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VOLUME 19, N° 4, AUTOMNE 2014

IN THIS ISSUE

Inuit midwives and healthy pregnancies

Community-acquired pneumonia in a First Nations population

Aboriginal health curriculum at NOSM

The occasional greater occipital nerve block

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References: 1. ONBREZ® BREEZHALER® Product Monograph. Novartis Pharmaceuticals Canada Inc., December 3, 2013. 2. Data on file. Novartis Pharmaceuticals Canada Inc. Study B2355. 3. Data on file. Novartis Pharmaceuticals Canada Inc. Study B2354.



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VOL. 19, NO. 4, FALL / AUTOMNE 2014

EDITORIALS / ÉDITORIAUX

- 123** Rural Aboriginal health — *Peter Hutten-Czapski, MD*
- 124** La santé des Autochtones en milieu rural — *Peter Hutten-Czapski, MD*
- 125** President's message. Still competent? — *John Soles, MD*
- 126** Message du président. Toujours compétent? — *John Soles, MD*

ORIGINAL ARTICLES / ARTICLES ORIGINAUX

- 128** Understanding healthy pregnancies: the perspective of Inuit midwives in northwestern Quebec — *Mary Ellen Macdonald, PhD; Laakkuluk Williamson Bathory, BSc; Hannah Shenker, MD; Hope Weiler, PhD; Margaret Berry, MD; Atul Sharma, MD; Celia Rodd, MD*
- 135** Hospital admission for community-acquired pneumonia in a First Nations population — *Justin Poling, MD; Len Kelly, MD; Christina Chan, MPH; David Fisman, MD; Marina Ulanova, MD*

DESCRIPTIVE ARTICLE / ARTICLE DESCRIPTIF

- 143** From the community to the classroom: the Aboriginal health curriculum at the Northern Ontario School of Medicine — *Kristen Jacklin, PhD; Roger Strasser, MBBS; Ian Peltier, BA*

THE PRACTITIONER / LE PRATICIEN

- 151; 156** Country cardiograms case 52 — *Inka Toman, MD; Brent M. McGrath, MD*
- 152** The occasional greater occipital nerve block — *Gordon Brock, MD*

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Horse Show in Simcoe, Ontario."

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COMMENTARY / COMMENTAIRE

- 158 The evolving nature of narcotic use in northwestern Ontario
— Jazmyn Balfour-Boehm; Sara Rea; Janet Gordon; Joe Dooley, MD;
Len Kelly, MD; Anne Robinson, MD

127 CORRECTION

161 INSTRUCTIONS FOR AUTHORS

162 CAREER / CLASSIFIED ADVERTISING

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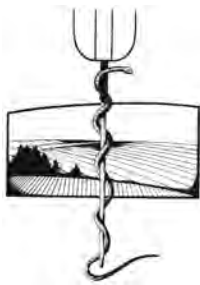
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Rural Aboriginal health

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Writing about rural Aboriginal health as a white doctor is a challenge. Who am I to write an editorial on this topic? The political context, extending from local band politics all the way to the sentiments inherent in Idle No More, can turn any misstep into the piece being branded as “white man’s burden.” And, yet, lessening the divide of the health status between Aboriginal populations and other Canadians is so important for rural Canada that we must write about it, even as outsiders.

I live in northeastern Ontario in Ojibwe territory. Nearby are a number of reserves whose people, despite being younger than the surrounding white population, have a disproportionate burden of ill health. Studies show that most illnesses have a higher incidence among indigenous people.¹ For a front-line worker such as myself, it seems that it’s respiratory illness among the young, and diabetes and its complications among older adults, that are particularly common and of note.

In some cases we can treat while being colour blind, but it doesn’t take long before you realize that there are conflicting world views and value systems at play. What you suggest sometimes does not “take.” Some wash their hands and call it “noncompliance,” but, in the end, does that not also mean that the doctor didn’t “get it”?

None of the local doctors in my area are Aboriginal, and most lack training in dealing with this group. Any cultural competency we exhibit has been from the school of hard knocks. Isn’t it a good sign that this is starting to change?

In the current issue, we have several articles with rural Aboriginal content. Jacklin and colleagues² describe the Aboriginal health curriculum at the Northern Ontario School of Medicine and how it came to be. That school is to be commended for its engagement with Aboriginal communities all the way from the board of directors, curriculum development, mandatory placements in Aboriginal communities, through to the admissions process.

Macdonald and colleagues³ explore the values of Inuit midwives and midwifery students, and how those values play a role in health care provided to Inuit women in northern Quebec.

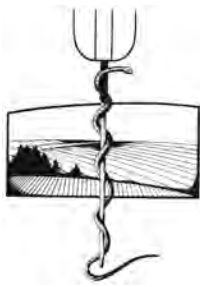
Kelly and colleagues⁴ describe the high incidence of community-acquired pneumonia in their local Aboriginal population in northwestern Ontario. Attention to such an illness burden, disproportionately carried by many Aboriginal populations, is necessary to drive understanding and change.

It is through insights such as those offered in this issue that we can start to “get it” and be more effective in our care.

Müggeweb [thank you] for reading.

REFERENCES

1. Gracey M, King M. Indigenous health part 1: determinants and disease patterns. *The Lancet* 2009;374: 65-75.
2. Jacklin K, Strasser R, Peltier I. From the community to the classroom: the Aboriginal health curriculum at the Northern Ontario School of Medicine. *Can J Rural Med* 2014;19:143-50.
3. Macdonald ME, Bathory LW, Shenker H, et al. Understanding healthy pregnancies: the perspective of Inuit midwives in northwestern Quebec. *Can J Rural Med* 2014;19:128-33.
4. Kelly L, Poling J, Chan C, et al. Hospital admission for community-acquired pneumonia in a First Nations population. *Can J Rural Med* 2014;19:135-41.



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La santé des Autochtones en milieu rural

Il est difficile pour un médecin blanc d'écrire au sujet de la santé des Autochtones en milieu rural. Qui suis-je pour rédiger un éditorial à ce sujet? Dans le contexte de la politique des bandes locales et des sentiments inhérents au mouvement « La passivité, c'est fini » (*Idle No More*), la moindre petite erreur pourrait faire qualifier l'éditorial de « fardeau de l'homme blanc ». Pourtant, il est tellement important pour le Canada rural de refermer l'écart entre la santé des populations autochtones et celle des autres Canadiens que nous devons écrire à ce sujet, même comme non-Autochtones.

Je vis dans le nord-est de l'Ontario, en territoire ojibway. Dans les réserves voisines, même si les populations sont plus jeunes que la population blanche qui les entoure, leur mauvais état de santé est disproportionné. Des études montrent que la plupart des maladies connaissent une incidence plus élevée parmi les peuples autochtones¹. Pour un travailleur des premières lignes comme moi, les affections respiratoires chez les jeunes et le diabète et ses complications chez les adultes âgés sont les maladies particulièrement répandues et dignes de mention.

Dans certains cas, nous pouvons traiter les patients sans tenir compte de leur état autochtone, mais on se rend compte rapidement que des perceptions du monde et des systèmes de valeurs contradictoires sont en jeu. C'est pourquoi il arrive parfois que vos suggestions ne « collent pas ». Certains s'en lavent les mains et parlent « d'inobservation » du traitement, mais en bout de ligne, cela ne signifie-t-il pas aussi que le médecin n'a pas « pigé »?

Aucun des médecins locaux de ma région n'est autochtone, et la plupart n'ont pas suivi de formation sur la façon de traiter ce groupe. Les compétences culturelles que nous pouvons avoir ont été acquises à la dure. N'est-ce pas là un bon signe qui indique que la situation commence à changer?

Le numéro courant contient plusieurs articles sur la santé des Autochtones en milieu rural. Jacklin et ses collaborateurs² décrivent le programme d'études en santé autochtone offert par l'École de médecine du Nord de l'Ontario et son origine. Il faut féliciter l'École de son engagement total auprès des communautés autochtones, qui va de son conseil d'administration au processus d'admission, en passant par l'élaboration des programmes de cours et les stages obligatoires en milieu autochtone.

Macdonald et ses collaborateurs³ explorent les valeurs des sages-femmes et des sages-femmes étudiantes inuites et la façon dont ces valeurs interviennent dans les soins de santé dispensés aux Inuites du nord du Québec.

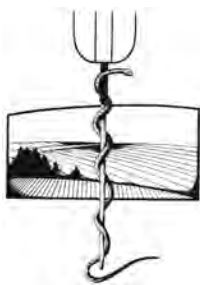
Kelly et ses collaborateurs⁴ décrivent l'incidence élevée de la pneumonie extrahospitalière dans leur population autochtone locale du nord-ouest de l'Ontario. Si l'on veut comprendre la situation et instaurer des changements, il faut accorder une attention spéciale à un tel fardeau morbide qui est disproportionné dans beaucoup de populations autochtones.

