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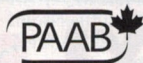
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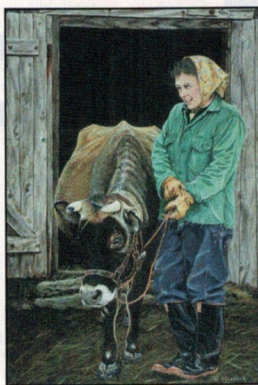
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The incentive gravy train

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When a community is trying to attract industry it seems many things are possible. When they are trying to attract doctors, although there have been some successes, by and large a successful model for recruitment and retention has not emerged. Why is this?

Although communities unquestionably require and are thankful for the presence of physicians, the attitude toward providing concrete incentives out of community capital is more complex.

By many community standards the income of physicians is well above average, particularly rural averages. They are perceived as being the beneficiaries (as they are) of generous government subsidies in both education and practice. No matter that in spite of all this new physicians are graduating buried in mountains of debt, or that rural physicians compare on the earn-

reluctance?) of rural communities to expend scarce community resources to further subsidize physicians. Contrast this to the million dollars raised in record time by our community to purchase a CT scanner for the hospital. There is perhaps some wisdom in their choices. The CT scanner may still be in the community in 5 years, the physician may well not!

It is becoming clear to me that incentives are a win-lose proposition. On the positive side of the ledger they work to attract warm bodies into cold gaps in service. They give welcome respite to those who have been overworking to try to bridge to better times, but they conveniently avoid probing too deeply into the motivations of the candidates. Along the way many compromises are made. So what if the candidate does not plan to practise obstetrics — at least the ED is covered! It doesn't take too many turns of this wheel before the vision of "polyvalence" fades and is replaced by expediency.

Maybe it is time to put an end to "signing bonuses" and the incentive gravy train, and integrate differentials related to the full-service profile that characterizes rural practice. This way, all rural physicians see their commitment valued, and new candidates can decide if they are up to the challenge.

This might mean one pay scale for those who function in one dimension, another for those who function in several (such as office and ED) and yet another for true rural "polyvalence" for those who cover all the bases (office/ED/admissions/obstetrics/etc.) — all weighted, of course, to the degree of involvement in each sector.

Anyone interested?

**INCENTIVES . . . CONVENIENTLY AVOID
PROBING TOO DEEPLY INTO THE
MOTIVATIONS OF THE CANDIDATES.**

ing ladder to the office manager of your typical high tech firm. What is important is that perception inevitably becomes a barrier to providing further support to new physicians, this time out of the local purse.

Many mayors of small communities whom I met during my time at Health Canada, were seeking federal subsidies to help them provide "turnkey" solutions to new graduates, in the form of fully staffed and equipped offices. They were clearly reflecting the inability (or



Le filon des incitatifs

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Lorsqu'une communauté tente d'attirer une industrie, de nombreuses possibilités s'offrent à elle, semble-t-il. Or, quand il s'agit d'attirer des médecins, aucun modèle général fructueux de recrutement et de maintien en poste n'a encore vu le jour, bien qu'il y ait eu quelques réussites mitigées. Pourquoi donc?

Les communautés ont besoin de médecins et sont reconnaissantes de leur présence, c'est certain, mais les attitudes sont plus complexes face à l'octroi d'incitatifs concrets puisés à même le capital de la communauté.

Selon les normes de nombreuses communautés, le revenu des médecins dépasse de loin la moyenne, particulièrement en milieu rural. On croit aussi que les médecins bénéficient de généreuses subventions du gouvernement au niveau tant de l'éducation que de la pratique (ce qui est le cas). Il importe peu que les nouveaux médecins soient malgré cela endettés jusqu'au cou lorsqu'ils et elles obtiennent leur diplôme, ou que dans l'échelle des revenus, les médecins ruraux se comparent aux chefs de bureau d'une entreprise typique de haute technologie. Ce qui importe, c'est que la perception devient inévitablement un obstacle qui empêche d'appuyer davantage les nouveaux médecins, cette fois à même les fonds locaux.

Beaucoup de maires de petites localités que j'ai rencontrés pendant que j'étais à Santé Canada cherchaient à obtenir des subventions fédérales qui les aideraient à offrir aux nouveaux diplômés des solutions «clé en main» sous forme de bureaux entièrement équipés en ressources matérielles et humaines. Ils démontraient clairement que les localités rurales sont incapables de dépenser de maigres ressources communautaires pour subventionner encore davantage les médecins (ou hésitent à le faire?). Comparons cette

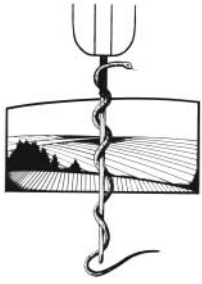
situation au million de dollars que notre communauté a réunis en un temps record afin d'acheter un tomodynamomètre pour l'hôpital. Il y a peut-être un peu de sagesse dans ses choix. Le tomodynamomètre sera sans doute encore en service dans la communauté dans cinq ans, mais il se pourrait très bien que le médecin n'y soit plus!

Il devient clair pour moi que les incitatifs sont une proposition gagnante-perdante. Du côté positif de l'équation, ils attirent des troupes fraîches qui viennent combler les lacunes des services. Ils apportent un soulagement bienvenu à ceux et celles qui travaillaient trop pour tenter de combler l'écart en attendant des jours meilleurs, mais on évite commodément de sonder trop profondément les motifs des candidats. Entre-temps, les compromis sont nombreux. Peu importe que le candidat ne prévoie pas pratiquer l'obstétrique — il y a au moins l'urgence qui est couverte! La vision de la «polyvalence» s'estompe rapidement devant l'opportunisme.

Le moment est peut-être venu de mettre fin aux «primes de signature» et au filon des incitatifs, et d'intégrer les différences reliés au profil tous services caractéristique de la pratique en milieu rural. Ainsi, tous les médecins ruraux voient qu'on attache de la valeur à leur engagement et les nouveaux candidats peuvent décider s'ils sont à la hauteur du défi.

Cela pourrait signifier une échelle de salaire pour ceux qui fonctionnent dans une seule dimension, une autre pour ceux qui oeuvrent dans plusieurs domaines (comme au bureau et à l'urgence) et une autre encore pour la véritable «polyvalence» rurale de ceux qui font de tout (bureau/urgence/admission/obstétrique, etc.) — le tout bien entendu pondéré en fonction de la présence dans chaque secteur.

Des intéressés?



President's message. Babies in the bush

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My community of Golden is experiencing a spring baby boom. We are blessed to be far enough from the nearest centre to have retained our operating room, and lucky to have a pediatrician who likes living here. We can handle most obstetrical challenges and we only transfer women and neonates needing tertiary care. However, statistics show that my community is an exception and the reality of rural maternity care is becoming increasingly challenged.

Fewer family physicians are delivering babies. A higher percentage of rural physicians than urban still do deliveries, but even in communities with obstetrical services it is rare for all physicians to do so. A specific rural threat is closure or downgrading of hospital services that support maternity care. Although studies show better outcomes in communities with obstetrical services but without cesarean section (C-section) capability than in those who transfer out all obstetric cases, fewer physicians are comfortable practising obstetrics without C-section availability. The Canadian birthrate is declining, and gone are the days where one would deliver 200 babies during a rotating internship. All these factors lead to fewer skilled and confident practitioners.

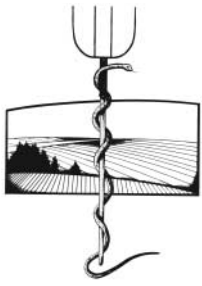
The Society of Rural Physicians of Canada is currently involved in a project led by the Society of Obstetricians and Gynaecologists of Canada on Multidisciplinary Collaborative Primary Maternity Care (MCP2). The Project is funded by Health Canada and is developing models integrating a variety of health care professionals in an attempt to provide sustainable levels of maternity care in Canada. Participants include obstetricians, midwives and family doctors. There is strong political support

for models emphasizing shared care between obstetricians and midwives. However, the role of the family doctor is less clear as fewer FPs choose to practise obstetrics. In rural areas this becomes a significant challenge. We will never have the volume to support specialist obstetricians, and, although some midwives choose rural locations, the low volume of deliveries would not sustain a full-time midwife.

Our concern in the SRPC is that we have different needs from the urban population when it comes to provision of obstetrical care. The majority of rural maternity care will always be provided by rural doctors. We need adequate hospital facilities to enable this care and nurses who are trained and comfortable in providing this care. We need training in advanced skills for rural GPs in obstetrics, anesthesia and surgery.

The SRPC supports the rural collaborative model consisting of rural GPs with enhanced skills working with rural nurses with enhanced skills. The SRPC is represented on the National Steering Committee and subcommittees by Drs. Brian Geller, Jill Konkin and Saskia Acton. Over the next 2 months a number of our members will be interviewed as part of the research arm of the MCP2 Project. There will be a link on our Web site to the project, a survey on RuralMed, an insert in *CJRM*, and a presentation at our national conference in Montréal in April.

The outcome of this Project has the potential to significantly affect our ability to provide obstetrical services in rural Canada because governments will look to the recommendations when deciding what services to fund. I want to thank all the SRPC members who are providing a strong voice for rural maternity care as the Project unfolds.



Message de la présidente. Campagne fertile

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Soles, MD*

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Ma communauté de Golden connaît une explosion démographique printanière. Nous sommes bénis d'être suffisamment éloignés du centre le plus proche pour avoir gardé notre salle d'opération, et chanceux d'avoir un pédiatre qui aime vivre ici. Nous pouvons relever la plupart des défis en obstétrique et nous transférons seulement les femmes et les nouveau-nés qui ont besoin de soins tertiaires. Les statistiques montrent toutefois que ma communauté fait exception à la règle et que la réalité des soins obstétricaux en milieu rural est de plus en plus exigeante.

Moins de médecins de famille pratiquent des accouchements. Le pourcentage des médecins ruraux qui en pratiquent toujours est plus élevé que celui des médecins urbains, mais même dans les localités qui ont des services d'obstétrique, il est rare que tous les médecins le fassent. La fermeture ou le déclassement des services hospitaliers d'appui aux soins obstétricaux menace particulièrement les milieux ruraux. Les études montrent que les résultats sont meilleurs dans les localités qui ont des services d'obstétrique même sans capacité de césarienne que dans celles qui transfèrent tous les cas d'obstétrique, mais moins de médecins se sentent néanmoins à l'aise de pratiquer l'obstétrique sans possibilité de césarienne. Le taux de natalité au Canada est à la baisse et l'époque où l'on pratiquait 200 accouchements pendant un internat est révolue. Tous ces facteurs réduisent le nombre de praticiens possédant les compétences voulues et se sentant à l'aise de pratiquer des accouchements.

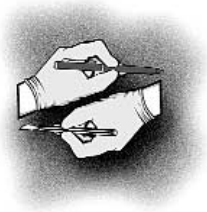
La Société de la médecine rurale du Canada participe actuellement à un projet piloté par la Société des obstétriciens et gynécologues du Canada sur les soins primaires obstétricaux concertés (SPOC2). Le projet financé par Santé Canada travaille à mettre au point des modèles qui regroupent tout un éventail de professionnels de la santé pour tenter de fournir des niveaux viables de soins obstétricaux au Canada. Des obstétriciens, des sages-femmes et des médecins de famille y participent. Les modèles qui mettent l'accent sur les soins partagés entre obstétriciens et

sages-femmes ont un solide appui politique. Le rôle du médecin de famille est toutefois moins clair, car moins de MF choisissent de pratiquer l'obstétrique. Dans les régions rurales, le défi devient important. Nous n'aurons jamais le volume de patientes nécessaire pour justifier les services d'obstétriciens spécialistes, et même si quelques sages-femmes choisissent de pratiquer en milieu rural, le faible volume des accouchements ne ferait pas vivre une sage-femme à plein temps.

La SMRC craint que nous ayons des besoins différents de ceux de la population urbaine sur le plan de la prestation des soins obstétricaux. Des médecins ruraux dispenseront toujours la majorité des soins obstétricaux en milieu rural. Nous avons besoin d'installations hospitalières adéquates pour dispenser ces soins et d'infirmières possédant la formation voulue et qui se sentent à l'aise dans ce contexte. Nous avons besoin, pour les omnipraticiens ruraux, de formation spécialisée avancée en obstétrique, en anesthésie et en chirurgie.

La SMRC appuie le modèle de soins concertés en milieu rural qui réunit en collaboration des omnipraticiens ruraux et des infirmières rurales, tous deux possédant des compétences spécialisées plus poussées. La SMRC est représentée au Comité directeur national et aux sous-comités par les D^{rs} Brian Geller, Jill Konkin et Saskia Acton. Au cours des deux prochains mois, on interviewerera un certain nombre de nos membres dans le contexte du volet recherche du projet SPOC2. Il y aura, sur notre site web, un lien vers le projet, un sondage sur la médecine en milieu rural, un encart dans le *JCMR* et une communication présentée au cours du congrès national à Montréal en avril.

