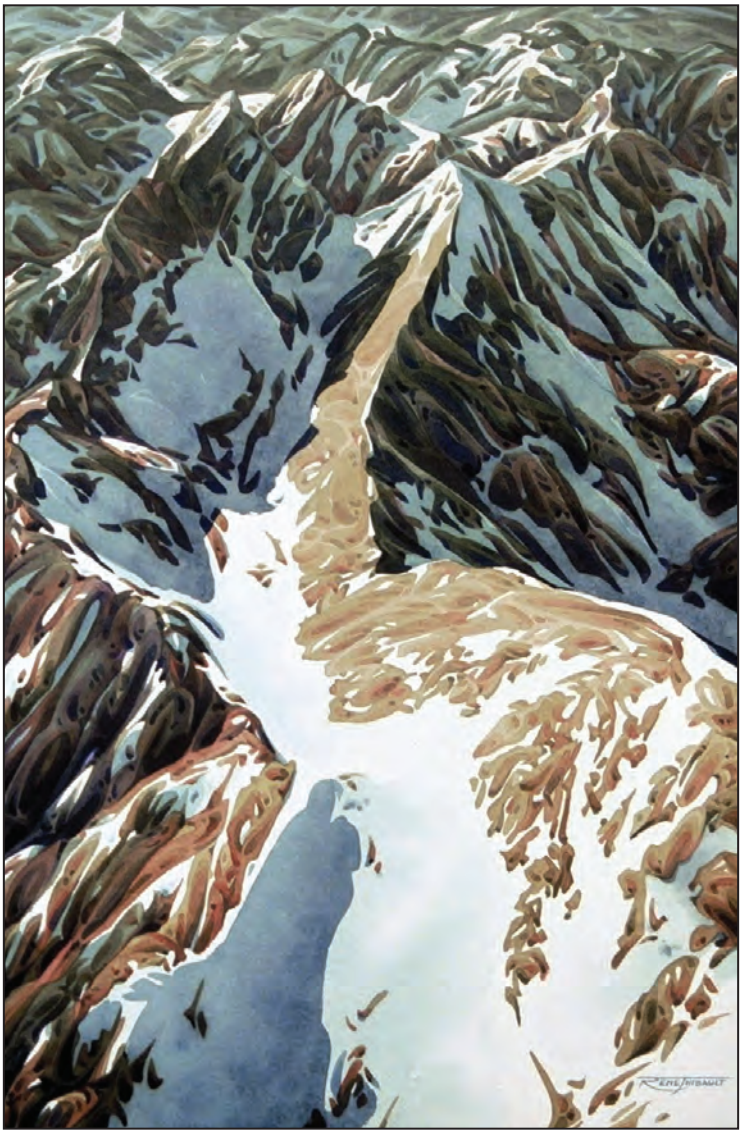
Canadian Journal of Rural Medicine

Journal canadien de la médecine rurale



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

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THIS ISSUE

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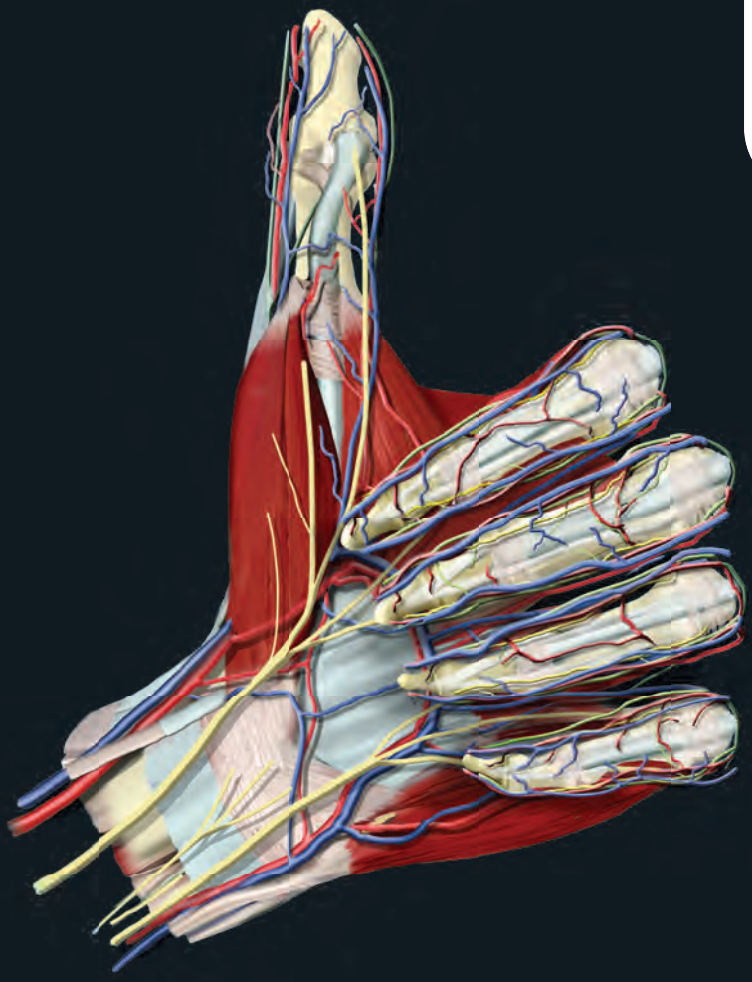

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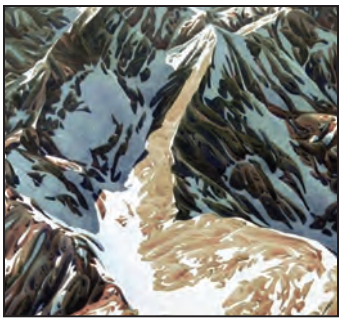

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Challenges of confidence

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Once upon a time I didn't want to publish an occasional piece on normal delivery: rural doctors might have been insulted. And yet in this issue is an excellent piece on the occasional vaginal delivery.[1] A few observations changed my opinion.

I suppose it was the wearing of one of my other hats as program coordinator for advanced maternity skills at the Northern Ontario School of Medicine. Over the years I was starting to get applicants who were not looking for mastery of the skill of cesarean delivery, but who felt unprepared for rural practice that included normal deliveries. Being workshop leader for the SRPC Rural Critical Care Obstetrics Module probably cemented my about-face. In that workshop, I was seeing people who wanted to gain some comfort for the inevitable parturient who would deliver on their doorstep regardless of the absence of a welcome mat.

So when approached with the idea of an occasional piece covering normal delivery, I wrote to the author,

> Much as I rue that it has come to that, neither I nor my co-editors are blind to the fact that those scared of an easy multip crowning are now the majority. The occasional breech does not speak to the needs of that crowd.

The time had come.

I wish the problem were confined to rural obstetrics. The actual problem is more insidious and pervasive, and relates to almost anything that occurs outside the office (and some things in the office).

Although some of this is no doubt the curmudgeon's lament about the changing of the times, in some of these words is the realization that the rural town is not a small city, and it cannot be sustained by subspecialized practitioners of limited scope. The city might have long turned its back on generalists, but the country desperately needs them. What are we to do?

First, we have to deal with the usual crisis of confidence when the apron strings are cut. We too felt insecure when finishing our rotating internship, and if we didn't it was only because of a lack of insight. We have to fight the institutional barriers that inhibit practising physicians from providing "in situ" support to help "finish" new graduates and to teach new skills as the need arises.

Second, we have to be mindful and expose the fraudulent unwritten curriculum that encumbers current graduates during their 2 years of residency training that family physicians "don't do" obstetrics, emergency medicine, or even nursing home and hospital care (at least not without additional training!). Expose those residents to role models who CAN and DO practise the spectrum of rural medicine.

Finally, it may be time to develop a written curriculum for current trainees, ensuring along the way that they develop competencies in all aspects of rural medicine that are required to deal with the needs of remote populations, without having to specialize in some subset.

Oh yes, and we can publish the occasional how-to on something as basic as supporting a woman through normal birth.

REFERENCE

1. Miller KJ. The occasional vaginal delivery. *Can J Rural Med* 2012;1:21-4.

Les défis de la confiance

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À une certaine époque, je m'opposais à la publication occasionnelle d'articles traitant de l'accouchement normal : je me disais que cela risquait d'insulter les médecins ruraux. Et pourtant, on trouvera dans ce numéro un excellent article sur l'accouchement par voie vaginale[1]. En effet, quelques observations m'ont fait changer d'idée.

Je suppose que c'est en partie à cause de l'un des autres chapeaux que je porte, celui de coordonnateur du programme de compétences avancées en soins de maternité à l'École de médecine du Nord de l'Ontario. Au fil des ans, je rencontrais des candidats qui ne cherchaient pas à maîtriser les techniques d'accouchement par césarienne, mais qui se sentaient mal préparés à la pratique rurale comprenant des accouchements normaux. Mon travail d'animateur des ateliers du module de soins critiques obstétricaux en milieu rural de la Société de la médecine rurale du Canada (SMRC) a sans doute cimenté ma volte-face. Dans cet atelier, je voyais des apprenants désireux d'acquérir les compétences qui leur permettraient d'être mieux préparés à accueillir l'inévitable parturiente prête à accoucher sur le pas de leur porte même s'ils n'avaient pas déroulé le tapis rouge !

Quand on m'a demandé ce que je pensais de la publication occasionnelle d'un article au sujet de l'accouchement normal, j'ai donc répondu ceci à l'auteur :

> Bien que je regrette qu'il en soit ainsi, ni moi ni mes corédacteurs ne pouvons nier que ceux qui s'effraient à l'idée d'un accouchement sans complication où se présentent par la tête plus d'un bébé constituent désormais la majorité. Parler de la présentation occasionnelle par le siège ne répond pas aux besoins de ce groupe. L'heure était arrivée.

J'aimerais bien que le problème se limite à l'obstétrique en milieu rural, mais il est en fait omniprésent et plus insidieux. Il se rapporte à peu près à tout ce qui se produit hors du cabinet (et même au cabinet jusqu'à un certain point).

J'en conviens, mon propos semble celui d'un grincheux qui se plaint des temps qui changent. Il reste toutefois une réalité : la municipalité rurale n'est pas une petite ville et elle ne peut pas être desservie par des praticiens surspécialisés dont l'envergure est limitée. La ville a probablement tourné le dos aux généralistes depuis longtemps, mais les régions rurales ont toujours désespérément besoin d'eux. Que faire ?

En premier lieu, nous devons faire face à la crise de confiance habituelle lorsque nous nous apprêtons à voler de nos propres ailes. Nous sommes tous et toutes passés par là. Nous nous sentions tout aussi incertains quand nous avons terminé notre internat par rotation et si cette angoisse en épargnait certains, c'était simplement de l'inconscience de leur part. Nous devons combattre les obstacles institutionnels qui empêchent les médecins praticiens de fournir un soutien « in situ » pour aider à parfaire les connaissances des nouveaux diplômés et leur enseigner de nouvelles compétences quand le besoin se fait sentir.

En deuxième lieu, nous devons être attentifs et exposer au grand jour le contenu non écrit des programmes d'études par lesquels on cherche frauduleusement à faire croire aux diplômés, pendant leurs deux années de formation en résidence, que les médecins de famille « ne font pas » d'obstétrique ou de médecine d'urgence ou ne

prodiguent pas de soins en foyer de soins de longue durée ou en milieu hospitalier (ou du moins pas sans une formation supplémentaire !). Il faut présenter à ces résidents des modèles de médecins CAPABLES de couvrir tout le spectre de la médecine rurale ET QUI LE FONT.

Enfin, le temps est sans doute venu de créer pour les résidents un programme d'études qui leur permettra d'acquérir en cours de route toutes les compétences nécessaires en médecine rurale pour répondre aux besoins des populations éloignées, sans avoir à se spécialiser indûment.

Ah oui, et nous pouvons aussi publier à l'occasion des « instructions » au sujet d'un acte aussi fondamental que celui d'aider une femme à traverser un accouchement normal.

RÉFÉRENCE

1. Miller KJ. The occasional vaginal delivery. *Can J Rural Med* 2012; 1:21-4.

Directives aux auteurs

Le *Journal canadien de la médecine rurale (JCMR)* est un trimestriel critiqué par les pairs disponible sur papier et sur Internet. Le *JCMR* est le premier journal de médecine rural au monde à être inscrit dans Index Medicus et dans les bases de données MEDLINE et PubMed.

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

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

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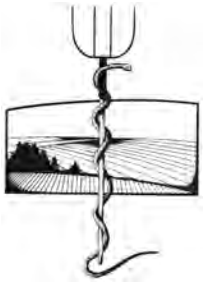

President's message. The elephant in the room

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Last year at the SRPC's annual conference in Collingwood, Ont., the former president of The College of Family Physicians of Canada (CFPC) extended an invitation to the SRPC to sit as an observer on the newly formed Special Interests or Focused Practices Council of the CFPC. In August I attended my first meeting. I have to report that I felt like the elephant in the room, representing generalism in a meeting whose raison d'être was the acknowledgement of, and acquiescence to, family medicine currents that are flowing in the opposite direction.

The CFPC states that it is committed to comprehensive practice. Yet, it is prepared to grant ever-increasing legitimacy to specialized family practices, which by nature identify with an urban population base, thereby shrinking the pool of family physicians available to rural Canada.

Let me be very clear; I have no beef with these physicians. They are as legitimate and valuable as any other, and they provide excellent service to the communities that they serve. The incoming president of the CFPC, for example, has a specialized practice in palliative care, and the community he cares for is lucky to have him. What bothers me is the policy vacuum that is allowing family medicine to be defined by the sum of the individual decisions of family physicians, rather than by the values and needs of Canadian society. As was expressed at the meeting, the CFPC seems to be following rather than leading.