C'est grâce aux réflexions comme celles qui sont présentées dans le présent numéro que nous pourrions commencer à « piger » et à fournir des soins plus efficaces

Müggwech [merci] d'avoir lu cet article.

RÉFÉRENCES

1. Gracey M, King M. Indigenous health part 1: determinants and disease patterns. *The Lancet* 2009;374:65-75.
2. Jacklin K, Strasser R, Peltier I. From the community to the classroom: the Aboriginal health curriculum at the Northern Ontario School of Medicine. *Can J Rural Med* 2014;19:143-50.
3. Macdonald ME, Bathory LW, Shenker H, et coll. Understanding healthy pregnancies: the perspective of Inuit midwives in northwestern Quebec. *Can J Rural Med* 2014;19:128-33.
4. Kelly L, Poling J, Chan C, et coll. Hospital admission for community-acquired pneumonia in a First Nations population. *Can J Rural Med* 2014;19:135-41.



President's message. Still competent?

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I recently received a letter from my provincial college informing me that I was one of 500 community-based physicians chosen to undergo a review by their Physician Practice Enhancement Program. This is a relatively new program that will be reviewing all community-based physicians in British Columbia roughly every 7 to 8 years. The review involves peer assessment of recorded care, physician multi-source feedback assessment, and an office assessment of premises and processes. My initial response to this letter was one of irritation. More paperwork and a future time commitment are not things I crave. On further reflection, I think this will likely be a useful process for me and my associates. It may identify issues with our office practice and unrecognized educational needs. It also raises a question in my mind: How do we determine ongoing competence?

Most of us are involved in mandatory maintenance of competence programs through The College of Family Physicians of Canada or the Royal College of Physicians and Surgeons of Canada. These programs evaluate whether we have completed some form of continuing education, but they do little to ensure that our continuing medical education (CME) meets our real needs. Many of us also have obligatory requirements from our hospitals, or other administrative structures for programs such as Advanced Cardiac Life Support, Advanced Trauma Life Support and the Neonatal Resuscitation Program. These requirements perhaps limit the ability of rural physicians to participate in CME that would be of greater benefit to them. Most of us will select CME courses based on what we perceive to be our needs, but we also

choose courses based on our interests. Does CME participation fully relate to ongoing competence? How do we gauge ongoing competence? Many of us have unrecognized educational needs. How can we identify these?

I work with a small group of colleagues and share an office, charts and, often, patients. This allows me a simple, perhaps simplistic, approach to assess the competence of my colleagues. Based on what I know of the care they provide, do I trust them to care for my patients, my family and myself? If I have significant concerns, it is my responsibility to approach my colleague in a gentle, non-threatening fashion and perhaps arrange relevant CME locally. Often, when patients or their problems make me uncomfortable or uncertain, it points to an unmet educational need. For many of us these relate to addictions, chronic pain, cultural issues and personality disorders.

There are competencies other than being a medical expert that as a trainee I was expected to acquire by osmosis, was never taught and for which I was rarely evaluated. Are you a competent communicator, collaborator, manager, health advocate, scholar and professional? Do you consider these competencies when you look at your continuing professional development? Do you consider them when you evaluate your colleagues and learners?

As professionals, it is our responsibility to assess our own competence and, to some extent, those of our close colleagues, in all areas of practice, and to rectify any identified deficiencies. As rural physicians, this can be challenging. However, if we don't do it, other organizations will take over this responsibility, and the results may not benefit us, our patients or our communities.

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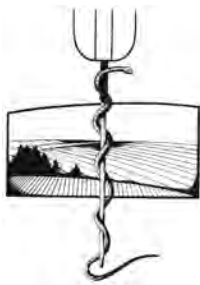
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Message du président. Toujours compétent?

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J'ai reçu récemment du collège des médecins de ma province une lettre m'informant que je faisais partie des 500 médecins communautaires choisis pour subir une évaluation dans le cadre de son programme d'amélioration de la pratique. Ce programme relativement nouveau prévoit évaluer tous les médecins communautaires de la Colombie-Britannique aux 7 à 8 ans environ. Le mécanisme comporte une évaluation par les pairs des soins tels que consignés aux dossiers, une évaluation des commentaires sur le médecin provenant de sources multiples et une évaluation des locaux et des processus administratifs du cabinet. J'ai réagi d'abord par l'irritation. Je déteste l'idée d'une augmentation de la paperasse et d'un empiètement sur mon temps. Mais à la réflexion, je pense que l'exercice sera utile pour moi et pour mes collaborateurs. Il permettra peut-être de cerner des problèmes dans nos pratiques administratives et de souligner des besoins de formation non reconnus. Je me pose aussi une question : comment faire la preuve de notre compétence continue?

Nous participons pour la plupart à des programmes obligatoires de maintien de la compétence administrés par le Collège des médecins de famille du Canada ou le Collège royal des médecins et chirurgiens du Canada. Ces programmes vérifient si nous avons effectué des activités d'éducation médicale continue, mais ils ne font pas grand-chose pour veiller à ce que ces activités d'EMC répondent à nos besoins réels. Beaucoup d'entre nous ont aussi des obligations qui leur sont imposées par leurs hôpitaux ou autres structures administratives, qui les obligent à suivre des programmes portant notamment

sur les compétences avancées de maintien des fonctions vitales en cas de défaillance cardiaque et en traumatologie et sur la réanimation en néonatalité. Ces obligations nuisent peut-être à la capacité des médecins ruraux de participer à des activités d'EMC qui leur seraient plus bénéfiques. Nous choisissons pour la plupart des cours d'EMC en nous fondant sur ce que nous considérons comme nos besoins, mais aussi en fonction de ce qui nous intéresse. La participation aux activités d'EMC est-elle liée entièrement au maintien de la compétence? Comment évaluer le maintien de la compétence? Beaucoup d'entre nous ont des besoins en éducation qui ne sont pas reconnus. Comment les cerner?

Je collabore avec un petit groupe de collègues et je partage un bureau, des dossiers et, souvent, des patients. Cela me permet d'adopter une approche simple, peut-être un peu simpliste, de l'évaluation de la compétence de mes collègues. Compte tenu de ce que je connais des soins qu'ils fournissent, est-ce que je leur fais confiance pour qu'ils s'occupent de mes patients, de ma famille et de moi? Si j'ai des préoccupations importantes, il m'incombe d'abord mon collègue en douceur et de façon non menaçante, et peut-être d'organiser des activités locales pertinentes d'EMC. Souvent, lorsque des patients ou leurs problèmes me rendent inconfortable ou incertain, cet inconfort révèle un besoin non satisfait en éducation. Pour beaucoup d'entre nous, les besoins de formation portent sur les toxicomanies, la douleur chronique, les problèmes culturels et les troubles de la personnalité.

Il y a des compétences autres que celle d'expert en médecine que l'on

s'attendait à ce que j'acquière par osmose, qu'on ne m'a jamais enseignées et qui ont rarement été évaluées. Êtes-vous compétent comme communicateur, collaborateur, gestionnaire, promoteur de la santé, érudit et professionnel? Tenez-vous compte de ces compétences lorsque vous analysez votre perfectionnement professionnel continu? En tenez-vous compte lorsque vous évaluez vos collègues et vos apprenants?

Comme professionnels, il nous incombe d'évaluer notre propre compétence et, jusqu'à un certain point, celle de nos proches collaborateurs dans tous les domaines de pratique et de combler toute lacune relevée. Cette tâche peut être difficile pour un médecin en milieu rural. Or, si nous ne nous en chargeons pas, d'autres organisations le feront et il se peut que les résultats ne soient pas avantageux pour nous, pour nos patients ou nos communautés.

CORRECTION

In the article "Country cardiograms case 51,"¹ page 114, lines 8–19 of the first paragraph, the text "PR interval shows beat-to-beat variation ... posterior ST elevation myocardial infarction (MI)." should read as follows:

PR interval shows beat-to-beat variation, which is evidence of atrioventricular dissociation. There are minimal ST depressions in the lateral leads I, aVL, V5 and V6. There is a junctional escape rhythm noticed throughout the ECG. No P waves are present for the last 3 QRS complexes. This is an example of isorhythmic atrioventricular dissociation. Follow-up 15-lead ECG did not show any evidence of posterior ST elevation myocardial infarction (MI).

