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A Rural–Urban Paradox

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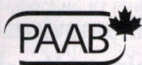
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A flight to nowhere

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Toronto Island, actually, but you know. The Ornge helicopter is elsewhere and by the time you might get it the patient would be dead. As happens in a rural doctor's life, you do what needs doing. It's you and your nurse in a single-engine plane. The stretcher is on one side of the cabin, with you on the seat that they have to remove to load the patient, along with a box containing all the hospital's O blood (both + and -) sitting between you.

Your patient of a couple of years had a large pancreatic pseudocyst (no, he's not a drinker) that they stented at St. Mike's just 2 weeks prior. He is now vomiting blood. The smell of melena (you don't forget that) fills the cabin of the Pilatus PC-12. An ancient Lifepak 12 with a frayed cord is occasionally giving you numbers that you occasionally dare to believe relate to the patient. The pilot's shoe string secures the 5 bags of fluid to a ring in the ceiling. Blood pressure 85/60 mm Hg, 82% oxygen saturation, respiratory rate 35 breaths/min. Heart rate? You don't have a number and you don't feel anything at the carotid, but he does ask, "Can I have some more morphine, Doc?" Torn between hope, mercy and fear, you delay — "Only a few more minutes before we land" — and you hold the patient's hand. (Or is he holding yours?)

Whoosh up to Toronto Western where you are met by a smiling attend-

ing who gets the story and then busily and efficiently starts putting in the tubes. A flurry of resident and nursing staff (Is that a respiratory therapist?) — resources that you can only dream about — descend in a busy cloud. "We'll start with an arterial line." "We need a large bore central line." "I need a 16." "Get ready to intubate."

You slowly back away with the faith that he's in good hands here. As you pass the foot of the bed you notice 100 mL of urine in the bag from the flight. You think, "We didn't do so badly either," and prepare the pump, tackle box and other pieces for the journey back.

Getting back is always an issue; getting back from Toronto is a particular challenge. You make it back to the little airport departure lounge but there is no one there. Behind a desk you commandeer a phone and dial the number of the tower — they are used to directing traffic. "Sure make your way to the Porter FBO (fixed base of operations). They'll send a van down to pick you up." Great!

Then you notice that the plane is blue. Yours, you are pretty sure, was white. No worries, the original crew had to leave, but this plane will take you home, first via London and then Sault Ste Marie. Except that the weather has changed and you can't land in Sault Ste Marie, Sudbury or Earleton, and you are flying back to Toronto. Back to flying to nowhere. You know.



Vol vers nulle part

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Vers l'aérogare de l'île de Toronto, en fait, mais vous savez comment ça se passe. L'hélicoptère Orange était ailleurs et lorsqu'il finirait par arriver, le patient serait mort. Ainsi se déroule la vie d'un médecin de campagne : vous prenez les mesures qui s'imposent. Vous et votre infirmière dans un avion monomoteur. La civière est d'un côté de la cabine, vous êtes assis sur le siège qu'ils ont dû décrocher pour faire entrer le patient. À vos côtés, une boîte contenant toute la réserve de sang de type O de l'hôpital (positif et négatif).

Le patient que vous traitez depuis une couple d'années a un gros pseudokyste pancréatique (non, il ne boit pas) et une endoprothèse posée à St. Mike's il y a à peine deux semaines. Il vomit maintenant du sang. L'odeur de mélaena (ça ne s'oublie pas) emplit la cabine du Pilatus PC-12. Un ancien Lifepak 12 au cordon échiffé daigne parfois afficher des données et parfois, vous osez croire qu'elles se rapportent au patient. Le pilote suspend avec une ficelle les cinq sacs de fluide à un anneau du plafond. La tension artérielle est à 85/60 mm Hg, la saturation en oxygène à 82 %, le rythme respiratoire à 35 par minute. Le rythme cardiaque ? Vous n'avez pas de données et vous ne sentez rien à la carotide, mais le patient demande « Doc, je pourrais avoir d'autre morphine ? » Tirailé entre l'espoir, la compassion et la peur, vous temporez — « Encore quelques minutes, on atterrit bientôt » — et vous tenez la main du patient (ou est-ce lui qui tient la vôtre ?).

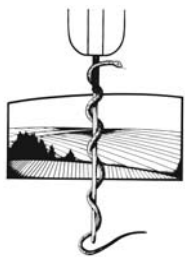
Entrée en catastrophe à Toronto Western où vous accueille le médecin

en poste tout souriant qui note l'histoire et s'affaire efficacement à poser des cathéters. Une flopée de résidents et d'infirmières (et un thérapeute respiratoire ?) — autant de ressources dont vous ne pouvez que rêver — descend sur le patient en nuée bourdonnante. « Commençons pas un cathéter artériel. » « Il nous faut un cathéter central de gros calibre. » « J'ai besoin d'un 16. » « Préparez-vous à intuber. »

Vous reculez lentement, vous avez foi en eux : le patient est entre bonnes mains ici. Au pied du lit, vous remarquez 100 mL d'urine dans le sac qui a servi pendant le vol. Vous vous dites : « Nous avons fait un assez bon travail nous aussi. » Et vous préparez la pompe, le coffret d'accessoires et les autres bidules pour le voyage de retour.

Revenir, voilà qui est toujours problématique. Et revenir de Toronto, c'est un défi. Vous vous rendez dans le petit salon des départs de l'aérogare de l'île, mais il n'y a personne. Derrière un pupitre, vous vous emparez du téléphone et vous composez le numéro de la tour — ils sont habitués de diriger la circulation, après tout. « Rendez-vous à la base d'opération de Porter, ils vous enverront une mini-fourgonnette. » Parfait !

Puis, vous remarquez que l'avion est bleu. Le vôtre, vous en êtes presque certain, était blanc. Pas de problème, l'équipage a dû repartir, mais cet avion vous ramènera à la maison, en passant d'abord par London et puis Sault Ste Marie. Sauf que la météo a changé, et il est impossible d'atterrir à Sault Ste Marie, à Sudbury ou à Earlton. L'avion a fait demi-tour et se dirige vers Toronto. Vers nulle part. Vous savez comment ça se passe.



President's message. The earthquake in Haiti

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Shortly after the earthquake in Haiti, I was asked the question, "What can the SRPC do to help?"

It would appear that we're perfect for the job. Canadian rural physicians are true generalists. We meet our patients' needs using the tools at hand. Médecins sans Frontières is aware of this and preferentially recruits rural doctors. The SRPC is currently managing projects in 3 developing countries and exploring projects in 3 others. Yet after conferring with our International Committee chair, the SRPC's official answer to the question about Haiti was, "Send money." Here's why.

Some authors describe health care needs in disasters as 4 overlapping phases.¹ During the first 2–3 days, traumatic injuries dominate. Then, for about 2 weeks, there are complications caused by delayed treatment of initial injuries. Then, an increase of regular health problems, such as obstetric, pediatric and psychological conditions, exacerbated by the disaster predominate. Finally, an accumulated need for elective care is seen. In most disasters, foreign medical help arrives after 3–14 days.¹ "In fact, only a handful of survivors owe their lives to foreign teams. Most survivors owe their lives to neighbours and local authorities."²

The inevitable shortage of charter flights that occurs when a wide variety of governmental and nongovernmental organizations, plus concerned individuals, travel to a disaster zone raises the expense. Flights go to the highest bidder, not the most needed services and supplies. Blocked or destroyed roads cause problems with transportation from the airport to the place of need. This

results in increased costs and delays the arrival of help.³ Further, "Unilateral contributions of unrequested goods are inappropriate, burdensome, and divert resources from what is needed most." "Past sudden-impact natural disasters ... have shown the need for international contributions in cash and not in kind."²

Canadian rural doctors are accustomed to working with running water, electricity, equipment and supplies, as well as a health care team, including nurses and administrative personnel. Remaining local health care facilities and personnel require support and augmentation, not competition from foreign teams. This requires some prior knowledge of the local health care system. "A hasty response that is not based on familiarity with local conditions and meant to complement the national efforts only contributes to the chaos."³

Canadian rural doctors and the SRPC have much to contribute in disaster relief at home and abroad, but it takes planning and preparation. We can't run to a disaster zone and expect to be useful. Discussions at our Rural and Remote Medicine Course, Apr. 22–24, 2010, will clarify our role in future humanitarian disasters — as individuals and as an organization.

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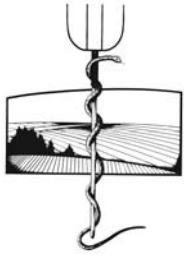
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Message du président.

Le tremblement de terre en Haïti

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Peu après le tremblement de terre qui a frappé Haïti, on m'a demandé : « Comment la SMRC pourrait-elle aider ? »

Il semble que nous sommes parfaits pour le travail. Les médecins ruraux du Canada sont de vrais généralistes. Nous répondons aux besoins de nos patients en utilisant les outils disponibles. Médecins sans Frontières le sait et recrute de préférence des médecins ruraux. La SMRC gère actuellement des projets dans 3 pays en développement et 3 autres sont à l'étude. Après avoir consulté le président de notre Comité international, la SMRC a répondu officiellement à la question au sujet d'Haïti en demandant d'envoyer de l'argent. Voici pourquoi.

Des auteurs ont expliqué que les besoins en soins de santé en cas de catastrophe se manifestent en 4 phases qui se chevauchent¹. Au cours des 2 ou 3 premiers jours, il y a surtout des blessures. Ensuite, pendant environ 2 semaines, ce sont les complications causées par le retard de traitement des traumatismes initiaux qui font leur apparition. La catastrophe entraîne ensuite une augmentation des problèmes de santé ordinaires comme les problèmes obstétricaux, pédiatriques et psychologiques. Enfin, on constate un besoin accumulé de soins électifs. Après la plupart des catastrophes, l'aide médicale arrive de l'étranger après 3 à 14 jours¹. « En fait, une poignée seulement de survivants doivent la vie à des équipes de l'étranger. La plupart la doivent à des voisins et aux autorités locales². »

Les coûts augmentent à cause de la pénurie inévitable de vols nolisés qui se produit lorsqu'un vaste éventail d'organisations gouvernementales et non gouvernementales et de personnes intéressées se rendent dans la région touchée. Les vols sont accordés aux plus offrants et non aux services et aux fournitures dont on a le plus besoin. Les routes bloquées ou détruites causent des problèmes de transport entre l'aéroport et le lieu du sinistre, ce qui augmente les coûts et retarde

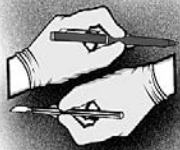
l'arrivée de l'aide³. De plus, « les contributions unilatérales de biens non demandés sont inappropriées, encombrantes et détournent des ressources des besoins les plus grands. » « Des catastrophes naturelles antérieures qui ont frappé subitement [...] ont démontré le besoin de contributions internationales en argent et non en nature². »

Les médecins ruraux du Canada sont habitués à travailler avec de l'eau courante, de l'électricité, du matériel et des fournitures, ainsi qu'une équipe de soins de santé comprenant des infirmières et du personnel administratif. Il faut appuyer et augmenter les installations de santé et le personnel médical local restant, qui n'ont pas besoin de la concurrence d'équipes étrangères. À cette fin, il faut connaître au préalable le système de santé local. « Une réponse précipitée qui ne repose pas sur la connaissance du contexte local et ne vise pas à compléter les efforts nationaux ne fait que contribuer au chaos³. »

Les médecins ruraux du Canada et la SMRC peuvent beaucoup contribuer aux secours en cas de catastrophe au Canada et à l'étranger, mais il faut de la planification et de la préparation. Nous ne pouvons nous précipiter vers une région frappée par une catastrophe et nous attendre à être utiles. Les discussions qui se tiendront durant notre cours sur la médecine en milieu rural et éloigné du 22 au 24 avril 2010 clarifieront notre rôle individuel et collectif au cours de prochaines catastrophes humanitaires.