It is as though the trend toward specialization has been accepted without comment by the CFPC, without any plan on how best to ensure an adequate supply of generalists. This is an abdication of the CFPC's mandate, enshrined in an act of Parliament,[1] to oversee the training of family physicians to the benefit of all communities in the country, including, as a priority, the 30% of the country that is rural.

To meet this issue head on, at its most recent council meeting, the SRPC voted unanimously to form a working group to examine the issue and develop recommendations to support and guide the survival of the generalist. The CFPC will be invited to participate, as will be representatives from the resident and student communities. Input from the broadest audience possible is not only welcome, but necessary. Consider the question carefully. All input will be brought to the attention of the working group.

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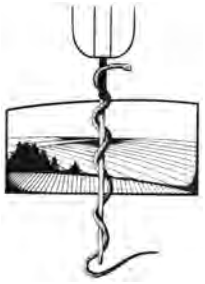
1. The College of Family Physicians of Canada. What it is. What it does. *Can Fam Physician* 1969;15:104-5. Available: www.ncbi.nlm.nih.gov/pmc/articles/PMC2281625/pdf/canfamphys00402-0104.pdf (accessed 2011 Nov. 22).



Message du président. L'éléphant dans la pièce

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L'année dernière, au congrès annuel de la SMRC à Collingwood, en Ontario, l'ancien président du Collège des médecins de famille du Canada (CMFC) a invité la SMRC à participer en qualité qu'observateur au nouveau Conseil du CMFC sur les pratiques ciblées. En août, j'assistais à ma première réunion. Je dois avouer que je me sentais comme l'éléphant dans la pièce. Je représentais le généralisme à une réunion dont la raison d'être était la reconnaissance et la ratification de courants de médecine familiale qui allant en direction opposée.

Le CMFC se dit voué à promouvoir une pratique complète. Et pourtant, il est prêt à conférer de plus en plus de légitimité aux pratiques familiales spécialisées qui, par leur nature, s'identifient aux populations urbaines, diminuant ainsi le nombre de médecins de famille disponibles pour desservir le Canada rural.

Permettez-moi de m'expliquer : je n'en veux aucunement à ces médecins. Ils ont tout autant le droit d'exercer la médecine et sont tout aussi utiles que les autres médecins. Ils offrent un excellent service aux communautés qu'ils desservent. Le nouveau président du CMFC, par exemple, a une pratique spécialisée en soins palliatifs et la communauté qu'il dessert est chanceuse de l'avoir. Ce qui me dérange, c'est une absence de politiques à cause de laquelle la médecine familiale peut se définir par la somme des décisions individuelles des médecins de famille, plutôt que par les valeurs et les besoins de la société canadienne. Comme on l'a mentionné à la réunion, le CMFC semble suivre plutôt que diriger.

C'est comme si le CMFC avait accepté d'emblée la tendance vers la spécialisation, sans commentaire, sans avoir prévu de plan pour veiller à une offre suffisante de généralistes. Or, il s'agit là d'un abandon de la mission du CMFC, enchâssée dans une loi du Parlement[1], qui consiste à superviser la formation des médecins de famille au profit de toutes les communautés du pays, y compris, en priorité, des régions rurales qui en représentent les 30 %.

Pour s'attaquer de front à cette question, la SMRC, à la plus récente réunion de son Conseil, a voté à l'unanimité la formation d'un groupe de travail pour examiner la question et formuler des recommandations visant à soutenir et à guider la survie de la médecine générale. Le CMFC sera invité à participer, comme le seront des résidents et des étudiants en médecine. Nous souhaitons entendre le plus vaste éventail possible d'opinions, car nous estimons que c'est nécessaire. Réfléchissez bien à la question. Tous les commentaires seront portés à l'attention du groupe de travail.

RÉFÉRENCE

1. The College of Family Physicians of Canada. What it is. What it does. *Can Fam Physician* 1969;15:104-5. Disponible : www.ncbi.nlm.nih.gov/pmc/articles/PMC2281625/pdf/canfamphys00402-0104.pdf (consulté le 22 novembre 2011).

Health views and metabolic syndrome in a Finnish rural community: a cross-sectional population study

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This article has been peer reviewed.

Introduction: Metabolic syndrome (MetS) can be prevented through the promotion of healthy lifestyles. In rural areas, MetS is associated with unhealthy lifestyles and socioeconomic and demographic changes. However, there is scarce evidence on how health views contribute to the unhealthy lifestyles that result in MetS.
Methods: The study involved adults in 8 birth cohorts between 30 and 65 years of age living in the rural community of Lapinlahti in eastern Finland. We assessed participants' demographic and lifestyle factors and health views. For assessment of health views, we applied factor analysis. For MetS classification, we used the 2005 criteria of the National Cholesterol Education Program.
Results: The prevalence of MetS among the participants was 38%. In a backward logistic regression analysis adjusted for other variables, there was a significant association between MetS and older age (odds ratio [OR] 2.91) as well as low level of physical activity (OR 1.99). In a factor analysis, 4 principal factors of lay health views were identified, of which blame-shifting (OR 1.36, 95% confidence interval [CI] 1.21–1.49) and social alienation (OR 1.23, 95% CI 1.24–1.40) were significantly associated with MetS in an unadjusted logistic regression analysis.
Conclusion: It is important, particularly in primary health care, to recognize health views behind MetS and to empower communities in the prevention of MetS.

Introduction : Il est possible de prévenir le syndrome métabolique par la promotion d'habitudes de vie saines. Dans les régions rurales, le syndrome métabolique est associé à des habitudes de vie malsaines et à des changements socioéconomiques et démographiques. Il y a toutefois peu de données probantes au sujet de la contribution que les opinions sur la santé apportent aux habitudes de vie malsaines qui jouent un rôle dans l'apparition du syndrome métabolique.
Méthodes : L'étude a porté sur des adultes de huit cohortes de naissance, âgés de 30 à 65 ans et vivant dans la communauté rurale de Lapinlahti, dans l'est de la Finlande. Nous avons évalué les facteurs liés aux caractéristiques démographiques et aux habitudes de vie des participants, ainsi que leurs opinions sur la santé. Nous avons appliqué l'analyse des facteurs pour évaluer les opinions sur la santé. Pour classer le syndrome métabolique, nous avons utilisé les critères de 2005 du National Cholesterol Education Program.
Résultats : La prévalence du syndrome métabolique chez les participants s'est établie à 38 %. Une analyse de régression logistique rétrograde corrigée en fonction d'autres variables a révélé qu'il y avait un lien important entre le syndrome métabolique et l'âge plus avancé (risque relatif [RR] 2,91) et le peu d'activité physique (RR 1,99). Une analyse des facteurs a révélé quatre principaux facteurs d'opinion de non-initiés sur la santé et on a établi un lien important entre le transfert du blâme (RR 1,36, intervalle de confiance [IC] à 95 %, 1,21–1,49) et l'aliénation sociale (RR 1,23, IC à 95 %, 1,24–1,40), d'une part, et le syndrome métabolique de l'autre, dans le contexte d'une analyse de régression logistique non corrigée.

Conclusion : Il importe, particulièrement en contexte de soins de santé primaires, de reconnaître les opinions sur la santé à l'origine du syndrome métabolique et de responsabiliser les communautés dans la prévention du syndrome.

INTRODUCTION

Metabolic syndrome (MetS) is an important cluster of risk factors for cardiovascular morbidity and diabetes, and a definite contributor to cardiovascular and all-cause mortality.[1,2] It has been found to be associated with genetic factors and lifestyles that include a lack of physical activity.[3] Sedentary behaviour during leisure time has been found to be associated with MetS and with individual cardiovascular risk factors in men, regardless of whether the men meet physical activity recommendations, and has been found to be associated with MetS in women who do not meet physical activity recommendations.[4]

Rurality may[5] or may not[6] contribute to a diminished level of physical activity in daily life. According to a health survey in Canada, however, the higher prevalence of obesity in rural than in urban areas[7] may indicate more sedentary lifestyles and lower levels of physical activity in rural than in urban areas. There is also growing evidence of the association between MetS, poor socioeconomic status[8,9] and psychosocial factors.[10,11] Socioeconomic and demographic shifts in rural areas have resulted in a steady increase in the incidence of MetS.[12]

At the community level, primary health care providers should identify people at high risk for MetS. Not much is known about the association between confirmed MetS and lay health views. However, the SHIELD (Study to Help Improve Early evaluation and management of risk factors Leading to Diabetes) population study, which assessed the association between risk factors for MetS and health attitudes and behaviour, found that people most at risk were not concerned about their diet, overall nutrition and fitness.[13] The researchers concluded that it would be difficult to provide treatment to these high-risk residents because of their habits related to diet, exercise and medication.

Our objective was to study the association between confirmed MetS and age, vocational education, physical activity and vegetable intake. More specifically, we sought to study the association between MetS and views on health and health care in an adult Finnish rural population. We aimed to explore perceptual determinants of lifestyle behind MetS. Factor analysis was used to find profiles of health views that may predict MetS.

METHODS

Study population and procedure

Lapinlahti, with a total population of 7513, is a typical rural community in eastern Finland with a demographic shift to older age strata and increasing migration of the young and economically active population to urban centres. The study was carried out in collaboration between the University of Eastern Finland and the Lapinlahti Primary Health Care Centre, which is responsible for all public primary care in the catchment population.

In the first phase of the study, we mailed a questionnaire to all adult residents in the Lapinlahti municipality who were born in 1939, 1944, 1949, 1954, 1959, 1964, 1969 and 1974. Volunteers from the first phase of the study participated in a health survey, the second phase of our study, which was carried out in the health care centre by a team of one research nurse and one laboratory technician. The first author (J.M.) supervised the procedures. The health survey consisted of a physical health examination, laboratory tests and a structured questionnaire that included statements related to health and health services that were rated by participants using a Likert scale. In our analyses, we did not include previous health records kept at the health care centre. Therefore, all our findings were based on the information collected in the health survey.

All participants in the health survey from the second phase filled out a structured questionnaire including 29 statements about views on health and health care on a 5-point Likert scale (1 = totally agree, 2 = agree to some extent, 3 = disagree to some extent, 4 = totally disagree, 5 = not applicable). Similar statements have been used in previous studies in Finland, such as studies in the North Karelia project since 1972 and in the World Health Organization MONICA (monitoring trends and determinants in cardiovascular disease) Project since the early 1980s.[14] Based on our long-term practical experience, the statements in the structured questionnaire about health views measure the health understanding and behaviour of the Finnish general population quite well.

We sought to find factors of health views that would describe the health understanding and behav-

iour of our study participants. Factor analysis identified 20 statements for health view factors. To measure only the views of those participants who could locate their health views on the continuum, category 5 ("not applicable") was excluded from the analysis.

MetS was determined from anthropometric measurements and blood test results. The presence of at least 3 of the 5 MetS criteria of the National Cholesterol Education Program (NCEP) classified the participants as having MetS.[15] The 5 criteria were

1. fasting plasma glucose level 5.6 mmol/L or greater and/or medication for diabetes, or previously diagnosed type 2 diabetes;
2. serum triglyceride level 1.7 mmol/L or greater and/or medication for elevated triglyceride level;
3. serum high-density lipoprotein (HDL) cholesterol level under 1.03 mmol/L in men and under 1.29 mmol/L in women and/or medication for low HDL cholesterol;
4. systolic blood pressure 130 mm Hg or greater and/or diastolic blood pressure 85 mm Hg or greater and/or antihypertensive medication;
5. waist circumference greater than 102 cm in men and greater than 88 cm in women.

Waist circumference was measured at the midpoint between the lowest rib and the iliac crest, and blood pressure was taken 3 times at intervals of 5 minutes, in a sitting position after 10 minutes of rest. For the blood pressure measurements, we routinely used a calibrated Omron M4-1 semiautomatic device. A manual mercury sphygmomanometer was used for participants with reported or detected cardiac arrhythmias. For the statistical analysis, we calculated the means of the 3 measurements. Glucose level was tested from capillary blood with a glucometer calibrated for plasma glucose level, and other laboratory tests were done from the serum of a venous blood sample. The blood samples were drawn after 12 hours of fasting. All the laboratory investigations were performed according to the routine protocol of the Kuopio University Hospital's medical laboratory.

Statistical analysis

We used SPSS 14.0 for Windows (SPSS Inc.). In all the statistical analyses, we regarded a p value of less than 0.05 as statistically significant. The association between MetS and categorical background and lifestyle variables was explored with a χ^2 test. A Mann–Whitney U test was used for all continuous variables except for HDL cholesterol in women, which was the only normally distributed variable. For HDL cholesterol, we used an independent samples t test. Further, the association between MetS and lifestyle factors was studied using logistic regression analysis adjusted for age, sex, marital status, vocational education level and employment status.

We used SPSS principal component factor analysis with oblimin rotation to condense the statements on health views in the structured questionnaire into a smaller set of statements to identify different health view factors with a minimum loss of information.[16] Sampling adequacy for factor analysis was studied using the Kaiser–Meyer–Olkin method. At a minimum loading level of 0.4, the analysis reduced the number of statements from 29 to 20 (Appendix 1). Because we could not find previous reports of studies with a similar arrangement, we had to agree on the selection of the most appropriate labels to describe the statements that loaded under each category. The labels used are expressions that are used in the disciplines of medicine, sociology and psychology.

Cronbach α was used to indicate the adequacy of the internal coherence of the sample. The occurrence of each health view factor in the sample was calculated from the sum variables, which did not give exactly 100% as the total. This was because of co-occurrence of health views among the participants. Finally, a linear regression analysis was performed to explore the association between MetS and health view factors.