In column 2, line 13, "mild" should be "moderate."

REFERENCE

1. Slatnik M. Country cardiograms case 51. *Can J Rural Med* 2014;19:107,114-5.

Understanding healthy pregnancies: the perspective of Inuit midwives in northwestern Quebec

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Introduction: For 25 years, Inuit midwives have provided perinatal and newborn care for about 90% of the pregnancies in northwestern Quebec. Patients in this region continue to have high rates of preventable nutritional deficiencies. The objective of this study was to explore the perceptions of professional midwives and students about what makes a healthy pregnancy and a healthy newborn.

Methods: We convened, via teleconference, a semistructured focus group with the local midwives and students. The conversation focused on local understanding of a healthy pregnancy and a healthy newborn, and the role of midwives in the communities.

Results: Four midwives and 6 students took part in the focus group, representing 80% of local midwives and students. All of the participants were women, and their professional experience ranged from 3 to 25 years. Through inductive thematic analysis, it became apparent that personal experiences and professional training were important determinants of opinions. Midwives believed that the health of women and infants could be improved through better food selection, particularly reliance on traditional nutrient-rich food. They were aware that iron deficiency was a problem and that infants required vitamin D; however, they reported that supplement uptake was poor.

Conclusion: Concern was expressed about a decline in traditional beliefs and about unhealthy behaviours. Participants advanced strategies to promote knowledge locally (e.g., visual aids, local radio) to attempt to reduce rates of nutritional deficiencies

Introduction : Pendant 25 ans, les sages-femmes inuites ont prodigué les soins périnataux et néonataux requis pour environ 90 % des grossesses dans le Nord-Ouest du Québec. Les patientes de cette région continuent de présenter des taux élevés de carences nutritionnelles évitables. L'objectif de cette étude était d'explorer les perceptions des sages-femmes professionnelles et des étudiantes sur ce qu'elles considèrent comme une grossesse saine et un nouveau-né en bonne santé.

Méthodes : Nous avons organisé un groupe de discussion semi-structuré par téléconférence avec des sages-femmes et des étudiantes locales. L'entrevue a porté sur leur conception d'une grossesse saine et d'un nouveau-né en bonne santé et sur le rôle des sages-femmes dans les communautés.

Résultats : Quatre sages-femmes et 6 étudiantes ont participé au groupe de discussion, représentant 80 % des sages-femmes et étudiantes locales. Toutes les participantes étaient des femmes et leur expérience professionnelle variait de 3 à 25 ans. Une analyse thématique inductive a fait ressortir que les expériences personnelles et la formation professionnelle étaient d'importants déterminants des opinions formulées. Les sages-femmes se sont dites d'avis que la santé des femmes et des nouveau-nés pouvait être améliorée par de meilleurs choix alimentaires, particulièrement en ce qui concerne l'alimentation traditionnelle, riche en éléments nutritifs. Elles étaient conscientes du fait qu'une carence en fer constitue un problème et que les nourrissons ont besoin de vitamine D. Elles ont toutefois mentionné que dans les faits, les suppléments sont peu utilisés.

Conclusion : Les participantes ont exprimé leur inquiétude face au déclin des connaissances traditionnelles et face aux comportements malsains. Elles ont proposé des stratégies pour promouvoir la transmission des connaissances à l'échelle locale (p. ex., aides visuelles, radio locale) pour tenter de remédier aux carences nutritionnelles.

INTRODUCTION

Midwives of western Nunavik in northern Quebec provide local care for expectant mothers and infants for the first 2 months of life.^{1,2} More than 90% of the approximately 200 births each year occur at 3 regional birthing centres. Before the 1980s, Inuit women were generally transferred late in their third trimester to give birth in a large urban tertiary care hospital in southern Quebec. Inuit women mobilized in the 1980s to reclaim their traditional practices and to ensure safe, competent birthing care in their own communities.^{1,2}

The Inuulitsivik Midwifery Education Program is a modular, competency-based curriculum that is consistent with midwifery education programs in southern Canada. Storytelling and other local methods of teaching (e.g., showing rather than telling) are the cornerstone for learning in this program, which is dedicated to preserving and promoting Inuit-based practices. Emphasis is placed on the transfer of traditional knowledge, for example how to promote healthy pregnancies via a diet of traditional or “country” foods.^{1,2} The students typically spend about 4–5 years to complete the program, although their training is often intermittent when they have maternity leave for their own infants.

Consistently, more than half of the midwives in Inuulitsivik are Inuit, selected for training by the community and trained there; the rest of the midwives are non-Inuit and come from southern communities. Together, this group has developed practice guidelines for the care of pregnant mothers and infants. While working in 3 communities spread across about 1700 km of Arctic coastline, these midwives participate in weekly teleconferences to discuss ongoing pregnancies and share their knowledge.¹ Perinatal mortality in these communities is consistent with the overall rate in Canada and the rates in regions populated largely by Inuit communities.¹

Notwithstanding the successes of the Inuulitsivik Midwifery Education Program, mothers and infants in northwestern Quebec still have higher rates of several preventable nutritional deficiencies compared with national averages.^{3–7} Infants born in northern Canada have a 4–5 times higher incidence of severe vitamin D deficiency (rickets) than infants born in southern Canada.^{3–5,8} As a preventive strategy, 400 IU/day of vitamin D is recommended for infants living north of 55° latitude if breastfed during summer months, and higher doses are suggested during winter months (October to April) when infants cannot generate vitamin D through cutaneous sun exposure.⁹

Reasons for these deficiencies include reduced intakes of nutrient-rich traditional foods, the scarcity and high cost of healthy food options in local grocery stores, and the lack of enthusiasm for following supplementation guidelines provided by midwives and other health care providers.^{10–12} Poor uptake of supplements is a worldwide issue, reflecting skepticism toward supplementation (e.g., especially when there are no outward signs of poor health), as well as lack of knowledge, lack of support from health care providers, and a common belief that the current diet provides complete nourishment.^{13,14}

In this study, we sought to explore the perceptions of professional midwives and students as key providers of perinatal care in Inuulitsivik about what makes a healthy pregnancy and a healthy newborn. We also sought to explore community perceptions about perinatal and newborn health, and to determine local attitudes about nutritional supplements. With the use of focus groups, we sought to understand attitudes, knowledge, perceptions and beliefs of the midwives about barriers to infant vitamin D supplementation and rickets prevention in this region, while exploring culturally acceptable strategies for future interventions.

METHODS

Participants

Participants were Inuit midwives and students working in 3 birthing centres in western Nunavik. We excluded non-Inuit midwives in an attempt to capture the thoughts and beliefs of the local women, without any influence or bias from their supervisors or colleagues. The moderator of the focus group (L.W.B.) is an Inuk mother.

Data collection and analysis

In June 2011, we conducted a semistructured focus group, which lasted about 2 hours. The discussion focused on local understanding of a healthy pregnancy and a healthy newborn, and the role of midwives in the communities. The conversation was in English with occasional Inuktitut phrases, which were translated by the moderator. The session was conducted via teleconference and was audiotaped. The moderator transcribed the recording shortly afterwards, using standard rules of transcription. All identifiers were removed from the transcript, which was reviewed by the moderator and by the

principal investigator (C.R.). The principal investigator was present during the phone conversation only as a listener. Additional focus groups were not deemed necessary, because the research team felt that the first one had been sufficiently thorough.

A deductive and inductive thematic analysis was used to analyze the transcript. The deductive coding frame was constructed from the interview guide; the inductive coding frame was developed through multiple careful readings of the transcripts by the moderator, the principal investigator and the co-principal investigator (M.E.M.). As recurring ideas were identified, the 3 investigators used consensus to develop the major themes and subthemes. Exemplar quotations were then extracted from the transcript by C.R.^{15,16}

Ethics approval

The study received ethics approval from the Montreal Children's Hospital Research Ethics Board and the Inuulitsivik Health Board.

RESULTS

Four midwives and 6 midwifery students participated in the focus group. The sample represented more than 80% of the midwives and students from the birthing centres. All of the participants were women, and their professional experience ranged from 3 to 25 years.

The midwives had much to say about pregnancies, nutrition, supplementation and health practices. One experienced midwife was particularly passionate about the topics, frequently articulating ideas that resonated with all other participants. This sharing had a didactic component, which was consistent with the experiential learning style of their midwifery curriculum. Cued by the moderator, all participants were able to provide important insights from their own pregnancies, their training and their work.

Three major themes formed our deductive analytic framework: local understanding of a healthy pregnancy, local understanding of a healthy infant and the role of midwifery today.