Ce projet pourrait avoir des répercussions importantes sur notre capacité d'offrir des services d'obstétrique en milieu rural au Canada parce que les gouvernements étudieront les recommandations lorsqu'ils décideront quels services financer. Je remercie tous les membres de la SMRC qui défendront énergiquement les soins obstétricaux en milieu rural à mesure que le projet avancera.



ORIGINAL ARTICLE ARTICLE ORIGINAL

Prevalence of specific cardiovascular disease risk factors in young Newfoundland and Labrador adults living in urban and rural communities

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reviewed.

Introduction: The province of Newfoundland and Labrador has a high rate of cardiovascular disease. Risk factors of cardiovascular disease have not been well studied in young adults. There are reasons to believe that the prevalence of cardiovascular disease risk factors may be higher in young adults residing in rural versus urban settings.

Methods: 540 men and women, ages 18 to 34 years and residing in urban and rural areas of Newfoundland and Labrador were compared for cigarette smoking and for body size. Both body mass index and waist circumference measures were used to indicate body size. Education level and family income were also studied. Data were collected via personal interview as part of a larger study, *Nutrition Newfoundland and Labrador*.

Results: No difference was noted between the 2 groups in regular smoking or BMI. More female rural residents had a waist circumference above the accepted cut-off compared with female urban residents (32.5% v. 17.0%).

Conclusion: Young adults in urban and rural areas both experience high rates of modifiable risk factors for CVD. Some may be more prevalent in rural areas. Prevention programs should include young adults, especially those residing in rural areas.

Introduction : La province de Terre-Neuve-et-Labrador a un taux de maladies cardiovasculaires (MCV) élevé. Les facteurs de risque de ces maladies n'ont pas été bien étudiés chez les jeunes adultes. Il y a raison de croire que la prévalence de facteurs de risque de MCV est peut-être plus élevée chez les jeunes adultes en milieu rural qu'en milieu urbain.

Méthodes : 540 hommes et femmes, de 18 à 34 ans, résidant des régions urbaines et rurales de Terre-Neuve-et-Labrador ont été comparés pour la taille du corps et le tabagisme. On a utilisé les indices de masse corporelle et la mesure de circonférence de taille pour indiquer la taille du corps. On a étudié aussi le niveau de scolarité et le revenu familial. On a fait la collecte de données par entrevues personnelles, dans le cadre d'une étude plus grande sur la nutrition à Terre-Neuve-et-Labrador.

Résultats : On n'a constaté aucune différence entre les deux groupes quant aux habitudes régulières de tabagisme ou aux IMC. Plus de femmes des milieux ruraux que des milieux urbains avaient une circonférence de taille supérieure au seuil accepté (32,5 % c. 17,0 %).

Conclusion : Les jeunes adultes des milieux ruraux et urbains sont exposés à des facteurs de risque de MVC modifiables. Pourtant, certains facteurs sont peut-être plus prévalents dans les milieux ruraux. Les programmes de prévention devraient inclure les jeunes adultes, surtout ceux qui résident dans les régions rurales.

INTRODUCTION

The province of Newfoundland and Labrador has a higher level of cardiovascular disease (CVD) mortality than any other Canadian province.¹ Manifestations of CVD are not usually

observed until the 4th decade of life or later.² However, studies have suggested that abnormalities that develop in the early stages of life may lead to cardiovascular consequences in adulthood.³ These include consequences of adolescent and early adult obesity, such as

hypertension and high levels of low density lipoprotein (LDL) cholesterol.³ Furthermore, many lifestyle factors, such as poor eating habits and physical inactivity, develop in the early years and persist into adulthood.⁴

Frameworks for the determinants of health in populations suggest a community-level influence between various factors and individual health.^{5,6} Studies in Canada have demonstrated this community-level influence. Residents of rural communities have been characterized as having lower incomes, higher unemployment rates and lower educational levels compared with urban residents.⁷ There is also speculation that rural residents differ from their urban counterparts with regard to their ability to access health services, adequate food supplies and health knowledge.⁸

There has been limited investigation into the health risk behaviours of young Canadians residing in urban versus rural areas.⁷ The Canadian Heart Health Surveys considered regional differences throughout provinces in health behaviours,⁹ and Statistics Canada in 1996/1997 studied, by province, risk factors for heart disease and stroke.¹ However, these studies did not compare the health status of rural young adults versus their urban counterparts. Newfoundland and Labrador has clear distinctions between what is a rural and what is an urban centre, which is beneficial when studying differences in health status with area of residence. The purpose of this study was to investigate the prevalence of certain CVD risk factors in young adults residing in the province of Newfoundland and Labrador, and to see if these factors were experienced more by those residing in rural versus urban settings.

METHODS

We conducted a secondary analysis of data from *Nutrition Newfoundland and Labrador*.¹⁰ This is a cross-sectional study that was conducted on a stratified random sample of non-institutionalized residents of the province in the spring and fall of 1996. This survey is part of a federal-provincial initiative and followed procedures developed in Nova Scotia, Quebec and Saskatchewan, which have previously conducted provincial surveys.^{11,12} The surveys allowed for a collection of data on dietary intake and related health issues via personally administered questionnaires. Anthropometric data were collected via direct measurement. The Newfoundland and Labrador Health Insurance Register File was used for selection purposes.¹⁰ A total of 3746 eligible individuals were contacted, and interviews were completed for 1927 of these.

Study sample

For this project, a subset of respondents of *Nutrition Newfoundland and Labrador* were studied. Five hundred and forty young adults aged 18 to 34 years inclusive were randomly selected. Both men (43%) and women (57%) were represented. For the purposes of this study, a subject's area of residence was designated as urban (population $\geq 10\,000$) or rural (population $< 10\,000$). The data used in the present study were collected in 1996.

Measures

Two indicators of socioeconomic status were investigated: education and total household income.¹³ Education level was determined by offering each respondent 4 options: elementary, high school, community college and university. The highest level of education claimed to be completed by each respondent was taken as his or her education level. To assess total household income the interviewer displayed a card to the interviewee, who was asked to choose the option best describing the annual income of his or her household. Nine options were offered. The first 8 stipulated ranges of annual income from $< \$5000$ to $> \$60\,001$. Option 9 was "Do not know." Household income categories were defined in relation to reported household income, household size and low-income cut-offs for Newfoundland and Labrador.¹⁴

Three modifiable risk factors of CVD were investigated:¹⁵ 2 indicators of body size^{16,17} and cigarette smoking.¹⁸ Cigarette smoking was measured by comparing the number of self-reported non-smokers to the number of self-reported regular smokers (> 1 cigarette per day).

Measures used to indicate body size were body mass index (BMI) and waist circumference. Body mass index was calculated by dividing total body weight (in kg) by shoeless standing height squared (m^2). A BMI < 20 is associated with health problems in some people, between 20 and 25 is associated with lowest mortality, between 25 and 27 is associated with increased risk of ill health in some and > 27 is associated with the highest risk of developing ill health.¹⁹ Waist circumference was used to estimate the degree of abdominal obesity.²⁰ A waist circumference ≥ 102 cm in men and 88 cm in women was shown by Lean and colleagues to be negatively associated with health status.²¹ Therefore, these were used as cut-off/standard values.

Nutrition Newfoundland and Labrador did collect

data on dietary intake and physical activity, but these were not analyzed for this project.

Statistical analysis

Sampling weights were calculated prior to data analysis to prevent over-representation of particular geographical areas, ages and genders.²² Absolute numbers of responses and percentages of totals are tabulated. Chi-squared analyses and *t* tests for independent means were computed to assess differences between groups for CVD risk factors and area of residence. Statistical differences were assigned to $p < 0.05$.

RESULTS

Over 15% of rural residents (15.3%) attained only an elementary education, compared with urban residents (5.2%). Less than 20% of rural residents attained a university education, versus 43% of urban residents (Table 1). With regard to household income, more rural residents appear to have earned a lower level of household income and less earned a higher level when compared to urban residents (Table 2). However, statistical analyses were not able to be performed on these socioeconomic data.

The percentage of regular smokers was high, at 43.0% of rural and 37.6% of urban residents. However, there was no difference between being a regular smoker and living in a rural or urban community, according to a chi-squared analysis of our data (Table 3). The *t* test was also conducted to determine if

a relationship existed between area of residence and actual number of cigarettes smoked per day by regular smokers, but no significant difference was observed.

Area of residence was significantly related to waist circumference in women ($p = 0.003$, chi-squared analysis) (Table 3). There were 32.5% of young adult women living in rural areas who had a waist circumference above the accepted cut-off, compared with 17% of young adult women living in urban areas. No statistical difference was noted between waist circumferences of young adult men living in rural versus urban areas. There were no differences detected between BMI levels of the rural and urban groups (chi-squared analysis) (Table 4). The percentage with BMI >27 was high in both groups. Even though it was not significant, a slightly higher number of residents in rural areas had a BMI >27 in comparison to residents of urban areas.

DISCUSSION

Newfoundland and Labrador has the highest rate of CVD mortality in Canada.¹ It is important to investigate the prevalence of CVD risk factors in young adults in rural and urban areas in this province to assist in better understanding how rates of CVD mortality can be lowered.

Research suggests that geographic location, in particular living in urban or rural areas, affects one's health status. Rural residents are more likely to suffer long-term disabilities and have shorter quality-adjusted life expectancies.²⁵ Our results suggest not only that young adults experience very high rates of some risk factors for CVD but that some are more prevalent in young adults residing in rural versus urban communities.

Both education and household income are measures

Table 1. Education level of 540 rural and urban young adult study participants

Education level	Place of residence, no. (and %) of participants	
	Rural	Urban
Elementary school	33 (15.3)	17 (5.2)
High school	71 (33.0)	75 (23.0)
Community college	68 (32.0)	91 (28.0)
University	42 (19.7)	143 (43.8)

Table 2. Household income level for 461* of the rural and urban young adult study participants

Household income level	Place of residence, no. (and %) of participants	
	Rural	Urban
Lower	78 (40.8)	65 (24.1)
Middle	65 (34.0)	87 (32.2)
Higher	48 (25.2)	118 (43.7)

*Not all subjects were willing to answer questions pertaining to household income.

Table 3. Cardiovascular disease risk factors for the rural and urban young adult study participants

Risk factor	Place of residence, no. (and %) of participants		χ^2	df	<i>p</i> value
	Rural	Urban			
Smoking					
Regular smoker, <i>n</i> = 187	75 (43.0)	112 (37.6)	1.582	1	0.208
Waist circumference (and cut-offs)					
Women (≥ 88 cm), <i>n</i> = 284*	30 (32.5)	18 (17.0)	8.664	1	0.003
Men (≥ 102 cm), <i>n</i> = 213*	9 (22.8)	12 (18.6)	0.605	1	0.437

df = degrees of freedom

*Not all subjects were willing to have body size measurements taken.

of socioeconomic status that are often used for determining their relationship for overall health.¹⁵ Young adults living in rural areas of Newfoundland and Labrador may have been less likely to have completed postsecondary education compared to their counterparts residing in urban areas. Similar results were observed in the Canadian Heart Health Surveys. Reeder and colleagues found that fewer rural Canadian men and women obtained a university degree in comparison to urban Canadian men and women.⁹

A greater percentage of urban residents appeared to have earned a higher level of household income compared with rural residents in this study, although statistical analysis was not performed. This is supported by the Canadian Health Survey, which suggested that a higher percentage of rural residents earned lower levels of annual household incomes compared with their urban counterparts.⁹ In Newfoundland and Labrador this may be partly explained by the fact that many rural residents have seasonally based jobs and their urban counterparts are typically employed year round.²⁴ Results from the 1995 Adult Health Survey revealed that 53.5% of urban residents (St. John's) were employed year round, compared with 27.8% of rural residents (Northern Community Health Board Region).²⁵

There were similar numbers of young adult regular smokers detected in both urban and rural areas. This suggests that both young adult, rural and urban residents have equal opportunities to develop health problems associated with cigarette smoking. According to Ayanian and Cleary, cigarette smoking is presently the largest modifiable risk factor for cardiovascular disease.¹⁸ A recent study from the United States revealed that cigarette smoking was positively associated with younger age groups.²⁶ Results from the present study reveal that area of residence does not play a role in cigarette smoking. However, it is still a factor in the contribution of CVD for younger age groups in Newfoundland and

Labrador. Rates of regular cigarette smoking were high regardless of area of residence (43.0% and 37.6%). Thus, health professionals may need to place more emphasis on the education of young smokers and their increased risk for CVD.¹⁸

In this study no association was detected between area of residence and BMI. Body mass index refers to both the amount of a person's body fat and how it is distributed over the body. Both have been shown to be associated with health.^{3,15,20} Data from the Canadian Heart Health Surveys described some regional and rural-urban differences in body size.⁹ This study revealed no association between mean BMI and living in rural versus urban areas for Canadians aged 18 to 74 years.⁹ Results from the Canadian Heart Health Surveys were also described by regions. Within the Atlantic region, no substantial differences were noted between area of residence and a BMI >27 kg/m.^{9,11}

Thirty-three to 39% of young adult respondents were overweight (BMI > 27). In 1996, the National Population Health Survey illustrated that 39% of all adults residing in Newfoundland and Labrador had a BMI of ≥ 28 .²⁷ This is considerably higher than the Canadian national average of 31% and is likely a contributor to the fact that this province has the highest level of CVD mortality for both men and women.^{1,27}

Recent studies suggest that distribution of body fat should be considered an important risk factor for CVD development.²⁰ Living in urban and rural areas did affect abdominal adipose tissue distribution. Women living in rural areas were more likely to have a waist circumference >88 cm as compared with urban women. This suggests that women living in rural areas may be at increased risk of developing ill health, including CVD, according to Lean and associates.²¹ There was no significant difference detected in abdominal tissue distribution for men in this study.