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ORIGINAL ARTICLE ARTICLE ORIGINAL

Determinants of mammography use in rural and urban regions of Canada

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Introduction: National guidelines advocate biennial mammography screening for asymptomatic women aged 50–69 years. Unfortunately many women do not abide by such recommendations, and evidence indicates that compliance rates are lower in rural areas.

Methods: We estimated logistic regression models using data from the Canadian Community Health Survey for 2002/03 and 2004/05. We identified the extent of regional variation within and between Canadian provinces using a new and more detailed set of rural indicators based on economic zones of influence, after accounting for a range of demographic and socio-economic factors.

Results: The odds of asymptomatic women aged 50–69 years having undergone mammography during the previous 2 years were significantly lower for those residing in relatively remote and rural areas than for those residing in census metropolitan areas (odds ratio [OR] 0.58, confidence interval [CI] 0.42–0.80). This was also true of women residing in certain other rural areas that had some limited labour market attachment to larger urban areas (OR 0.81, CI 0.70–0.93), but there were no significant differences between smaller and larger urban areas. We also found variation in mammography use among women living in rural and urban areas across provinces.

Conclusion: Mammography use is significantly lower in rural and remote areas, even after a range of other demographic and socio-economic factors are accounted for. One important factor underpinning this result appears to be differences in attitude about the importance of regular mammography screening between women residing in rural and urban areas. Information campaigns raising awareness about the importance of mammography screening should be targeted, in particular, at women residing in rural and remote areas.

Introduction : Des lignes directrices nationales préconisent une mammographie de dépistage tous les 2 ans pour les femmes asymptomatiques âgées de 50 à 69 ans. Malheureusement, beaucoup de femmes ne suivent pas ces recommandations et les données probantes indiquent que les taux d'observation sont moins élevés dans les régions rurales.

Méthodes : Nous avons estimé des modèles de régression logistique à partir de données tirées de l'Enquête sur la santé dans les collectivités canadiennes pour 2002–2003 et 2004–2005. Nous avons déterminé l'ampleur de la variation régionale à l'intérieur des provinces canadiennes et entre celles-ci en utilisant un ensemble nouveau et plus détaillé d'indicateurs ruraux basés sur les zones d'influence économique, compte tenu d'un éventail de facteurs démographiques et socioéconomiques.

Résultats : Les chances que des femmes asymptomatiques âgées de 50 à 69 ans se soient soumises à une mammographie au cours des 2 années précédentes étaient beaucoup moins élevées chez celles qui habitaient des régions relativement éloignées et rurales que chez celles qui vivaient dans des régions métropolitaines de recensement (coefficient de probabilité [CP] 0,58, intervalle de confiance [IC], 0,42–0,80). C'était aussi le cas chez les femmes habitant d'autres régions rurales comportant une certaine proportion de main-d'œuvre active dans le marché du travail de régions urbaines plus étendues (CP 0,81; IC 0,70–0,93), mais il n'y avait pas de différences significatives

entre les grandes régions urbaines et les régions urbaines plus petites. Nous avons aussi constaté une variation entre les provinces au niveau du recours à la mammographie chez les femmes des régions rurales et urbaines.

Conclusion : Le recours à la mammographie est beaucoup moins élevé dans les régions rurales et éloignées, même si l'on tient compte de tout un éventail d'autres facteurs démographiques et socioéconomiques. Un facteur important qui sous-tend ce résultat semble résider dans les différences au niveau de l'attitude face à l'importance d'une mammographie de dépistage périodique entre les femmes des régions rurales et urbaines. Les campagnes d'information visant à faire mieux comprendre l'importance de la mammographie de dépistage devraient viser en particulier les femmes habitant les régions rurales et éloignées.

INTRODUCTION

Breast cancer is a common disease and leading source of cancer-related mortality among Canadian women. It is estimated that 1 in 9 women will develop breast cancer during her lifetime, and 1 in 25 will die prematurely from malignancy.¹ Breast cancer correlates related to lifestyle choices include obesity, physical inactivity and excessive alcohol consumption. Given these avoidable risk factors, medical professionals advocate healthy lifestyles to minimize the incidence of breast cancer. Nevertheless, genetic and demographic risk factors, specifically age, are not modifiable. Thus health officials rely on early detection to efficiently manage the treatment of breast cancer. Detection modalities include clinical and self breast examinations, as well as mammography. Studies suggest that timely discovery and quality treatment considerably improve survival rates.² In particular, some evidence indicates that mammography screening could reduce breast cancer mortality by one-third.³ Because the incidence of breast cancer is most prevalent in women aged 50 to 69 years,⁴ Health Canada recommends biennial mammography for asymptomatic women in this age group. However, there is more controversy regarding the effectiveness of mammography for women younger than 50 and older than 69 years.⁵

Although Canada is a relatively urbanized country, about 20% of the population resides in rural areas.⁶ Some studies have found that rural women in Canada are less likely to undergo mammography compared with those in urban areas,^{1,7,8} although other work has found no relationship between mammography use and urban or rural status.⁹ Because mammography requires a physician referral and availability of diagnostic equipment, barriers to access may arise from increased wait times, distance to mammography technology and lack of transportation.^{1,8,9} Moreover, there may be differences in attitudes and practices

between rural and urban doctors.⁷ Disparities in knowledge and attitudes about risk and treatment of breast cancer may also exist between rural and urban women.^{8,10,11}

In this paper, we identify how mammography use varies across a broader set of rural and urban areas than the simple dichotomous classification used in much of the previous research. These areas range from densely populated cities to isolated rural communities that have few direct links to larger population centres. We also identify any differences in mammography use across rural and urban areas within particular provinces, as federal agencies support the development of mammography guidelines, and provincial governments maintain responsibility for administering them.

METHODS

We used individual-level data from the 2002/03 and 2004/05 waves of the Canadian Community Health Survey (CCHS) Statistics Canada master files. The CCHS is a national biennial survey of about 130 000 people that records detailed information on a wide range of health status, behaviour and use of services. It encompasses people aged 12 years and older residing in all provinces and territories, but excludes people living on Crown lands, full-time military personnel, on-reserve Aboriginal people and residents of institutions. As well, the CCHS does not sample among residents living in the Inuit territory of Nunavik in northern Quebec. We defined our sample as adult women aged 50 to 69 years who resided in one of Canada's 10 provinces, which resulted in a total of 37 794 observations. Residents of the Northwest Territories, the Yukon Territory and Nunavut were omitted because of small sample sizes. We sought to determine the extent of compliance with Health Canada guidelines regarding mammography screening across rural and

urban regions, after accounting for a variety of demographic and socio-economic confounders. These confounders included factors, such as age, marital status and education level, that are likely to influence the take-up of mammography screening but are not specific to rural residents.

The key measure of mammography screening in the CCHS was whether the respondent reported undergoing mammography during the previous 2 years (1 if yes, 0 if no). We wanted to focus only on asymptomatic women, so we omitted from the sample any women who reported undergoing mammography within the last 2 years for reasons other than regular checkup, age or family history of breast cancer. Given the ongoing debate about the efficacy of mammography for women aged 40–49 years, we also estimated results for an expanded sample of women aged 40–69 years. This larger sample comprised 56 830 observations.

The Anderson Model and its refinements^{12–14} provided an empirical framework to guide model specification. The model posits that a person's use of health services will be determined by 3 broad factors: predisposing factors, enabling factors and need factors. Predisposing factors capture the person's predisposition to use services and are a function of demographics, social structure and health beliefs. Enabling factors are factors that enable or impede use of health services, and include personal characteristics, such as income and education, as well as community characteristics, such as the concentration of health care professionals. Need factors reflect the need for care based on self-perceived and diagnosed health status.

Location of residence is considered to be an enabling factor because it will reflect proximity to health centres with the necessary diagnostic equipment and the associated costs of travel to obtain screening services.¹⁵ In classifying locations, we relied on Statistics Canada's metropolitan influenced zone (MIZ) classification. The MIZ definition is used to differentiate among less urbanized areas that are outside of both census metropolitan areas (CMAs), which are urban areas with a population of at least 100 000, and census agglomerations (CAs), which are urban areas with a population of more than 10 000 but less than 100 000. Census subdivisions outside of CMAs or CAs are grouped into categories based on commuting flows of the employed labour force in the subdivision to CMAs or CAs.⁶ A subdivision outside of these urban areas is classified as "strong MIZ" if 30% or more of its workforce commute to a CMA or CA. "Moderate

MIZ" and "weak MIZ" areas comprise subdivisions with commuting flows of 5% to 30% and 0% to 5%, respectively. Subdivisions classified as "no MIZ" have commuting flows to CMA or CAs of fewer than 40 people and are considered to be the most rural and remote areas based on commuting flows to urban centres. In addition, Statistics Canada also differentiates between "tract" CAs and "nontract" CAs, based on whether the CA contains a core population centre, called a tract, of 2500 to 8000 people.⁶ This geographical classification is a further refinement of the 5-category classification of urban and rural areas provided by Statistics Canada and has been used in recent research on patterns in use of health services in Canada.^{16,17}

Province of residence is also an enabling factor. Although all Canadian provinces and territories offer mammography services to female residents through organized screening initiatives, programs differ by how long they have been in operation and the resources devoted to achieving stated objectives.^{18,19} Although federal agencies support the development of mammography guidelines at a national level, provincial governments maintain responsibility for administering health care and have various approaches to encouraging timely use of mammography.¹⁸ To capture these differences, we include a set of province-specific indicator variables as explanatory variables in the regression analysis.

There is ample evidence that physician referral is a primary determinant of mammography use.^{1,8–11,20,21} To reflect this, we included an indicator variable for whether the woman had a regular family doctor. In addition, we included both the number of physicians and the number of medical specialists per 100 000 residents in each health region for each CCHS survey year, as broad measures of the general availability of health services at the level of the provincial health region. We obtained these data from the Canadian Institute for Health Information.

It was also necessary to account for other differences between women in rural and urban areas that might explain differential use of mammography screening, and the literature has identified a number of such determinants. These include predisposing factors such as age,^{1,2,10,11,20–22} marital status,¹ immigrant status, ethnicity and language fluency.^{1,2,8,20,23} Particularly in rural areas, health services in alternate languages may not be available and information campaigns relaying the importance of breast health may be less effective in reaching such women. Other important enabling factors are family income and

level of education, which can affect mammography use through numerous channels. Both family income and level of education have been found to be positively related to mammography use in the literature.^{1,2,10,11,20,21} We performed logistic regression analysis, and used population weights and robust standard errors in the calculation of all estimates and confidence intervals (CIs).

RESULTS

Table 1 shows the percentages of asymptomatic women who had undergone mammography within the previous 2 years, categorized by the degree of remoteness from a CMA using the MIZ classification. Overall, only two-thirds of women aged 50–69 years had undergone mammography within the previous 2 years as recommended by Health Canada guidelines, and about one-half of women aged 40–69 years had undergone mammography within the previous 2 years. Interestingly, with the exception of women residing in “no MIZ” areas there were no marked differences in the incidence of mammography screening among women residing in CMAs, CAs and more rural and remote areas. For women living in more remote “no MIZ” areas, the incidence of mammography screening was around 7 percentage points lower for both age groups.

Regression results are presented in Tables 2 and 3. Columns 1 and 2 of Table 2 give estimated odds ratios (ORs) and 95% CIs for the determinants of the likelihood that an asymptomatic woman aged 50–69 years had undergone mammography during the previous 2 years. The key results for the effects of geographic remoteness are contained in Table 2 as well as the results for the confounding variables (predisposing and enabling factors). After accounting for differences in demographic and socio-economic factors, as well as health service access, we found that women residing in the most isolated areas — the “no MIZ” regions — were the least likely to have undergone mammography (OR 0.58, CI 0.42–0.80). The odds of having undergone mammography were also significantly lower in “moderate MIZ” regions (OR 0.81, CI 0.70–0.93) but not “weak MIZ” regions. There were also no significant differences in mammography screening for women living in CAs or in “strong MIZ” areas compared with women living in CMAs. There were, however, pronounced differences among provinces, with women in Newfoundland (OR 0.72, CI 0.57–0.90) and Nova Scotia (OR 0.75, CI 0.61–0.92) less likely than women in Ontario to have undergone mammography during the previous 2 years, and

women in New Brunswick more likely (OR 1.39, CI 1.11–1.72).