Local understanding of a healthy pregnancy

When speaking about the determinants of a healthy pregnancy, 3 major topics emerged: food selection, unhealthy lifestyle choices and the need to support traditional community values.

The participants spoke passionately about the need for better food selection, especially a greater reliance on traditional nutrient-rich foods. They

appropriately perceived these as rich sources of nutrients, such as iron and vitamin D (Table 1). Yet there was a strong feeling that mothers had little appreciation for the value of country foods; some did discuss that access might also be limited. Additionally, one midwife stated that young women were buying "junk" (i.e., commercial) foods instead of nutritious foods, perhaps because healthier choices were often more expensive and perhaps because they also spent money on drugs and alcohol. False advertising in the local store was seen as another barrier. One woman stated, "Crystal powders that they sold at the [grocery store] — I thought that they were good for

Table 1: Traditional foods rich in vitamin D, in English and Inuktitut (Nunavik lexicon)¹⁷

English	Inuktitut
Good sources of vitamin D (content > 5 µg/100 g)	
Beluga	ᑭᑭᑭᑭᑭ
Blubber, boiled	ᑭᑭᑭᑭᑭ/ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭ. ᑭᑭᑭᑭᑭᑭᑭ
Oil, aged	ᑭᑭᑭᑭᑭᑭᑭ ᑭᑭᑭᑭᑭ
Narwhal	ᑭᑭᑭᑭᑭᑭᑭ
Blubber, raw	ᑭᑭᑭᑭᑭ/ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭᑭᑭ ᑭᑭᑭᑭᑭ
Ringed seal	ᑭᑭᑭᑭᑭ
Liver, raw	ᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Arctic char	ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭᑭᑭ
Flesh, raw	ᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Flesh and skin, dried	ᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Cisco eggs	ᑭᑭᑭᑭᑭ
Raw	ᑭᑭᑭᑭᑭ
Lake trout, raw	ᑭᑭᑭᑭᑭᑭᑭᑭᑭ
Flesh, raw	ᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Loche	ᑭᑭᑭᑭᑭᑭ
Eggs, raw	ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Liver, raw	ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Sculpin	ᑭᑭᑭᑭᑭᑭ
Flesh, raw	ᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Bones, raw	ᑭᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Moderate sources of vitamin D (content 0.5–5 µg/100 g)	
Beluga	ᑭᑭᑭᑭᑭᑭ
Maktak, raw	ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Caribou	ᑭᑭᑭᑭᑭᑭᑭ
Kidney, raw	ᑭᑭᑭᑭᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Liver, raw	ᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Muskox	ᑭᑭᑭᑭᑭᑭ
Fat, raw	ᑭᑭᑭᑭᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Whitefish	ᑭᑭᑭᑭᑭᑭᑭ
Flesh, raw	ᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭ
Bearded seal	ᑭᑭᑭᑭᑭ
Flex, boiled	ᑭᑭᑭᑭᑭ. ᑭᑭᑭᑭᑭᑭᑭ, ᑭᑭᑭᑭᑭᑭᑭ
Arctic cod	ᑭᑭᑭᑭᑭ
Ringed seal	ᑭᑭᑭᑭᑭᑭ
Blubber	ᑭᑭᑭᑭᑭᑭᑭᑭᑭᑭ
Brain	ᑭᑭᑭᑭᑭᑭᑭ
Eyes	ᑭᑭᑭᑭᑭ

my kids because in the advertising they were saying that [they were] 'vitamin C enriched.' I only learned later that they were just colour and sweeteners and that ruined my babies' teeth."

Others noted a risk factor for poor pregnancy and infant outcomes was the lack of acceptance of advice from midwives, particularly in relation to supplements. One midwife stated, "Even though we introduce supplements for them to help them to get their [iron levels] higher, even though we teach them at each prenatal visit ... some are listening and some are not listening." One reason for "not listening" was described as follows: "They think of it as medicine ... some people do not like taking medicine."

When exploring the role of the community and the elders, one participant conveyed that a healthy pregnancy requires multiple components: it "is mind and spirit and taking care of your body and having support from family and being followed by a midwife." Community support was also important: fresh country food was offered first to pregnant women, and hunters and elders understood which foods were nutritionally important for a healthy pregnancy. A senior participant recounted, "This man, having one ptarmigan at home, will call my mother and my mother would say [to me]: 'Look, you need to eat ptarmigan during your pregnancy.'" Ptarmigan, a bird hunted by the Inuit, is "rich in iron" the participant explained. However, this community support may also be in decline. Participants lamented the loss of social traditions from one generation to the next. As one midwife put it, "[traditional] rules to do during your pregnancies [are] not being practised as much as [they were] years ago." Whereas this has now become the job of midwives, a senior midwife also felt that the onus was on community members to do more to promote healthy behaviours.

Thus, there was a clear perception that rapid social changes (especially related to diet and access to affordable healthy foods), lack of education (especially regarding the nutritional value of foods and the importance of supplements) and reduced community involvement challenged efforts to support healthy pregnancies.

Local understanding of a healthy infant

The second deductive topic was the determinants of a healthy infant. Three major themes emerged from the group conversation: the importance of breastfeeding, infant nutrition through local foods and supplements, and the need for more nutritional education in communities and midwife training.

One participant was particularly vocal on the topic of breastfeeding, seeing it as both "the best nutrition, especially during the first year" and "good bonding for the mother and the baby." Despite competing pressures on young mothers to give up breastfeeding to "go out fishing ..., to go out anywhere," she argued that it was the job of the midwife to encourage "young mothers to breastfeed often and much more." While aware of iron deficiency risks, the participants were not as aware of other nutritional deficiencies. When the moderator asked about vitamin D and rickets, a senior participant responded, "Rickets? What is that?" No one had knowingly seen a case of rickets or children with bowed legs or a young infant with hypocalcemic seizures (typical manifestations).

When asked about midwifery teaching on nutritional supplements, it was noted that this was a new part of their practice. One woman understood that infants were particularly vulnerable in the winter months and that twice the usual vitamin D dosage should be given because of the lack of sun. However, the general consensus was that young mothers do not take this advice when it is offered to them, despite the availability of free supplements at local nursing stations. "[Mothers] do not always give vitamin D," she explained. "It is not really on the scene." As for pregnant women, part of this reluctance was again attributed to the frequent association between supplements and medicine, which mothers do not perceive themselves as needing during pregnancy.

Role of midwifery today

It was evident in the focus group that the midwives took pride in their work, knowing they were promoting good health for both mothers and newborns. Although they acknowledged that their work had many challenges, their commitment can perhaps be summed up best through the words of a senior participant who stated that midwives ultimately are "the voice of the unborn."

Here, 3 main subthemes emerged. First, the participants saw it as their role to teach about the nutritional value of traditional foods; they were aware that their training allowed them to better understand nutritional issues, the problems with false advertising and the value of traditional counsel. Yet, they also acknowledged their own limitations.

Second, they were aware that planned pregnancies, especially within respectful partnerships, were the most successful in terms of health outcomes for infant and mother. Yet, they also knew that encouraging forethought in youth was a huge challenge.

Finally, they were aware of the vital importance of a community network to good health outcomes, specifically the intergenerational transfer of traditional knowledge. Like the dynamic observed within the focus group itself, engagement with the senior midwife provided an invaluable opportunity for learning, as younger midwives and students welcomed her experience-based expertise. A plan articulated by the midwives during the focus group involved the use of multimedia (e.g., “pictures on the effect of lack of vitamin D”). Another creative suggestion was the idea of a calendar-type tool to coordinate seasonal access to traditional foods with nutritional requirements.

DISCUSSION

The midwives strongly believed that the health of pregnant women and young children in their communities could be better, through better food choices, acceptance of supplements and rejection of detrimental lifestyle choices (e.g., use of alcohol, cigarettes and drugs). However, the midwives also shared a clear perception that rapid social changes (especially related to diet and access to affordable healthy foods), lack of education, widespread substance abuse and reduced community involvement challenged efforts to support healthy pregnancies.

For example, there is a general perception among the Inuit that traditional foods are healthy, free of cost and nutritious, and that they enhance cultural bonds through sharing.^{18,19} But the reality is that many northern Inuit communities are experiencing a shift to blended traditional and store-bought food despite the nutritional deficiencies that result from reduced intake of traditional foods.²⁰ Changes in local customs, the high cost of fuel for hunting trips coupled with financial hardship, and lack of knowledge of when and what to harvest to ensure well-rounded diets are also reasons for the waning use of traditional food.^{20–22} Adding complexity, there are increasing concerns over pollutants in traditional foods and how communities manage the potential benefits and dangers of their consumption.²³ The result is the increasing omission of nutrient-rich food like ptarmigan from the spectrum of healthy food options for expectant mothers.