Strengths and limitations

There were some advantages to this study. It used data collected in person by well trained interviewers who worked with a large study that included a high proportion of rural residents. Also, the selection procedure was designed to incorporate stratification by geographic region and so should provide accurate rural representation.

However, there were some limitations. The study did not investigate all risk factors of CVD, such as physical activity and diet. Although efforts were made to represent both rural and urban young adults, there is a high prevalence of out-migration of

Table 4. Body Mass Index for 518* of the rural and urban young adult study participants

Body Mass Index (BMI)	Place of residence, no. (and %) of participants	
	Rural	Urban
BMI ≤ 20	12 (5.4)	28 (7.5)
20 < BMI < 25	79 (41.4)	132 (42.5)
25 \leq BMI \leq 27	34 (14.4)	44 (16.7)
BMI > 27	80 (38.7)	109 (33.3)

$\chi^2 = 1.309$; degrees of freedom = 3; $p = 0.511$
 *Not all subjects were willing to have their body mass measurements taken.

Newfoundland and Labrador youth related to high levels of unemployment. Therefore, one might question how truly the findings represent the province's youth. There may be some limitation to comparing these results to those of young adults in other provinces. There is evidence to suggest that residents of Newfoundland and Labrador differ from those of other Canadian provinces in terms of education, income and access to health care. This may partly explain the higher prevalence of CVD in this province. Some respondents did not want BMI measurements taken or did not want to divulge financial information, which could have skewed results. This study is a secondary analysis of data collected for another purpose in 1996. Therefore, although not all comparisons detected statistically significant differences, some important trends were apparent. If the data collected had been focused primarily on the CVD risk factors in question and if the sample size had been larger, more significant findings might have resulted.

CONCLUSION

Risk factors for CVD exist in young adult residents of Newfoundland and Labrador, and there is some indication that young adults residing in rural areas are at an elevated risk due to distribution of body fat. Less formal education and lower household income may also put rural residents at a higher risk of developing ill health in general. It is important that steps be taken to provide knowledge and assistance to young Newfoundland and Labrador residents on ways to achieve and maintain a healthy lifestyle. This may be especially important to those residing in rural areas.

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ORIGINAL ARTICLE ARTICLE ORIGINAL

Inappropriate use of antibiotics for acute respiratory tract infections in a rural emergency department

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Introduction: Evidence-based reviews and guidelines recommend lowering antibiotic prescription rates for acute respiratory tract infections (ARIs).

Objective: To determine the number of patients presenting with uncomplicated ARIs at the walk-in emergency department (ED) of a rural community health centre and to determine the antibiotic prescription rate for each type of ARI.

Methods: A one-year retrospective data collection of a rural ED was carried out using MEDITECH and chart review to determine numbers of patients presenting with an ARI; antibiotic prescriptions were recorded according to ARI diagnosis.

Results: ARIs accounted for 22% of all patients seen by the ED doctor. In 57% of the ARIs diagnosed, patients were prescribed an antibiotic. Individual rates ranged from 2% for influenza to 100% for pneumonia. A breakdown of rates for each type of ARI is provided.

Conclusions: Antibiotic prescription rates for ARIs remain high, with some ARIs being more inappropriately managed than others. The rate of patients presenting with ARIs to the study ED was higher than in some other EDs, possibly reflecting the problems of recruiting and retaining family doctors in many rural areas, including ours.

Introduction : Les analyses critiques et lignes directrices factuelles recommandent de réduire les taux de prescription d'antibiotiques contre les infections aiguës des voies respiratoires (IAR).

Objectif : Déterminer le nombre de patients qui se présentent avec une IAR sans complication à l'urgence sans rendez-vous d'un centre de santé communautaire rural et déterminer le taux de prescription d'antibiotiques pour chaque type d'IAR.

Méthodes : On a recueilli pendant un an des données rétrospectives d'un service d'urgence rural au moyen de MEDITECH et en procédant à une étude de dossiers pour déterminer le nombre de patients qui se sont présentés avec une IAR. On a consigné les ordonnances pour des antibiotiques en fonction des IAR diagnostiquées.

Résultats : Parmi tous les patients reçus par le médecin à l'urgence, 22 % avaient une IAR. Dans 57 % des cas d'IAR diagnostiquée, on a prescrit un antibiotique aux patients. Les taux individuels ont varié de 2 % dans le cas de la grippe à 100 % dans celui de la pneumonie. On présente une ventilation des taux pour chaque type d'IAR.

Conclusions : Les taux de prescription d'antibiotiques dans les cas d'IAR demeurent élevés et certaines IAR sont moins bien prises en charge que d'autres. Le taux de patients qui se sont présentés avec une IAR au service d'urgence à l'étude a été plus élevé qu'à d'autres services d'urgence, ce qui reflète peut-être les problèmes posés par le recrutement et le maintien en poste des médecins de famille dans beaucoup de régions rurales, y compris la nôtre.

INTRODUCTION

Throughout the world, a large part of the family doctor's work is the diagnosis and management of acute respiratory tract infections (ARIs). Depending on the season and the type of practice, these infections make up 20% to 25% of a

family doctor's out-patient work.¹⁻³ Infections such as colds, sinusitis, bronchitis and influenza are almost always caused by viruses, and infections such as otitis media and pharyngitis (which are sometimes due to bacterial infection) will often recover spontaneously without antibiotics. Nevertheless, it has been

amply documented that family doctors in most developed countries have high rates of antibiotic prescribing for these conditions.⁴⁻⁶

Evidence-based reviews and guidelines (Box 1) recommend less use of antibiotic treatment for ARIs, not only because the antibiotics are ineffective, but because their widespread use is thought to contribute to the development of antibiotic resistance in community bacteria.⁷ There has been a recent trend of reduced antibiotic prescribing in the US⁸ and the UK.⁹ However, prescribing rates are still high, especially for infections in children, and in some countries the rate has actually increased.¹⁰ Prescribing rates in a rural emergency department (ED) in Canada have recently been shown to be very high for children.¹¹

In the current study, a 1-year audit of a rural walk-in ED was undertaken to determine the number of patients (all ages) presenting with ARIs and the antibiotic prescribing rate for those patients.

METHODS

The Newhook Community Health Centre serves a rural population of approximately 15 000. It provides 24-hour walk-in access to a small ED, with one doctor covering each on-call shift. Retrospective data were collected on all visits to the ED for a 1-year period (September 2002 to August 2003), using both the MEDITECH system (Medical Information Technology, Inc., Westwood, Mass.) and careful examination of handwritten charts.

Patients presenting with ARI symptoms of less than 1-week duration were included in the study, as were all patients with an exit diagnosis of common cold (including croup and laryngitis), viral upper

respiratory tract infection, acute otitis media, acute pharyngitis, acute bronchitis (including bronchiolitis in children), acute sinusitis, influenza and pneumonia. In each case, prescriptions were reviewed and prescribed antibiotics were recorded according to ARI diagnosis. Only when an uncomplicated ARI was present (i.e., no underlying complication such as asthma, chronic bronchitis, severe cardiorespiratory disease, or compromised immune status) was the patient eligible for inclusion into this study.

The doctor on-call list for the period of the study was also reviewed, and the number of different doctors covering the ED over the study period was recorded.

RESULTS

There were 8682 visits to the ED. Of these, 971 patients came for dressings, injections and conditions managed exclusively by the ED nurses. The remaining 7711 patients were seen by the on-call doctor. A diagnosis of one or more of the ARIs was made in 1730 patients, accounting for 22% of all patients seen by the ED doctor.

As shown in Table 1, an antibiotic was prescribed in 999 cases (57% of the diagnosed ARIs). Also shown is the number of antibiotics prescribed for each type of ARI, which ranged from 2% for influenza to 100% for acute pneumonia.

A total of 29 different doctors worked in the ED during the study year. A brief review of the prescribing rates for ARIs varied from 10%–88%; those doctors who were “high prescribers” had a higher rate of antibiotic prescription for all conditions. The most notable behaviour was of one physician, who was responsible for 36 of 68 (53%) diagnoses of “pneumonia.”

Box 1. Evidence-based information on antibiotics and acute respiratory tract infections

Most family doctors would probably agree that antibiotics are needed for pneumonia and not needed for influenza. For other acute respiratory infections, antibiotics may or may not be needed. We use the following evidence-based resources to determine the most appropriate pattern of practice.

The Cochrane Library, Issue 1, 2003. Oxford; Update Software

- Arroll B, Kenealy T. Antibiotics for the common cold.
- Del Mar C, Glasziou P, Spinks AB. Antibiotics for sore throat.
- Glasziou P, Del Mar C, Sanders L. Antibiotics for acute OM in children.
- Williams JW, Aguilar C, Makela M. Antibiotics for acute sinusitis.

Alberta Clinical Guidelines Program (www.albertadoctors.org)

- Diagnosis and Management of Croup
- Diagnosis and Treatment of Acute Pharyngitis
- Diagnosis and Treatment of AOM in Children
- Management and Treatment of Acute Bronchitis
- Diagnosis and Management of Acute Bacterial Sinusitis

DISCUSSION

Our retrospective audit revealed that family doctors are probably still prescribing far too many antibiotics for ARIs. Antibiotic prescription rates varied widely depending on the diagnosis; antibiotics were rarely prescribed when influenza was diagnosed (2%) and always prescribed when pneumonia was diagnosed (100%). There was also evidence of “diagnostic labelling”¹² — the phenomenon of doctors who pick a suitable name for the condition after they have decided to prescribe an antibiotic. This likely accounts for over half the diagnoses of “pneumonia” that were made by one physician. Particularly worrying, however, are the antibiotic prescribing rates found for acute sinusitis (82%) and acute bronchitis (73%); both rates were high despite the fact that these are predominantly viral infections unaffected by antibiotics. Other rates also appeared high. The prescribing rate for acute pharyngitis was 84%, even though antibiotics would normally only be indicated for those with acute streptococcal infections — usually about 30% of children and 10% of adults.¹⁵ The 90% prescribing rate for otitis media also appears unwarranted; although otitis media is usually caused by a bacterial infection, most children improve spontaneously.¹⁴

Our audit also revealed that ARIs accounted for 22% of ED visits. Large studies of patients attending EDs have found that ARIs usually account for 10%–15% of ED visits. The high rate of patients who presented with ARI in the current study is likely due to the difficulties encountered in recruiting and retaining family doctors for our rural area. Many

people do not have a family doctor and use the ED as their source of primary care. Although EDs can and do provide primary care, these ED visits do not provide continuity of care — no fewer than 29 different doctors worked at the site during one year! The 29 doctors ranged from 30-year family practice veterans, to recent medical school graduates moonlighting from residencies in psychiatry and radiology.

Steps must be taken to affect more appropriate antibiotic prescribing rates. Group discussions on the management of ARIs and the use of simple evidence-based protocols, such as the sore throat score developed by McIsaac and colleagues¹⁵ and those produced by the Alberta Medical Association,¹⁶ are currently underway.

Competing interests: None declared.

Key words: rural, emergency department, acute respiratory tract infections, antibiotics

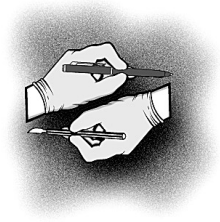
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Table 1. Acute respiratory tract infection diagnoses (n = 1662) and proportions of antibiotic use at a rural community health centre emergency department, Sept. 1, 2002, to Aug. 31, 2003

Diagnosis	No. of patients	No. of patients prescribed an antibiotic (and % of total)
Upper respiratory tract infection (including croup)	683	178 (26)
Influenza	109	2 (2)
Otitis media	277	250 (90)
Acute pharyngitis	377	316 (84)
Acute sinusitis	76	62 (82)
Acute bronchitis (including bronchiolitis)	168	123 (73)
Pneumonia	68	68 (100)
Totals	1758*	999 (57)

*Diagnosis total is higher than patient total because 28 patients were given the diagnosis of 2 simultaneous acute respiratory tract infections.



ORIGINAL ARTICLE ARTICLE ORIGINAL

Understanding the role of nurse practitioners in Canada

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The practice of medicine and nursing continues to evolve as a result of changes in knowledge, technology and health care needs. New areas of specialization have developed and, in particular, the roles and duties of registered nurses have been expanded. This expansion has enabled nurses with advanced education and skills to function as independent and interdependent clinicians who practise in partnership with physicians and other health care professionals.