For the other variables, a number of important results should be noted. First, recent immigrants were significantly less likely to have undergone regular mammography (OR 0.61, CI 0.41–0.89) and the gap was even more pronounced if the woman was not fluent in either English or French (OR 0.21, CI 0.15–0.29). Second, women with higher family incomes and higher levels of education were more likely to have undergone mammography during the previous 2 years than other women. Third, the results clearly indicate the importance of having a family doctor to regular mammography screening. The odds of a woman with a family doctor having undergone mammography during the previous 2 years were almost 3.5 times greater than for women without a family doctor (OR 3.48, CI 3.01–4.03). With these variables included in the regression equation, the concentration of physicians in the associated health region was not a significant determinant of mammography use.

Columns 3 and 4 of Table 2 are based on the larger sample of women aged 40–69 years. As with the other age group, women residing in the most remote areas were significantly less likely to have undergone mammography during the previous 2 years compared with women living in CMAs (OR 0.71, CI 0.54–0.94). As well, women residing in “moderate” and “weak” MIZ regions were less likely to have undergone mammography (OR 0.82, CI 0.73–0.92 and OR 0.86, CI 0.76–0.97, respectively).

Table 1. Percentages of Canadian women who had undergone mammography within the previous 2 years, by remoteness from a census metropolitan area or census agglomeration*

Residence	Women aged 50–69 yr, % (n = 37 794)		Women aged 40–69 yr, % (n = 56 830)	
	Underwent mammography	Total sample	Underwent mammography	Total sample
CMA	67.7	63.5	50.8	65.0
Tract CA	68.4	6.0	50.5	5.9
Nontract CA	69.2	9.5	52.5	9.1
Strong MIZ	69.0	5.3	49.3	5.2
Moderate MIZ	66.4	8.3	49.9	7.8
Weak MIZ	68.7	6.4	52.8	6.1
No MIZ	61.0	0.9	45.4	0.9
All areas	67.8	100.0	50.8	100.0

CA = census agglomeration; CMA = census metropolitan area; MIZ = metropolitan influenced zone.

*The sample excludes women who had undergone mammography for reasons other than regular screening or a regular checkup. Regions outside of CMAs and CAs are grouped according to MIZ classification.

Table 2. Logistic regression results for mammography within the previous 2 years for adult Canadian women*

Variable	Women aged 50–69 yr (n = 37 794)		Women aged 40–69 yr (n = 56 830)	
	OR†	95% CI‡	OR†	95% CI‡
Remoteness (CMA = 1)				
Tract CA	1.03	0.85–1.24	0.90	0.79–1.03
Nontract CA	0.89	0.77–1.04	0.91	0.81–1.02
Strong MIZ	1.02	0.85–1.21	0.92	0.80–1.05
Moderate MIZ	0.81	0.70–0.93	0.82	0.73–0.92
Weak MIZ	0.92	0.77–1.10	0.86	0.76–0.97
No MIZ	0.58	0.42–0.80	0.71	0.54–0.94
Province (Ontario = 1)				
Newfoundland	0.72	0.57–0.90	1.06	0.87–1.28
Prince Edward Island	0.96	0.70–1.32	1.00	0.78–1.28
Nova Scotia	0.75	0.61–0.92	1.27	1.06–1.52
New Brunswick	1.39	1.11–1.72	1.41	1.20–1.67
Quebec	1.08	0.88–1.33	0.89	0.77–1.04
Manitoba	0.88	0.70–1.13	0.74	0.62–0.88
Saskatchewan	0.85	0.69–1.05	0.67	0.57–0.78
Alberta	1.10	0.91–1.33	1.37	1.19–1.58
British Columbia	0.92	0.78–1.09	1.26	1.10–1.44
Predisposing factors§				
Married	1.71	1.44–2.02	1.40	1.25–1.58
Widowed	1.64	1.33–2.01	1.31	1.10–1.55
Separated/divorced	1.34	1.12–1.61	1.14	1.00–1.31
French	1.25	0.99–1.57	1.15	0.97–1.35
English and French	1.22	1.03–1.44	1.26	1.12–1.42
English and other language	0.89	0.76–1.04	1.12	0.98–1.27
French and other language	1.11	0.47–2.60	1.10	0.64–1.91
Neither English nor French	0.21	0.15–0.29	0.25	0.19–0.33
Foreign-born	0.99	0.85–1.15	0.98	0.86–1.11
Foreign-born and arrived within the past 10 yr	0.61	0.41–0.89	0.70	0.54–0.92
Enabling factors§				
Income < \$10 000	0.97	0.76–1.24	1.12	0.89–1.40
Income \$20 000–\$40 000	1.32	1.12–1.55	1.19	1.04–1.36
Income \$40 000–\$60 000	1.45	1.21–1.74	1.32	1.14–1.53
Income \$60 000–\$80 000	1.40	1.14–1.72	1.27	1.09–1.48
Income > \$80 000	1.60	1.29–1.98	1.41	1.21–1.64
< secondary education	0.82	0.72–0.95	0.74	0.66–0.83
Some postsecondary education	1.22	1.00–1.50	0.95	0.82–1.11
Certificate or diploma	1.24	1.09–1.41	1.03	0.94–1.14
Bachelor degree	1.44	1.19–1.74	1.13	0.99–1.29
Bachelor degree plus	1.47	1.13–1.91	1.08	0.92–1.28
Has a regular doctor	3.48	3.01–4.03	2.49	2.20–2.82
No. of doctors per population of 100 000	1.00	1.00–1.01	1.00	1.00–1.00
No. of specialists per population of 100 000	1.00	1.00–1.00	1.00	1.00–1.00
Pseudo- R^2 ¶	0.08	—	0.21	—

CA = census agglomeration; CI = confidence interval; CMA = census metropolitan area; MIZ = metropolitan influenced zone; OR = odds ratio.

*The sample excludes women who had undergone mammography for reasons other than regular screening or a regular checkup. Regression equations also include variables for age, age-squared, indicator variables for 5-year age cohorts and survey year.

†Odds ratios in bold are significantly different from 1 at the 5% level of significance.

‡95% CIs are based on robust standard errors.

§Default categories for the predisposing and enabling factors are as follows: single, speaks English only, Canadian born, family income between \$80 000 and \$100 000, high school education only and no regular family doctor.

¶Pseudo- R^2 is an approximate measure of the overall fit of the model and is calculated using log-likelihood statistics of the full model and the null model with no covariates included.

Although most of the other results are comparable to what was discussed above, the inclusion of asymptomatic women aged 40–49 years in the sample had a marked effect on the OR for provinces: the odds of having undergone mammography during the previous 2 years were predicted to be significantly higher for women in Nova Scotia (OR 1.27, CI 1.06–1.52) and British Columbia (OR 1.26, CI 1.10–1.44) than for women in Ontario, in contrast to what was found when the sample was restricted to women aged 50–69 years.

It has been established in the literature that screening in accordance with recommended guidelines varies widely among Canadian provinces, from 41% in Newfoundland to 69% in British Columbia.⁸ To assess how rural–urban differences in mammography use may also vary among provinces, we estimated the same regression models separately by provincial group: Atlantic provinces, Quebec, Ontario, the Prairies and British Columbia. Selected results are presented in Table 3. The regression equation for each provincial group includes the full

Table 3. Logistic regression results by province for mammography within the previous 2 years for Canadian women*

Province†	Women aged 50–69 yr (n = 37 794)		Women aged 40–69 yr (n = 56 830)	
	OR‡	95% CI§	OR‡	95% CI§
Atlantic provinces				
Tract CA	0.93	0.49–1.76	0.74	0.48–1.15
Nontract CA	0.65	0.42–1.01	0.68	0.48–0.96
Strong MIZ	0.91	0.51–1.62	0.67	0.43–1.05
Moderate MIZ	0.64	0.42–0.98	0.75	0.54–1.05
Weak MIZ	0.84	0.54–1.31	0.83	0.58–1.17
No MIZ	0.41	0.21–0.80	0.87	0.38–2.00
Quebec				
Tract CA	0.62	0.36–1.10	0.67	0.42–1.06
Nontract CA	0.93	0.62–1.41	0.99	0.76–1.30
Strong MIZ	1.12	0.76–1.65	0.88	0.66–1.17
Moderate MIZ	0.84	0.61–1.15	0.86	0.67–1.09
Weak MIZ	0.84	0.40–1.76	1.05	0.67–1.66
No MIZ	0.32	0.13–0.74	0.65	0.27–1.61
Ontario				
Tract CA	1.29	0.97–1.70	1.11	0.92–1.33
Nontract CA	1.06	0.86–1.31	1.08	0.91–1.27
Strong MIZ	1.02	0.79–1.31	1.01	0.84–1.22
Moderate MIZ	0.67	0.53–0.84	0.73	0.61–0.88
Weak MIZ	0.97	0.68–1.39	0.84	0.64–1.09
No MIZ	1.02	0.39–2.64	1.03	0.46–2.32
The Prairies				
Tract CA	0.89	0.54–1.48	0.66	0.44–1.00
Nontract CA	0.75	0.49–1.16	0.64	0.45–0.92
Strong MIZ	0.79	0.47–1.34	0.63	0.42–0.96
Moderate MIZ	1.10	0.75–1.64	0.72	0.51–1.01
Weak MIZ	0.84	0.57–1.23	0.64	0.46–0.91
No MIZ	0.79	0.48–1.29	0.65	0.44–0.96
British Columbia				
Tract CA	1.06	0.73–1.54	0.84	0.64–1.09
Nontract CA	0.75	0.50–1.13	0.83	0.63–1.11
Strong MIZ	1.04	0.55–1.98	1.34	0.79–2.30
Moderate MIZ	0.61	0.38–0.98	0.82	0.57–1.18
Weak MIZ	0.81	0.51–1.28	0.69	0.50–0.95
No MIZ	0.30	0.10–0.91	0.31	0.14–0.69

CA = census agglomeration; CI = confidence interval; MIZ = metropolitan influenced zone; OR = odds ratio.

*The sample excludes women who had undergone mammography for reasons other than regular screening or a regular checkup. Regression equations include variables for age, age-squared, indicator variables for 5-year age cohorts, and survey year as well as the variables reported in Table 1. These results are not reported in Table 2, but are available on request from the authors.

†Census metropolitan area = 1.

‡Odds ratios in bold are significantly different from 1 at the 5% level of significance.

§95% CIs are based on robust standard errors.

set of variables listed in Table 2, although, for brevity, we chose to report only the results for the set of rural–urban indicators. Columns 1 and 2 of Table 3 show that, other things being equal, women aged 50–69 years who reside in more remote rural areas of the Atlantic provinces, Quebec and British Columbia had the lowest odds of having undergone mammography during the previous 2 years. As well, residents of “moderate MIZ” regions of the Atlantic provinces, Ontario and British Columbia had lower odds of having undergone mammography than residents of large urban CMAs in those provinces. (It should be noted that the large and less populated regions of northern and western Ontario are classified by Statistics Canada as “moderate MIZ.”) Further, in no provincial group were the odds of having undergone mammography significantly higher in any other rural or urban regions than in CMAs. In columns 3 and 4 of Table 3, we considered the expanded sample of women aged 40–69 years. The results are broadly comparable for the Atlantic provinces, Quebec, Ontario and British Columbia, although some ORs for “no MIZ” areas were no longer significant. The residents of all types of region of the Prairie provinces outside of CMAs had lower odds of having undergone mammography than residents of CMAs in Prairie provinces.