A recurring theme in the focus group was the lack of confidence and interest in nutritional supplements among expectant mothers. The literature on supplement use across the world notes that some communities prefer natural sources to supplements; others avoid supplements because they are believed

to promote fat, which is viewed negatively by women.¹⁴ Among the Inuit specifically, the midwives argue that the frequent association of supplements (taken to enhance health) with medicine (taken in ill health) challenges local efforts to promote healthy pregnancies. To overcome this resistance, the midwives proposed educating the community about the importance of nutritional supplements through a multimedia campaign (e.g., radio advertisements, flyers) targeting mothers.¹¹ Some other groups have successfully worked on increasing knowledge by targeting stores with information adjacent to the various products.¹¹

There is abundant literature that documents the unhealthy lifestyle choices of many Inuit, First Nations and indigenous communities, with higher risks for pregnant women and fetuses.^{6,24} These include high rates of smoking, and use of alcohol and marijuana. In a previous survey of several Nunavik and other Canadian Inuit communities, it was demonstrated that rates in pregnant women were 92%, 61% and 35%, respectively.²⁵ This widespread use of substances is an important barrier to healthy pregnancies. The midwives in our study recognized that this is a major challenge to the health of mothers and infants, and they felt strongly that the best way to make a positive impact in their communities was through further education. Across the globe, the role of education has been connected to the positive community health outcomes, including increased intake of supplements.²⁶

We found no studies evaluating gains in midwives’ nutritional knowledge after completion of their professional training. The women participating in the focus group were self-selected as interested in community health. Moreover, they were eager to acquire new knowledge and continually improve health outcomes, as evidenced by their interactions during the focus group. It was apparent that the focus group was in itself a learning tool through sharing information and outside knowledge. That the moderator was an Inuk mother likely put them further at ease. Continuing education was eagerly sought by this group, who welcomed more interactive sessions.

Whereas we deliberately sought midwives from northern communities in this study, in future studies we could also include non-Inuit midwives, asking for their perspectives on their work in these communities. Future efforts will ensure that the midwives are provided with educational flyers to post in their nursing stations; we also hope to create additional tools to highlight the seasonal variability of foods rich in vitamin D (Table 1), to help the midwives to promote them better.

Limitations

About 20% of the local Inuit midwives were unable to participate in our focus group. We acknowledge that there were few midwives in these communities to discuss their perceptions, that they were self-selected and that only a single focus group was held. The resulting small sample may limit generalizability and relevance to other health care providers across Canada.

CONCLUSION

The midwives of the Inuulitsivik region expressed concern about unhealthy behaviours in young women and about the decline of traditional beliefs, particularly during pregnancy. They were eager to engage the community and promote knowledge locally to reduce nutritional deficiencies and optimize health during pregnancy and infancy.

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REFERENCES

1. Van Wagner V, Eppo B, Nastapoka J, et al. Reclaiming birth, health and community: midwifery in the Inuit villages of Nunavik, Canada. *J Midwifery Womens Health* 2007;52:384-91.
2. Van Wagner V, Osepchuk C, Harney E, et al. Remote midwifery in Nunavik, Quebec, Canada: outcomes of perinatal care for the Inuulitsivik Health Centre, 2000-2007. *Birth* 2012;39:230-7.
3. Berti P, Souedia R, Kuhlein M. Dietary assessment of indigenous Canadian Arctic women with a focus on pregnancy and lactation. *Int J Circumpolar Health* 2008;67:349-62.
4. Christofides A, Schauer C, Zlotkin S. Iron deficiency and anemia prevalence and associated etiologic risk factors in First Nations and Inuit communities in northern Ontario and Nunavut. *Can J Public Health* 2005;96:304-7.
5. Plante C, Blanchet C, Rochette L, et al. Prevalence of anemia among Inuit women in Nunavik, Canada. *Int J Circumpolar Health* 2011;70:154-65.
6. Waiters B, Godel J, Basu T. Perinatal vitamin D and calcium status of northern Canadian mothers and their newborn infants. *J Am Coll Nutr* 1999;18:122-6.
7. Willows N, Dewailly E, Gray-Donald K. Anemia and iron status in Inuit infants from northern Quebec. *Can J Public Health* 2000;91:407-10.
8. Ward L, Gaboury I, Ladhani M, et al. Vitamin D deficiency rickets among children in Canada. *CMAJ* 2007;177:161-6.
9. Canadian Pediatric Society. Vitamin D supplementation in northern Native communities. *Paediatr Child Health* 2002;7:459-63.
10. Schaefer S, Erber E, Trzaskos J, et al. Sources of food affect dietary adequacy of Inuit women of childbearing age in Arctic Canada. *J Health Popul Nutr* 2011;29:454-64.
11. Sharma S, Barr A, Macdonald H, et al. Vitamin D deficiency and disease risk among aboriginal Arctic populations. *Nutr Rev* 2011;69:468-78.
12. Muckle G, Boucher O, Laflamme D, et al. *Qanuippitaa? How are we? Nunavik Inuit Health Survey 2004*. Quebec: Institut national de sante publique du Quebec; Nunavik Regional Board of Health and Social Services; 2008.
13. Hill Z, Kirkwood B, Kendall C, et al. Factors that affect the adoption and maintenance of weekly vitamin A supplementation among women in Ghana. *Public Health Nutr* 2007;10:827-33.
14. Wijsmann-Grootendorst A, van Dam R. The attitude of Dutch women of Turkish ancestry towards measures for the prevention and treatment of vitamin D deficiency; the results of focus group interviews. *Ned Tijdschr Geneesk* 2005;149:932-6.
15. Kreuger R, Casey M. *Focus groups: a practical guide for applied research*. Thousand Oaks (CA): Sage Publications; 2000.
16. Stewart D, Shamdasani P, Rook D. *Focus groups: theory and practice*. Thousand Oaks (CA): Sage Publications; 2007.
17. Kuhnlein H, Barthet V, Farren A, et al. Vitamins A, D and E in Canadian Arctic traditional foods and adult diets. *J Food Compos Anal* 2006;19:495-506.
18. Lambden J, Receveur O, Kuhlein M. Traditional food attributes must be included in studies of food security in the Canadian Arctic. *Int J Circumpolar Health* 2007;66:308-19.
19. Johnson-Down L, Egeland G. Adequate nutrient intakes are associated with traditional food consumption in Nunavut Inuit children aged 3-5 years. *J Nutr* 2010;140:1311-6.
20. Sharma S, Gittelsohn J, Rosol R, et al. Addressing the public health burden caused by the nutrition transition through the Healthy Foods North nutrition and lifestyle intervention program. *J Hum Nutr Diet* 2010;23(Suppl 1):120-7.
21. Beaumier M, Ford J. Food insecurity among Inuit women exacerbated by socioeconomic stresses and climate change. *Can J Public Health* 2010;101:196-201.
22. Mead E, Gittelsohn J, Kratzman M, et al. Impact of the changing food environment on dietary practices of an Inuit population in Arctic Canada. *J Hum Nutr Diet* 2010;23(Suppl 1):18-26.
23. Turgeon O'Brien H, Blanchet R, Gagne D, et al. Exposure to toxic metals and persistent organic pollutants in Inuit children attending childcare centers in Nunavik. *Environ Sci Technol* 2012;46:4614-23.
24. Schroth R, Lavelle C, Moffat M. Review of vitamin D deficiency during pregnancy: Who is affected? *Int J Circumpolar Health* 2005;64:112-20.
25. Muckle G, Laflamme D, Gagnon J, et al. Alcohol, smoking and drug use among Inuit women of childbearing age during pregnancy and the risk to children. *Alcohol Clin Exp Res* 2011;35:1081-91.
26. Locyer V, Porcellato L, Gee I. Vitamin D deficiency and supplementation: Are we failing to prevent the preventable? *Community Pract* 2011;84:23-6.

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Hospital admission for community-acquired pneumonia in a First Nations population

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Introduction: Northwestern Ontario is a large rural area with a high concentration of remote First Nations communities. In Ontario, the highest hospital admission rates for pneumonia are reported from northern and rural regions. However, data are lacking on the epidemiology of community-acquired pneumonia in northwestern Ontario. We sought to characterize cases of community-acquired pneumonia requiring admission at the Sioux Lookout Meno Ya Win Health Centre, which serves a primarily First Nations population of 28 000.

Methods: We undertook a 3-year review of cases of community-acquired pneumonia requiring hospital admission at the centre. We used multivariable logistic regression to identify independent variables predictive of adverse outcomes.

