick that aids in the ECG interpretation of a posterior MI pattern is to take the initial 12-lead ECG, invert it, hold it in front of a mirror, and examine leads V1 and V2 in the mirror image. The familiar infarction pattern will then be apparent (this can be done with Fig. 1 and 2). Over time a tall R wave often develops in V1 and V2 in a posterior STEMI, which is a "Q-wave equivalent." This will appear as a Q wave in leads V8 and V9, or in leads V1 and V2 using the mirror trick.

For the question, see page 118.

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8:00am Rounds
9:00am Office
! 5:30pm Family Time

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Wanted: Family Physicians who live in the moment. And want it all.

It's an investment you'll never regret.
Family. The heart of home and community.
Create memories.
Teach values.
Give them the gift of your time.

Here in Chase and Kamloops, BC we don't talk about work/life balance. We live it.

Learn to ski. Ride bikes. Fly kites. Catch a first fish. Swim in a sparkling lake. Camp. The BC Interior offers a vibrant lifestyle of arts, recreation, diverse educational options, and life-long friendships.

We are looking for Family Physicians for our multidisciplinary clinics in Chase and Kamloops, BC to provide full patient care within set weekday clinic hours. In Chase you will receive a guaranteed minimum income, full practice support and efficiency incentives. Physicians in Kamloops receive an Alternative Payment Program contract to provide primary care services to local residents who have difficulty accessing health care in other settings.

Families flourish here.
When can you start?

Life's better here. Visit www.betterhere.ca to find out why.

Chase Kamloops
1-877-522-9722 physicianrecruitment@interiorhealth.ca Interior Health

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