We can gain some insights into this possibility because the CCHS asked women who had not undergone mammography during the previous 2 years about their reasons for not doing so. We identified 4 reasons as indicating barriers in undergoing timely mammography: service not available when required, service not available in the area, wait times too long and transportation problems. Relevant summary statistics are presented in Table 4. Only a small percentage of women aged 50–69 who had not undergone timely mammography gave one of these reasons. The percentage doing so did increase with

increasing remoteness from major population centres — from 1.6% of women in CMAs and 2.0% of women in “tract” CAs, to 6.1% of women in “weak MIZ” regions and 6.0% of women in “no MIZ” regions — but even in the most rural regions only about 1 in 20 women identified access barriers as the reason for not having undergone mammography.

DISCUSSION

We found evidence that mammography screening among asymptomatic women aged 50–69 years varies by rural or urban status. Specifically, women living in more rural and remote areas of Canada were less likely to have undergone mammography during the previous 2 years than women living in larger urban areas. We observed this discrepancy after accounting for a host of other potentially important determinants of mammography use, including age, marital status, language fluency, education level, family income and whether the woman had a family doctor. Our results also clearly indicate that many of these factors significantly affect the odds of a woman having undergone mammography. Of particular note are the much lower odds of having undergone mammography among recent immigrants and women not fluent in either English or French, and the importance of having a family doctor to mammography screening.

The results also indicate that mammography screening programs that include women aged 40–49 years have a positive impact on the use of mammography by women in that age group, who reside in the provinces with such programs. Nova Scotia, Alberta and British Columbia unconditionally accept and annually recall women aged 40–49 years and the other provinces do not (though Alberta requires an initial written referral from a doctor for a woman in this age range to be accepted into the provincial screening program). Women aged

Table 4. Reasons given by 37 794 women aged 50–69 years for not having undergone mammography during the previous 2 years, by region of residence

Reason	Weighted % of total							Overall
	CMA	Tract CA	Nontract CA	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ	
Didn't get around to it	25.4	31.8	29.4	26.8	25.8	27.9	19.4	26.4
Respondent didn't think necessary	36.0	37.2	32.8	38.8	43.1	37.9	48.4	36.8
Doctor didn't think necessary	15.2	13.9	14.8	15.7	11.7	12.8	14.8	14.6
Fear of outcome or process	6.0	6.4	8.4	4.5	6.8	6.9	5.8	6.3
Barriers to timely access*	1.6	2.0	2.9	3.8	4.6	6.1	6.0	2.4
Other	15.8	8.7	11.6	10.4	8.0	8.3	5.6	13.5

CA = census agglomeration; CMA = census metropolitan area; MIZ = metropolitan influenced zone.

*Barriers to timely access include the following: service not available when required, service not available in the area, wait times too long and transportation problems.

40–49 years in these provinces are more likely to undergo mammography, other things being equal. Although the benefits of regular screening in this age group are debatable, there may still be an indirect benefit if such programs subsequently increase screening rates of women once they enter the critical 50–69 age range. However, there is no evidence that provincial screening programs for women in their 40s lead to increased screening rates among women aged 50–69 years in those provinces.

One possible explanation for the difference in mammography use between women in rural and urban areas is that women in relatively rural and remote areas face greater access barriers to mammography screening because of the limited availability of services in the area and distances and wait times involved in obtaining screening. However, it is also interesting to note that in our data there are only minor differences between provinces with and without mobile clinics in the incidence of mammography screening among women aged 50–69 years who live in “no MIZ” areas: 61% of women in provinces with mobile clinics had undergone mammography during the previous 2 years, compared with 62% of women in provinces where there were no mobile clinics.

Physician referral is an important determinant in a woman’s choice to undergo mammography,^{1,8–11,20,21} and Zapka and colleagues¹¹ found that 83% of women would partake in breast screening if recommended to do so by a doctor. Although we controlled for the incidence of having a family physician as well as the concentration of physicians in rural and urban areas, differences in mammography screening may still arise because of differences in the incidence of regular doctor visits or because of the interaction between women and their physicians. Recent research¹⁷ has found that older individuals living in Canadian regions outside of CMAs and CAs are less likely to visit their doctor during a given year than those living within CMAs and CAs. Thus there may be less of an opportunity for a rural woman’s physician to discuss with her the importance of mammography screening. As well, Abdel-Malek and coauthors²⁴ found that physicians in large urban areas of Ontario are less likely to adhere to screening guidelines compared with their rural counterparts. However, the results in Table 4 indicate that there are no meaningful differences in the percentage of women not undergoing recent mammography who reported that the reason for this was that their doctor did not think it necessary.

Differences in mammography use between rural

and urban areas may instead reflect variation in individual health beliefs, since it is well established that personal beliefs about breast cancer and mammography play a very important role in the take-up of regular screening.^{8,10,11,23,25} Previous research has reported that about 50% of women who forgo mammography do so because they believe it is unnecessary.^{8,11} Results in Table 4 show that 48.4% of women living in “no MIZ” regions who had not undergone mammography stated that they had not thought it necessary, compared with 36.0% of women living in CMAs. In a related vein, Bryant and Mah⁷ report that although knowledge of breast cancer and access barriers to mammography are comparable between rural and urban women, less than half of rural women agree that breast cancer is curable given early detection.

Findings from this research are accompanied by several caveats. First, the CCHS is based on self-reporting, so responses may be subject to recall bias. Second, women living on Crown lands, full-time military personnel, residents of northern territories, on-reserve Aboriginal women and women living in institutions were excluded, so our results do not necessarily generalize to the wider population of women aged 40–69 years. As well, the CCHS does not sample residents of Nunavik in northern Quebec, which means that residents of remote areas of Quebec in particular are underrepresented in the data. Third, although the detailed categories of rural and urban areas are a marked improvement over a simple dichotomous rural–urban distinction, particular types of regions are still likely to be quite heterogeneous. Finally, our data are drawn from only 2 points in time, so a more comprehensive evaluation of the effectiveness of public information campaigns and organized screening programs is not possible. Differences among provinces may be due to differences in how provincial screening programs are conducted, but a host of other province-specific factors may also underpin observed differences.

CONCLUSION

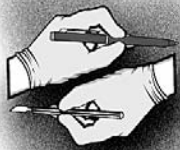
Our analysis suggests that information campaigns raising awareness about the importance of mammography should be targeted, in particular, at women residing in rural and remote areas. More generally, it seems reasonable that information campaigns to boost compliance might be used in conjunction with greater employment of mobile mammography clinics in rural areas, where women are less likely to have a family doctor. British Columbia, Manitoba, Saskatchewan, Quebec and New Brunswick have implemented such

clinics and report some successes.²⁶ Our analysis suggests that the use of mobile clinics in rural and remote areas should be accompanied by efforts to increase awareness of the importance of mammography screening among women living in those areas. More research is needed on the extent to which personal opinions about the importance of periodic mammography is driving lower rates of mammography use in Canada's rural and remote areas.

Competing interests: None declared.

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ORIGINAL ARTICLE ARTICLE ORIGINAL

The experience of primary health care users: a rural–urban paradox

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Introduction: We sought to assess the care experience of primary health care users, to determine whether users' assessments of their experience vary according to the geo-graphical context in which services are obtained, and to determine whether the observed variations are consistent across all components of the care experience.

Methods: We examined the experience of 3389 users of primary care in 5 administra-tive regions in Quebec, focusing on accessibility, continuity, responsiveness and reported use of health services.

Results: We found significant variations in users' assessments of the specific compo-nents of the care experience. Access to primary health care received positive evalua-tions least frequently, and continuity of information received the approval of the high-est percentage of users. We also found significant variations among geographical contexts. Positive assessments of the care experience were more frequently made by users in remote rural settings; they became progressively less frequent in near-urban rural and near-urban settings, and were found least often in urban settings. We observed these differences in almost all of the components of the care experience.

Conclusion: Given the relatively greater supply of services in urban areas, this analysis has revealed a rural–urban paradox in the care experience of primary health care users.

Introduction : Nous avons voulu évaluer l'expérience des utilisateurs de soins pri-maires, afin de vérifier si leur appréciation varie en fonction du milieu géographique où les services leur sont dispensés et si les variations enregistrées sont constantes pour toutes les composantes de l'expérience de soins.

Méthodes : Nous avons analysé l'expérience de 3389 utilisateurs de soins primaires de 5 régions administratives du Québec, en mettant l'accent sur l'accessibilité, la continu-ité et la rapidité des interventions et sur l'utilisation rapportée des services de santé.

Résultats : Nous avons noté des variations importantes dans les évaluations des util-isateurs pour ce qui est des éléments spécifiques de l'expérience de soins. L'accès aux soins de santé primaires a fait l'objet d'un moins grand nombre d'évaluations favor-ables et la continuité de l'information a reçu l'approbation du plus fort pourcentage d'usagers. Nous avons aussi découvert d'importantes variations selon le milieu géo-graphique. Ce sont les usagers des régions rurales éloignées qui ont évalué le plus favorablement leur expérience des soins; la fréquence des évaluations favorables a été inversement proportionnelle à la proximité du milieu urbain et elle a été la plus faible dans les villes. Nous avons observé ces différences pour la quasi totalité des com-posantes de l'expérience de soin.

Conclusion : Compte tenu de l'accès relativement plus facile aux services dans les régions urbaines, cette analyse met au jour un paradoxe concernant l'expérience des utilisateurs de soins primaires selon qu'ils vivent en milieu rural ou en milieu urbain.

INTRODUCTION

Urban settings exhibit characteristics generally perceived as favourable to a satisfying care experience for patients,

particularly with respect to accessibility and use of services. Rural settings exhibit characteristics considered less favourable to a satisfying care experi-ence. These characteristics are tied to

the nature of the local population (its size, density, and socio-economic profile), the availability of health resources, and the distance from and dependence on large urban centres. In contrast, some qualities of rural settings, such as community integration and cohesion, are perceived as having a positive influence on other components of the care experience, such as continuity and responsiveness.¹⁻⁵ The scientific evidence available at this time does not fully support these perceptions (unpublished data, 2001–2003).⁶⁻¹² Part of the difference appears to lie in the specific components of the care experience analyzed.

This article is intended to shed light on the relationship between users' experience of their care and the geographical context in which services are obtained. Our study had 3 specific objectives: to assess the care experience of primary health care users, to determine whether assessments vary according to the geographical context in which services are obtained and to determine whether the observed variations are consistent across all components of the care experience.

METHODS

Sources of data

This study consists of a secondary analysis of data from a survey of primary health care users. A detailed description of the methodology has been presented elsewhere.¹³ The survey of 3389 primary health care users collected data on the users' evaluations of the accessibility, continuity and responsiveness of the services as well as their reported use of services.

These users came from a random sample of 100 medical clinics drawn from 5 administrative regions of Quebec: the North Shore, the Lower Saint Lawrence, Gaspé, Montérégie and Montréal. The sample of clinics was stratified in 2 ways: by geographical context, to bring out the rural–urban difference, and by the types of organizations of primary health care found in Quebec (i.e., community-based health centres, medical group clinics and solo medical practices). To be eligible, an organization had to provide general medical services to an undifferentiated and predominantly English- and French-speaking client base. These clinics represented 60% of those invited to participate. The remaining organizations declined to participate.

A maximum of 4 physicians per clinic were either designated by their clinic director or had the time to

participate in the study, for a total of 221 physicians.

The patients of these physicians were approached by the research assistant to establish their eligibility, explain the study and negotiate informed consent. Eligible patients were those able to give informed consent by themselves (aged ≥ 18 yr and mentally competent) or by proxy (e.g., children) and were able to complete the questionnaire in English or French. Of the eligible patients, 76.9% completed the survey.