Results: The annual incidence of hospital admissions related to community-acquired pneumonia was 3.42 per 1000 population. Of the 287 patients, 87% were First Nations and 52% were female. There was a high prevalence of diabetes, and chronic cardiovascular, renal and pulmonary diseases. Hospital admissions for community-acquired pneumonia were most prevalent among young children and older adults; both age groups had low coverage with recommended pneumococcal vaccines. Adverse outcomes included 10 deaths (3%) and 35 transfers to an intensive care facility (12%). Chronic renal disease and nonreceipt of azithromycin at initial presentation were identified as 2 independent predictors of an adverse outcome; there was a trend toward an increased risk of an adverse outcome in individuals with chronic obstructive pulmonary disease.

Conclusion: Our findings emphasize the importance of preventing pneumonia in First Nations communities in northwestern Ontario. Research focusing on the distinct epidemiology of community-acquired pneumonia in this population is needed.

Introduction : Le Nord-Ouest de l'Ontario est une vaste région rurale où se trouve une forte concentration de communautés éloignées des Premières Nations. En Ontario, les taux les plus élevés d'hospitalisation en raison d'une pneumonie sont observés dans les régions du Nord et en milieu rural. On manque cependant de données sur l'épidémiologie de la pneumonie extrahospitalière dans le Nord-Ouest de l'Ontario. Nous avons cherché à caractériser les cas de pneumonie extrahospitalière nécessitant une admission au Centre de santé Sioux Lookout Meno Ya Win, qui dessert une population de 28 000 habitants principalement composée de membres des Premières Nations.

Méthodes : Nous avons entrepris une revue répartie sur 3 ans des cas de pneumonie extrahospitalière ayant nécessité une admission à ce centre. Nous avons utilisé une méthode de régression logistique à variables multiples pour identifier des variables indépendantes permettant de prévoir la survenue d'événements défavorables.

Résultats : L'incidence annuelle des hospitalisations reliées à la pneumonie extrahospitalière était de 3,42 pour 1000 habitants. Parmi les 287 patients, 87 % étaient des membres des Premières Nations et 52 % étaient de sexe féminin. On a enregistré une prévalence élevée de diabète, de maladie cardiovasculaire chronique, de maladie rénale et de maladie pulmonaire. La prévalence des hospitalisations en raison d'une pneumonie extrahospitalière était particulièrement élevée chez les jeunes enfants et les adultes âgés; dans ces deux groupes d'âge, le taux de couverture par les vaccins recommandés contre

le pneumocoque était faible. Les événements défavorables ont été 10 décès (3 %) et 35 transferts vers l'unité de soins intensifs (12 %). Deux variables indépendantes relevées chez les patients au moment de l'hospitalisation ont été prédictives d'événements indésirables : la maladie rénale chronique et la non-réception d'azithromycine; on a observé une tendance à un risque accru d'événements indésirables chez les personnes atteintes de maladie pulmonaire obstructive chronique.

Conclusion : Nos observations soulignent l'importance de la prévention de la pneumonie dans les communautés des Premières Nations du Nord-Ouest de l'Ontario. Il faudrait mener des études sur les particularités épidémiologiques de la pneumonie extrahospitalière dans cette population.

INTRODUCTION

Northwestern Ontario is a large geographic area with distinct environmental, socioeconomic and demographic characteristics that may challenge the maintenance of optimal health and health care services. The area shares many social determinants of health and negative health-related factors typical for rural Canada, such as higher prevalence of people with low income and lower education, less healthy dietary practices and lower levels of physical activity, compared with urban Canadians.¹ The health status of the northwestern Ontario population is also influenced by the vast geography of remote First Nations communities, with challenging access to comprehensive medical services and adverse social determinants of health (e.g., overcrowding, poverty, limited access to potable water).²⁻⁴

First Nations people in Canada experience a disproportionate burden of numerous health problems, including infectious and respiratory diseases.⁵ Previous studies identified increased rates of hospital admission for community-acquired pneumonia among First Nations people in Alberta and Labrador, compared with the non-First Nations population.^{6,7} In Ontario, the highest reported admission rates for pneumonia and influenza were found in northern and rural regions;⁸ however, data are lacking on the epidemiology of community-acquired pneumonia in northwestern Ontario. We sought to characterize cases of community-acquired pneumonia requiring hospital admission in a primarily First Nations population.

METHODS

This 3-year retrospective population-based study examines all cases of community-acquired pneumonia requiring hospital admission at the Sioux Lookout Meno Ya Win Health Centre, in Ontario. The centre serves a primarily First Nations population of 28 000 in 28 remote communities⁹ (Fig. 1).

We specifically identified the medical risk factors and comorbidities associated with community-acquired pneumonia and those associated with an

unfavourable clinical course of the disease, such as all-cause mortality associated with the admission or transfer to a tertiary care centre with an intensive care unit (ICU). We compared our centre's admission rates and lengths of stay with provincial averages.

All cases of pneumonia involving admission for at least 24 hours between January 2007 and December 2009 were retrospectively identified by the International Classification of Diseases, 9th revision (ICD-9) codes. The patients' charts were reviewed to exclude health care-associated or hospital-acquired pneumonia. We excluded any patients who had been admitted within the preceding 30 days or transferred to the hospital from a long-term care facility. We also excluded any nosocomial infections with onset of the symptoms more than 72 hours after admission. All discharge diagnoses of pneumonia were included in the study. Data on 41 variables were collected, including patient demographics, medical conditions, current medications and clinical course of disease. Pneumococcal vaccination status as well as microbiology data (blood and sputum culture) were also recorded where available.

Outcomes of interest included all-cause mortality, transfer to another hospital (for admission to intensive care facilities) or a summary outcome of death or transfer. We evaluated the association between patient characteristics and outcome risk, using univariable logistic regression models. Because of the relatively small number of specific outcomes (deaths and transfers) models were built to assess risk of summary outcomes. Candidate covariates ($p \leq 0.15$) were used to build a multivariable logistic regression model, with covariates removed in a stepwise fashion to maximize Akaike information criterion.

The Meno Ya Win Research and Ethics Review Committee gave ethics approval for the study.

RESULTS

Patient characteristics

During the study period, 287 cases of community-acquired pneumonia resulted in admission at the

Sioux Lookout Meno Ya Win Health Centre, for an annual incidence of 3.42 per 1000 population. Of these, 91.3% had radiographic confirmation of the clinical diagnosis. The mean age of patients was 37.2 years with a clear bimodal distribution; 126 patients were under 20 years of age (mean 2.8 yr) and 161 patients were over 20 years of age (mean 64.1 yr) (Figs. 2 and 3). Of the patients, 52% were female, 87% were First Nations, and 71% were obese (body mass index [BMI] > 30) or overweight (BMI > 25). Among adults, 41% smoked or formerly smoked, 47% had diabetes, 31% had chronic obstructive pulmonary disease (COPD), 46% had either congestive heart failure or coronary artery disease, and 20% had chronic renal disease. A total

of 40% of patients had received treatment or been admitted for a previous case of pneumonia. The largest number of cases of community-acquired pneumonia were in children aged 1–24 months ($n = 80$) and in adults aged 70–79 years ($n = 42$).

Vaccination status was low. Of the whole cohort, 22% had received a pneumococcal vaccine. Of the children aged 2 months to 14 years, 25% had received the 7-valent conjugate pneumococcal vaccine, and 41% of adults aged 65 years or older had received the 23-valent pneumococcal polysaccharide vaccine.