La pratique de la médecine et des soins infirmiers continue de se transformer à mesure de l'évolution du savoir, de la technologie et des besoins en soins de santé. De nouvelles spécialités ont fait leur apparition et les rôles et responsabilités des infirmières autorisées, en particulier, ont pris de l'ampleur. Cette expansion a permis aux infirmières qui ont fait des études avancées et possèdent des compétences spécialisées de fonctionner comme cliniciennes autonomes et interdépendantes qui pratiquent en partenariat avec les médecins et autres professionnels de la santé.

In these times of complex health care issues, economic challenges, escalating health care costs and limited access to physicians, alternative models of health care delivery, such as nurse practitioners (NPs), have the potential to improve access to comprehensive and appropriate care services. They are an important consideration for health policy decision-makers.^{1,2} Despite this, NPs remain an underused resource within the health care system.¹

In Canada there is discordance with respect to titles, educational requirements, legislation, and clinical and legal responsibilities among regions. This discordance limits the portability of certification and even the implementation of NPs in many settings.

The purpose of this article is to provide the reader with an explanation of the titles, educational requirements, legislation and clinical and legal responsibilities of NPs, as well as barriers to the effective integration of these nurses. The recommendations for integration

of NPs into a strategic health care plan will be discussed.

HISTORICAL PERSPECTIVE

In 1967, the first education program for NPs working in northern nursing stations was started at Dalhousie University in Halifax, NS. The 1972 Boudreau Report³ made the implementation of the expanded role of the registered nurse (RN) a high priority in Canada's health care system. A joint statement on the role of the NP was released in 1973 by the Canadian Nurses Association and the Canadian Medical Association,^{4,5} but during the 1980s, NP education programs across Canada were obsolete. This is believed to be due to a perceived physician oversupply, lack of remuneration mechanisms, lack of legislation, lack of public awareness, lack of support from both medicine and nursing, and, of course, lack of funding.⁶ Despite this unfavourable situation, approximately 250 NPs continued to work in Ontario through the

1980s and early 1990s, primarily in community health centres and in northern nursing stations. In spite of the failure of the first initiatives, the NP role continues to be promoted by government health care commissions and task forces as a valuable resource for the delivery of health care, especially in the areas of disease and injury prevention, health promotion and community-based care. Details of the history of NPs can be found at the Nurse Practitioners' Association of Ontario Web site (www.npao.org/history.aspx).

DEFINITION

"Nurse practitioner" is a frequently used title to identify advance practice nurses (APNs), but it has no universal definition. The NP role has existed in Canada and the US since the 1960s. In its infancy, the term "nurse practitioner" referred to RNs working in ambulatory or outpatient settings such as public health, clinics and physician offices. The role has since evolved, and NPs are now typically recognized as having acquired additional knowledge, skills and expertise in an area of specialty (e.g., neonatology, critical care, diabetes). Advanced nursing practice synthesizes nursing and medical knowledge, with a commitment to client-centred care.⁷ In their expanded roles, NPs may perform tasks that have traditionally been considered the domain of physicians.⁸

Although it has been in common use in Canada since the 1970s, the NP title is not protected in relevant Canadian Acts and, therefore, means different things to different people. The umbrella term "advance practice nurse" is frequently used to refer to this group and accounts for both the variety of specialized nursing roles and the additional educational preparation that each role requires.⁸ In the medical literature these RNs are often collectively referred to as "nurse practitioners," and the term "nurse practitioner" is the recognized Medical Subject Heading (i.e., MeSH) by the National Library of Medicine. Title protection, as well as regulation of NPs, is the responsibility of the provincial and territorial nursing regulatory bodies. However, in most provinces there is no restriction on the use of the title. Therefore, an NP may be one who has completed a formal graduate program and has years of clinical experience or one who has a diploma in nursing and who has learned on the job.⁶

Titles used by NPs in Canada include:⁹

- Primary Health Care Nurse Practitioner (PHC NP)

- Registered Nurse–Extended Class (RN[EC])
- Acute Care Nurse Practitioner (ACNP)
- Clinical Nurse Specialist/Nurse Practitioner (CNS/NP)
- Nurse Practitioner–Specialist (NP-S)
- Specialty Acute Care Nurse Practitioner (SACNP).

EDUCATION

Currently only 12 of the 66 nursing programs in Canada offer NP education and certification, the majority of which are baccalaureate or post-diploma programs focusing on primary care (PHC NP). However, this has resulted in NPs with different titles, scopes of function, and levels of educational preparation and certification. In 1994 the Council of Ontario University Programs in Nursing, a consortium of 10 nursing faculties in the province, developed a new PHC NP Program, and the first class graduated in 1996. An emergence of ACNP programs developed for intensive care settings began in 1986 at McMaster University with the training of NPs in neonatology. Other acute care NP specialty training programs have since been developed, including those at the universities of Alberta and of Toronto. Lobbying is currently underway by professional nursing associations, regulatory bodies and interest groups across the country to standardize all NP programs at the graduate degree level.

ROLES

The role of the PHC NP involves a community-based scope of practice, often in association with a family physician, where advanced decision-making skills in assessment, diagnosis and care management are used. The PHC NP provides health care services with a focus on health promotion, prevention, rehabilitation and support care and within the legislated scope of nursing practice, which include the 3 Controlled Acts entitled to all RNs in Ontario (Table 1).¹⁰ Depending on provincial legislation, the PHC NP is able to provide independent care beyond this scope of general nursing practice.

The role of the ACNP involves managing patients across all health settings, including the management of the acutely and critically ill or those with an exacerbation of chronic health problems.⁸ This role includes providing direct patient care management by performing in-depth physical assessments, interpreting results of laboratory and diagnostic tests, ordering pharmacotherapeutics and

performing invasive procedures such as insertion of arterial or central venous catheters.¹¹ Specialty areas of ACNP practice in the US were initially focused on hospital-based care such as critical care, pediatrics, subspecialties of internal medicine and surgery, emergency medicine, and many others.¹² These specialty areas have since expanded to clinics and other unique settings such as home care, long-term care, sports medicine, and tropical medicine.¹²

Both categories of NPs function under a collaborative model of practice involving all members of a health care team. In the absence of provincial legislation and regulations, the NPs must work within existing nursing legislation and under protocols or medical directives defined by the NP and the employer. This model may or may not be outlined in a collaborative practice agreement, which is a legal document defining the NPs' scope of practice and responsibilities, practice protocols and reporting structure. The collaborative practice agreement is binding among all parties: the NP, the collaborating physician(s), the institution (employer), and/or departmental head(s), and is not transferable from one employer or NP to another.

LEGISLATION AND REGULATORY ISSUES

Only 3 Canadian provinces (Ontario, Alberta, and Newfoundland and Labrador) have passed legislation supporting the APN role. Alberta and Ontario have legislation supporting PHC NPs, and in 1994 the College of Nurses of Ontario approved the new class of RNs — the Extended Class RN(EC).^{13,14} Graduates from an Ontario PHC NP program may write the Ontario provincial certification exam for the RN(EC) designation, which is protected under this provincial legislation. In 2001, Newfoundland and Labrador became the only province in the country to have passed legislation supporting ACNPs and adopt the title Nurse Practitioner–Specialist (NP-S).¹⁵

There are 3 controlled acts¹⁰ authorized to RNs in the Nursing Act in Ontario (1991) (Table 1). The RN(EC) has the authority to perform 3 additional controlled acts: 1) communicating a diagnosis of a disease or disorder, 2) ordering diagnostic ultrasound, and 3) prescribing a limited range of drugs. As well, changes to other acts authorize the RN(EC) to order specific x-rays (chest, rib, arm, wrist, hand, leg, ankle, foot), mammography and ultrasonography (abdomen, pelvis, breast), and the RN(EC) can order a specific range of 101 laboratory tests provided in the Laboratory and Specimen

Collection Centre Act. However, the RN(EC) does not have the authority to interpret these investigations; that remains the responsibility of a physician.¹⁶

The RN(EC) is also authorized to prescribe a specific range of drugs provided in a statutory amendment to the Nursing Act, 1991, made under the Expanded Nursing Services of Patients Act, 1997. Any drugs and/or laboratory tests not on the list must be ordered by the collaborating physician but may also be ordered by the nurse through a medical directive.¹⁶ Currently, many PHC NPs perform diagnostic and prescribing activities under the authority of a physician, often by means of a medical directive. Registration in the Extended Class permits the PHC NP to assume sole accountability for these activities. Therefore, it is important for these NPs to identify themselves by following their signatures with the initials “RN(EC).”

In addition to the above activities, NPs can consult other health care professionals, including physicians. This consultation or referral can occur at any point in the assessment of the patient or when planning, implementing or evaluating the patient's care, whenever the patient's condition requires care beyond the scope of practice of the RN(EC). The degree to which the physician becomes involved may vary. Consultation may result in the physician providing an opinion and recommendation; an opinion, recommendation and concurrent intervention; or assuming primary responsibility for the care of the client (transfer of care).

MEDICOLEGAL ISSUES

All health care professionals, including NPs, are accountable for their practice and face liability risks

Table 1. Controlled acts entitled to all registered nurses in Ontario

- | | |
|----|---|
| 1. | Performing a prescribed procedure below the dermis or mucous membrane; |
| 2. | Administering a substance by inhalation or injection; and |
| 3. | Putting an instrument, hand or finger <ul style="list-style-type: none"> • beyond the external ear canal, • beyond the point in the nasal passages where they normally narrow, • beyond the larynx, • beyond the opening of the urethra, • beyond the labia majoria, • beyond the anal verge, or • into an artificial opening into the body. |

related to their health care role. This accountability does not preclude physicians from being enjoined as defendants in a lawsuit, but typically only those found responsible for the adverse outcomes are held liable.¹⁷ Ideally, all NPs should have personal liability protection for malpractice claims. Liability protection for Canadian nurses is provided by the Canadian Nurses Protective Society (CNPS), similar to the Canadian Medical Protective Association for Canadian physicians. The CNPS is a non-profit organization that offers legal liability protection (related to nursing practice) to eligible RNs. As members of a professional association or college that is a participating member of CNPS, NPs are automatically eligible for personal occurrence-based professional liability protection; that is, protection for whenever the claim is made, as long as the NP was insured at the time of the occurrence. CNPS assistance is available up to \$2 million for each occurrence to a maximum of \$3 million per year for civil lawsuits, successfully defended criminal charges and alleged breach of statute arising from the provision of a professional nursing service. Whether an NP requires more liability protection than the \$2 million offered by CNPS is dependent on the legal risk factors inherent in the role. Additional insurance, often in the amount of \$5 million, is available and is usually claim-based. Additional "tail coverage" insurance, which provides protection for claims made during an additional "tail" period, is available for purchase. Inadequate NP malpractice insurance coverage may have an impact on associated physicians in cases of common care, such that, *"the individual with insurance coverage may become financially liable for all."*¹⁷

CNPS statistics reveal that NPs were involved in 1.6% of the lawsuits and 2.1% of all occurrences reported to CNPS between 1997 and 2001.¹⁸ The 10-year claims history from the American National Practitioner Data Bank indicates that malpractice payments for nurses have been rare (1.7% of all payments) and NPs were responsible for only 4.7% of all nurse payments.¹⁸

Although some physicians and their associations have voiced concerns that working with NPs might increase their risk of liability, other physicians suggest an added value of having NPs on the team in that NPs mitigate risk because of very good communication skills and their therapeutic relationships with patients and families. Therefore, although it is important to maximize liability protection, it is more important to develop a comprehensive risk-management strategy for collaborative practice models.

EVIDENCE

The first randomized controlled trial (RCT) comparing NPs to physicians was conducted in 1969 in a primary care setting.¹⁹ Using patient mortality, disability and dissatisfaction as outcomes, the results demonstrated that NPs could provide primary health care as well as physicians. Canadian primary care NP RCTs were the next to be reported.²⁰⁻²² In addition to establishing the methodology for similar health outcome-based trials, these studies brought to the forefront the concept of NPs performing many of the primary care tasks of Canadian family physicians. They also quantitatively demonstrated an equivalence in patient health outcomes between the 2 groups.

Although these trials showed that NPs could function alone in 67% of all patient visits and were cost effective in this setting, the single fee-for-service physician payment model was not conducive to universal adoption of NPs in all primary care practices.²¹ Recently, several multi-centred, RCTs comparing NPs to physicians in primary care settings have been published.^{19,23-25} The comparisons have involved resource use and validated measures of patient satisfaction and health status.

A recent systematic review of 11 trials and 23 observational studies examined a) patient and provider satisfaction, b) safety and effectiveness, c) process of care, and d) costs.²⁶ The authors identified few recent RCTs, and the observational studies were of poor quality. Operational definitions were vague or inconsistent across the literature, and valid and reliable measurement tools were rarely used. Despite these limitations, similarities in findings were evident in the studies reviewed, and the ability to replicate studies and demonstrate consistent findings may allow for generalizability.²⁷ The authors found that care delivered by NPs in various primary care settings resulted in higher patient satisfaction and quality of care compared with physician care, with no difference in health outcomes. No differences were found in prescribing patterns, consultations or referrals. Compared with physicians' patients, NPs' patients demonstrated equivalent or greater 1) compliance with health promotion treatment recommendations, and 2) knowledge of their health status and treatment plan. NPs spent more time per visit with their patients than did physicians, but the average number of visits per patient was the same. Although the NPs ordered more lab tests than did physicians, the average lab cost per NP patient was less.²⁸ In summary, the cumulative

published research shows that, in all outcomes measured, NPs performed as well or better than physicians. Although NPs frequently spent more time with patients, it was found that they also provided patients with more information.²⁴ These combined factors may be responsible for the higher patient satisfaction scores that NPs received.²⁴ This accumulative evidence does not demonstrate that NPs can replace physicians, but rather that, under specific conditions, they are able to perform a limited number of tasks usually carried out by physicians.