Description of the variables

Care experience refers to users' assessment of the accessibility, continuity and responsiveness of primary health care as well as their reported use of health services. Appendix 1 shows the survey instrument of 14 variables used to delineate components of the care experience. Accessibility measures the ease with which users can access primary health care services.¹⁴ Continuity is a measure of whether services are provided as a coherent series of events that meet service needs and the life circumstances of the patient.¹⁵ Responsiveness expresses the degree to which the organization of services meets users' expectations.¹⁶ Use of services refers to services provided by family physicians, medical specialists and hospital emergency departments.

To assess the various components of the care experience, we constructed ordinal variables by grouping questions according to our views of what best fit together. For each variable, we defined categories based on a rigorous analysis of question–response profiles. The goal was to differentiate user assessments of the care experience as much as possible. It should be noted that most of the responses fell into the most positive appraisal categories. As a result, responses classified in the higher categories of these variables must often be understood as very positive appraisals of the care experience. Responses classified in the lower categories signify a poorer appraisal of this dimension, albeit without constituting a negative appraisal.

Our interest in geographical contexts was based on the hypothesis that each setting provides a different set of social, psychologic, geographic and economic conditions. These circumstances are significant and identifiable, and they influence the values, attitudes and behaviours of the people living there.^{17,18}

For the purposes of this study, 2 features of the contexts were included: the size of the population in the municipality where the patient's clinic was located and the distance of these municipalities from the

large urban centres of Montréal and Québec City. This led to the definition of 4 distinct geographical contexts, presented in Appendix 2.

Some characteristics of primary health care users influence both their appreciation of the care experience and their use of services, and therefore may have a confounding influence on the relationship between the geographical contexts and the care experience. To control for the influence of these characteristics, we constructed an index of vulnerability to poorer health and, consequently, to a greater need for services by primary health care users. The index was based on the following risk factors: financial position (poor or very poor), level of education (no high school diploma), employment (other than employed), civil status (single), age (≥ 65 yr) and perceived state of health (poor). A high level of vulnerability represents users who had more than 4 of these factors (11.6% of users) and a low level of vulnerability represents users with less than 2 factors (11.7% of users). The vulnerability of the rest of the sample was considered moderate.

Analysis

We used weighted and nonweighted data. The user scores of reported care experience (see Results and Table 1) were weighted according to the inverse of the sampling fraction for the clinics where the services were provided, so that scores would be representative of the regions in which clinics were sampled. We used a logistic regression with nonweighted data to analyze the relationship between the scores of reported care experience and the geographical settings where services were used (see Results and Table 2). Logistic and ordinal logistic regression models were used, depending on the coding of the dependent variables. Service users in urban centres served as the reference category for all the analyses.

RESULTS

Assessment of experience by component of care

The analysis (Table 1) revealed large variations in

Table 1. Perceptions of 3389 primary health care users about their care experience

Care experience	Assessment categories;* % of users			
	--	-	+	++
Accessibility				
Ease of contact†	13.7	30.2	23.5	32.6
Emergency or urgent need†	32.0	29.4	28.8	9.8
Continuity				
<i>Relational continuity</i>				
Duration of affiliation with a physician‡	—	16.7	46.1	37.2
Duration of affiliation with a clinic‡	—	25.8	36.4	37.8
Regular use of care services§	18.7	17.6	35.5	28.2
Extent of physician's knowledge of the patient§	21.5	20.3	24.7	33.5
Quality of patient-physician communication§	24.2	29.8	25.2	20.9
Consistency of approach§	17.5	22.3	32.4	27.8
Continuity of information§	8.7	—	—	91.3
Responsiveness				
Respect for the person§	9.6	5.2	10.9	74.3
Length of waiting time†	25.7	30.1	28.3	15.9
Use of services				
Primary care consultations¶	22.5	35.8	18.9	22.9
Specialist consultation**	75.4	—	—	24.6
Use of hospital emergency department**	59.4	—	—	40.6

*Symbols --, -, + and ++ show the variation of users' care experience, whether measured as levels of appreciation, duration of the relationship or the use of services. See Appendix 1 for further definitions of the assessment categories.

†Four categories from very poor to excellent, where -- is very poor and ++ is excellent.

‡Three categories: -- is 0–1 yr, + is 2–9 yr and ++ is ≥ 10 yr.

§Four categories from absolutely not to absolutely, where -- is absolutely not and ++ is absolutely.

¶Four categories: -- is 1–2 times, - is 3–5 times, + is 6–8 times and ++ is ≥ 9 times in the past year.

**Two categories: -- is no and ++ is yes.

the reporting of the care experience. Some components received more positive assessments than others. Access to primary care services was one aspect of the care experience that received positive evaluations least frequently. Access to services for an emergency or an urgent need received positive evaluations from the lowest percentage of users.

The vast majority of users appreciated having a long-term relationship with a family physician and being able to regularly use his or her services as required. However, the qualitative aspects of this relationship received poorer appraisals. Almost half of the respondents could not say whether their physician knew them well, and most of them judged communication with their doctor as poor.

Consistency of approach, or the integration of care from different providers, received positive assessments from most of the people interviewed. Continuity of information was the aspect of the care experience that received the approval of the highest percentage of users.

Users responded very differently to the 2 mea-

sures of responsiveness. The physician's consideration and respect for the patient as a person received a positive assessment from a high percentage of users, yet the little importance that physicians attach to waiting time was one of the least appreciated aspects of the care experience.

Lastly, 58% of users had made between 1 and 5 visits to a primary care physician during the previous year, and 42% reported more than 5 visits. In addition, 25% of users had consulted a medical specialist during the previous year, and 41% had visited a hospital emergency department at least once during the previous 2 years.

Care experience and geographic context

Table 2 presents significant odds ratios ($\alpha \leq 0.05$) associating a positive assessment of the care experience with the geographic setting in which the services were obtained, controlling for the degree of vulnerability of the service user.

The results indicate that a larger percentage of

Table 2. Probability (odds ratio: $p < 0.05$) of a primary health care user having a positive perception of the care experience, by geographical context and adjusted for user vulnerability

Care experience	Odds ratio, adjusted for user vulnerability			
	Remote rural	Near-urban rural	Near urban centre	Urban centre
Accessibility				
Ease of contact	2.3	1.5	1.4	1.0
Emergency or urgent need	1.6	1.2	—	1.0
Continuity				
<i>Relational continuity</i>				
Duration of affiliation with a physician	—	—	1.6	1.0
Duration of affiliation with a clinic	1.2	1.2	1.3	1.0
Regular use of care services	1.6	—	—	1.0
Extent of physician's knowledge of the patient	1.8	1.4	1.3	1.0
Quality of patient-physician communication	1.7	1.3	1.2	1.0
<i>Consistency of approach</i>	2.4	1.9	1.4	1.0
<i>Continuity of information</i>	2.2	1.8	—	1.0
Responsiveness				
Respect for the person	1.5	—	1.3	1.0
Length of waiting time	2.6	1.4	1.5	1.0
Use of services				
Primary care consultations	1.8	1.3	—	1.0
Specialist consultation	—	0.6	0.6	1.0
Use of hospital emergency department	2.4	1.7	1.7	1.0

users in remote rural settings make a positive evaluation of the care experience than in urban centres. The odds ratios are higher for remote rural users than for urban users in almost all dimensions of access, continuity, responsiveness and use of services. The exceptions are affiliation with a family physician for longer than 2 years and consultations with medical specialists. The results also confirm the existence of a gradient by geographic context: the probability of a positive appreciation of the care experience is higher in remote rural settings, diminishing progressively in near-urban rural settings and settings near urban centres, and reaching its lowest level in the urban centres.

DISCUSSION

This study reveals large variations in the care experience among users of primary care services. A high proportion of users reported very positive perceptions of the care experience. For the most part, the highest percentages of users gave positive assessments to the various forms of continuity, and the lowest rates were associated with various components, including accessibility (especially in cases of an emergency or an urgent need), the quality of the relationship with the family physician (including the physician's knowledge of the patient), the quality of communication with the physician and the importance given by physicians to waiting times.

Our analysis reveals that the probability of a positive reporting of the care experience is highest in remote rural settings, falling progressively in near-urban rural settings and near urban centres. The probability of a positive reporting is lowest in urban centres. This analysis highlights the existence of what may be seen as a rural–urban paradox. The paradox affects every component of the care experience, including accessibility, continuity, responsiveness and use of health services, with the exception of consultations with medical specialists. The paradox is not explained by user profiles in different geographic contexts, because the relationships between assessments of the care experience and geographic context hold after controlling for the users' degrees of vulnerability.

Several hypotheses may explain this paradox (unpublished data, 2009). It may be that expectations of the care experience are lower in remote rural settings than in urban centres, or that the instruments used to measure the care experience highlight aspects that are deemed more important in urban settings than they are in remote rural settings. It is

not likely that expectations of care are lower in rural settings. Residents of rural settings have been reported to attribute higher value to different components of the care experience than their counterparts in urban centres (unpublished data, 2009). But no significant difference was found in the level of their expectations. If a difference does exist, it is that rural residents have higher expectations than urban residents, not lower (unpublished data, 2009).

The paradox may also be explained in part by the nature of the collaboration between professionals in the health organizations operating in these territories. There are some indications that this collaboration plays an important role in users' evaluations of the care experience.¹⁹ Another explanation may reside in how primary care services are organized. It has been shown that care experiences vary according to the form of organization of primary care services.^{19,20} It is possible that remote rural settings are more likely to have primary care services organized in a manner that is associated with more satisfactory care experiences, as compared with urban centres. Conversely, forms of organization of primary care services associated with less satisfactory care experiences may be more prevalent in urban centres than in remote rural settings. The factors that could explain this situation are unknown and need to be explored further.

Some limitations of this study need to be highlighted. Our study was based on the response of primary health care users. This selection criterion may have skewed positively the assessment of the care experience. The extent to which this bias differs across geographical contexts is unknown.

We assessed users' vulnerability by integrating socio-economic and health-related factors into a single index. This has the advantage of providing an overall assessment of vulnerability while taking into account the additional influence that the accumulation of risk factors may have on the care experience. However, it might prove to be less sensitive and specific in controlling for users' vulnerability, because the association of each factor included in the index may vary across components of the care experience.

Finally, this study did not control for the influence of organizational factors that could be associated with both the care experience and the geographic context. Examples of such factors include the characteristics of the primary care organizations used and the relationships that they maintained with general and specialized hospitals. Whether such factors account for the observed difference is unknown. If they do, it could be argued that they should also be considered characteristics of the contexts.

CONCLUSION

This analysis highlights the existence of what has been called the rural–urban paradox. Further research is needed to determine whether the paradox is present in other parts of the country as well and to pinpoint the factors that could account for its existence. A better understanding of these factors would allow the improvement of the care experience of users in urban settings without altering those associated with a positive care experience in rural and near rural settings.