Ethical approval

The ethics committee of Kuopio University Hospital and the University of Eastern Finland approved the study. All participants gave written informed consent.

RESULTS

Of the 760 adults who were mailed questionnaires for basic background and lifestyle information, 594 (78%) completed the questionnaire. In the second phase of the study, 480 participants filled out our structured questionnaire (Appendix 1) for a participation rate of 63% (230 men, 250 women). The rate of participation in the health survey was better among residents aged 50 years or more (69%) than among residents less than 50 years of age (57%). It was also better among women than among men in all age groups, except for residents born in 1944 (74% among men and 68% among women).

The basic characteristics of the participants of the health survey (as identified by our 20 statements

for health view factors) are presented in Table 1. The prevalence of MetS among the participants was 38% (40% among men and 36% among women). The prevalence of positive single MetS components was 74% for blood pressure, 44% for serum HDL cholesterol, 42% for fasting plasma glucose, 33% for waist circumference and 25% for serum triglyceride.

MetS was significantly associated with older age ($p < 0.001$), and low levels of physical activity ($p = 0.001$), vegetable intake ($p = 0.008$) and vocational education ($p = 0.010$). In a backward logistic regression analysis, the association of MetS with older age (odds ratio [OR] 2.91, 95% confidence interval [CI] 1.91–4.45) and low physical activity (OR 1.99, 95% CI 1.31–3.01) persisted.

In the factor analysis of the health views of all the health survey participants, 4 health view factors were identified (Table 2): blame-shifting (blaming external factors), denial (rejecting facts), high awareness (adopting facts) and social alienation (self-estrangement/distancing from social interaction). Calculated from the sum variables, the occurrence of high awareness was 87%; blame-shifting, 34%; social alienation, 10%; and denial, 8%. The total percentage of all the sum variables was more than 100%, as described in the methods section. A significant correlation was found between social alienation and denial ($p = 0.009$). "Doctors and nurses push too much health advice" was the only statement that loaded in 2 factors, namely social alien-

Table 1. Characteristics of the participants of the health survey, *n* = 480*

Characteristic	Group; no. (%)*			*p* value
	Total	MetS† absent	MetS† present	
Age, mean (SD) yr	50.4 (10.2)	48.6 (10.1)	53.3 (9.7)	< 0.001
Male sex	230 (48)	138 (46)	92 (51)	0.40
Marital status‡ (single/divorced/ widowed), *n* = 479	86 (18)	49 (16)	37 (20)	0.27
Level of vocational education§ (lower level), *n* = 479	335 (70)	195 (66)	140 (77)	0.010
Employment status¶ (unemployed/retired), *n* = 465	138 (30)	77 (27)	61 (35)	0.094
Smoking status** (smoker), *n* = 475	133 (28)	83 (28)	50 (28)	> 0.99
Alcohol use†† (alcohol user)	377 (79)	234 (79)	143 (79)	> 0.99
Physical activity‡‡ (inactive), *n* = 474	230 (49)	126 (43)	104 (58)	0.001
Dietary vegetable intake§§ (low intake), *n* = 479	215 (45)	119 (40)	96 (53)	0.008
Taking medication for diabetes	21 (4)	6 (2)	15 (8)	0.002
Taking medication for hypertension	104 (22)	30 (10)	74 (40)	< 0.001
Taking medication for dyslipidemia	65 (14)	25 (9)	40 (22)	< 0.001
Physical measure, mean (SD)				
Waist circumference, cm				
Men	98.5 (11.9)	92.2 (7.7)	107.9 (10.9)	< 0.001
Women	85.1 (13.8)	77.6 (8.0)	97.8 (12.1)	< 0.001
Blood pressure, mm Hg				
Systolic	139 (19)	135 (18)	146 (18)	< 0.001
Diastolic	83 (11)	81 (10)	87 (11)	< 0.001
Fasting plasma glucose, mm Hg	5.6 (1.2)	5.3 (1.0)	6.1 (1.3)	< 0.001
Serum HDL cholesterol, mmol/L				
Men	1.09 (0.34)	1.22 (0.32)	0.89 (0.26)	< 0.001
Women¶¶	1.37 (0.43)	1.54 (0.40)	1.08 (0.31)	< 0.001
Serum triglycerides, mmol/L	1.36 (0.82)	1.04 (0.41)	1.90 (1.02)	< 0.001

HDL = high-density lipoprotein; MetS = metabolic syndrome; SD = standard deviation.
*Unless otherwise indicated.
†National Cholesterol Education Program 2005 criteria.
‡Married or cohabitating versus single, divorced or widowed.
§Higher level of vocational education (degree from a polytechnic or university) versus lower level of vocational education (lower than polytechnic level or no education).
¶Employed versus unemployed or retired.
**Nonsmoker versus smoker.
††No (no use of alcohol for 12 mo) versus yes (current alcohol user).
‡‡Active (≥ 3 units/wk) versus inactive (≤ 2 units/wk); 1 unit equals a minimum of 30 minutes of physical exercise at work or during leisure time.
§§High intake (≥ 3 times/wk) versus low intake (≤ 2 times/wk).
¶¶Independent samples *t* test used (nonparametric Mann–Whitney U test used for the other continuous variables).

ation (0.412) and denial (0.495). In an unadjusted logistic regression analysis, blame-shifting (OR 1.36, 95% CI 1.21–1.49) and social alienation (OR 1.23, 95% CI 1.24–1.40) were associated with MetS. The 4-factor solution explained 43% of the total variance. The frequency of option 5 ("not applicable") for each statement is presented in Table 2.

DISCUSSION

Nearly 4 out of 10 of the participants of the health survey had MetS. We identified 4 health view profiles, of which blame-shifting and social alienation were significantly associated with MetS. A large number of the respondents cited "not applicable" to all statements under the blame-shifting profile because they found these statements irrelevant to their situation. In this profile, interestingly, 4 of the 5 loading statements explored views related to obesity/overweight and the fifth one explored views related to ailments. Although obesity and ailments were common among the participants, a large majority of them did not have any substantial problems with their body image.

Knowledge about MetS among the general population is low.[13,17] The SHIELD population study[13] explored the association between self-reported MetS risk factors and health attitudes and behaviour. In that study, the high-risk group was used as a surrogate for MetS risk. To our knowledge, however, the present study is the first comprehensive report on the association between confirmed MetS and health views in a general adult population. We confirmed a MetS diagnosis with a health examination using NCEP 2005 criteria. The blame-shifting group in our study is similar to the "don't bother me" group in the SHIELD study. Neither group would embrace changes in health behaviour without major external support.

Socioeconomic and demographic changes have been substantial in our study area. Because of a lack of scientific evidence, however, it is impossible to confirm an attitude change in the rural general population. Australian researchers have reported that psycho-educational barriers compromise prevention of diabetes in rural communities.[18] Similar barriers are likely to hamper prevention of MetS in Finnish rural communities. In our study, social alienation and

Table 2. Statements in the structured questionnaire with 0.4 loading and health view factors identified in the factor analysis

Statement (no. in the questionnaire)	Not applicable; no. (%)*	Health view factors			
		Blame-shifting	Social alienation	High awareness	Denial
Nurses cannot give good advice for reducing my weight (24)	178 (37.2)	0.851			
Doctors cannot give good advice for reducing my weight (20)	165 (34.5)	0.816			
I can't do anything for my overweight since it is hereditary (3)	154 (32.2)	0.746			
I can't reduce my weight since food is one of my few enjoyments (4)	126 (26.4)	0.677			
I don't want to practise physical exercise to control my weight (15)	86 (12.9)	0.512			
It is impossible to exercise due to my ailments (22)	80 (16.7)	0.446			
Eating together with the family promotes the health of all family members (21)	9 (1.7)			0.609	
Stress may cause cardiovascular illnesses (14)	7 (1.5)			0.588	
Continuous medication can have harmful consequences (17)	11 (2.3)			0.587	
I don't want lifelong medication (9)	5 (1.0)			0.509	
Media pushes too much health advice (12)	6 (1.3)				0.608
Risks of fatty foods are exaggerated (19)	4 (0.8)				0.580
Food with little salt is tasteless (7)	3 (0.6)				0.558
Doctors and nurses push too much health advice (11)	20 (4.2)				0.495
Smoking is not as dangerous as argued (10)	71 (14.8)				0.476
Medical check-ups are unpleasant (18)	8 (1.7)		0.710		
Doctor's consultations are unpleasant (13)	8 (1.7)		0.622		
I don't go out for physical exercise in wintertime since it is cold and dark (27)	23 (4.8)		0.476		
My lifestyle is no one else's business (6)	15 (3.1)		0.422		
My family members don't support me in my health promotion (2)	19 (7.5)		0.416		

*Number of participants who selected option 5 ("not applicable") on a 5-point Likert scale.

blame-shifting were clear manifestations of individual resistance against traditional measures for health education. Based on our clinical experience, promotion of health literacy from childhood leads to lifelong healthy behaviour. Therefore, it should be given preference over traditional health education, which is based on illness risk assessment. The concept of salutogenesis (from the Greek *salus*, meaning health and genesis) introduced by Aaron Antonovsky[19] is a promising approach to health literacy.[20]

The main strengths of this study are its wide coverage of a single community and its comprehensive assessment of MetS. The age and sex distributions of the participants of the health survey differed slightly from those of the nonrespondents. However, this minimal difference does not weaken the significance of the study results. Because of the fairly high rate of participation, the health survey population represents the adult population of the community, which is a typical semirural community in eastern Finland. Similar prevalence figures based on other MetS definitions have been reported from other parts of Finland.[21] Therefore, the results may be generalized at least to the average Finnish adult population. Typical for this kind of survey, the lower participation rate of younger age groups and men in particular may have affected the results.

In the factor analysis, we selected the best possible expressions to cover the statements in each group. The items loaded quite clearly in the 4 factors. The structured questionnaire had high validity in the factor analysis, although it is not a validated instrument. The Kaiser–Meyer–Olkin method coefficient was 0.69, which justified the method we used. Further, the Cronbach α was 0.76 (0.69–0.81), indicating the adequacy of the internal coherence of the sample. The factor matrix explained 43% of the total variance. Because of the fairly high proportion of "not applicable" responses to the health view statements, however, the significant association found between MetS and the 2 factors (social alienation and blame-shifting) warrants careful interpretation of the results.

Blame shifting, which was significantly associated with MetS, resembles an external locus of control attitude.[22] Therefore, our findings support the findings of Ravaja and colleagues[23] on the association between MetS precursor states and external locus of control. However, we could not find supporting or conflicting evidence from the literature for our finding on the significant association between MetS and social alienation. This seems to be a novel finding.

CONCLUSION

It is important in primary care to recognize health views of community members most at risk of MetS for effective and patient-centred prevention of the syndrome and other illnesses related to lifestyle.

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Appendix 1. Health and health care statements in the structured questionnaire*

1. It is difficult for me to practise physical exercise.
2. My family members don't support me in my health promotion.†
3. I can't do anything about being overweight since it is hereditary.†
4. I can't reduce my weight since food is one of my few enjoyments.†
5. A small amount of alcohol taken daily supports health.
6. My lifestyle is no one else's business.†
7. Food with little salt is tasteless.†
8. I do not want to trouble myself with continuous thinking of my health condition.
9. I don't want lifelong medication.†
10. Smoking is not as dangerous as argued.†
11. Doctors and nurses push too much health advice.†
12. Media pushes too much health advice.†
13. Doctors' consultations are unpleasant.†
14. Stress may cause cardiovascular illnesses.†
15. I don't want to practise physical exercise to control my weight.†
16. I cannot afford a healthy diet.
17. Continuous medication can have harmful consequences.†
18. Medical check-ups are unpleasant.†
19. The risks of fatty foods are exaggerated.†
20. Doctors cannot give good advice for reducing my weight.†
21. Eating together with the family promotes the health of all family members.†
22. It is impossible to exercise because of my ailments.†
23. I have tried to do my best to reduce my weight.
24. Nurses cannot give good advice for reducing my weight.†
25. It is difficult for me to select healthy foods when shopping.
26. It is difficult for me to eat healthy foods at home because other family members have their own desires.
27. I don't go outside for physical exercise during winter since it is cold and dark.†
28. My work/studies do not hamper a healthy lifestyle.
29. Obesity has nothing to do with getting diseases.

*Statements were rated by participants using a 5-point Likert scale (1 = totally agree, 2 = agree to some extent, 3 = disagree to some extent, 4 = totally disagree, 5 = not applicable).
†Statements loading at the minimum level of 0.4 in the factor analysis.

Diagnostic approach to pulmonary embolism in a rural emergency department

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Introduction: Pulmonary embolism (PE) is a serious condition with mortality estimates of up to 10%. We sought to investigate the diagnosis of PE, time to access imaging and diagnostic utility of each modality in a rural emergency department (ED).
Methods: We completed a retrospective chart review to determine the investigations performed and treatments initiated in the management of suspected PE in a rural hospital.
Results: A total of 47 charts from a 5-year period were reviewed. Of these, 83.0% indicated a D-dimer test was ordered, and 31.9% and 40.4% indicated either ventilation–perfusion (V/Q) or computed tomography (CT) were ordered during the ED visit. Computed tomography diagnosed 11 of the 12 instances of confirmed PE. Mean time to patients undergoing V/Q or CT was 1.58 and 1.59 days, respectively. Low-molecular-weight heparin was started in 83.0% of patients.
Conclusion: In this ED there may be overreliance on the D-dimer test, irrespective of Wells score. Access to V/Q and CT were similar to that of an urban centre. Empiric anticoagulation was started in most patients.