FACILITATORS AND BARRIERS

A comprehensive review of the facilitators and barriers to the integration of NPs into the Canadian health care system based on a review of published studies can be found in the *Report on the Integration of Primary Health Care Nurse Practitioners into the Province of Ontario*.²⁹ Facilitators identified in this review are categorized as follows: policies and legislation; funding; practice models; education; evaluation and measurement; and other. The barriers identified are similarly categorized and include: attitudinal; legislative; funding; title; skill limitation; liability; and practice model limitations. Although it is beyond the scope of this review to describe each of these in detail, issues identified in common categories include the need to legitimize the role with standardizations for practice and the need to expand the prescriptive authority and scope of practice. Funding issues include provision of resources to establish NP practices and the need for appropriate remuneration models for physicians working with NPs.

SUMMARY

The public, health care professionals and decision-makers must be convinced that the introduction and expansion of alternative models of health care delivery is necessary for quantitative and qualitative improvements to the system. Since NPs are capable of providing a wide variety of health services, expanding nursing roles in a time of economic restraint, limited physician access and escalating health care costs is a viable solution to meeting gaps within the health care system.³⁰ To this end, family physicians might be considered the best positioned group to lobby this cause, given their collective, prominent role in health care provision and their demonstrated leadership and innovation in the implementation of NPs into the health care system at the primary care level.

Currently, one of the greatest barriers to introducing the NP role in a national health care strategic plan is the lack of a concerted and cooperative effort by all legislative and regulatory bodies to create universally accepted systems of accreditation and licensure similar to those for Canadian physicians.

Although a national standardization of NPs is one step in the process of implementing NP roles into a national health strategic plan, another is the demonstration of conclusive evidence. Finding this evidence involves a comprehensive research program that uses a variety of research methodologies to assess the complex and multifaceted components of health care delivery. The first phase should involve needs-assessment studies for each of the proposed areas of NP practice, to determine the most appropriate roles for NPs in Canadian health care.³¹ These would then be followed by clinical trials assessing patient outcome, patient and coworker satisfaction, and cost-effectiveness as it has been demonstrated with primary care studies. Currently, the majority of published clinical trials demonstrating the clinical effectiveness of NPs has been conducted at the primary care level. These studies and their results will serve as the design templates and research benchmarks respectively, necessary for the development of such a comprehensive research program.

Competing interests: None declared.

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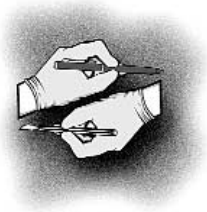
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ORIGINAL ARTICLE ARTICLE ORIGINAL

Use of traditional Mi'kmaq medicine among patients at a First Nations community health centre

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Hon

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This article has been peer reviewed.

Introduction: The provision of complete, effective, and culturally sensitive health care to First Nations communities requires a familiarity with and respect for patients' healing beliefs and practices.

Purpose: This study addresses one aspect of cross-cultural care by attempting to understand the use of Mi'kmaq medicine among patients at a community health centre and their attitudes toward both Mi'kmaq and Western medicine.

Methods: A questionnaire was completed by 100 patients (14 men, 86 women) at the clinic. The majority (66%) of respondents had used Mi'kmaq medicine, and 92.4% of these respondents had not discussed this with their physician. Of those who had used Mi'kmaq medicine, 24.3% use it as first-line treatment when they are ill, and 31.8% believe that Mi'kmaq medicine is better overall than Western. Even among patients who have not used Mi'kmaq medicine, 5.9% believe that it is more effective than Western medicine in treating illness.

Conclusion: These results have implications for the delivery of health care to First Nations patients, especially in terms of understanding patients' health care values and in meeting the need to provide effective cross-cultural care.

Introduction : Pour dispenser aux communautés des Premières nations des soins de santé complets, efficaces et adaptés aux aspects culturels, il faut bien connaître et respecter les croyances et les habitudes des patients sur le plan de la guérison.

Objet : Dans le cadre de cette étude qui porte sur un aspect des soins transculturels, on tente de comprendre le recours à la médecine mi'kmaq chez les patients d'un centre de santé communautaire et leurs attitudes à l'égard de la médecine mi'kmaq et occidentale.

Méthodes : Cent patients (14 hommes, 86 femmes) ont répondu au questionnaire à la clinique. La majorité (66 %) des répondants avaient eu recours à la médecine mi'kmaq et 92,4 % de ceux-ci n'en avaient pas parlé à leur médecin. Parmi ceux qui avaient eu recours à la médecine mi'kmaq, 24,3 % l'utilisent comme traitement de premier recours lorsqu'ils sont malades et 31,8 % croient que la médecine mi'kmaq est meilleure dans l'ensemble que la médecine occidentale. Même chez les patients qui n'ont pas eu recours à la médecine mi'kmaq, 5,9 % croient qu'elle est plus efficace que la médecine occidentale pour traiter la maladie.

Conclusion : Ces résultats ont des répercussions sur la prestation des soins de santé aux patients des Premières nations, surtout lorsqu'il s'agit de comprendre leurs valeurs à l'égard des soins de santé et de répondre au besoin de dispenser des soins transculturels efficaces.

*For every sickness on this Earth, there is a medicine
under your feet.*
— a traditional Mi'kmaq belief

INTRODUCTION

No culture has a monopoly on healing.¹ Diverse healing systems have devel-

oped throughout the world. Although they differ greatly in their methods, these systems are based on a common goal: maintaining the human condition in a state of health.

Traditional Mi'kmaq medicine and Western medicine are two such systems that have come into close contact and unfortunate conflict. The healing prac-

tices of Aboriginal people in Canada endured significant insult during the process of European colonization. The early Indian Acts in the late 1800s were associated with legislation that denied access to traditional medicinal plants and banned traditional healing methods as “witchcraft”.²

Although the right to practise traditional healing has been taken back by Aboriginal people,³ the wounds are still deep.

Former Grand Chief of the Assembly of First Nations Ovide Mercredi explains: “One of the reasons we have health problems in our communities is because our culture has been destroyed. . . . The importance in terms of relations with the medical profession is that instead of resisting the restoration of the Indian culture, you become a partner with us in the restoration”.⁴

A Royal Commission on Aboriginal Peoples widely consulted Aboriginals in Canada. The Commission’s 1996 Report advocated 4 cornerstones of Aboriginal health reform, one of which was “the appropriate use of traditional medicine and healing techniques [that] will assist in improving outcomes . . .”.⁵ It reported that many expressed the sentiment that “. . . the integration of traditional healing practices and spirituality into medical and social services is the missing ingredient needed to make those services work for Aboriginal people.”⁵

A policy statement by the Society of Obstetricians and Gynaecologists of Canada’s Aboriginal Health Issues Committee recommended that “health professionals should respect traditional medicines and work with Aboriginal healers to seek ways to integrate traditional and western medicine”⁶ and that

“health professionals should appreciate holistic definitions of health as defined by Aboriginal peoples.”⁷

This presents a significant challenge to health care providers trained in Western medicine. To achieve this holistic approach it is necessary for physicians working with Aboriginal patients to understand the attitudes and healing practices of their patients. This study was conducted to explore the use of Mi’kmaq medicine among a sample of patients at a First Nations community health centre and their attitudes toward Mi’kmaq and Western medicine.

METHODS

The site of this study was a First Nations community health centre that provides a comprehensive range of health services to the Mi’kmaq residents. The population surveyed were Mi’kmaq patients who attended the health clinic for any of the services provided (i.e., physician, dentist, prescription pick-up, prenatal care or diabetes clinic).

A survey was conducted over a period of 6 workdays using a brief, self-report questionnaire. The questionnaires were distributed to willing participants in the 2 waiting areas. The purpose of the survey and the anonymity of results were explained to participants.

To ensure appropriate and understandable wording, the questionnaire was designed in consultation with a Mi’kmaq staff member. It was a simple questionnaire, to take into account the participants’ varying literacy levels and competence with written English. Some participants asked to have the questions read out loud and others had the questions

1. Are you male or female?	Male	Female	
2. How old are you?	0–20	21–50	≥ 51
3. Are you Mi’kmaq?	Yes	No	
4. Have you ever used any Mi’kmaq medicine?	Yes	No	
5. Have you used any Mi’kmaq medicine in the past year?	Yes	No	
6. If you have used Mi’kmaq medicine, did you discuss it with your doctor?	Yes	No	
7. When you are ill, which do you <i>usually</i> do first: use Mi’kmaq medicine or go to your doctor (Western medicine)?	Mi’kmaq medicine	Go to doctor	
8. Which do you believe is better for treating illness: Mi’kmaq medicine or your doctor (Western medicine)?	Mi’kmaq medicine	Doctor	
*Patients were asked to circle their response to each query.			

explained to them in Mi'kmaq by other patients in the waiting area.

The questionnaire was brief in order to get a high response rate: participants had to complete the questionnaire while in the waiting area. It consisted of 8 questions (Table 1); participants circled the appropriate answer. A total of 108 questionnaires were collected. Two were discounted because the participants were not Mi'kmaq, 2 because the respondent did not identify his or her sex, 1 didn't identify his age and 3 didn't answer all the questions. This left 100 surveys to analyze.

To respect the community's wish to have the data presented anonymously, the population size (which would identify the community) is not disclosed in this study. Therefore, the results were calculated by simple proportions. Statistical analysis was not performed due to the small data set. Approval from the Community Health Administrator, on behalf of the Band Chief, was obtained.

RESULTS

Of the 100 questionnaires, 14 were completed by men and 86 by women. The majority (59%) of respondents were between the ages of 21–50, 18% were less than 21 years of age, and 23% were age 51

or older. All identified themselves as Mi'kmaq (Table 2).

Sixty-six percent of participants have used Mi'kmaq medicine; 27% in the past year, 39% have used it, but not in the past year. Of all the respondents 79% usually go to the doctor first when they are ill. Mi'kmaq medicine is used first by 17% when they are ill. Four respondents circled both answers.

Overall, 58% of respondents believe that the doctor is better at treating illness, 23% believe that Mi'kmaq medicine is better, and 19% circled both answers.

Users of Mi'kmaq medicine

For the sake of this study, users of Mi'kmaq medicine were divided into "Recent" users (those who have used it in the past year) and "Past" users (those who have used it, but not in the past year) (Table 2).

Of the 66% of respondents who identify themselves as Recent or Past users of Mi'kmaq medicine, the vast majority (92.4%, 61/66 respondents) have not discussed this with their physician.

The majority (69.7%) still go to their physician first when they are ill. However this number is smaller (55.6%) among Recent users. Of all users of Mi'kmaq medicine, 45.5% believe that their doctor

Table 2. Demographic features and attitudes of the users (n = 66) and non-users (n = 34) of Mi'kmaq medicine who responded to the study questionnaire

Feature	No. (and %) of respondents			
	Recent users* (n = 27)	Past users† (n = 39)	Non-users‡ (n = 34)	Overall (n = 100)
Demographic				
Age				
0–20	2 (7.4)	7 (17.9)	9 (26.5)	18 (18)
21–50	16 (59.3)	25 (64.1)	18 (52.9)	59 (59)
≥51	9 (33.3)	7 (17.9)	7 (20.6)	23 (23)
Sex				
Male	5 (18.5)	5 (12.8)	4 (11.8)	14 (14)
Female	22 (81.5)	34 (87.2)	30 (88.2)	86 (86)
Mi'kmaq	27 (100)	39 (100)	34 (100)	100 (100)
Discuss use of Mi'kmaq medicine with doctor	3 (11.1)	2 (5.1)	N/A	N/A
Preference for first-line treatment when ill				
Western medicine (i.e., doctor)	15 (55.6)	31 (79.5)	33 (97)	79 (79)
Mi'kmaq medicine	10 (37.0)	6 (15.4)	1 (3)	17 (17)
Both choices circled§	2 (7.4)	2 (5.1)	0	4 (4)
Attitude toward treating illness				
Doctor better	7 (25.9)	23 (59.0)	28 (82.4)	58 (58)
Mi'kmaq medicine better	10 (37.0)	11 (28.2)	2 (5.9)	23 (23)
Both choices circled§	10 (37.0)	5 (12.8)	4 (11.8)	19 (19)

*Those who have used Mi'kmaq medicine in the past year
†Those who have used Mi'kmaq medicine, but not in the past year
‡Those who have never used Mi'kmaq medicine
§Patients were asked to circle their response to each query.

is better at treating illness, 31.8% believe that Mi'kmaq medicine is better, and 22.7% circled both answers.

Recent users of Mi'kmaq medicine appear to favour it the most. Of this group, only 25.9% believe the doctor is better at treating illness, 37% believe Mi'kmaq medicine is better and 37% circled both answers.