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Appendix 1. Survey instrument of 14 variables used to delineate components of the care experience

Variable	Survey question	Assessment categories
Accessibility		
Ease of contact	How would you rate the ease of entering into contact with your physician, based on clinic location, hours of operation, availability of the physician and waiting time?	4 categories: from very poor to excellent
Emergency or urgent need	In an emergency or for an urgent need, how would you rate the ease of obtaining services from the medical clinic, when opened and when closed?	4 categories: from very poor to excellent
Continuity		
<i>Relational continuity</i>		
Duration of affiliation with a physician	For how many years have you been a patient of this physician?	3 categories: 0–1, 2–9 and ≥ 10 yr
Duration of affiliation with a clinic	For how many years have you been a patient of this clinic?	3 categories: 0–1, 2–9 and ≥ 10 yr
Regular use of care services	Is this physician or this clinic your regular source of care?	4 categories: from absolutely not to absolutely
Extent of physician's knowledge of the patient	Does your physician know you well as a person and your environment?	4 categories: from absolutely not to absolutely
Quality of patient–physician communication	Does your physician: Give you the results of your tests? Meet with members of your family if required? Allow you to consult your medical record?	4 categories: from absolutely not to absolutely
Consistency of approach	The last time you consulted a medical specialist, was it your physician who referred you?	4 categories: from absolutely not to absolutely
Continuity of information	If you visit a physician other than your regular one, will he or she be informed of the visit?	4 categories: from absolutely not to absolutely
Responsiveness		
Respect for the person	Does your physician: Respond to your questions in a way you can understand? Take enough time to talk about your problems and worries? Make you feel at ease to talk about them?	4 categories: from absolutely not to absolutely
Length of waiting time	How would you rate the time you wait at the clinic before seeing your regular physician?	4 categories: from very poor to excellent
Use of services		
Primary care consultations	In the past year, how many times have you visited a physician who is not a medical specialist?	4 categories: 1–2, 3–5, 6–8, ≥ 9 times
Specialist consultation	In the past 2 years, have you visited a medical specialist?	2 categories: no, yes
Use of hospital emergency department	In the last year, have you visited an emergency department at a hospital?	2 categories: no, yes

Appendix 2. Distribution of primary health care users by 4 geographical contexts

Geographical context	Description
UrbCE	Urban centre: located within the urban core of either the Montréal or Québec City CMA*
UrbNE	Near urban: located in a CMA or a CA† less than 150 km from Montréal or Québec City
RurNE	Remote urban: located in a CMA or CA between 250 km and 750 km from Montréal or Québec City
RurRE	Near-urban rural: RRSC‡ located less than 150 km from Montréal or Québec City
	Intermediary rural: RRSC located between 150 km and 250 km from Montréal or Québec City
	Remote rural: RRSC located between 250 km and 750 km from Montréal or Québec City
	Isolated rural: RRSC located more than 750 km from Montréal and Québec City

*CMA: census metropolitan area of more than 100 000 inhabitants; rural and urban suburb.

†CA: census agglomeration of between 10 000 and 100 000 inhabitants; urban and rural suburb.

‡RRSC: rural region with small cities of fewer than 10 000 inhabitants.



THE PRACTITIONER LE PRATICIEN

Country cardiograms case 36

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A 52-year-old man with a 3-hour history of severe chest pain presents to a small rural British Columbia emergency department. The delay is because of transportation from a remote industrial camp in the mountains. A record 3-minute door-to-electrocardiogram (ECG) time is achieved (Fig. 1). There is no previous ECG available for comparison. After immediate analysis, and the initiation of

the protocol to administer thrombolytic medication, the treating physician obtains a 15-lead ECG. Leads V4R, V8, V9 are shown in Figure 2.

What is the ECG diagnosis, and what are the implications for management of this condition?

For the answer, see page 80.

Competing interests: None declared.

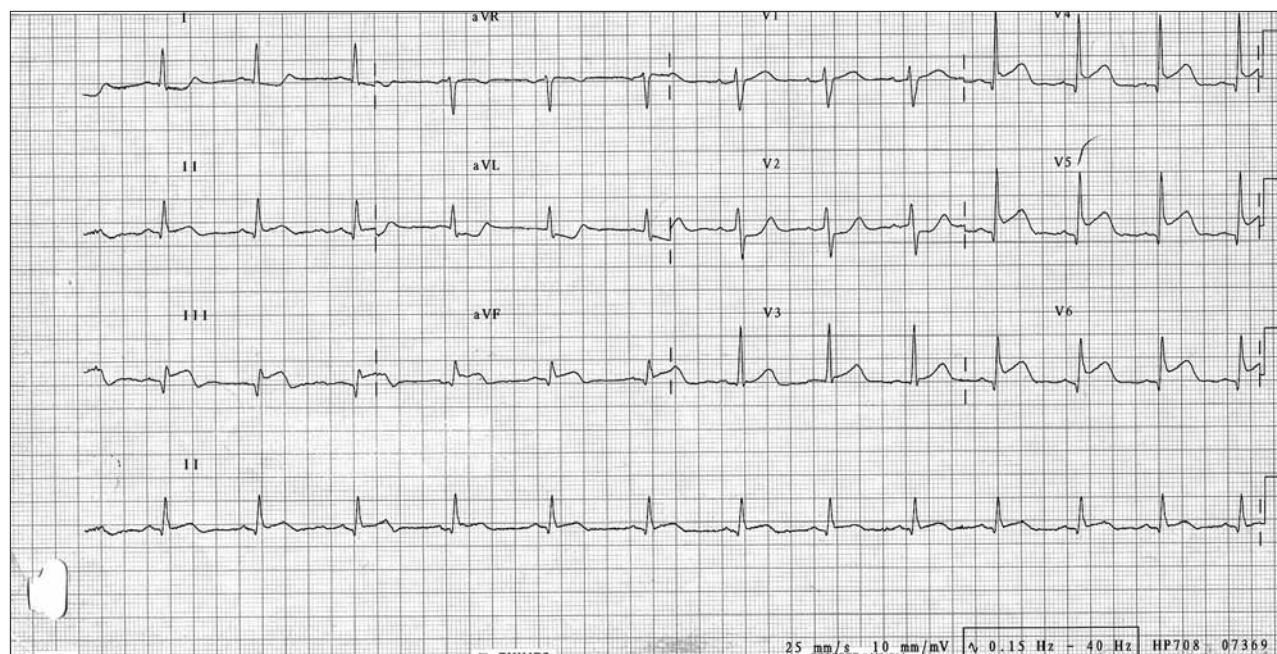


Fig. 1. Electrocardiogram of a 52-year-old man with a 3-hour history of severe chest pain.

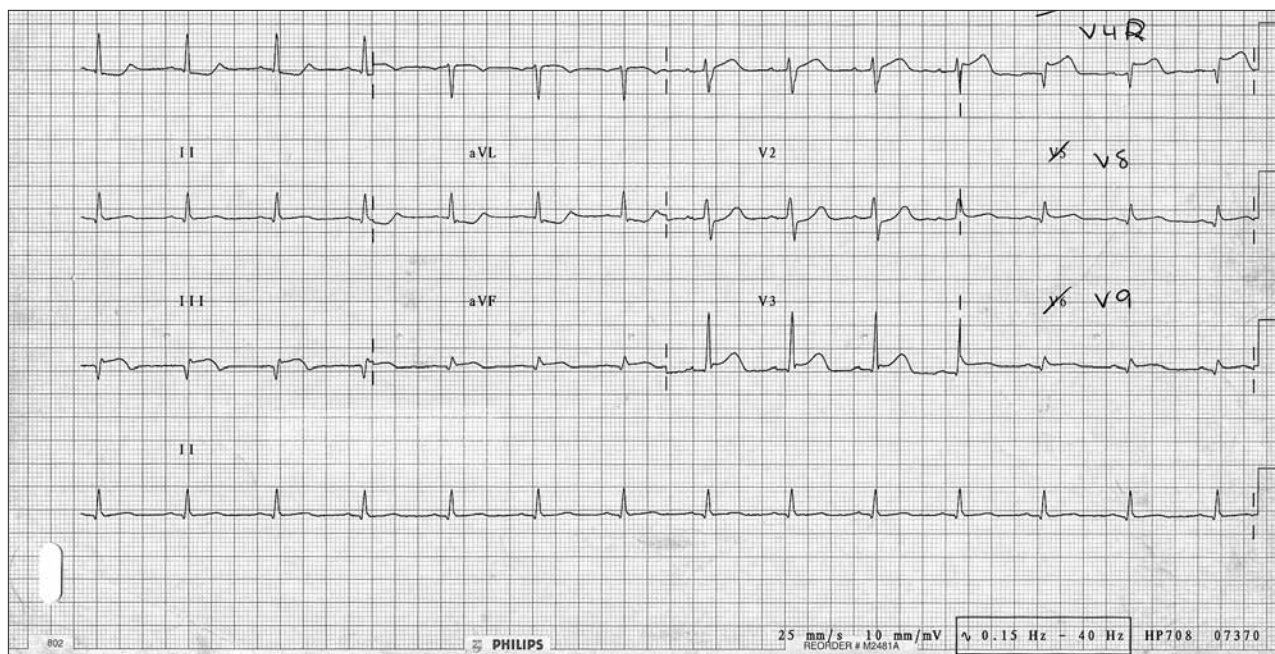


Fig. 2. Electrocardiogram featuring leads V4R, V8, V9 in place of leads V4, V5 and V6.

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.

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THE PRACTITIONER LE PRATICIEN

The occasional management of epistaxis

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reviewed.*

INTRODUCTION

Epistaxis, or nasal bleeding, is the most common otolaryngologic emergency, reported to occur in up to 60% of the general population.^{1,2} Although the presentation of epistaxis can be quite distressing to the patient and physician, only 10% of adult patients with epistaxis require definitive medical attention.³ In rare cases, however, massive nasal bleeding can be fatal.⁴

ANATOMY

Knowledge of nasal anatomy is essential in the detection of the bleed location and subsequent hemostasis. Although nasal circulation is complex (Fig. 1), epistaxis is usually described as either anterior or posterior. This distinction provides a useful basis for management.²

ANTERIOR BLEEDS

Anterior bleeds are by far the most common.⁵ Up to 80% occur within the

clinically obvious vascular watershed area of the nasal septum known as the Kiesselbach plexus.⁶ Anterior nosebleeds often result from mucosal trauma or irritation such as the following:⁵

- nose picking (most common)
- facial trauma secondary to motor vehicle collision or other blunt facial impact
- mucosal hyperemia secondary to allergic or viral rhinitis
- presence of a foreign body (if bleed is accompanied by purulent discharge)
- chronic excoriation secondary to chronic intranasal drug use

POSTERIOR BLEEDS

Posterior epistaxis can result in significant hemorrhage⁵ and generally arises from the posterior nasal cavity via branches of the sphenopalatine arteries.⁷ Posterior epistaxis occasionally may be asymptomatic or may present insidiously as nausea, hematemesis, anemia, hemoptysis or melena.²

RISK FACTORS

Risk factors that increase the incidence of anterior and posterior epistaxis include the following:

- anticoagulation⁸
- hereditary hemorrhagic telangiectasia or Osler-Weber-Rendu disease (most common presenting symptom of this disease)⁹
- blood dyscrasias, particularly platelet disorders, von Willebrand disease and hemophilia⁵
- aneurysms of the head and neck vasculature secondary to prior regional surgery⁶

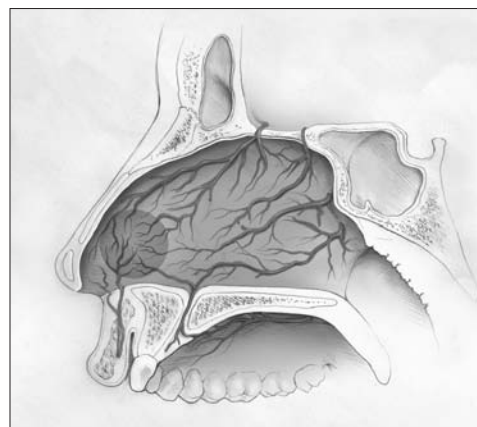


Fig. 1. Cross section of normal nasal circulation. © 2004 Christy Krames with permission.