Introduction : L'embolie pulmonaire (EP) est un problème grave dont le taux estimatif de mortalité peut atteindre 10 %. Nous avons cherché à étudier le diagnostic d'EP, le temps d'attente pour avoir accès aux services d'imagerie et l'utilité diagnostique de chaque mode dans un service d'urgence rural.
Méthodes : Nous avons effectué une étude rétrospective des dossiers pour déterminer les examens effectués et les traitements administrés dans la prise en charge d'une embolie pulmonaire soupçonnée dans un hôpital rural.
Résultats : Nous avons analysé au total 47 dossiers qui s'étalaient sur une période de 5 ans. Sur ce total, 83,0 % des dossiers indiquaient qu'on avait prescrit un dosage des D-dimères et 31,9 % et 40,4 %, respectivement, indiquaient qu'on avait prescrit soit une ventilation-perfusion (V/Q), soit une tomodensitométrie (TDM) au cours de la visite à l'urgence. La tomodensitométrie a permis de diagnostiquer 11 des 12 cas d'embolie pulmonaire confirmée. Les patients qui ont subi une V/Q ou une TDM ont attendu en moyenne 1,58 et 1,59 jour, respectivement. On a amorcé l'administration d'héparine de faible poids moléculaire dans 83,0 % des cas.
Conclusion : Au service d'urgence en cause, on compte peut-être excessivement sur le dosage des D-dimères, sans égard au score de Wells. L'accès à la V/Q et à la TDM était semblable à celui qu'offrait un centre urbain. On a amorcé l'administration d'une anticoagulation empirique à la plupart des patients.

INTRODUCTION

Pulmonary embolism (PE) is a serious condition with mortality estimates of up to 10%.[1] The diagnosis of PE can be difficult because of the nonspecific signs and symptoms, which include cough, dyspnea, tachypnea, hemoptysis and pleuritic chest pain. Evidence-based algorithms can help clinicians diagnose PE.[2,3]

A literature review found 2 Canadian reviews of diagnosis and treatment of PE, only 1 of which was focused on rural patients.[4,5] A key component to the diagnosis of PE in low-risk patients was the use of the D-dimer test. As of 2005,

most rural hospitals had this test available locally. A meta-analysis in 2010 validated these Canadian recommendations for the use of the D-dimer test in low-risk patients.[6]

Given the relation between deep vein thrombosis and PE, ultrasonography can also be used to help make the diagnosis in patients with leg symptoms.[7] Almost 100% of rural hospitals in Ontario report having ultrasonography available.[8]

More advanced imaging techniques such as ventilation–perfusion (V/Q) or computed tomography (CT) may be required to diagnose PE in patients with moderate to high pretest probability. These imaging methods are not readily available in most rural centres.

A study by Aujesky and colleagues in 2008 reported there was reduced short-term mortality in patients with PE who received treatment in high–case volume (urban) hospitals.[9] This has raised the issue of whether the management of PE should be regionalized.[10] Although there is evidence for regionalization of trauma and perinatology care,[11] we could find no research that assessed regionalization in the context of PE. However, it has been shown that excellent care can be provided in a rural setting to patients with acute myocardial infarctions, painful lower limb injuries and pneumonia.[12–14]

The purpose of this study was to investigate the diagnostic approach for PE, time to access imaging and diagnostic utility of each modality in a rural emergency department (ED).

METHODS

The South Huron Hospital is a 19-bed community hospital serving a rural population of about 20 000. The ED is open 24 hours and sees about 10 000 patients per year. The study was performed as a retrospective chart review. Permission to conduct the study was granted by the Medical Advisory Committee of the South Huron Hospital Association.

Through the health records department, a search was completed for all ED charts from Apr. 1, 2004, to Mar. 31, 2009, that had been given a diagnostic code pertaining to PE, including "suspected PE," "query PE," "rule out PE" and cases in which PE was high on the differential diagnosis.

Each patient's chart was manually reviewed to extract data that included demographic data, investigations performed (D-dimer, chest radiography, V/Q, CT, Doppler ultrasonography of the legs), time to obtain these investigations and what, if any, anticoagulation therapy was started in the ED.

Because South Huron Hospital is a small hospital in a rural area, it has no onsite nuclear medicine or CT availability. All patients requiring V/Q were transferred to London, Ont. (45 km away), although Stratford, Ont. (50 km away) also offers V/Q. For CT, patients can be transferred to London, Stratford or Strathroy, Ont. (55 km away). The hospital in Strathroy obtained a CT scanner in March 2007, partway through the period of data collection, and imaging services remained unchanged in London and Stratford throughout the study period.

Two studies that outlined methods for improving retrospective chart review research were consulted with respect to study design.[15,16] We adhered to 6 of the 8 suggestions by Gilbert and colleagues[15] and 9 of the 12 by Worster and colleagues,[16] including the creation of specific inclusion criteria and data abstraction forms, as well as holding periodic meetings between the data abstractor and the study supervisor to ensure consistency. Because there was a single data abstractor who was involved with the study design, we were unable to blind the abstractor to the hypothesis being tested or to test for interrater agreement (i.e., checking to see to what extent 2 or more data abstractors would obtain the same results). Given the use of predetermined data abstraction forms, we do not believe that the use of a single data abstractor had a negative impact on the data from the study.

Statistical analysis of the data, including descriptive statistics, Student t test and χ^2 analysis, was performed using Microsoft Excel and MedCalc statistical software.

RESULTS

Our initial search yielded 54 charts. The list was then manually reviewed, with 8 charts removed because of pre-existing knowledge of PE on admission to the ED or inappropriate coding of PE in the chart. During the chart review process, 1 last case (just before the end of the study period) of PE was diagnosed in the ED, which brought the total number of charts reviewed to 47.

Of the 47 charts reviewed, 27 involved female patients (57%). The mean age of patients was 62.7 (interquartile range 24.5) years. Chest radiography was ordered in 87.2% of charts, D-dimer in 83.0%, CT in 40.4%, V/Q in 31.9% and bilateral leg Doppler ultrasonography in 25.5%. In 14.9% of charts, both V/Q and CT were ordered in the course of the workup. In each of these cases, CT was ordered subsequent to V/Q as a definitive investigation. In several cases, CT was ordered after the ED workup (often while the patient was staying in hospital) and was

discovered by the data abstractor during investigation of follow-up care received by the patients.

The mean time to patients undergoing either V/Q or CT was 1.58 and 1.59 days, respectively, which was not a statistically significant difference (t_{27} = 0.0049, p = 0.50).

Twelve of the 47 charts (25.5%) included diagnoses of PE that were confirmed by imaging. Of these, 11 were diagnosed using CT and 1 using V/Q. D-dimer was ordered in 8 of the 12 positive charts.

Low-molecular-weight heparin was started in the ED in 83.0% of charts, including 10 of the 12 charts that included diagnoses of PE.

We compared PE-positive and PE-negative charts. With respect to both patient age and time to obtain imaging there was no significant difference between the 2 groups (t_{38} = 0.279, p = 0.39, and t_{24} = 0.074, p = 0.47, respectively). We used χ^2 tests for the comparison of 2 proportions to evaluate any difference in investigations ordered between the PE-positive and PE-negative groups. Of all investigations, only D-dimer proved to have a statistically significant difference, with the PE-negative group having more D-dimer tests ordered (χ^2 [1, n = 35] = 4.35, p = 0.040). The significance levels for the remaining comparisons as well as a summary of the comparative data between confirmed PE-positive and PE-negative charts are shown in Table 1.

DISCUSSION

A literature review did not reveal any previous studies examining the diagnosis of PE and time required to access imaging modalities from a rural ED. Furthermore, this review did not find any studies that compared time to obtain imaging in academic and rural centres. However, there has been a debate in the literature about possible regionalization of treatment for PE.[9,10]

A discussion with the nuclear medicine department at London Health Sciences Centre revealed only that instances of suspected PE are triaged as urgent, with V/Q performed either the same day or the following day (Dr. Jonathan Romsa, Chief/Chair Nuclear Medicine, The University of Western Ontario, London, Ont.: personal communication, 2011). Our study suggests that in this rural ED the time of about 1.6 days for patients to undergo either V/Q or CT was comparable. There is evidence to suggest that the use of imaging and procedural techniques varies by geographic location and between urban and rural settings. A Norwegian study showed that all radiographic imaging techniques (including CT and magnetic resonance imaging) were used more frequently per capita in the more populated as opposed to rural regions of the country.[17] Similar evidence has been collected in Ontario, showing that patients who live closer to a tertiary hospital are more likely to undergo angiography after myocardial infarction.[18]

Previous research evaluating the efficacy of both V/Q and CT in the diagnosis of PE has been less than conclusive. Several studies have suggested that V/Q is an effective modality that combines low exposure to radiation with a high level of sensitivity.[19,20] Other studies support the use of CT, citing higher levels of both sensitivity and specificity, as well as pointing out that in many cases CT is ordered subsequent to V/Q when an indeterminate scan result is obtained.[21–23] Although our results suggest that in this ED physicians prefer the use of CT in diagnosing PE, it is unknown whether this reflects a perceived ease of access from this site or some other underlying preference.

Of the 47 charts examined, 39 (83.0%) had a D-dimer ordered during the ED workup. Two previous studies that examined use of D-dimer by emergency physicians both concluded that D-dimer is not being used according to established guidelines.[24,25] The issues identified in these studies were the overuse of D-dimer in high-probability cases of suspected PE[22] and failure to use D-dimer to appropriately determine the need

Table 1. Comparison of charts positive for pulmonary embolism and negative for pulmonary embolism, n = 40*

Variable	Sample size (% female)	Age, mean (IQR) yr	ED investigations; no. (%)					Time to obtain imaging†, mean (IQR) d
			D-dimer	CXR	Leg US	V/Q	CT	
PE positive	n = 12 (41.7)	61.3 (23.3)	8 (66.7)	10 (83.3)	3 (25.0)	1 (8.3)	8‡ (66.7)	0.90 (1.75)
PE negative	n = 28 (75.0)	62.9 (25.5)	27 (96.4)	25 (89.3)	4 (14.3)	11 (39.3)	9 (32.1)	0.88 (1.00)
Significance		p = 0.39	p = 0.04	p > 0.99	p = 0.70	p = 0.30	p = 0.09	p = 0.47

CT = computed tomography; CXR = chest radiograph; ED = emergency department; IQR = interquartile range; Leg US = bilateral venous ultrasonography of the legs; PE = pulmonary embolism; V/Q = ventilation–perfusion.
*Of the 47 charts reviewed, 40 had documented PE positive or PE negative in the chart, and 7 had no documentation as to whether PE had been confirmed.
†Refers to V/Q or CT.
‡Refers to imaging that was ordered during the initial emergency department visit for suspected PE; does not include imaging as part of follow-up investigations.

for further testing.[23] Efforts were made to retrospectively calculate a Wells score for the patients reviewed in our study to evaluate adherence to clinical practice guidelines. Upon review, only one of the charts contained documentation of all the pertinent positive and negative signs and symptoms required for the Wells score. For this reason, it was not possible to accurately calculate use of the Wells score and D-dimer test retrospectively. The lack of documented pretest probability combined with these previous experiences suggests that, in our ED, D-dimer is being overused in the workup of suspected PE. One method to reduce this possible overuse of investigations would be to implement a protocol whereby Wells scores would be calculated before further imaging was ordered.

Our study has a number of limitations. The study was limited to one rural ED, raising questions about the generalizability of the data. The small number of patients included in the review limits the study's power. As a retrospective chart review there is the possibility of data being recorded incorrectly on charts as well as errors in transcription into the electronic records system. As was previously mentioned, the inability to calculate a Wells score, and therefore evaluate adherence to clinical practice guidelines, is a further limitation to the study.

CONCLUSION

Our results conclude that, in one rural ED, patients with suspected PE were subjected to equally short delays in undergoing either V/Q or CT and that CT was used more often in the diagnosis of PE than V/Q. There may be overreliance on D-dimer testing in this rural centre, compared with quoted averages, irrespective of Wells score. Doppler ultrasonography of the legs was not used any more frequently than CT or V/Q in aiding the diagnosis. Anticoagulation was started in most patients empirically. Further research needs to be done at multiple centres in both rural and urban settings to characterize the diagnosis, treatment and outcome for patients with PE. Then, an informed decision about the regionalization of treatment for PE could be addressed.

Competing interests: None declared.

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The occasional vaginal delivery

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There was a day when the normal vaginal delivery was considered a core part of any rural physician's skill set, and, as such, inclusion of "the occasional vaginal delivery" in a series such as this would be considered heresy. However, obstetric skills are now specialty skills that fewer family doctors possess. Only 10.5% of all Canadian family doctors provide intrapartum care.[1] A dwindling number of rural hospitals continue to provide maternity care, whether because of a lack of physician and/or nursing resources or regionalization of programs.[2–4]

Despite the choices made by hospital administrators and physicians, babies continue to arrive when they want to arrive, and mothers will continue to deliver in rural hospitals either before personnel trained in obstetrics can arrive or before transfer to an obstetrics centre can take place. As the physician delivering these babies, take solace in the fact that most of them largely deliver themselves. Your job is merely to guide the process, anticipating and minimizing complications.

If you're in a real hurry, just skip to the bold parts.

First, assess the patient. When is her due date? How long has she been in labour and what is her contraction pattern (i.e., frequency, length and strength)? A "good" labour pattern will consist of a strong (i.e., quite painful) contraction every 3–5 minutes lasting at least 60 seconds. How many babies has she had before and how long was/were her labour(s)? The average first labour lasts 8–12 hours, and the average second labour lasts 5–6 hours.[5,6] Have her membranes ruptured, and, if so, what colour was the fluid?