The mean length of hospital stay was 5.32 (95% confidence interval [CI] 4.68–5.96) days. Ten patients (3%) died as a direct result of pneumonia (either in hospital or within 30 days of discharge);

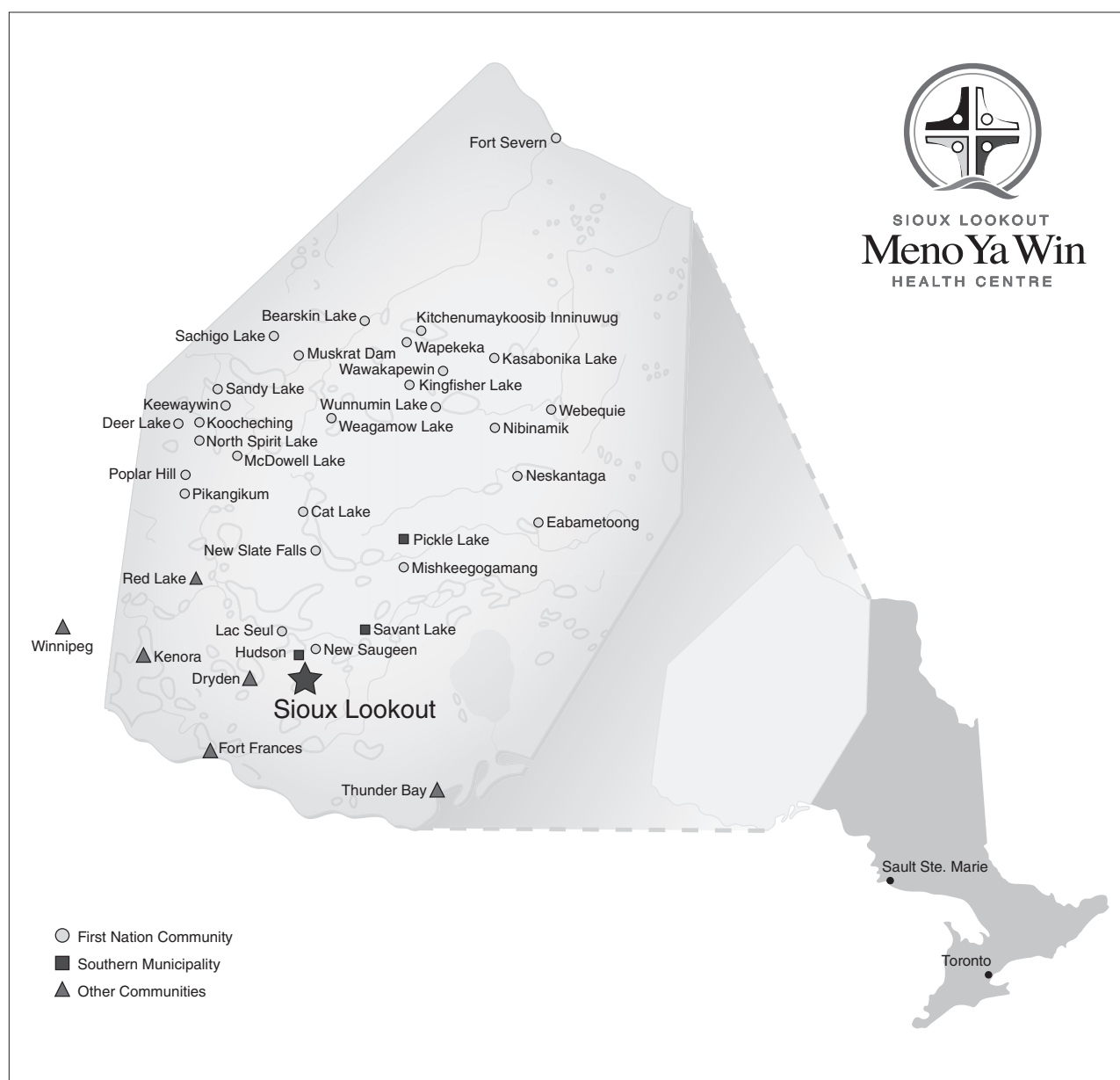


Fig. 1. The service area of the Sioux Lookout Meno Ya Win Health Centre (www.slmhc.on.ca/service-area; reproduced with permission from the Sioux Lookout Meno Ya Win Health Centre).

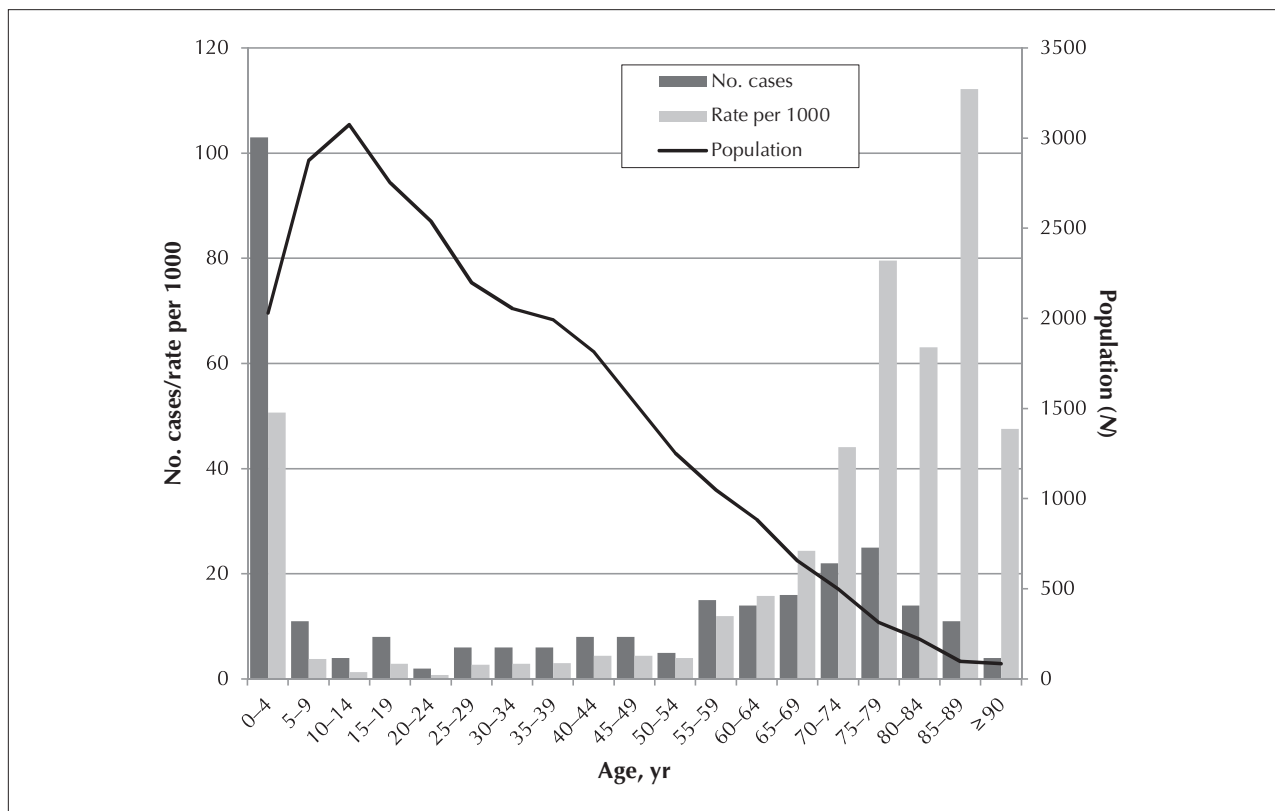


Fig. 2. Distribution of cases and incidence rates of community-acquired pneumonia involving hospital admission, by patient age.