- nasal neoplasms
- chronic alcohol abuse¹⁰
- intranasal steroid use¹¹

The associations regarding use of acetylsalicylic acid and hypertension as risk factors for epistaxis are uncertain.^{2,12}

EQUIPMENT

An epistaxis tray can be created using common supplies and a few specialized instruments:²

- nasal decongestant spray
- local anesthetic
- silver nitrate cautery sticks
- suction cautery (if available)
- bayonet forceps
- nasal speculum
- lubricating jelly
- bacitracin, mupirocin or other antistaphylococcal ointment¹³
- Frazier suction tip or suction tube connector (which works nicely as a suction tip in this situation)¹⁴
- posterior double balloon system or 14-F Foley catheter and syringe for balloon inflation
- packing materials including Merocel packs (Medtronic Inc.), Gelfoam (Pfizer, Inc.) and Xeroform (Kendall Healthcare; nonadherent gauze impregnated with petroleum jelly and 3% tribromophenol)
- emesis basin

MANAGEMENT

Step 1: evaluation and stabilization

- Initial management should focus on the cardiovascular stability of the patient. Massive epistaxis may necessitate airway intervention and fluid resuscitation before hemostasis is attempted. Normal appearance, vital signs and respiratory function are evidence that you can safely attend to the epistaxis.⁵
- Consider intravenous access. Difficult cases may require anxiolytic and/or analgesic medications.²
- Epistaxis can be a very messy situation. Always remember universal precautions and the “3 Gs”: gloves, gown and goggles.¹⁵
- Take a quick but comprehensive history (Box 1).¹⁴
- The patient should be in a well-lit room, seated upright, looking directly ahead and attempting the sniffing position. This allows for optimal view of the nasopharynx.⁵

- Clots may be cleared via suction or by asking the patient to *gently* blow his or her nose.⁵
- Attempt to visualize the bleed. The Kiesselbach plexus should be examined first since most bleeds originate here.⁵

Step 2: direct pressure

- Ask the patient to apply direct pressure by pinching the lower part of the nose (not the bridge) for 10 to 15 minutes.¹⁴
- The patient should be mouth breathing and leaning forward.
- Encourage the patient to spit out posterior pharyngeal blood into a basin. This will reduce the risk of vomiting from swallowed blood and of aspiration.⁵
- An ice pack over the dorsum of the nose may assist with hemostasis by constricting the blood vessels and thereby stopping the bleeding. Applying an ice pack to the back of the neck activates the mammalian dive reflex, thereby causing peripheral vasoconstriction.¹³
- Consider spraying the nasal cavity with decongestant spray, reapplying nasal pressure and waiting a few minutes.^{5,14}
- An alternate method is to insert cotton pledgets, soaked with an anesthetic–vasoconstrictor solution, into the nasal cavity to anesthetize and shrink nasal mucosa. Soak pledgets in 4% topical cocaine solution or a solution of 4% lidocaine and topical epinephrine (1:10 000) and place them into the nasal cavity. Leave them in place for 10–15 minutes.¹⁶
- Most anterior nosebleeds stop with the above procedures. If this does not occur, it is time to proceed to cauterizing the bleeding points.¹³

Step 3: cautery

- Electrical or chemical cautery can be used if an anterior source is identified. Chemical cautery is

Box 1. Factors to consider when taking the history of the patient with epistaxis

- Which side is bleeding?
- Amount of blood loss
- Is it recurrent?
- Is it in the pharynx?
- Recent trauma?
- Symptoms of hypovolemia?
- Medical history and current medication (e.g., acetylsalicylic acid, warfarin)

usually accomplished with silver nitrate sticks; this procedure will be described below.⁵

- Reinspect the nasal cavity and suction out any blood or clots to attempt to revisualize the bleeding sites.¹⁴
- Adequate illumination is important. If a headlamp is not available, an otoscope can be used.¹⁴
- Once the bleeding site has been identified, the silver nitrate applicator tip is applied to a small area surrounding the bleeding site starting proximally and moving centrally in a radial fashion. Use the nasal speculum, and brace your cauterizing hand. Ask your patient to remain still and explain why.^{5,14}
- Silver nitrate cauterizes everything it touches. Do not touch the facial skin, nasal alae or other nasal mucosa. In addition, silver nitrate may not work if bleeding is active.¹⁴
- Apply cautery for no more than 10 to 20 seconds at each site. Overzealous cautery can lead to ulceration and perforation.⁵
- To avoid the increased risk of tissue necrosis, never cauterize both sides of the septum during the same session.⁵
- If there is no more active bleeding, the patient may be discharged with printed instructions, provided there are no other medical problems.¹⁴

Step 4A: anterior packing

If bleeding continues, consider nasal packing.

Merocel packing

- Coat tampon with lubricating jelly, antibiotic ointment or a water-based cream (possibly

decreases the risk of toxic shock syndrome).⁵

- Insert the device directly along the floor of the nasal cavity (Fig. 2). The device can be re-expanded with 10 to 20 mL of saline. A 22-gauge angiocatheter on a saline syringe can be used to apply a small amount of saline posteriorly first to speed diffusion.^{5,14}
- Ensure that the tampon is inserted completely.
- Tape the strings to each cheek and apply a nasal bolster.

Xeroform or ribbon gauze packing

- Pick up the gauze with the forceps about 10–15 cm from the tip.
- Pack the nasal cavity starting from the floor of the nose upward.
- Continue to move upward by layering the gauze until you reach the cavity roof. Pack the cavity tightly.
- Both ends of the ribbon gauze should protrude from the nostril. You don't want one end dangling down the nasopharynx and causing the patient to gag, or worse, eliciting laryngospasm.
- Secure the gauze. Apply a nasal bolster to control dripping and secretions.¹⁴

Continued bleeding

If bleeding persists despite the initial packing, the contralateral naris may be packed next, providing a counterforce to promote tamponade. If this manoeuvre still does not produce hemostasis, the odds of a posterior source increase greatly, since nasal packing in anterior bleeding has about a 90%–95% success rate.^{17,18}

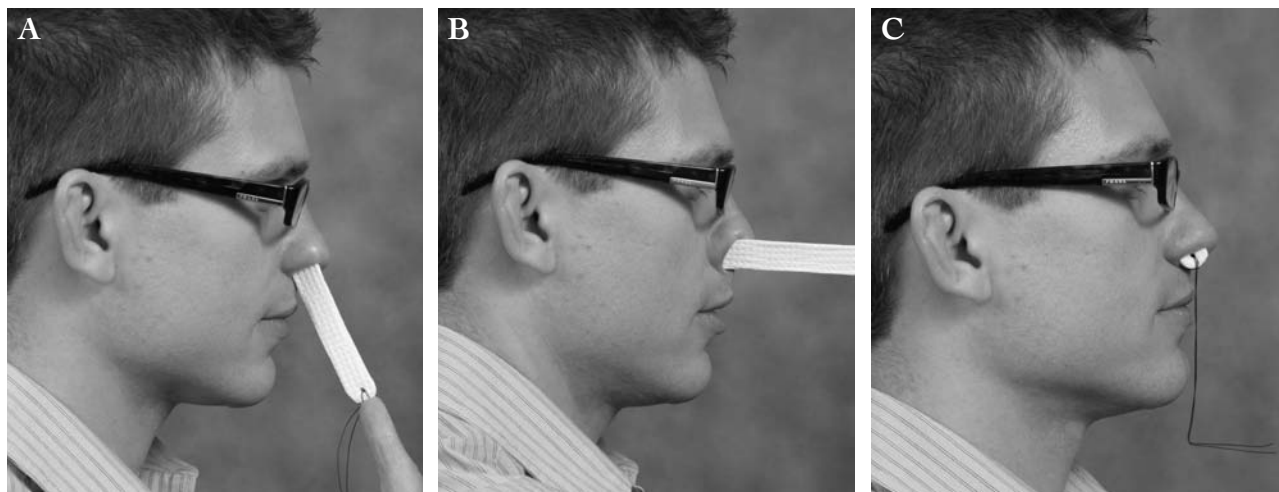


Fig. 2. Initial insertion angle of the Merocel pack (A). Advance the Merocel pack horizontally (B). Make certain that the pack is advanced fully into the nose (C).

Step 4B: posterior packing

- Continued hemorrhage despite an anterior pack may be due to a posterior bleed.
- Many postnasal packs are available commercially; however, the most commonly used is a Foley catheter.
- Before proceeding with the posterior packing, remove the anterior pack and re-examine the nasal cavity.
- Suction as required.⁵

Foley catheter

- Cut the tip of a 14-F Foley to minimize irritation of the posterior structures.
- Using a pair of forceps, advance the catheter along the floor of the nose until it is visible in the mouth. Partially fill the balloon with sterile saline (5–7 mL), and retract the catheter, and the cotton pack, until it is well opposed to the posterior nasopharynx.
- Fill the balloon completely (another 5 mL).
- Pain or distention of the soft palate suggests overfilling.
- At this point, consider repacking the anterior nose. Many practitioners will still pack the anterior nose at this point because without perfect opposition, some blood will pool anteriorly and exit the naris. Additionally, some epistaxis episodes involve both anterior and posterior sources, especially in the setting of a coagulopathy or hereditary hemorrhagic telangiectasia.
- Clamp the catheter in place with an umbilical clamp or a small c-clamp, as from a nasogastric tube.
- Ensure that the catheter is not pressing on the nose as alar necrosis may occur. This can be prevented by applying gauze around the nostril.⁵

Specialized balloon systems

- There are many balloon systems available. Most are effective for managing posterior bleeding.
- If you are using a double-balloon device, pass it into the affected nostril until it reaches the nasopharynx.
- Inflate the posterior balloon with 7 to 10 mL of saline, and carefully withdraw the catheter extending out of the nostril so that the balloon seats in the posterior nasal cavity to tamponade the bleeding source.
- Next, inflate the anterior balloon with roughly

15 to 30 mL of saline in the anterior nasal cavity to prevent retrograde travel of the posterior balloon and subsequent airway obstruction.

- An umbilical clamp can be placed across the stalk of the balloon adjacent to the nostril to further prevent dislodgement; the clamp should be padded to prevent pressure necrosis of the nasal skin.
- Balloon packs generally are left in place for 48–72 hours. As with anterior packing, tissue necrosis can occur if a posterior pack is inserted improperly or balloons are overinflated.²

Persistent bleeding despite anterior and posterior packing

- Patients with anterior or posterior bleeding that continues despite packing and balloon procedures should be referred to an otolaryngologist.^{2,5}
- Endoscopy can be used to locate the site of bleeding and perform direct cauterization.

Step 5: Consider antibiotics for prophylaxis of toxic shock syndrome

- The incidence of toxic shock syndrome with nasal packing is estimated at about 16 per 100 000 post-operative packings, but the incidence in primary nasal packing is not established.⁵
- It is unclear whether oral antibiotics are required for the prophylaxis of toxic shock syndrome. However, if antibiotics are prescribed, an antibiotic with staphylococcal coverage should be selected, such as amoxicillin clavulanate or a second-generation cephalosporin.^{13,19}

INVESTIGATIONS

It is recommended that coagulation screening should be carried out only if firm indications are found in the history and physical examination of patients presenting to the emergency department with epistaxis. Coagulation screening of all patients who present with epistaxis is of little value and leads to longer stays in the emergency department. Coagulation studies are justified in patients receiving anticoagulant treatment and in those with known coagulopathy or chronic liver disease.²⁰

SUMMARY

Epistaxis is a common clinical condition. It is important for clinicians to develop an approach to diagnosis and management, and it is important to distinguish between anterior and posterior bleeds. The

stepwise approach we have highlighted identifies the necessary equipment vital for timely and effective management. Clinicians are advised to prevent complications by using appropriate equipment, prescribing prophylactic antibiotics when needed, and, when bleeding continues despite packing and balloon procedures, referring patients to an otolaryngologist.

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OUT BEHIND THE BARN DANS LE FEU DE L'ACTION

Microsoft Windows 7

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Microsoft hopes that 7 is their lucky number. Windows 7 is the latest version of their operating system for personal computers. It replaces the Vista operating system, which has been criticized by many users and ridiculed in Apple Computer's "I'm a PC, I'm a Mac" advertisements.

ADVANTAGES

The new version is faster, more reliable and more user-friendly than Vista, and retains many features that were added when Vista replaced Windows XP. It includes the latest versions of Internet Explorer (version 8) and Windows Media Player (version 12). It has an improved security firewall and makes it easier to set up a home network.

DISADVANTAGES

It does not include an email program (like the old Outlook Express), but a free one can be downloaded from the "Windows Live Essentials" section of the Microsoft website. It also does not include antivirus software.