The physical examination starts with assessing maternal vitals and fetal heart rate (normal 120–160 beats/min). An assessment of cervical dilation should be performed; dilation will range from closed (usually also long and posterior) to fully dilated (10 cm). Accurate assessment of cervical dilation is a skill that requires practice and, for the purposes of emergency delivery, differentiating between barely open, half open, mostly open and fully open is adequate. Slide 2 fingers into the vagina as if doing a bimanual examination. When you strike the presenting part (hopefully, a hard, head-like presenting part) feel for a ring of tissue around the edges. Mentally approximate the diameter or the percentage of the head no longer covered (60% open = 6 cm dilated). If possible, determine any change in the cervix over time.

Decide on transfer. Consider all the information you have gathered to decide whether to transfer the patient. Any patient who is 8–9 cm dilated or experiencing an urge to push should not be transferred, no matter how close the obstetrics centre. Even observation over 15 minutes will often give you a good sense for the women who are moving too quickly to avoid delivery en route. Whenever possible, attempt to transfer women in premature labour, but bear in mind that although resuscitating a premature newborn is daunting, doing so in a moving ambulance is doubly so. Any woman in active labour should be accompanied en route by either a physician or an experienced obstetric nurse. Do not hesitate to consult the obstetrician on call at your

referral centre to aid in decision-making.

Call for help in the form of 2 nurses and a second physician, if possible. Consider contacting neonatal transport if problems are anticipated or the baby is premature. **Select a room for delivery** that is large enough to accommodate the extra help plus 1 or 2 family members. If possible, warm the room, because newborns do not regulate their own temperature well. A fancy bed and stirrups are not necessary — in fact, the end of a stretcher as a landing pad is quite handy. Although oxygen and wall suction are not needed for every delivery, they are useful.

Grab your emergency delivery kit. Suggested contents are in Box 1. At minimum, you'll need a clean sheet or flannel, 2 clamps, some gloves (preferably sterile) and a pair of scissors. No intravenous line is necessary. The only drug you'll need is oxytocin for intramuscular administration. Remember that birth is a clean but not a sterile procedure.

Monitor the baby. If you have a portable Doppler fetal monitor, it can be used to monitor the baby throughout the labour. Listen following contractions, every 30 minutes during the first stage (until pushing begins) and every 5 minutes during the second stage. It is not uncommon for the heart rate to drop as low as 60 beats/min during or following a push, but it usually comes back up to at least 100 beats/min within 30 seconds. If the fetal heart is persistently low, first ensure you are not listening to the mother's pulse. If it is truly the baby's heart rate, first change maternal position (e.g., side to side) then do what you can to expedite delivery (e.g., stronger pushes, episiotomy or operative delivery).

Get pushing. Once you have confirmed the patient is fully dilated, pushing can begin. Most women have an overwhelming urge to push and need little or no guidance. Most women deliver in the dorsal lithotomy position with legs upraised. Traditionally, women have been coached to hold their breath and bear down until they need a quick breath. Women should only push with contractions and aim for 3 long pushes per contraction. Coached pushing has been shown only to shorten the second stage of labour by 13 minutes[7] and may or may not be associated with greater birth trauma.[8] In general, allowing a woman to "do what comes naturally" may be best.

Babies often "rock" in the birth canal before passing the ischial spines. When this is complete, the baby crowns with the head resting at and stretching the perineum (Fig. 1). **Rapid delivery of the head should be avoided to allow tissues to stretch and to avoid perineal trauma.** One of the birth attendant's hands can be placed on the fetal head to control the delivery and help stretch tissues. The second hand is often placed on the perineum to protect it (Fig. 2). A towel draped over the perineum will also prevent soiling; it is common for the bowels to be emptied by the pressure of the descending head. At this stage, coaching the women to give small, grunty pushes can help to slowly stretch tissue, avoiding perineal lacerations. Episiotomy is rarely indicated.

Once the head is delivered, it will usually spontaneously return to the transverse position. A head that "turtles" back against the perineum and does not spontaneously restitute should alert you to the possibility of shoulder dystocia. **Check the baby's neck for cord** (Fig. 3), and, if possible, gently slide the cord over the baby's head before delivery of the shoulders.

Box 1. Equipment for emergency delivery

Necessary:
Two clamps
Sterile scissors
Two blankets (preferably warm)
Gloves (preferably sterile)
Oxytocin, 10 mg for intramuscular administration

Helpful:
Bowl to catch placenta
Bulb or wall suction
Oxygen
Sterile towel
4 × 4 gauze
Doppler fetal monitor

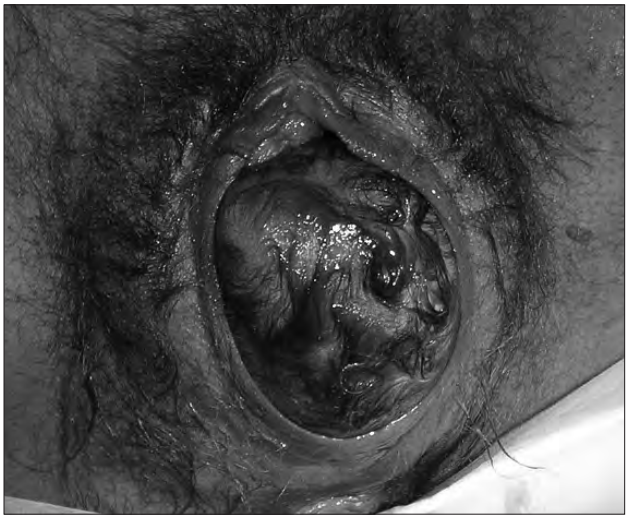

Fig. 1. The crowning point of delivery with the baby's head resting at and stretching the perineum.

Delivery of the shoulders is affected with maternal pushing and gentle downward guidance of the fetal head until the anterior shoulder is delivered, followed by gentle upward guidance for the posterior shoulder (Fig. 4 and 5). Sometimes, hooking the anterior shoulder can expedite delivery of the shoulders, but take care not to put pressure in the axilla. Never pull or pivot the baby's head, because this can cause injury to the brachial plexus. After delivery of the shoulders, the rest of the baby should come easily. **Administer 10 mg of oxytocin intramuscularly immediately after delivery** to aid in placental separation and to reduce postpartum bleeding.

Remember that newborns are slippery and care should be taken not to drop the infant. For this reason, I am fond of having the foot of the bed ready to place the baby on immediately after delivery, rather than "breaking the bed."

The baby should be dried to assist in temperature regulation and provide stimulation. **The cord should be double clamped and cut** close to, but not at, the umbilicus. Remember that cutting the cord is

Fig. 2. Place a hand on the perineum to protect it.

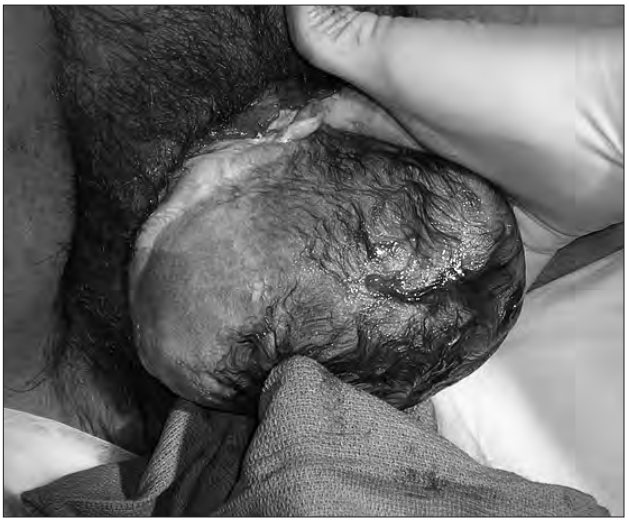

Fig. 3. Check the baby's neck for cord.

Fig. 4. Gently guide the head until the anterior shoulder is delivered.

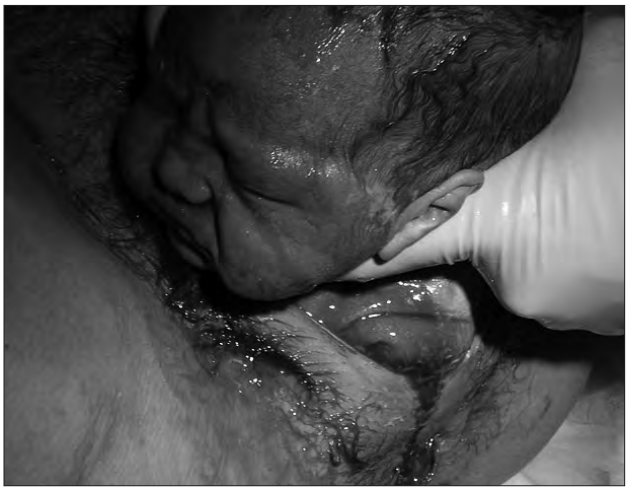

Fig. 5. Gently guide the head upward for delivery of the posterior shoulder.

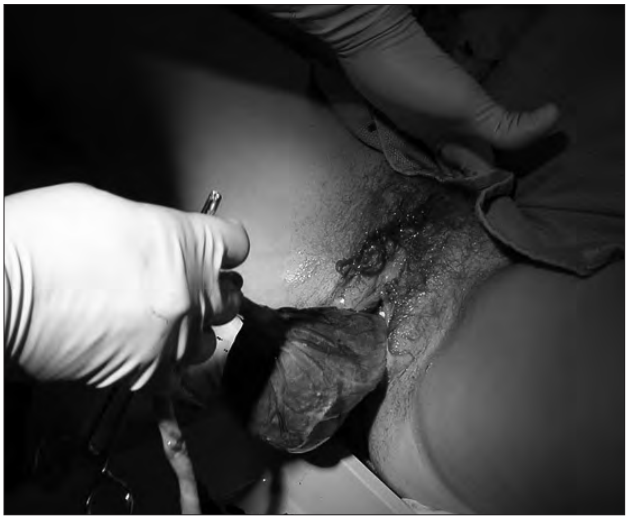

Fig. 6. Place a hand on the uterus just above the symphysis pubis to prevent descent of the uterus and uterine inversion.

now commonly considered the father's task. The baby should be wrapped in a warm, dry blanket and can be placed directly in the mother's arms. Suctioning is only required if the newborn is having respiratory difficulty. Routine suctioning of neonates is no longer recommended.[9]

The placenta will normally deliver spontaneously 5–10 minutes after delivery. This is often preceded by a gush of blood and lengthening of the cord. Delivery can be assisted by maternal pushing or gentle traction on the cord. Many practitioners will place a hand on the uterus just above the symphysis pubis to prevent descent of the uterus and uterine inversion (Fig. 6). Excessive traction on the cord can result in catastrophic consequences, including cord tearing and uterine inversion. Be patient, it may take up to 30 minutes for normal separation and delivery of the placenta. The placenta should be inspected to ensure no pieces are missing. If excessive bleeding continues after delivery of the placenta, massage the fundus and remove any clots palpable in the cervical os.

Inspect the perineum for tears. Small tears do not need to be repaired if hemostasis is good. It is often difficult to make heads or tails of vaginal and perineal lacerations. Most, however, can wait for more experienced hands to repair them. The vagina can be packed, if necessary, to control bleeding while waiting. Repair should be done with 3–0 or larger absorbable suture under local anesthesia.

The occasional vaginal delivery can be nerve-racking for the nonobstetric physician. However, most of these deliveries occur without event and only require gentle guidance and control from the attending physician.

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Country cardiograms case 42

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A 54-year-old man is brought to the emergency department of a remote diagnostic and treatment centre. An hour before his arrival, he experienced a sudden onset of severe anterior chest pain while hiking on a local trail. The pain has persisted since and is constant. He has no prior cardiac history and is not taking any medications; there is no previous electrocardiogram (ECG) available.

On examination, the patient is in distress but has normal vital signs. A high-pitched, early diastolic decrescendo murmur is easily audible along the left sternal border. The lung fields are clear to auscultation.

Cardiac monitoring shows that he is in sinus rhythm. He is given oxygen and 2 intravenous lines. Nitroglycerin spray provides no relief for his pain. An ECG is obtained. Testing for troponin levels are reported as negative.

The ECG (Fig. 1) shows a right bundle branch block and some ST-segment elevation in lead III. If this patient is going to require transfer to a coronary care unit and specialist intervention, it will be many hours before the necessary transport arrangements will be in place.

Is thrombolysis indicated? Would decisions about treatment be different if a left bundle branch block were present? What is the differential diagnosis? What other tests may help in this remote setting?

For the answer, see page 32.

Competing interests: None declared.