Non-users of Mi'kmaq medicine

Thirty-four percent of the respondents have never used Mi'kmaq medicine ("Non-users"). Interestingly, 5.9% of these Non-users believe that Mi'kmaq medicine is better than Western medicine in treating illness, even though they have never used it. Of the remainder, 82.4% feel that physicians are better at treating illness, and 11.8% circled both answers.

Age trends in use of Mi'kmaq medicine

The number of respondents in each age category differs, and statistical significance has not been determined; therefore, age trends must be discussed with caution.

The use of Mi'kmaq medicine may increase with age (Fig. 1). Of the respondents under the age of 20 years, 9/18 (50%) have used Mi'kmaq medicine, whereas 41/59 (69%) between ages 21–50 and 16/23 (70%) of those ≥51 have used Mi'kmaq medicine.

Recent use also increased with age in this study, from 11% of those <20, to 27% of those aged 21–50, to 40% of those ≥51.

DISCUSSION

The results of this survey suggest that the majority of Mi'kmaq patients surveyed at a First Nations community medical centre use or have used Mi'kmaq medicine in addition to Western medicine. This use is generally not discussed with their physician.

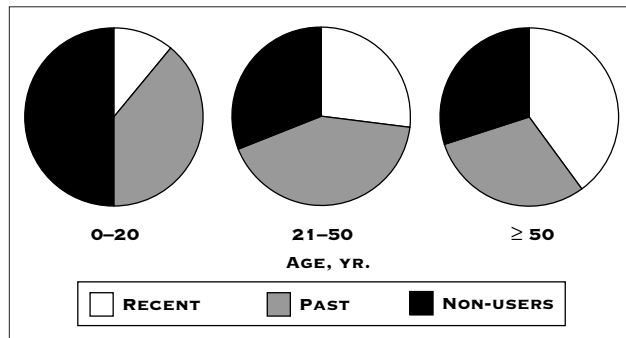


Fig. 1. Age trends in use of Mi'kmaq medicine

Furthermore, a large number of these patients believe that Mi'kmaq medicine is more effective than Western medicine, despite the fact that they are seeking Western medical advice. These findings have implications for the provision of effective and culturally sensitive health care to First Nations populations.

Similar studies have been done elsewhere. In his research study⁸ conducted for the 1996 Royal Commission Report,⁵ Kaufert found that 10.1% of respondents living on-reserve and 4.6% living in urban areas had consulted a traditional healer in the previous year.

In a study ascertaining the use of traditional health practices by urban American Indian / Alaska Native patients, it was found that 70% often used traditional health practices.⁹ Use was associated with alcohol abuse, trauma and musculoskeletal pain. These are all illness experiences that have historically been less successfully addressed by biomedical interventions.⁹

A study conducted at an urban Indian Health Service Clinic in Milwaukee found that 38% of patients had seen a traditional healer in the past year.¹⁰ Only 14.8% of these patients told their physician. Of those who had not seen a healer, 86% would consider seeing one in the future. More than one-third of patients seeing healers received different health advice from their physician and from their healer for the same condition, but rated their healer's advice above their physician's 61.4% of the time.¹⁰

Clearly, traditional healing practices are an important part of the beliefs and values about health held by many Aboriginal patients seeking care from Western medical facilities. Several studies have concluded that use of traditional healing practices is intrinsically beneficial to the health outcomes of Native American patients.^{9,10} This may be because Western medicine is not adept at addressing all aspects of Aboriginal health, especially illnesses strongly linked to psychosocial issues (for example, trauma and alcohol abuse).^{5,9}

There is a traditional Mi'kmaq belief that "For every sickness on this Earth, there is a medicine under your feet," but the counterpart of this belief is that "White man's diseases often require white man's medicine."¹ Clearly, it is recognized that there are strengths and weaknesses of both traditional and Western systems of health.

This apparent dichotomy of values has significant implications for health care provision and presents a unique challenge to Western-trained health care providers in Aboriginal communities. The sheer

number of patients in this study (24.2%) who seek Western medicine as a second-line therapy and the even larger number (31.8%) who do not believe that Western medicine is as effective as Mi'kmaq medicine implies that conventional medical advice may not be accepted or followed by patients. This may inhibit the ability of the physician to provide effective care.

Furthermore, 92.4% of users of Mi'kmaq medicine in this study did not tell their physician. The conclusions from a US study of why patients who use complementary therapies do not tell their physician may also apply to this population. These reasons included the belief that it is not important for the doctor to know, the doctor did not ask, would not understand, would disapprove, or might not be willing to continue as their health provider.¹¹

It is important for health care providers in Aboriginal communities to understand and respect traditional healing practices and beliefs. According to one study¹² of how physicians come to understand Aboriginal patients and their communities, "Patient care and community context are inextricably linked. Physicians need to understand the social structure and value system of the community they serve. Ultimately, physicians are treating both each patient and the whole community."

This is echoed in an editorial¹³ by Aboriginal physician Janet Smylie: "... examining the health problems of the Aboriginal populations with whom we work cannot be done without considering the community context." Understanding attitudes toward traditional healing practices are a key part of understanding community context. Physicians working in Aboriginal communities should seek to recognize and respond to the health care values unique to that patient population. To provide the most effective care, the physician must facilitate open discussion about the integration of healing methods that reflect the patient's values.

Limitations

To respect the community's wish for anonymity, the community's population size was not presented or used in data analysis. This limits the ability to generalize from the results. The data were self-reported, and there may have been some degree of self-selection among those who were more literate and willing to participate. Those who tended to decline participation were usually elderly and male. Some participants had the survey explained to them in Mi'kmaq by other patients in the waiting room, therefore the

interpretation of the questions may have varied. The term "Mi'kmaq medicine" was intentionally not defined, to allow people to interpret it in the context of their health care practices. However, this limits the ability to draw generalized conclusions.

Although there is much still to be learned, these results may provide some insight into the dichotomy of values held by Mi'kmaq patients with respect to health care. To provide culturally appropriate care, this will need to be addressed by health care providers in First Nations communities.

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THE PRACTITIONER

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Diagnosing pulmonary embolism in a rural setting

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INTRODUCTION

The paradox in the diagnosis of pulmonary embolism (PE) is that it tends to be both under-diagnosed and over-investigated.¹ Seventy percent of emboli are diagnosed at autopsy.² Even today, guidelines to investigations are variable and not always evidence-based. In the rural setting many of these investigations are delayed or simply unavailable, yet a timely decision for or against anticoagulation needs to be made. Rural physicians have the advantage of knowing the patient better and can therefore better assess probability of disease prior to testing. D-dimer tests, now available in most rural centres, have proved to be useful in patients with low probability of embolism and, if results are negative, can exclude the diagnosis. Additional studies such as chest x-ray, other laboratory tests, or ECG can support an alternate diagnosis. The rest of the investigation sometimes becomes less evidence-based, but, given the following checklist, we should be able to pursue the diagnosis appropriately with the help of our imaging colleagues in our referral centres.

STEP 1

Think of the diagnosis.

Avoiding under-diagnosis involves including PE in the differential. There are 5 identifiable syndromes.

1. Isolated dyspnea and tachypnea
2. Pneumonic syndrome of pleuritic chest pain, cough, râles or hemoptysis
3. Central catastrophe of shock,

hypotension, right heart failure or sudden death. Fortunately this is uncommon. Timely diagnosis is unlikely in a rural facility.

4. Chronic recurring emboli leading to pulmonary hypertension and right heart failure.
5. Septic emboli (e.g., IV drug abuse or infected central catheter).

The first 2 syndromes are the most common and produce the findings that are most characteristic. Ninety-seven percent of patients with PE have either dyspnea, tachypnea or pleuritic pain.² Other symptoms or signs can include cough, fever, râles, leg pain and hemoptysis. If pneumonia or chronic obstructive pulmonary disease with exacerbation is the diagnosis, PE should usually be thought of in the differential.

STEP 2

Assess patient risk factors.

Avoiding under-diagnosis involves considering at higher risk any patient with features of Virchow's triad (stasis, endothelial injury or hypercoagulability). This would include patients in the following scenarios:

1. within 4 weeks of surgery;
2. pregnancy and puerperium;
3. lower limb fracture or paralysis;
4. malignancy;
5. reduced mobility;
6. previous PE, or previous or current deep venous thrombosis (DVT);
7. cardiovascular or pulmonary disease;
8. use of oral contraceptives or estrogen therapy;

9. thrombophilias such as protein C and S deficiency, antiphospholipid antibodies and Factor V Leiden mutation.

STEP 3

Apply locally available, less specific investigations.

The following investigations may provide an alternate diagnosis and avoid over-investigation.

1. Chest x-ray. Only 12% of patients with PE have a normal chest radiograph.³ Atelectasis, parenchymal abnormality, pleural effusion, cardiomegaly or raised hemidiaphragm may be found, but these findings are neither sensitive nor specific. Lobar consolidation, however, suggests a diagnosis of pneumonia. Pneumothorax or pneumomediastinum can suggest an alternative diagnosis.
2. ECG. This is commonly abnormal in PE, but never diagnostic. Common changes such as sinus tachycardia, supraventricular arrhythmias, right bundle branch block, and right axis deviation are neither specific nor sensitive. ST changes suggesting pericarditis or infarction are helpful in providing an alternative diagnosis.
3. Blood gases. Often there is hypoxia with respiratory alkalosis. Gases can be normal 15% of the time. In PE this may indicate severity of illness, but it is unlikely to help with diagnosis. A finding of metabolic acidosis may suggest an alternative reason for dyspnea and tachypnea.
4. Pulmonary function tests. Often abnormal, but not specific or sensitive. Not recommended.
5. Echocardiography. Often abnormal in PE and may be prognostic, but never diagnostic.⁴ Seldom easily available in rural practice. Not recommended.

STEP 4

Apply Steps 1 to 3 to determine pre-test probability.

This takes into consideration physical findings, risk factors and more probable diagnoses to yield the Wells Score.⁵ Wells Score points values are calculated as follows.

- Clinical signs of DVT: 3.0
- Alternative diagnosis less probable

- than PE: 3.0
- Heart rate >100 beats/min: 1.5
- Immobilization or surgery <4 weeks ago: 1.5
- Previous DVT or PE: 1.5
- Hemoptysis: 1.0
- Cancer: 1.0

Total points score:⁶

- <2 = low probability with ≤10% risk of PE;
- 2–6 = moderate probability with 25% risk of PE;
- >6 = high probability with ≥60% risk of PE.

Moderate- and high-probability patients should be administered a low-molecular-weight heparin (LMWH) anticoagulant while awaiting further investigation.

STEP 5

Consider more specific testing and imaging.

1. D-dimer

- The latex fixation test is not sensitive enough. The whole blood assay (SimpliRED™; AGEN Biomedical Limited, Brisbane, Australia) is recommended in patients with low pre-test probability, to rule out the possibility of PE in these patients. More highly sensitive ELISA [enzyme-linked immunosorbent assay] tests are available, but have a higher false-positive rate.⁶ Most rural areas should have access to the SimpliRED™ assay in-house.
- False-positive D-dimer tests are more common in the elderly, in patients with a history of recent surgery, or in those with cancer. Such patients are more likely to have higher pre-test probability and therefore PE could not be excluded by D-dimer. **This test has no predictive value in patients of intermediate or high pre-test probability.**
- A negative SimpliRED™ D-dimer is sufficient to exclude diagnosis of PE in a low pre-test probability patient. A patient with a positive SimpliRED™ D-dimer should be administered a LMWH anticoagulant while awaiting further investigation.⁴

2. Ventilation perfusion (VQ) scan

- Indicated **only if chest x-ray is normal and there is no cardiovascular or pulmonary disease.**
- **High probability scan makes the diagnosis of PE in the context of reasonable pre-test probability of PE.⁷ False-positives can occur.**