VERSIONS

Windows 7 comes in 4 versions. The Home Premium edition is suitable for individual home computers. The Professional edition is more suitable for offices and adds the ability to encrypt files and back them up on a network. The Ultimate edition adds encryption for USB devices and support for 35 different languages. The Starter edition will be preinstalled only on small net-book computers.

HARDWARE REQUIREMENTS

The hardware requirements for Windows 7 are similar to those for Vista. The central processing unit (CPU) must have a speed of 1 GHz or faster. There must be at least 1 GB of random access memory (RAM). The hard drive should have a capacity of at least 16 GB. The graphics card should be DX9-compatible with the WDDM 1.0 driver. To determine whether your current computer is capable of running Windows 7, download and run the free "Upgrade Advisor" program from the Microsoft website.

HARDWARE AND SOFTWARE COMPATIBILITY

With any new operating system, there are always a few problems with running older hardware and software. Before upgrading, check with the software vendors to ensure that your current version is compatible with Windows 7.

BUYING A NEW COMPUTER

If you plan to buy a new computer soon, your choices include a PC-type or an Apple that runs the new "Snow Leopard" operating system. If you prefer a PC, be sure to buy one with Windows 7 preinstalled. This avoids any problems with upgrading from Vista to Windows 7.

UPGRADING FROM VISTA

If your current computer already runs Vista, it is likely capable of running Windows 7. A backup of programs and data is not required, but will ensure against loss of important data.

UPGRADING FROM WINDOWS XP

Upgrading from XP requires users to back up all programs and data to an external device and then reinstall them later. Users can download the free “Easy Transfer” program from the Microsoft website to back up files and program settings to an external storage device. If your computer was purchased before 2007, it may not be capable of running Windows 7. So take the time to download all recent updates to XP, including Service Pack 3, as Microsoft will eventually stop supporting XP and older versions of Windows.

Competing interests: None declared.

FURTHER INFORMATION

Visit the following websites to learn more about Windows 7:

- Microsoft (microsoft.com); search for “Windows 7,” “Upgrade Advisor,” “Easy Transfer” or “Windows Live Essentials”
- Google (google.ca); search for “Windows 7 review”
- PC Magazine (pcmag.com); Windows 7 review articles
- PC World (pcworld.com); Windows 7 review articles

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"Too many doctors?"

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When the Voluntary Services Overseas (VSO) office informed me that a placement had been found at a district hospital in Malawi, I quickly started my research into the health care situation there. The statistics were grim, reflecting everything you think of when you think of Africa: 1 million AIDS orphans, under-five mortality of 133 per 1000 live births, malaria taking the lives of thousands of children every year, \$5 per capita spent annually on health care.

Among the many shocking statistics I unearthed was one that caused me to hesitate: a doctor:patient ratio of 1:60 000! This, apparently, was why they were recruiting doctors. I wasn't sure I was up to the task.

Clinging to the faint hope that this statistic was somehow in error — a typo perhaps or out of date, at least — my husband and I packed up our 2 children and all the medical supplies we could carry and boarded a plane headed for the "Warm Heart of Africa."

As it turned out, the number *was* wrong. When I met my Malawian counterpart, I learned that there would be just the 2 of us at our district hospital. Trying to look unperturbed, I ventured another question, "And our district has a population of ... ?" "Oh, about 500 000 ..." he replied casually with a big Malawian smile.

Arriving at the hospital for the first time I braced myself for the worst. To my amazement I found a functional, bustling place with hundreds of patients lined up outside antenatal and under-5 clinics, outpatient departments, vaccination clinics, tuberculosis program offices, and HIV testing and anti-

retroviral distribution clinics. So many people, all of them very alive and colourful — a scene more festive than funereal. Every morning there would be singing, dancing and theatre put on by the hospital staff (many of whom were the equivalent of janitors who just happened to like performing!) with messages about health topics to entertain and educate patients while they waited.

The wards revealed scenes more consistent with my expectations. Many were full to overflowing. The beds were old and the bedding a bit dodgy, but generally they were clean and bright. The patients were mostly young and many looked very ill, almost all suffering from infectious diseases.

Over time, I learned the secrets of running a hospital without doctors and very few nurses (40 for a 250-bed hospital with usually 350 patients.) Behind the shockingly low numbers of reported "health care professionals" hides an army of relatively low-paid medical assistants, clinical officers, patient attendants, ward aides, cleaners, environmental health workers, health surveillance assistants, community health workers, laboratory technologists, drivers, porters, and on and on. In addition, each patient is expected to be accompanied by a "guardian," usually a female family member who is responsible for feeding and cleaning the patient, and generally monitoring their condition, reporting to the nurses when something seems wrong.

The Malawian Ministry of Health has figured out that the way to fix a health care system is not to just train more doctors. One health policy expert, when asked what to do about the 3:150 000 doctor:patient ratio in Malawi,

suggested, "Can we get it down to two? Or one?"¹

The problem with doctors is that many use their privileged position to cluster in big centres (sound familiar?), demand high wages and focus large amounts of time on small numbers of patients, most often the ones who can pay. Many doctors, whether they are Malawian or foreign, get tired of the difficult life in Malawi and move on (or back) to greener pastures. When most Malawians are still dying of simple, preventable diseases like diarrhea and malaria, doctors are simply not cost-effective. All of the other cadres of health care workers have less freedom to move and so continue on in the trenches, doing the work that needs to be done, much of it in the field of public health.

In Malawi, the front-line equivalents of Canadian rural general practitioners are medical assistants and clinical officers. With 2 or 3 years of very specific training focused on the most common conditions they are likely to face, they manage inpatients, outpatients, emergency and maternity, even doing cesarean deliveries and the odd bowel resection! An impressive scope of practice. They do an extremely good job considering their limited training, and they consulted me on only the most complicated cases (which made my practice extremely interesting, challenging and rewarding!). The main focus of my work involved "capacity building" with this team — filling in the knowledge gaps created by training your front-line "doctors" for only 2 or 3 years. I helped with policy and protocol development, shared skills as I saw patients and did training so my colleagues could do even more. To further maximize their time, they have long ago embraced the concept of group counselling for antenatal, postpartum, well-baby, HIV testing and antiretroviral, family planning and many other patients.

Is this a perfect system? Absolutely not. There are still far too many preventable deaths. Despite all of the innovative ways the Malawians are trying to make the most of what they have, they simply don't have enough — not enough staff, not enough supplies (or at least, not enough of the right supplies at the right time) and not enough training, and that leads to not enough good care. Examples of malpractice that would make headlines in Canada were routine in our hospital and barely provoked any discussion. A baby stillborn because there was no one to check the fetal heart for hours during second stage. A man asphyxiated because the junior clinical officer didn't recognize the neck abscess as a threat to his airway. The many apnoeic babies who were

never resuscitated because some of the midwives just assumed them to be already dead. No human being anywhere in the world should have to settle for this kind of care. It is just plain wrong. Clearly much, much more needs to be done.

Surprisingly though, one of the worst health care systems in the world still offers many things that can be learned. The VSO logo "Sharing Skills, Changing Lives" might be assumed to mean that we, the volunteers from the developed world, come in, share our skills and knowledge, and change the lives of the people we work with for the better. As anyone who has had any cross-cultural experience knows, it is never so straightforward. The learning, sharing and changing always happen on both ends, with the volunteers often going home shaking their heads in amazement at how much they have "taken away" and gained, hoping they were able to leave at least as much behind.

Perhaps there is something to be learned from countries like Malawi who have found ways to deal with a doctor crisis much worse than our own. Group counselling visits could be much more widely used here in Canada. More nurse practitioners and physician assistants could go a long way toward lightening our load if they were given the chance. Many of the routine problems we see could easily and competently be dealt with by nonphysicians. We should be sure it is not professional arrogance, greed or simply resistance to change that is hindering this much-needed transition. From what I have seen both in Malawi and Canada, with good training these professionals perform their delegated functions to a very high standard — to the benefit of the patient. We still need doctors and lots of them for the system to work and for our patients to get the best possible care, but we must also continue to look at other options.

Competing interests: None declared.

Dr. Ilona Hale is a family physician from Kimberley, BC, who has recently spent 2 years with her family volunteering at a district hospital in Malawi, Africa, with Voluntary Services Overseas (VSO).

For more information on volunteering overseas with CUSO-VSO (Canadian University Services Overseas—Voluntary Services Overseas) visit www.cuso-vso.org.

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RESIDENTS' CORNER / COIN DES RÉSIDENTS

Residents' Corner revived

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After a brief hiatus, we are pleased to announce the return of the Residents' Corner at *CJRM*. The Residents' Corner gives residents a venue to share their rural residency experiences in the form of essay, commentary or even just advice. To usher back in this era of resident involvement with the journal, I'd like to let my fellow residents know about a few more exciting bits of news.

First, as chair of the SRPC Resident Committee, I would like all residents to be aware of the committee and of the opportunity to serve on it. We are especially in need of representatives from the francophone medical schools. The mandate of the committee includes (among others) increasing the awareness of the SRPC among residents across Canada, and working to create a support network for residents in rural and isolated communities.

Second, we would like to encourage all residents to attend the upcoming 18th Annual Rural and Remote Medicine Course in April, which will be held this year in Toronto. Remember to see

if your program offers financial incentive for attending conferences or CME activities.

Third, we are excited to showcase a new resident-operated website whose purpose is to forward the agenda of our mandate (www.ruralresidents.com). It includes a discussion board so residents across the country can share ideas and information and help to support one another, as well as many links suggested by residents.

Finally and full circle, we want to let all residents know about the opportunity here at *CJRM* to contribute to the Residents' Corner with their rural experiences. The essay should be limited to 500 words with references, and 520 words without. It should be related to your experience in rural medicine. Submissions can be sent electronically to the journal at cjrm@cjrm.net and will run pending both space and approval.

For more information on any of these topics, please go to our resident-run website at www.ruralresidents.com.

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THE PRACTITIONER LE PRATICIEN

Country cardiograms case 36: Answer

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Figure 1 (on page 68) shows a normal sinus rhythm, with a rate of 78 beats/min. There is widespread ST segment elevation in the inferior leads (III, aVF and, to a lesser extent, II) and anterolateral leads (V4–V6). The coved shape of the ST segments and the degree of elevation support a diagnosis of ST elevation myocardial infarction (STEMI). This probability is strengthened by the reciprocal ST segment depression changes in leads I and aVL. Slight ST segment depression is present in lead V2, raising the possibility of posterior wall involvement. T wave inversion is apparent in lead II, and q waves of equivocal significance are present in the inferior and anterolateral leads.

Up to 40% of inferior myocardial infarctions 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 electrocardiogram (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, (i.e., in the fifth intercostal space in the mid-clavicular 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 paraspinal 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 essential to mark these leads correctly by hand on the ECG printout.

Leads V8 and V9 provide information about the posterior wall of the heart. In this case there is just slight ST segment elevation (≤ 0.5 mm), which is certainly not enough to diagnose a posterior STEMI. However, significant ST segment elevation (2.5 mm) is clearly evident in lead V4R; this is sensitive and specific for right ventricular infarction.

A diagnosis of right ventricular myocardial infarction calls for special management, both in terms of commonly used medications that become dangerous in this situation, and of the judicious use of fluid administration. Nitroglycerin is to be avoided, especially in the frequently used sublingual forms as these rapidly deliver a large dose. Morphine sulfate is likewise contraindicated. These patients may become bradycardic and hypotensive, and are extremely “volume-sensitive,” which often responds to boluses of intravenous fluid.

Thrombolysis with tenecteplase in this case was deemed to be partially effective, and following an emergency medevac to a tertiary institution, angiography was performed. The pattern of injury (inferior, anterolateral, right ventricular) suggests involvement in the distribution of a dominant right coronary artery. This was confirmed at angiography, and an appropriate angioplasty and stenting procedure was successfully performed.

For the question, see page 68.