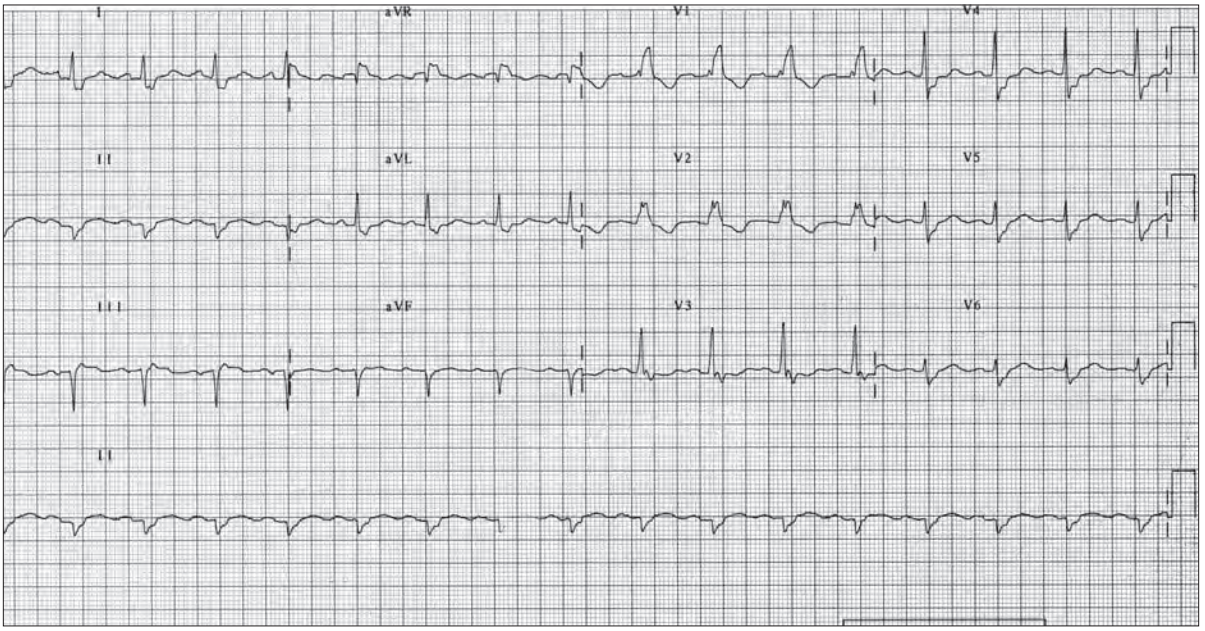

Fig. 1. Electrocardiogram of a 54-year-old man with severe anterior chest pain, showing a right bundle branch block and ST-segment elevation in lead III.

Specialist physicians for rural and remote populations in Canada

Submitted on behalf of the Specialist Steering Committee representing the Specialist Section of the Society of Rural Physicians of Canada. Current committee members:
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The Specialist Section of the Society of Rural Physicians of Canada was formed in 2008. Following the formation of the section, the Specialist Steering Committee was established to work on the section's issues of interest. The policy statement presented here is a result of a combination of individual and group consultations, as well as input from individual specialists working in rural areas. The information gathered since the formation of the steering committee was used to develop this policy. The policy statement has now been accepted and adopted by the SRPC Council and is presented below.

BACKGROUND

- A substantial proportion of Canada's population lives outside of large urban centres.
- The Canadian Association of Paediatric Health Centres has documented that 65% of hospital admissions of Canadian children occur in regional and community facilities (nontertiary centres).[1]
- The equivalent proportion of adult patients is likely larger.
- No national standards exist regarding the education or support of specialist physicians who work outside of university centres or large tertiary care or urban centres.
- The education of specialist physicians largely occurs in large urban centres; trainees are therefore excessively influenced by urban professionals and subspecialist practice.
- The development of a sufficient and sustainable workforce of specialist physicians for Canada's more rural populations requires planning, commitment and cooperation among communities, governments and educators.[2]
- Medical schools should be accountable to the regions they serve and are funded by with respect to the mix of medical graduates produced.[2]
- Governments and territories should regularly monitor the physician requirements of their populations and work with universities to ensure an adequate mix and supply.

There is a need to develop policy and recommendations in 3 areas: education of specialist physicians, support of practising specialist physicians and government policy regarding specialist services.

EDUCATION OF SPECIALIST PHYSICIANS

- Identify basic specialty services required in community and regional health centres, for example, general surgery, internal medicine, pediatrics, and obstetrics and gynecology. (Responsible organizations: federal government, Royal College of Physicians and Surgeons of Canada.)
- Develop appropriate curricula, and mandate compulsory nonurban rotations with specific requirements for all trainees. Monitor compliance with same. (Responsible organization: Royal College of Physicians and Surgeons of Canada.)
- All specialty trainees need to be provided with exposure to and specific education in care for First Nations populations. (Responsible

organizations: medical schools, Royal College of Physicians and Surgeons of Canada.)
- Consider undergraduate medical school policies that may attract rural students, for example, outreach to schools; admission policies; financial incentives, grants or scholarships; and compulsory rotations and exposure to rural health care and medical practice.[2] (Responsible organizations: medical schools.)

SUPPORT OF PRACTISING SPECIALIST PHYSICIANS

- Integrate all rural/regional specialists with their respective medical school departments in terms of, for example, health care, education of students, health policy decisions, health advocacy. (Responsible organizations: medical schools.)
- Make all educational opportunities in medical school departments available to rural practitioners using modern communication technology. (Responsible organizations: medical schools.)
- Clinical traineeships: portable educational licensing at minimal cost, across the country. Funding opportunities for same. (Responsible organizations: licensing authorities such as the Federation of Medical Regulatory Authorities of Canada; Royal College of Physicians and Surgeons of Canada, governments, health districts.)
- Opportunity: "clearing house" for training opportunities. (Responsible organization: Royal College of Physicians and Surgeons of Canada.)
- Locum physicians — national "clearing house" (national organization that will maintain a physician pool). (Responsible organization: Royal College of Physicians and Surgeons of Canada.)
- Financial and other incentives to assist in recruiting and retaining specialist physicians in rural areas, for example, access to education opportunity and grants, retention fees, tax breaks. (Responsible organizations: Royal College of Physicians and Surgeons of Canada, governments, health districts.)
- Recognize the contributions of rural specialists with special awards. (Responsible organizations: Royal College of Physicians and Surgeons of Canada, provincial physicians' organizations, universities.)

GOVERNMENT POLICY REGARDING SPECIALIST SERVICES

- National standards for the needs of rural populations should be defined in terms of specialist medical services. Identify required specialties and supports.
- Policy regarding accountability of medical schools in terms of, for example, educational expectations, and numbers and mix of specialist physicians produced.
- Policy regarding raiding other countries of their physicians. See "The Melbourne Manifesto: A code of practice for the international recruitment of health care professionals."[3]

Competing interests: None declared.

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Secure my Mac? Yes!

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I have a Mac — I don't need antivirus software!" This is a major selling point for the increasingly popular line of Apple products. While this sentiment makes people comfortable with their personal computers, it scares information technology (IT) departments and gives a somewhat false sense of security. Although it is true that there has never been a "virus" for the Mac OS X operating system, there have been a few malicious programs that have caused trouble for end users. Malware (malicious software) consists of any unwanted program on your computer. This includes anything from viruses and spyware, to applications that are simply advertisements.

By definition, a virus is a program that self-replicates and installs itself on the host computer in order to spread and infect others. A virus requires no input from the end user. A Trojan horse is a type of malware that requires the end user to make a mistake and install it themselves. On the Mac, this requires entering your password. There have been a few Trojan horses that have received a lot of press and, although they are dangerous, they do not have the properties of a virus and cannot spread without user input. The number of threats that affect the Mac operating system pale in comparison to those that affect its Windows counterpart, but there are still ways to protect yourself from the few threats that exist.

MACS ARE NOT IMMUNE TO EMAIL SCAMS

Although most of us will not send a money order overseas at the promise of riches, being careful with your email will help to protect everyone on your contact list as well as yourself. Popular email hosts such as Yahoo, Hotmail and Google all provide convenient access to your account from any computer in the world. Having a secure password here is imperative. If your account becomes compromised, the first thing that will happen is that your contact list will be downloaded. Once scammers have that, they no longer need access to your account. They can spoof your email address so that people believe emails are coming from someone they know and trust. That picture of your recent vacation now contains a virus. The best thing to do is to use the built-in Mail application of Mac OS X and keep your contacts stored locally on your Mac instead of in the "cloud," where it can be more easily accessed.

KEEP AN EYE ON WHAT YOU DOWNLOAD

Pop-ups can be annoying, but are usually not doing anything to your Mac. What you need to be careful of is that pop-ups can trigger files to be downloaded to your computer. These will appear in your downloads folder (or desktop folder on older Macs). Basic principle: if you didn't download it on purpose, don't open it. There is an added benefit in OS X in that it requires you to input a password every time something is installed on your computer, so malware cannot be installed without your input.

BE A GOOD NEIGHBOUR — DON'T INFECT YOUR WINDOWS FRIENDS

Although the amount of malware that

can affect Macs is small, Macs can be carriers of malicious programs. This is why IT departments sometimes have problems with Macs. Having an antivirus program on a Mac is largely unnecessary for the end user, but it is a good idea if you share a lot of files with Windows-based machines. Here is an example. A Mac user downloads a picture of a cute puppy from a website. This picture has a virus attached to it, and, although it does no harm to the Mac user, the infection can spread once it is sent to a Windows machine. This is the main reason to run an antivirus program on a Mac. ClamXav (www.clamxav.com) is widely considered one of the best free antivirus programs for the Mac. Most of the major antivirus companies have Mac versions of antivirus software, but there is little need to pay for protection in Mac OS X. If you are worried about spreading viruses, using ClamXav to scan files you are sending is a good way to prevent it from happening.

KEEP YOUR MAC HEALTHY

There are a number of ways to ensure that your Mac is running to the best of its ability so that it is able to ward off malware and other security threats. Most of them are very simple. The first thing is to make sure that you have the latest updates from Apple. Even the older operating systems have updates. By clicking the Apple logo in the top left of your Mac and choosing software update, you can ensure you have the latest updates. These updates add features to some software as well as patch any security holes that have been found.

Repairing disk permissions regularly is the best way to keep your Mac running quickly. This is done by opening the "Disk Utility" program located in the Utilities folder of your Applications folder. Once the program is open, select your main disk "Macintosh HD" by default. Under the "First Aid" tab you will find a "Repair Disk Permissions" button. It will take a few minutes to complete and you may get a message that states certain things will not be repaired, but that is normal.

One last thing to do is to make sure you have enough disk space on your Mac. In the Finder, select your Main disk and choose "Edit" and "Get Info." This will tell you how much of your disk is being used and how much free space you have. The general rule of thumb is that you want at least 15% free disk space. This is a good number to go by, but if you have a large drive, you can get away with having a smaller percentage of free space. If you do not have enough free space, start by emptying your trash. A good free tool to find out what is taking up all your space is JDiskReport (www.jgoodies.com/freeware/jdiskreport/index.html). This can be downloaded for free and is very simple to run. If you have a lot of music, movies and pictures taking up most of your space, consider moving them to an external drive. Be careful how you store your data, and always have important data in more than one place. I cannot stress this enough — data recovery can run into the thousands of dollars just to retrieve information from one drive.

Competing interests: None declared.

Making useful links between inner-city and remote physicians

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Are there useful links to make between physicians in the inner city and remote Canada?

As friends with similar backgrounds and interests, one of us chose remote medicine while the other chose the inner city for residency. Our divergent educations made us think: what do remote and inner-city medicine have in common, and what links could be made between inner-city and remote physicians to create a more socially responsive health care workforce?

Though seemingly occupying virtual extremes, inner-city and remote medicine share striking similarities. Patients in both populations are often marginalized. Poverty, inadequate living conditions, uneven access to nutritious food, addiction and mental health issues are more common in both environments than in the mainstream of Canadian society. For geographical, financial or sociopolitical reasons, inner-city and remote populations also share restricted access to care from physicians and allied health care professionals.[1,2]

Given these challenges, both inner-city and remote communities require family physicians to push the boundaries of advocacy, creativity and breadth of skills. This allows physicians to be true generalists while also developing special skills in areas like addiction, primary care for HIV, palliative care and mental health.

It is likely these unique aspects of the work that draw physicians to underserviced settings. The resilience and resourcefulness of patients and families, along with the appealing sense of community that inner-city and remote environments often foster, make the work rewarding. In both places, we share a sense of being on the front lines of health, as advocates for patients, facilitating access to care. It is this shared enthusiasm and set of values that draws us closer as friends and colleagues, but finds us farther apart geographically.

We believe there are others who share our fascination with and desire to work in both inner-city and remote medicine. This shared aspiration raises interesting questions. Can we do both effectively? Does city-based training adequately prepare physicians for remote medicine? Is there a way to practise in both environments while providing continuity and quality of care?

Despite some logistical challenges, longitudinal relationships between inner-city and remote physicians might increase the breadth and depth of collegial networks for physicians in underserved communities. This could be achieved through any number of creative ways, for example, northern continuity rotations for a stream of inner-city residents, or a network of inner-city physicians who serve intermittently in the same northern communities, creating continuity and ensuring skills are maintained. "Practice sharing" with communities in the north could perhaps convince some inner-city doctors, many committed to serving the underserved, to be recruited to remote communities for longer periods.

Although dedicated, long-term physicians in remote areas are optimal, increasingly linking inner-city doctors

to northern communities may provide support in areas requiring more physicians. It might also start important conversations about commonalities in serving vulnerable populations among geographically diverse physicians who share the value of access to health for all.

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Competing interests: None declared.

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Instructions for Authors

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

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

Material in the following categories will be considered for publication.

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

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

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

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

Cover: artwork with a rural theme

Manuscript submission

Submit 2 hard copies of the manuscript to the Editor, *Canadian Journal of Rural Medicine*, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9, and an electronic version, preferably by email to cjrm@cjrm.net, or on CD. The preferred electronic version is an older Word format (in doc format such as Word 2003 or older — not docx). Digital art and photos must accompany the manuscript in separate files (see "Electronic figures and illustrations").

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

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

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Country cardiograms case 42: Answer

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Figure 1 (on page 25) shows normal sinus rhythm, at a rate of 97 beats/min. The QRS duration is increased at 0.15 seconds, with right bundle branch block morphology; PR and QT intervals are normal. Left axis deviation is present, with an axis of –70°, indicating that a left anterior fascicular block is also present, and thus a bifascicular block is present. (Axis in the presence of a right bundle branch block is best calculated by using only the initial 0.06 seconds of the QRS complex and ignoring the wide terminal deflection.)