- **Normal scan effectively excludes PE.**⁷
 - 65% of scans are non-diagnostic and require another test for exclusion.⁶ Proximal leg ultrasonography, weekly for 2 weeks, is usually recommended, but difficult to schedule on time. It often does not get done, leading to unnecessary or prolonged anticoagulation or missed diagnosis. Rural patients are at a particular disadvantage in having to travel for multiple tests.
 - More limited availability, especially out of hours.
 - Investigation of choice in pregnancy, having 10% of the radiation dose of CT studies.
- 3. Computerized tomography (CT) pulmonary angiography and proximal leg venography.** This is not the same as chest CT or pulmonary angiography. Helical CT is done with rapid high-pressure contrast injection and imaging within a few seconds.
- **Used if there is an abnormal chest x-ray, cardiovascular or respiratory disease.**
 - **Some sources recommend this as initial imaging for non-massive PE.**⁸ Good evidence for this approach may have to wait for the results of the PIOPED II Study [Prospective Investigation of Pulmonary Embolism Diagnosis], expected to be available in 2005.⁹ Advances in CT imaging are expected to steadily improve reliability.
 - **A positive study confirms PE.**
 - **A negative scan is not equivalent to a normal VQ scan and does not exclude PE.**¹⁰ An additional study is required, such as CT venography or proximal leg ultrasonography. Ideally the latter study is repeated twice, at weekly intervals.⁸
 - **Useful to obtain another diagnosis that would explain symptoms and exclude PE.**
 - **CT venography done at the same time as CT pulmonary angiography takes little additional time and adds to sensitivity. It also identifies pelvic or abdominal thrombi that would otherwise be missed. There is larger exposure to both radiation and contrast. This combination is probably a good “one stop” resource for the rural patient who has to travel for each investigation and has faint hope of access to weekly leg ultrasonography as recommended in many guidelines.**¹ The evidence for accuracy of this approach awaits the publication of the PIOPED II data. Meanwhile, there are guidelines from the British Thoracic Society that suggest that CT pulmonary angiography is the best initial imaging modality.⁸
- Occurrence of venous thromboembolism in patients with negative CT pulmonary angiography and negative leg ultrasonography taken the same day and repeated in 1 week is as low as 1.5%.¹¹ Study follow-up, however, was only for 3 months, and more robust data are needed. There are still no good outcome studies assessing CT venography with CT pulmonary angiography.
 - Sometimes more available in centres taking rural referrals and more accessible out of hours. Timely imaging is always desirable.
 - Caution is advised in renal failure, contrast allergy and pregnancy, where VQ scanning is usually preferred.
- 4. Ultrasound of proximal leg veins**
- **If clinical DVT is present, leg ultrasonography can be the initial investigation. If positive, it is sufficient to confirm PE.**⁸
 - In absence of clinical DVT, proximal clot is found in only 23%–52% of patients with confirmed PE when ultrasonography is used. It is known that 60% of patients with PE have proximal DVT when venography is done. Compression ultrasonography therefore has limited clinical usefulness as an initial test in absence of leg symptoms.⁸
 - This is a useful and non-invasive test, but it is often difficult to obtain a study at an appropriate time — especially for a rural patient.
 - This is a recommended additional test for the patient with a non-diagnostic VQ scan or a negative CT angiogram. If negative, a repeat is suggested at 1 and 2 weeks if pre-test probability is intermediate or high.
- 5. Pulmonary angiography**
- Still considered the “gold standard” for PE diagnosis, this study is reserved for patients at very high pre-test probability who have otherwise negative imaging and in whom suspicion for PE remains very high. This is the province of the consultant.
 - Mortality as a result of the study can be up to 0.5%.
- STEP 6**
- Apply Steps 4 and 5 to the algorithm to confirm or exclude a diagnosis of pulmonary embolism in your patient.*
- See Figure 1 for the diagnostic algorithm.

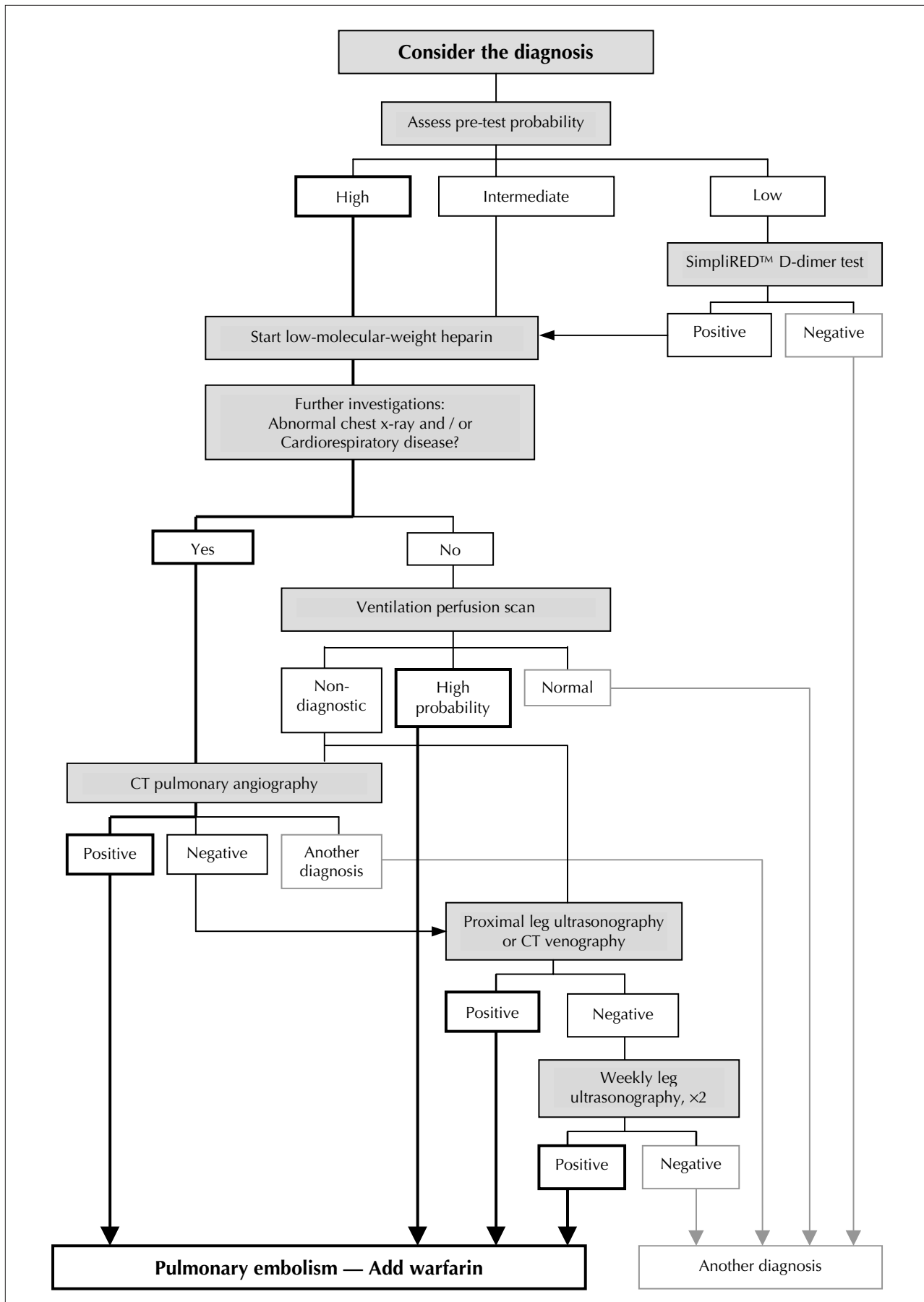


Fig. 1. Diagnostic algorithm for diagnosis of pulmonary embolism

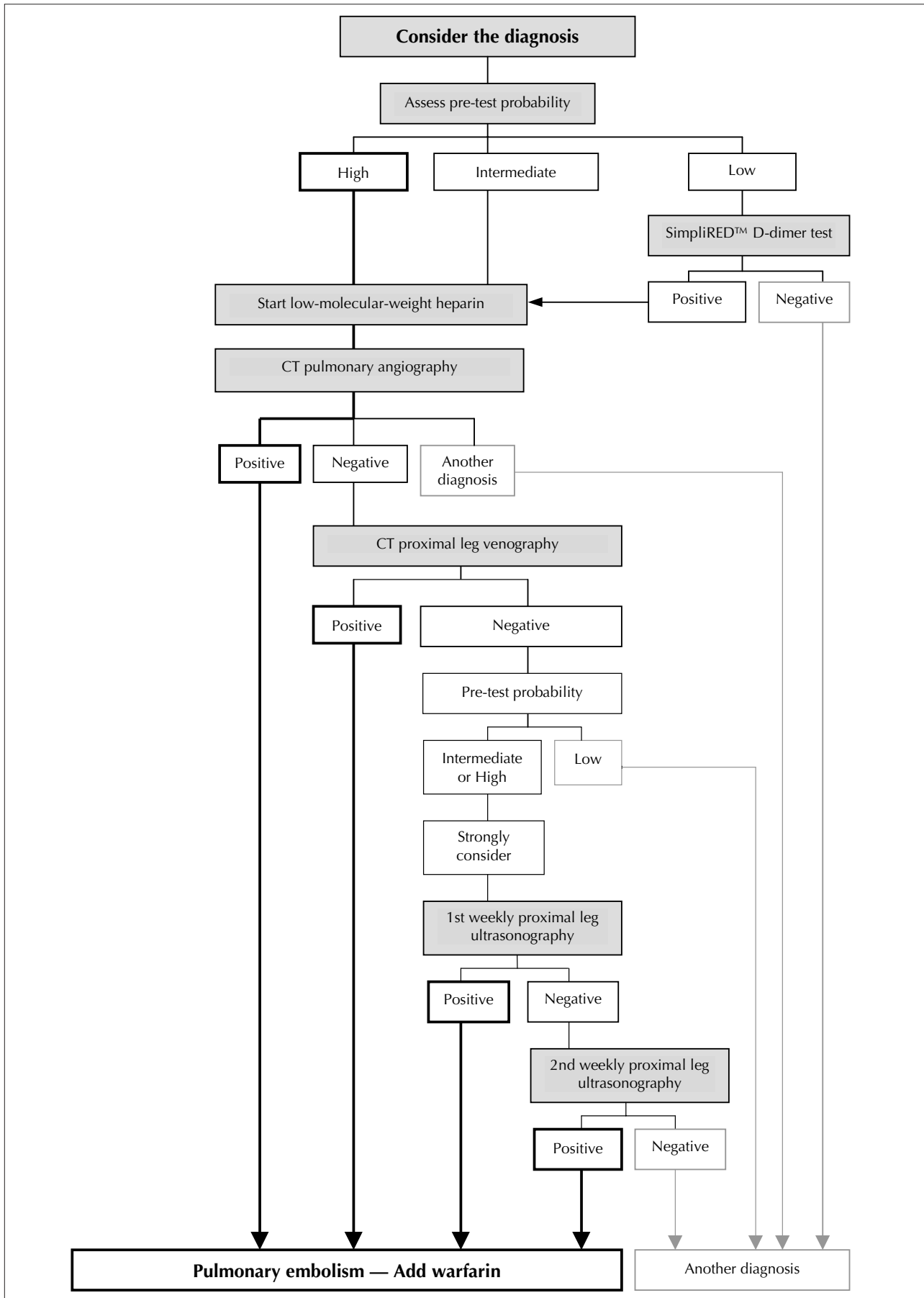


Fig. 2. Streamlined diagnostic strategy for the rural patient

STEP 7

Treat the patient.

The difficult work has been done. Apart from the rare unstable patient, all patients can be managed in a rural setting. **The unstable patient needs rapid anticoagulation with unfractionated heparin and rapid transport for specialty evaluation and possible thrombolysis.**

1. Patients with low pre-test probability and negative SimpliRED™ D-dimer should have another diagnosis pursued and have no treatment for PE.
2. Patients with a negative VQ scan should have another diagnosis pursued and no treatment for PE.
3. Patients with intermediate or high pre-test probability need to have LMWH started prior to any further imaging. If a thrombophilia is suspected, consider drawing blood for studies prior to anticoagulation.
4. Patients with confirmed PE (through high probability VQ scan, positive CT pulmonary angiography/venography or positive proximal leg ultrasonography) should have warfarin added. Once INR [international normalized ratio] is in the 2–3 range, heparin can be discontinued. Recommended duration of warfarin use appears in Table 1.^{12,13}
5. For unstable patients, anticoagulation is achieved more quickly with unfractionated heparin. It would require high pre-test probability with reasonable exclusion of alternate diagnoses (such as dissecting aneurysm) before consideration of anticoagulation in this event. Thrombolysis can be considered, but must

Table 1. Recommended duration of anticoagulant (warfarin) use in patients with confirmed* pulmonary embolism (PE)

Description of event	Duration of anticoagulation
First event, if there is a temporary or reversible risk factor (e.g., trauma or surgery)	at least 3 mo
First event, if the cause of PE is not identified	at least 6 mo
Recurrent idiopathic PE or continuing risk factor (e.g., thrombophilia)	at least 12 mo
Symptomatic isolated calf-vein thrombosis	6 to 12 wk

*PE confirmed by high-probability ventilation perfusion scan, positive CT pulmonary angiography/venography or positive proximal leg ultrasonography.

Note: For the full American College of Chest Physicians recommendations visit:
www.chestjournal.org/cgi/content/full/119/1_suppl/176S176S#SEC9

await further imaging for diagnosis and will need to be considered in a referral centre.

6. Patients with another diagnosis receive alternative treatment.

CONSIDERATIONS FOR RURAL PHYSICIANS

Figure 2 illustrates a streamlined diagnostic strategy for the rural patient.