R-wave progression from V4 through V6 appears abnormal. The ST-segment and T-wave changes that are present in V1–V3 are typical of the secondary changes that occur with a right bundle branch block. ST-segment elevation of 0.5 mm is present in lead III, with even less ST elevation in leads II and aVF. There are no reciprocal ST-segment changes in leads I or aVL.

The presence of a right bundle branch block does not constitute a barrier to the diagnosis of myocardial infarction, although it is clearly helpful to know which ST-segment and T-wave changes are usually associated with it. In this patient, the abnormal R-wave progression is unusual and could conceivably represent some form of anterior myocardial damage and be a "Q wave equivalent." The slight ST-segment elevation in the inferior leads clearly merits further attention and repeat electrocardiograms (ECGs), but the diagnostic criteria for inferior ST-segment elevation myocardial infarction (1 mm elevation in 2 out of 3 inferior leads) are not met. Thrombolysis is therefore not indicated at this point, although a 15-lead ECG, showing leads V4R, V8 and V9, would be useful.

If a left bundle branch block were present, the situation would be more challenging because the ST-segment changes of infarction often cannot be reliably identified, and a left bundle branch block produces considerable ST-segment and T-wave changes of its own. Criteria for thrombolysis therefore include the presence of a new left bundle branch block in the presence of a clinical presentation typical of myocardial infarction. In a case such as this, if a new left bundle branch block were documented, consideration would be given to thrombolysis.

However, there is much more to the assessment of severe chest pain than consideration of thrombolysis. An unusual feature in this presentation is the presence of a heart murmur that is suggestive of aortic regurgitation. This should prompt consideration of other causes of chest pain. Pulmonary embolism and aortic dissection are 2 other causes of sudden, severe chest pain. Thrombolysis may be beneficial in the former, but is likely to have a catastrophic outcome in the latter.

In a remote emergency department with limited resources, chest radiography

"Country cardiograms" is a regular feature of *CJRM*. We present an electrocardiogram and discuss the case in a rural context. Please submit cases to Suzanne Kingsmill, *CJRM*, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9; cjrm@cjrm.net.

has an important role to play in the management of severe chest pain. Its potential benefits must be balanced with acceptance of the inevitable delays that it causes, and the virtual impossibility of achieving the goal of a door-to-drug time of 30 minutes if thrombolysis is administered.

In presentations with an apparently obvious diagnosis (clinical picture and clear electrocardiographic evidence of ST-segment elevation that meets diagnostic criteria), thrombolysis is therefore appropriate without the need for radiography. Yet when criteria are not met or are equivocal, or the diagnosis is not clear, chest radiography can help in the diagnosis and in avoiding potentially disastrous treatment.

Chest radiography in this patient showed a markedly widened mediastinum. Aortic dissection extending proximally to the aortic root was subsequently confirmed on computed tomographic angiography after the patient was transferred to a regional centre.

Routine measurement of blood pressure and checking of pulses in both arms should form part of the initial assessment of a patient presenting to the emergency department with chest pain. These measures may help detect instances of aortic dissection that result in a substantial difference in pressure between the right and left arm as a result of involvement of the brachiocephalic or left subclavian arteries, respectively.

The presentation of aortic dissection may include hypertension or hypotension or, as in this patient, normal blood pressure. The murmur of aortic regurgitation is a common finding in proximal aortic dissection that extends to the aortic root. Involvement of the coronary ostia may cause genuine ischemic changes to appear on the electrocardiogram, and may even cause ST-elevation myocardial infarction. There are no specific electrocardiographic findings in aortic dissection, although changes of left ventricular hypertrophy may be present. Proximal dissections can also result in hemopericardium and the associated electrocardiographic changes of low voltage.

Thrombolysis remains potentially the most effective intervention that can be performed in small, remote communities in instances of severe chest pain. This patient's case may serve as a reminder to adhere to the criteria for administering thrombolytics and to always consider causes of severe chest pain other than myocardial infarction.

For the question, see page 25.

Country Cardiograms

Have you encountered a challenging ECG lately?

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

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

Please submit cases, including a copy of the ECG, to Suzanne Kingsmill, Managing Editor, *CJRM*, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9; cjrm@cjrm.net

Cardiogrammes ruraux

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

Dans la plupart des numéros du *JCMR*, nous présentons un ECG assorti de questions. Les réponses et une discussion du cas sont affichées sur une autre page.

Veuillez présenter les cas, accompagnés d'une copy de l'ECG, à Suzanne Kingsmill, rédactrice administrative, *JCMR*, 45, boul. Overlea, C. P. 22015, Toronto (Ontario) M4H 1N9 ; cjrm@cjrm.net

ZOSTAVAX®

[zoster vaccine live, attenuated (Oka/Merck)]

Prescribing Summary

Patient Selection Criteria

THERAPEUTIC CLASSIFICATION

Live, attenuated virus varicella-zoster vaccine

INDICATIONS AND CLINICAL USE

ZOSTAVAX® is indicated for the prevention of herpes zoster (shingles).

ZOSTAVAX® is indicated for immunization of individuals 50 years of age or older.

SPECIAL POPULATIONS

For use in special populations, see Supplemental Product Information, WARNINGS AND PRECAUTIONS, Special Populations.

CONTRAINDICATIONS

History of hypersensitivity to any component of the vaccine, including gelatin. History of anaphylactic/anaphylactoid reaction to neomycin (each dose of reconstituted vaccine contains trace quantities of neomycin). Neomycin allergy generally manifests as a contact dermatitis. However, a history of contact dermatitis due to neomycin is not a contraindication to receiving live virus vaccines.

Primary and acquired immunodeficiency states due to conditions such as: acute and chronic leukemias; lymphoma; other conditions affecting the bone marrow or lymphatic system; immunosuppression due to HIV/AIDS; cellular immune deficiencies. Immunosuppressive therapy (including high-dose corticosteroids); however, ZOSTAVAX® is not contraindicated for use in individuals who are receiving topical/inhaled corticosteroids or low-dose systemic corticosteroids or in patients who are receiving corticosteroids as replacement therapy, e.g., for adrenal insufficiency.

Active untreated tuberculosis.

Pregnancy (see WARNINGS AND PRECAUTIONS - Pregnant Women in the Supplemental Product Information).

Safety Information

WARNINGS AND PRECAUTIONS

General

The health care provider should question the patient about reactions to a previous dose of any varicella-zoster virus (VZV)-containing vaccines (see CONTRAINDICATIONS).

As with any vaccine, adequate treatment provisions, including epinephrine injection (1:1000), should be available for immediate use should an anaphylactic/anaphylactoid reaction occur. Deferral of vaccination should be considered in the presence of fever >38.5°C (>101.3°F). ZOSTAVAX® does not protect all individuals against the development of Herpes Zoster or its sequelae. See ACTION AND CLINICAL PHARMACOLOGY and CLINICAL TRIALS in the product monograph.

The duration of protection beyond 4 years after vaccination with ZOSTAVAX® is unknown. The need for revaccination has not been defined.

ZOSTAVAX® has not been studied in individuals who have previously experienced an episode of herpes zoster.

Transmission

In clinical trials with ZOSTAVAX®, transmission of the vaccine virus has not been reported. However, post-marketing experience with varicella vaccines suggests that transmission of vaccine virus may occur rarely between vaccinees who develop a varicella-like rash and susceptible contacts. Transmission of vaccine virus from varicella vaccine recipients who do not develop a varicella-like rash has also been reported and is therefore a theoretical risk for vaccination with ZOSTAVAX®. The risk of transmitting the attenuated vaccine virus to a susceptible individual should be weighted against the risk of developing natural herpes zoster and potentially transmitting wild-type VZV to a susceptible contact.

ADVERSE REACTIONS

Adverse Drug Reaction Overview

In clinical trials, ZOSTAVAX® has been evaluated for general safety in more than 32,000 adults 50 years of age or older. ZOSTAVAX® was generally well tolerated.

ZOSTAVAX® Efficacy and Safety Trial (ZEST) in Subjects 50 to 59 Years of Age

In the ZEST study, subjects received a single dose of either ZOSTAVAX® (n=11,184) or placebo (n=11,212) and were monitored for general safety throughout the study. During the study, a vaccine-related serious adverse experience was reported for 1 subject vaccinated with ZOSTAVAX® (anaphylactic reaction).

All subjects received a vaccination report card (VRC) to record adverse events occurring from Days 1 to 42 postvaccination in addition to undergoing routine safety monitoring throughout the study.

Vaccine-related injection-site and systemic adverse experiences reported at an incidence of ≥1% are shown in Table 1. The overall incidence of vaccine-related injection-site adverse experiences was significantly greater for subjects vaccinated with ZOSTAVAX® versus subjects who received placebo (63.9% for ZOSTAVAX® and 14.4% for placebo).

Table 1: Vaccine-Related Injection-Site and Systemic Adverse Experiences Reported in ≥1% of Adults Who Received ZOSTAVAX® or Placebo (1-42 Days Postvaccination) in the ZOSTAVAX® Efficacy and Safety Trial

Adverse Experience	ZOSTAVAX® (N = 11,094) %	Placebo (N = 11,116) %
Injection-Site		
Pain†	53.9	9.0
Erythema†	48.1	4.3
Swelling†	40.4	2.8
Pruritus	11.3	0.7
Warmth	3.7	0.2
Hematoma	1.6	1.6
Induration	1.1	0.0
Systemic		
Headache	9.4	8.2
Pain in extremity	1.3	0.8

† Designates a solicited adverse experience. Injection-site adverse experiences were solicited only from Days 1-5 postvaccination.

Within the 42-day postvaccination period in the ZEST, noninjection-site zoster-like rashes were reported by 30 subjects (15 for ZOSTAVAX® and 15 for placebo). Of 21 specimens that were adequate for Polymerase Chain Reaction (PCR) testing, wild-type VZV was detected in 10 (3 for ZOSTAVAX®, 7 for placebo) of these specimens. The Oka/Merck strain of VZV was not detected from any of these specimens.

Within the same 42-day postvaccination reporting period in the ZEST, varicella-like rashes were reported by 115 subjects (64 for ZOSTAVAX® and 51 for placebo). Of 21 specimens that were available and adequate for PCR testing, VZV was detected in one of these specimens from the group of subjects who received ZOSTAVAX®; however, the virus strain (wild type or Oka/Merck strain) could not be determined.

Shingles Prevention Study (SPS) in Subjects 60 Years of Age and Older

In the largest of these trials, the Shingles Prevention Study (SPS), 38,546 subjects received a single dose of either ZOSTAVAX® (n=19,270) or placebo (n=19,276) and were monitored for safety throughout the study. During the study, vaccine-related serious adverse experiences were reported for 2 subjects vaccinated with ZOSTAVAX® (asthma exacerbation and polymyalgia rheumatica) and 3 subjects who received placebo (Goodpasture's syndrome, anaphylactic reaction, and polymyalgia rheumatica).

In the Adverse Event Monitoring Substudy, a subgroup of individuals from the SPS (n=3,345 received ZOSTAVAX® and n=3,271 received placebo) were provided vaccination report cards to record adverse events occurring from Days 0 to 42 postvaccination in addition to undergoing routine safety monitoring throughout the study.

Table 2: Number of Subjects with ≥1 Serious Adverse Events (0-42 Days Postvaccination) in the Shingles Prevention Study

Cohort	ZOSTAVAX® n/N %	Placebo n/N %	Relative Risk (95% CI)
Overall Study Cohort			
All ages	255/18671 1.4%	254/18717 1.4%	1.01 (0.85, 1.20)
60-69 years old	113/10100 1.1%	101/10095 1.0%	1.12 (0.86, 1.46)
≥70 years old	142/8571 1.7%	153/8622 1.8%	0.93 (0.74, 1.17)
AE Monitoring Substudy Cohort			
All ages	64/3326 1.9%	41/3249 1.3%	1.53 (1.04, 2.25)
60-69 years old	22/1726 1.3%	18/1709 1.1%	1.21 (0.66, 2.23)
≥70 years old	42/1600 2.6%	23/1540 1.5%	1.76 (1.07, 2.89)

N=number of subjects in cohort with safety follow-up
n=number of subjects reporting an SAE 0-42 Days postvaccination

The incidence of death was similar in the groups receiving ZOSTAVAX® or placebo during the Days 0-42 postvaccination period: 14 deaths occurred in the group of subjects who received ZOSTAVAX® and 16 deaths occurred in the group of subjects who received placebo. The most common reported cause of death was cardiovascular disease (10 in the group of subjects who received ZOSTAVAX®, 8 in the group of subjects who received placebo). The overall incidence of death occurring at any time during the study was similar between vaccination groups: 793 deaths (4.1%) occurred in subjects who received ZOSTAVAX® and 795 deaths (4.1%) in subjects who received placebo.

Vaccine-related injection-site and systemic adverse experiences reported at an incidence ≥1% are shown in Table 3. Most of these adverse experiences were reported as mild in intensity. The overall incidence of vaccine-related injection-site adverse experiences was significantly greater for subjects vaccinated with ZOSTAVAX® versus subjects who received placebo (48% for ZOSTAVAX® and 17% for placebo).

Table 3: Vaccine-Related Injection-Site and Systemic Adverse Experiences Reported in ≥1% of Adults Who Received ZOSTAVAX® or Placebo (0-42 Days Postvaccination) in the Adverse Events Monitoring Substudy of the Shingles Prevention Study

Adverse Experience	ZOSTAVAX® (N = 3345) %	Placebo (N = 3271) %
Injection Site		
Erythema†	35.6	6.9
Pain/tenderness†	34.3	8.6
Swelling†	26.1	4.5
Hematoma	1.6	1.4
Pruritus	7.1	1.0
Warmth	1.7	0.3
Systemic		
Headache	1.4	0.9

† Designates a solicited adverse experience. Injection-site adverse experiences were solicited only from Days 0-4 postvaccination.

The remainder of subjects in the SPS received routine safety monitoring, but were not provided report cards. The types of events reported in these patients were generally similar to the subgroup of patients in the Adverse Event Monitoring Substudy. Within the 42-day postvaccination reporting period in the SPS, the number of reported noninjection-site zoster-like rashes among all subjects was small (17 for ZOSTAVAX®, 36 for placebo; p=0.009). Of these 53 zoster-like rashes, 41 had specimens that were available and adequate for PCR testing. Wild-type VZV was detected in 25 (5 for ZOSTAVAX®, 20 for placebo) of these specimens. The Oka/Merck strain of VZV was not detected from any of these specimens.

The number (n=59) of reported varicella-like rashes was also small. Of these varicella-like rashes, 10 had specimens that were available and adequate for PCR testing. VZV was not detected in any of these specimens. The results of virus testing in subjects with varicella-like and zoster-like rashes should be interpreted with caution due to the number of samples that were not available for testing.

The numbers of subjects with elevated temperature (≥38.3°C [≥101.0°F]) within 7 days postvaccination were similar in the ZOSTAVAX® and the placebo vaccination groups [6 (0.2%) vs. 8 (0.3%), respectively].

Other Studies

In other clinical trials conducted prior to the completion of the SPS, the reported rates of noninjection-site zoster-like and varicella-like rashes within 42 days postvaccination were also low in both zoster vaccine recipients and placebo recipients. Of the 17 reported noninjection-site zoster-like and varicella-like rashes, 10 specimens were available and adequate for PCR testing. The Oka/Merck strain was identified by PCR analysis from the lesion specimens of only two subjects who reported varicella-like rashes (onset on Day 8 and 17).

To address concerns for individuals with an unknown history of vaccination with ZOSTAVAX®, the safety and tolerability of a second dose of ZOSTAVAX® was evaluated. In a placebo-controlled, double-blind study, 98 adults 60 years of age or older received a second dose of ZOSTAVAX® 42 days following the initial dose; the vaccine was generally well tolerated. The frequency of vaccine-related adverse experiences after the second dose of ZOSTAVAX® was generally similar to that seen with the first dose.

Post-Marketing Adverse Drug Reactions

The following additional adverse reactions have been identified during post-marketing use of ZOSTAVAX®. Because these reactions are reported voluntarily from a population of uncertain size, it is generally not possible to reliably estimate their frequency or establish a causal relationship to the vaccine.

Skin and subcutaneous tissue disorders: rash.

Musculoskeletal and connective tissue disorders: arthralgia; myalgia.

General disorders and administration site conditions: injection-site rash; injection-site urticaria; pyrexia; injection-site lymphadenopathy.

Immune system disorders: hypersensitivity reactions including anaphylactic reactions.

To report a suspected adverse reaction, please contact Merck Canada Inc. by:
Toll-free telephone: 1-800-567-2594
Toll-free fax: 1-877-428-8675
By regular mail: Merck Canada Inc., P.O. Box 1005, Pointe-Claire – Dorval, QC H9R 4P8

DRUG INTERACTIONS

Overview

ZOSTAVAX® must not be mixed with any other medicinal product in the same syringe. Other medicinal products must be given as separate injections and at different body sites.

Concurrent administration of ZOSTAVAX® and antiviral medications known to be effective against VZV has not been evaluated.

Use with Other Vaccines

ZOSTAVAX® and PNEUMOVAX® 23 (pneumococcal vaccine, polyvalent, MSD Std.) should not be given concomitantly because concomitant use resulted in reduced immunogenicity of ZOSTAVAX® (see CLINICAL TRIALS in the product monograph).

Administration

DOSAGE AND ADMINISTRATION
(see Product Monograph for complete information)
Recommended Dose and Dosage Adjustment
FOR SUBCUTANEOUS ADMINISTRATION.

Do not inject intravascularly.

Individuals should receive a single dose consisting of the entire content of the vial (approximately 0.65 mL).

ZOSTAVAX® is not a treatment for zoster or postherpetic neuraligia (PHN). If an individual develops herpes zoster despite vaccination, active current standard of care treatment for herpes zoster should be considered.

At present, the duration of protection after vaccination with ZOSTAVAX® is unknown. In the Shingles Prevention Study (SPS), protection was demonstrated through 4 years of follow-up. The need for revaccination has not yet been defined.

Reconstitute immediately upon removal from the freezer.

To reconstitute the vaccine, use only the diluent supplied, since it is free of preservatives or other antiviral substances which might inactivate the vaccine virus.

Vial of diluent:

To reconstitute the vaccine, first withdraw the entire contents of the diluent vial into a syringe.

To avoid excessive foaming, slowly inject all of the diluent in the syringe into the vial of lyophilized vaccine and gently agitate to mix thoroughly. Withdraw the entire contents into a syringe, and using a new needle, inject the total volume of reconstituted vaccine subcutaneously, preferably into the upper arm - deltoid region.

IT IS RECOMMENDED THAT THE VACCINE BE ADMINISTERED IMMEDIATELY AFTER RECONSTITUTION, TO MINIMIZE LOSS OF POTENCY. DISCARD RECONSTITUTED VACCINE IF IT IS NOT USED WITHIN 30 MINUTES.

Do not freeze reconstituted vaccine.

CAUTION: A sterile syringe free of preservatives, antiseptics, and detergents should be used for each injection and/or reconstitution of ZOSTAVAX® because these substances may inactivate the vaccine virus.

It is important to use a separate sterile needle and syringe for each patient to prevent transfer of infectious agents from one individual to another.

Needles should be disposed of properly.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit. ZOSTAVAX® when reconstituted is a semi-hazy to translucent, off white to pale yellow liquid.

OVERDOSAGE

There are no data with regard to overdose.

For management of a suspected drug overdose, contact your regional Poison Control Center.

STORAGE AND STABILITY

Storage

ZOSTAVAX® **SHOULD BE STORED FROZEN** at an average temperature of -15°C or colder until it is reconstituted for **injection** (see DOSAGE AND ADMINISTRATION). Any freezer, including frost-free, that has a separate sealed freezer door and reliably maintains an average temperature of -15°C or colder is acceptable for storing ZOSTAVAX®. The diluent should be stored separately at room temperature (20 to 25°C) or in the refrigerator (2 to 8°C). Do not store the diluent in a freezer.

Before reconstitution, protect from light.

DISCARD IF RECONSTITUTED VACCINE IS NOT USED WITHIN 30 MINUTES.

DO NOT FREEZE THE RECONSTITUTED VACCINE.

Study References

References:

1. National Advisory Committee on Immunization. Update on varicella. CCDR 2004;30(ACS-1):1-28.
2. Oxman MN. Clinical manifestations of herpes zoster. In: Arvin AM, Gershon AA, editors. Varicella-zoster virus virology and clinical management. Cambridge Press 2000:246-75.
3. Data on file, Merck Canada Inc.: Product Monograph. ZOSTAVAX®, 2011.

Supplemental Product Information

WARNINGS AND PRECAUTIONS

Special Populations

Geriatric: The mean age of subjects enrolled in the largest (N=38,546) clinical study of ZOSTAVAX® was 69 years (range 59-99 years). Of the 19,270 subjects who received ZOSTAVAX®, 10,378 were 60-69 years of age, 7,629 were 70-79 years of age, and 1,263 were 80 years of age or older. ZOSTAVAX® was demonstrated to be generally safe and effective in this population.

Pregnant Women: There are no studies in pregnant women. It is also not known whether ZOSTAVAX® can cause foetal harm when administered to a pregnant woman or can affect reproduction capacity. However naturally-occurring varicella-zoster virus infection is known to sometimes cause foetal harm. Therefore, ZOSTAVAX® should not be administered to pregnant women; furthermore, pregnancy should be avoided for three months following vaccination (see CONTRAINDICATIONS).

Nursing Women: It is not known whether VZV is secreted in human milk. Therefore, because some viruses are secreted in human milk, caution should be exercised if ZOSTAVAX® is administered to a nursing woman.

Pediatrics: ZOSTAVAX® is not recommended for use in this age group.

HIV-AIDS Patients: The safety and efficacy of ZOSTAVAX® have not been established in adults who are known to be infected with HIV with or without evidence of immunosuppression (see CONTRAINDICATIONS).

Immunocompromised Subjects: Data are not available regarding the use of ZOSTAVAX® in immunocompromised subjects (see CONTRAINDICATIONS).

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Advertisements should be sent to: Journal Advertising, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; tel 800 663-7336 or 613 731-8610 x2107/2041; fax 613 565-7488; advertising@cma.ca

Send all box number replies to: Box ____, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8.

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Le texte des annonces doit être adressé à : Annonces classées, *Journal canadien de la médecine rurale*, 1867, prom. Alta Vista, Ottawa ON K1G 5W8; tél. 800 663-7336 ou 613 731-8610 x2107/2041; fax 613 565-7488; advertising@cma.ca

Veuillez faire parvenir les réponses aux numéros de boîtes à l'adresse suivante : Boîte ____, *CJRM*, 1867, prom. Alta Vista, Ottawa ON K1G 5W8.

LOCUM: ON – Southampton. Family medicine locum needed for a 6-month maternity leave, from March to August 2012, to cover clinic-only care, in this beautiful beach town. One month placements within this time period will also be considered. No on-call. Competitive wages. EMR. Flexible hours. Contact: Dr. Gowan, email amyjongerius@hotmail.com
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Approximately 95% of Canadian adults have had chickenpox and are therefore at risk for herpes zoster[1]

A DISEASE THAT MAY CAUSE BURNING, STABBING, SEARING PAIN[2*]

And there is no way to predict who will develop herpes zoster[3]

INDICATIONS AND CLINICAL USE

ZOSTAVAX® is indicated for the prevention of herpes zoster (shingles) in individuals 50 years of age or older.

SELECTED IMPORTANT SAFETY INFORMATION

ZOSTAVAX® is not a treatment for zoster or postherpetic neuralgia (PHN). If an individual develops herpes zoster despite vaccination, active current standard of care treatment for herpes zoster should be considered. Vaccination with ZOSTAVAX® may not result in protection of all vaccine recipients. ZOSTAVAX® is contraindicated in patients with a history of hypersensitivity to any component of the vaccine, including gelatin; a history of anaphylactic/anaphylactoid reaction to neomycin; primary and acquired immunodeficiency states due to conditions such as: acute and chronic leukemias; lymphoma; other conditions affecting the bone marrow or lymphatic system; immunosuppression due to HIV/AIDS, cellular immune deficiencies; immunosuppressive therapy (including high-dose corticosteroids); active untreated tuberculosis; pregnancy. In clinical trials, ZOSTAVAX® has been evaluated for general safety in more than 32,000 adults 50 years of age or older. ZOSTAVAX® was generally well tolerated. Vaccine-related injection-site and systemic adverse experiences reported at an incidence ≥1% are shown below. The overall incidence of vaccine-related injection-site adverse experiences was significantly greater for subjects vaccinated with ZOSTAVAX® versus subjects who received placebo (48% for ZOSTAVAX® and 17% for placebo among recipients aged ≥60 (Shingles Prevention Study [SPS]) and 63.9% for ZOSTAVAX® and 14.4% for placebo among recipients aged 50-59) (ZOSTAVAX® Efficacy and Safety Trial [ZEST]). Vaccine-related injection-site and systemic adverse experiences reported in ≥1% of adults who received ZOSTAVAX® (N=3,345) or placebo (N=3,271) (0-42 Days Postvaccination) in the Adverse Event Monitoring Substudy of the SPS were: erythema† (35.6%, 6.9%), pain/tenderness† (34.3%, 8.6%), swelling† (26.1%, 4.5%), hematoma (1.6%, 1.4%), pruritus (7.1%, 1.0%), warmth (1.7%, 0.3%), headache (1.4%, 0.9%). Most of these adverse experiences were reported as mild in intensity. The remainder of subjects in the SPS received routine safety monitoring, but were not provided report cards. The types of events reported in these patients were generally similar to the SPS subgroup of patients in the Adverse Event Monitoring Substudy. Vaccine-related injection-site and systemic adverse experiences reported in ≥1% of adults who received ZOSTAVAX® (N=11,094) or placebo (N=11,116) (1-42 Days Postvaccination) in the ZEST were: pain† (53.9%, 9.0%), erythema† (48.1%, 4.3%), swelling† (40.4%, 2.8%), pruritus (11.3%, 0.7%), warmth (3.7%, 0.2%), hematoma (1.6%, 1.6%), induration (1.1%, 0.0%), headache (9.4%, 8.2%), pain in extremity (1.3%, 0.8%).

ZOSTAVAX®

[zoster vaccine live, attenuated (Oka/Merck)]

THE FIRST AND ONLY VACCINE INDICATED TO HELP PREVENT HERPES ZOSTER IN INDIVIDUALS 50 YEARS OF AGE OR OLDER

* ZOSTAVAX® is not indicated to reduce the morbidity and complications associated with herpes zoster.

† Designates a solicited adverse experience. Injection-site adverse experiences were solicited only from Days 0-4 postvaccination in SPS and from Days 1-5 postvaccination in ZEST.

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See prescribing summary on page 34