1. Exclude PE in a low-probability patient with a negative SimpliRED™ D-dimer. All other patients need further work-up.
2. Consider VQ scanning in otherwise healthy patients with normal chest x-ray, pregnancy, renal failure or contrast allergy, but remember that 65% of these will be non-diagnostic and will need leg ultrasonography concurrently, perhaps at 1 and 2 weeks. Scanning takes 4–5 hours, and ultrasonography is difficult to schedule.
3. Strongly consider CT pulmonary angiography with proximal leg venography as your initial imaging investigation. It is more widely and immediately available, and the initial venous imaging can be done at the same time. It is occasionally going to provide an alternate diagnosis. Some current guidelines would support terminating investigation if this were negative,^{1,8} however, intermediate- and high-risk patients are still going to need follow-up ultrasonography at 1 and 2 weeks, if we consider the best evidence at present.
4. Take the trouble to follow patients with negative CT studies with proximal leg ultrasonography at 1 and perhaps 2 weeks. This is often a scheduling nightmare, and primary physicians and consultants often overlook this step.
5. **In summary: Low probability patients with negative D-dimer can be excluded. All other patients can be managed more simply and quickly by CT pulmonary angiography and proximal leg venography. Low-risk patients, if this study is negative, can be excluded. All other patients should be considered for proximal leg ultrasonography up to twice, at weekly intervals.**

Competing interests: None declared.

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Donner votre nom au complet et votre adresse de courriel. Si vous ajoutez aussi une courte biographie, elle pourra être affichée sur la liste en guise de présentation. Vous pouvez aussi accéder aux archives de RuralMed et à un formulaire d'inscription au serveur de liste anglophone sur la page d'accueil du site de la SCMR, www.srpc.ca



PODIUM: DOCTORS SPEAK OUT LA PAROLE AUX MÉDECINS

A strategic plan for eliminating rural hospital services through the process of regionalization

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We're now into our 3rd year of regionalization in BC. As those of us in rural communities deal with the restructuring, it often seems as if our communities have been specifically targeted for change. This essay grew out of the suspicion that perhaps these changes have a more sinister goal than just "saving money and streamlining a more effective health care delivery system." Maybe they want to shut us down. And maybe if they succeed in BC, the methods could become a blueprint for getting rid of the pesky challenge of delivering effective rural health care in the rest of the country. . . . So here is some advice for governments interested in getting rid of the problem of rural health care once and for all!

RATIONALE FOR THE "PLAN"

1. Seventy percent of Canadians live in urban areas. Therefore it makes sense to locate all hospitals in the area of maximum use and benefit.

2. There has been significant rural-urban migration during the past century, an international trend. This indicates ample opportunity for rural citizens to relocate to urban areas should they wish to. Those remaining in rural areas do so either through lack of initiative and/or motivation to move to the cities, or through deliberate choice to live in a rural area. Those making such a decision must assume the responsibility for the risks associated with a rural location and must no longer expect the calibre of services available in urban areas.

3. It doesn't make economic sense to maintain significantly costly medical services for the relatively small proportion of the population so affected.

THE "PLAN"

1. Divide the province into mega-regions. The first step in regionalization must be to organize the infrastructure in such a way as to eliminate local access. To accomplish this goal, regions must be as large as possible. The management must be located in the largest city in the region. The management team and controlling board should be as urban as possible, both in location and philosophy. You may include a rural representative to minimize local political fallout, but ensure that objections can be easily outvoted. This ensures representation and rural input but eliminates the need to take such concerns seriously.

2. Eliminate local hospital boards and health councils. When rural communities must access a board representative in another city it reduces any possibility of a sympathetic hearing due to previous relationships with representatives. You also must eliminate local administration. It's much easier to justify closing services at 1 small facility when the administrator is responsible for 2 or 3 small hospitals. Services can be eliminated either because a similar service is located at some other small facility somewhere in the region (ignoring practical barriers to access) or because a service is not provided in other small facilities in the region.

3. Close hospitals. When possible, close the local hospital outright if another facility is close enough to justify such a move (whether or not the other facility has the capacity to handle any more volume). If this isn't possible, downgrade the hospital to a "primary care centre." This has the advantage of claiming to provide better services under the umbrella of preventive and population health indices, while eliminating costly emergency services. It's more politically correct in the current federal health climate and potentially can cost much less.

4. Destabilize hospitals. Where it's impossible to close or downgrade a hospital due to distance factors, it's possible to destabilize it to the point where the nursing and medical staff will become so frustrated that enough will quit and render the facility non-functional. Then the closure becomes easy to justify. Practical methods to achieve this include:

A. Refer all on-site problems to off-site administration. When nursing and medical staff must deal with out-of-town administration, problems are likely to become much more significant before being dealt with — if they are dealt with at all. It is also helpful to schedule as many meetings out of town as possible, at times most likely to interfere with the actual provision of medical care. Give as little advance notice as possible. Make sure the majority of meetings are last-minute emergencies.

B. Centralize scheduling and downsize beds and nursing staff at the same time. Make it very difficult to understand the new schedule, and delay filling vacant shifts until the last possible moment to keep the nursing staff unsettled. Do not make any special effort to staff rural OR days. These are difficult at the best of times, so benign neglect will be enough to eliminate many OR days. This, combined with bed cuts, will decrease the number further. When numbers are small enough the service can be closed due to arguments about numbers needed to maintain competence. Remember rural ORs are very expensive and benefit relatively few patients.

C. Obstetrical care presents a special challenge. Promote literature assuring it is safe to give birth in communities without C/S back-up, in case any locals are aware of the data that shows that closing rural obstetrical services leads to poorer outcomes. Having no local access to C/S will increase the numbers of women who leave the community to give birth. Eventually, delivering elsewhere among

strangers will become the norm and the rural service will close due to stress among providers caused by inadequate local resources. Alternatively, if we could promote home births extensively we might be able to entirely eliminate the need for hospital maternity services in rural areas.

D. Centralize all supplies and drugs. Do not make it clear whose responsibility it is to keep the hospital stocked. (This can be accomplished by careful elimination of clerical staff.) This will ensure that needed supplies and drugs for emergency care are often missing at a critical moment. This will, in turn, generate more stress for nurses and doctors, promote staff conflict and ultimately result in loss of nurses and physicians from the community.

POLITICAL CONSIDERATIONS

1. A relatively small number of voters live in rural areas and, should this plan achieve success, the numbers will be significantly diminished over the next decade.

2. There is a small chance that rural citizens could be seen as victims in this plan, therefore all actual closure mechanisms must be marketed to demonstrate the benefit for rural communities in centralizing services. Likewise, whenever possible the movement to closure of rural facilities must appear to be rural led (e.g., the community is unable to cope with the challenges so they choose to defer services to larger centres).

3. Reports from independent consultants are extremely useful in minimizing political fallout from closures. A properly crafted study can easily find statistical evidence supporting the desired outcome.

CONCLUSION

This paper demonstrates a plan to eliminate the costly problem of providing acute care medical services in rural communities over the next decade. Implemented correctly, there should be minimal political fallout. Eventually the new standard of care will be seen as the only reasonable choice. Lack of access and delayed access in rural communities will further reduce costs to the system because morbidity and mortality will decrease the number of rural citizens accessing the system.



OUT BEHIND THE BARN DANS LE FEU DE L'ACTION

CMA Web site – Drug information

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Are you tired of squinting at the small print in the *Compendium of Pharmaceuticals and Specialties (CPS)*, or of not being able to find information on a newly released drug? If so, visit the Canadian Medical Association Web site, which includes an up-to-date drug database, a drug interaction analyzer and information about “herbal” or “natural” products. An individual subscription to this information would cost US\$350, but it is available free to CMA members.

CONTENT

The database is compiled by Lexi-Comp (www.lexi.com) and is updated regularly. For example, a search for Vioxx (rofecoxib) showed a “special alert” about the drug being recently taken off the market because of cardiovascular complications. Lexi-Comp is a US company, but the database includes monographs on drugs that are only available in Canada. The Canadian trade names are listed for most products, a feature that is often weak in other drug databases.

REGISTRATION

To register to use this and other “members only” resources, visit the CMA Web site (cma.ca) and click on the “Register Now” icon. When you register, you will be given a user name and password to access the Web site.

DRUG INFORMATION PAGE

Go to the CMA Web site and then click on the “Drug Information” icon. This page provides a list of available resources, a search window, and links to recent drug advisories from Health

Canada and the US Food and Drug Administration (FDA). Help for a new user is limited to 2 short “tips” pages.

SEARCH WINDOW

Enter a search term in the “Search For” window. The default is to search the “Name” field. You can change this by selecting an option from the “Within” drop-down menu. The default database is “Lexi-Drugs Online” but this can be changed in the drop-down menu labelled “In.” To initiate the search, click on the “Go” icon. The database is large, so even with a high-speed Internet connection, the results may take a few seconds to display.

DRUG NAMES

The description of a drug includes the generic name and both Canadian and US brand names. A separate section lists “International Brand Names,” which is useful when treating a patient from outside North America.

CLINICAL INFORMATION

The database includes sections about dosage, contraindications, drug interactions, adverse reactions, and effects on pregnancy and lactation. Hyperlinks let you jump quickly to any desired subsection. There are also pictures of many products, and a colour-coded index of drugs, available from the “Drug ID” link on the main Drug Information page.

DRUG INTERACTIONS

Major interactions are listed in the drug description, including any effects on the Cytochrome P450 system. There is a link in each drug description to the interaction analyzer (described later).

PATIENT INFORMATION

Many drug descriptions include a “Lexi-Pals” link to a patient-oriented handout. To save time, consider printing or downloading copies of the handouts for any medications that you use regularly.

LEXI-DRUGS ONLINE

By clicking on the “Lexi-Drugs Online” link on the main Drug Information page, you can search by the first letter of a drug’s generic name. This index displays the date when the information was last updated. There is an option to list any products whose descriptions have changed in the past 7 or 30 days.

DRUG INTERACTION ANALYZER

Click on “Drug Interact” on the main Drug Information page. From this “interaction” page you can search for drug–drug, drug–herb and herb–herb interactions. To demonstrate, let’s assume that a patient is taking warfarin. During a later visit, you learn that this patient is also taking aspirin and 2 herbal therapies, ginkgo and ginseng.

WARFARIN SEARCH

Type “warfarin” in the “Search For” window, and then click on the “Go” icon. (This is different from the “Enter Key Words” search window located at the top of all CMA pages.) The page will be redrawn, and warfarin appears as the first entry in a drug list below the search window. A list of drugs interacting with warfarin will be displayed, including a “risk rating” code:

- A. No known interaction
- B. No action needed
- C. Monitor therapy
- D. Consider therapy modification
- X. Avoid combination.

ASPIRIN SEARCH

Next, add aspirin to your search list by typing it in the “Search For” window. This time the program will prompt you to distinguish between “aspirin” and “acetaminophen.” Click on “aspirin” in the option list to add it to the analysis list. If necessary, you can remove an individual drug from the analysis list by clicking on “Remove,” or remove all drugs by clicking on “Clear Items”.

HERBAL SEARCHES

Now, type “ginkgo” then “ginseng” as separate entries in the search window. For ginseng, the program will display 3 types (American, Panax and Siberian). We’ll assume that your patient does not know which type he or she is taking, so select all 3.

INTERACTION ANALYSIS

After entering all the medications, click the “Analyze” icon. The program will list each medication and any interaction with the other 5 medications. To see a description of the interaction for each pair of drugs, click on the highlighted link.

INTERACTION DESCRIPTIONS

Each description begins with a brief summary, including an assessment of the reliability of the information. This is followed by more detail, including suggestions for management and a list of references. A useful addition to this information would be to provide a direct PubMed link for each listed reference.

LEXI-DRUGS FOR PDAS

Lexi-Drugs, Lexi-Interact and other Lexi-Comp databases are also available for use on PDAs (personal digital assistants) of either the Palm OS or Pocket PC type. The database can be stored on memory cards.

Competing interests: None declared.



The first SRPC Residents' Page!

Jean Warneboldt, MD

For more information, please contact Jean Warneboldt at: jean_warneboldt@alumni.sfu.ca

Residents are becoming increasingly visible within the SRPC. The first SRPC Resident Committee (RC) (Box 1) represents over 350 resident members.

Our goals are two-fold:

- Support resident interest in rural practice
- Act as a body for recruitment into full-fledged SRPC members.

After establishing our goals we recruited members by giving presentations and providing information on the SRPC and the Committee.

FUTURE PLANS

The Committee decided to focus on 3 major initiatives:

1. Establish a *CJRM* Residents' Page to increase our communication with students, residents and physicians and to update SRPC members on resident activities and encourage involvement from others.
2. Update the Electives list, which contains names of rural SRPC preceptors for both med student and resident electives (www.srpc.ca). It's especially helpful for setting up electives outside your home province.
3. Mentor medical students. We support students interested in rural family medicine through Family Medicine Interest Group involvement and by providing advice on rural electives. (See Box 1 for RC members' email addresses.)

HOW CAN I BECOME MORE INVOLVED WITH THE SRPC?

The SRPC is an exciting organization with connections to vibrant physicians all across the country. Attend the 2005 Rural and Remote Medicine Conference in Montréal, Apr. 28–30, 2005. Check SRPC's Web site for the Resident Talks organized by the RC.

Promote a rural interest group at your home university. This can be done through the undergraduate Family Medicine Interest Group or through your residency program. All family medicine residents must do a rural elective, providing a terrific opportunity to get excited about rural medicine and the SRPC.

And finally, remember to submit those interesting stories that stem from your rural experiences to the *Rural News* (www.srpc.ca).

Box 1. Inaugural Committee Members

Chair

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10 Regional Members*

Northwest

- | | |
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Quebec

- | | |
|-----------|-----------|
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