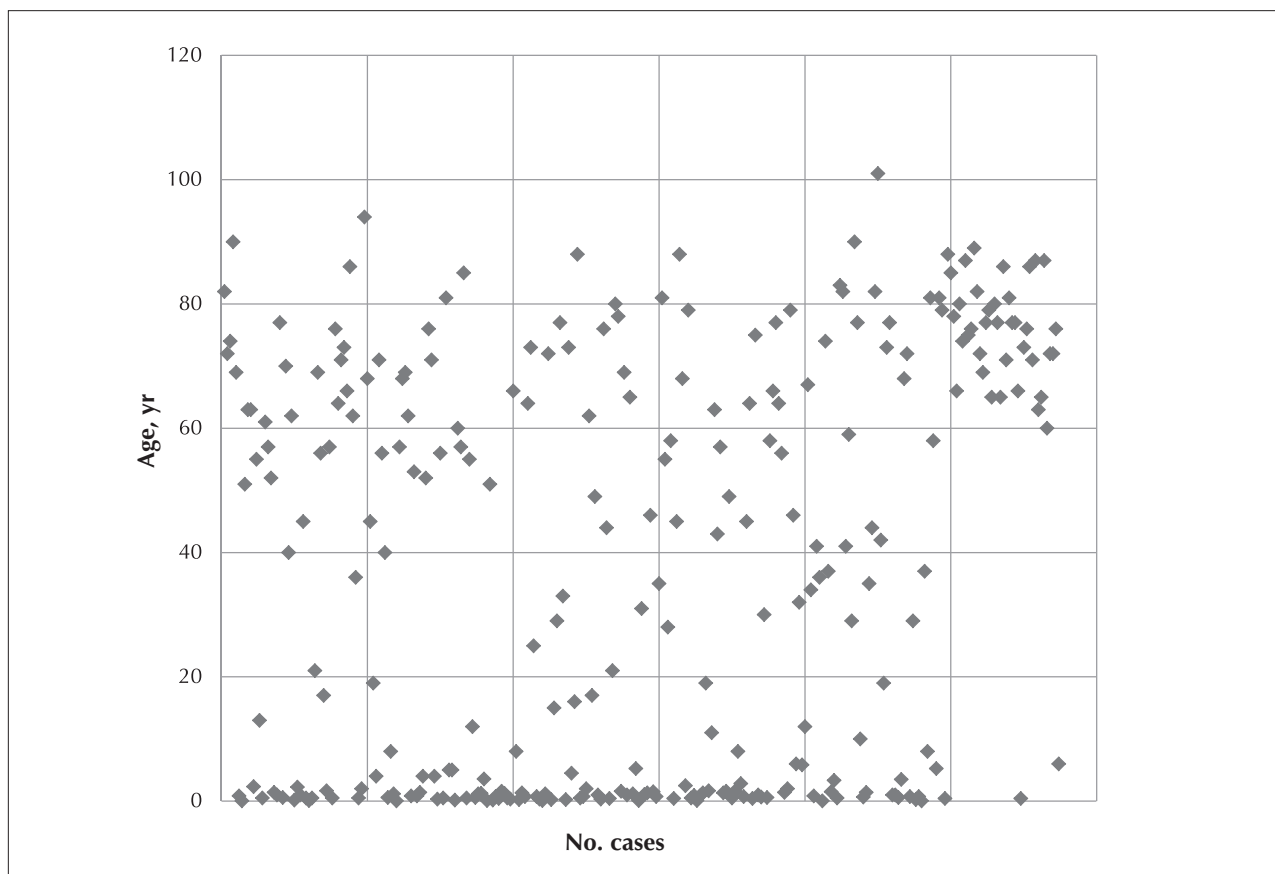


Fig. 3. Age distribution in 287 hospital admissions for community-acquired pneumonia.

35 patients (12%) were transferred to a tertiary care centre for admission to the ICU. The most common treatment courses were cefuroxime, azithromycin, or levofloxacin, with 9% of the patients receiving antibiotics before the hospital admission. Microbiological information from sputum samples were almost universally absent.

Risk factors for unfavourable outcomes

Our analysis identified 2 independent predictors of adverse outcomes: chronic renal disease (odds ratio [OR] 3.14, 95% CI 1.37–7.25, $p = 0.007$) and non-receipt of azithromycin at the initial presentation (OR 2.17, 95% CI 1.10–4.30, $p = 0.03$). In addition, we found a trend toward an increased risk of adverse outcomes in patients with COPD (OR 1.95, 95% CI 0.90–4.16, $p = 0.09$). Other factors that have been previously identified as predictive of poor outcomes in individuals with community-acquired pneumonia, including nonreceipt of a pneumococcal vaccine and advanced age, were not found to be predictors of poor outcome in this analysis.

DISCUSSION

During the 3 years of this study, the annual incidence of pneumonia-related hospital admission at the Sioux Lookout Meno Ya Win Health Centre was 3.42 per 1000 population. In comparison, the provincial rate for 1992–2001 was 2.42 per 1000 population.^{8,10} Our catchment area population constitutes 10% of the population of Local Health Integration Network no. 14, which also has high rates of hospital admission for pneumonia (3.38/1000 v. provincial rates of 1.82/1000 for 2008–2012).¹¹

High rates of hospital admission for community-acquired pneumonia in northwestern Ontario may be due to several factors. Canadian and American studies have found community-acquired pneumonia to be more common among Aboriginal populations, with higher admission rates than the general population.^{6,7,12–14} In 1995–2001, the admission rate due to pneumonia for the Innu and Inuit communities in Labrador was 11.6 per 1000 population compared with 3.0 per 1000 population in non-Aboriginal communities on the Northern Peninsula of Newfoundland.⁷

Unsatisfactory living standards in rural Aboriginal communities due to poverty, overcrowding, indoor pollution from smoking and wood-burning, poor ventilation and shortage of clean water are recognized as major determinants of increased morbid-

ity in Aboriginal Canadians.^{15,16} Limited access to primary care is also a characteristic factor among many rural Aboriginal communities.¹⁷ Indeed, community-acquired pneumonia is considered an ambulatory care-sensitive condition (i.e., a disease that can be effectively managed in an ambulatory setting).³ A 2003 study by Shah and colleagues³ addressed the frequencies of preventable hospital admissions in northern Ontario and found a high admission rate for ambulatory care-sensitive conditions in Aboriginal populations compared with non-Aboriginal populations residing in the same geographic area, even when matched by socioeconomic status.

Although pneumonia is the leading cause of admission to the Sioux Lookout Meno Ya Win Health Centre, the proportion of patients whose hospital stay was 2 days or less was about 6 times the provincial average.¹¹ More frequent admissions for community-acquired pneumonia with shorter hospital stays have also been reported from rural hospitals in Alberta and in Innu and Inuit patients in Labrador, in comparison with non-Aboriginal patients.^{7,18} In addition, studies have found that non-Aboriginal patients have less severe pneumonia, with lower in-hospital mortality, than non-Aboriginal patients.^{6,7} In a 2004 study from Alberta, Marrie and colleagues⁶ found that in-hospital mortality in First Nations patients was 3.1%, compared with 6.9% in age-matched non-First Nations patients.

Mortality from pneumonia varies by study. Recently short-term mortality as high as 9% has been reported in patients admitted to hospital with community-acquired pneumonia.¹⁹ In our study, 30-day mortality was 3.5%, which suggests that pneumonia had a less severe course in our patients. Limited access to primary care follow-up and outpatient supports may lead to admission of patients who present with less severe disease, because patients often live hours away by air travel from the hospital.

Age is recognized as a major risk factor for community-acquired pneumonia, with higher incidence rates in people aged 65 years or older.²⁰ However, children under the age of 4 years are also at an increased risk.^{7,21} Aboriginal infants have the highest rate of hospital admission, whereas non-Aboriginal patients with pneumonia are primarily older adults.⁷ The bimodal age distribution in our study is consistent with these previous studies. In our study, the largest number of cases ($n = 80$) was found in children aged 1–24 months, and the second largest group ($n = 42$) consisted of adults aged 70–79 years. Because of the large number of childhood cases, the mean age of patients in our study was lower than that from another

Canadian report of community-acquired pneumonia in First Nations populations (37 yr v. 53.5 yr).⁶

Typical comorbidities of community-acquired pneumonia as well as medical risk factors described in the literature were present in our study: a high prevalence of diabetes, cardiovascular disease, COPD, chronic renal disease, previous episodes of pneumonia and smoking.^{22–24}

Chronic renal failure is a recognized risk factor for community-acquired pneumonia.^{25–28} In Canada, the prevalence of severe chronic kidney disease is almost twofold higher among First Nations than non-First Nations people.²⁹ The First Nations population of northwestern Ontario is disproportionately affected by chronic renal failure.^{30,31} In our study, it was found to be an independent risk factor associated with an unfavourable outcome of pneumonia. The presence of diabetes and COPD is known to have a negative impact on the immune system^{32,33} and was seen in 47% and 31% of our participants, respectively. A trend to an increased risk of an unfavourable outcome of pneumonia was observed in patients with COPD, but not in patients with diabetes.

Microbiological data were absent from most of the patient charts in our study, as is often the case in pneumonia studies. In our study participants, coverage of children and older adults with recommended pneumococcal vaccines was low (the 7-valent pneumococcal conjugate vaccine, Pneu-C-7; and the 23-valent pneumococcal polysaccharide vaccine, Pneu-P-23, respectively).³⁴ The Pneu-C-7 vaccine recommended by the Public Health Agency of Canada for all children under 2 years of age has been part of the routine Ontario vaccination program since 2005.³⁵ In our cohort, the average vaccination rate in children between 2 months and 14 years of age was only 25%, whereas 35% would have been eligible by age given the timing of the introduction of the vaccine in Ontario.

Pneu-P-23 is recommended for all adults older than 65 years in Canada.³⁶ Although there is conflicting evidence that the administration of the Pneu-P-23 vaccine reduces rates of pneumonia, the administration of this vaccine in at-risk populations is supported by data demonstrating improvement in clinical outcomes, including shorter hospital stays, reduced occurrence of bacterial sepsis or transfer to intensive care, and reduced mortality.^{37–39} Our vaccination rate in this population was 41%; improved vaccination practices might decrease infection rates and hospital admissions in the older portion of our population.

We also found that nonreceipt of azithromycin at the initial presentation was a predictor of a negative

outcome. This may speak to the possibility of high rates of susceptible organisms, including atypical causes of pneumonia, but also may be indicative of the immune-modulating properties of this antibiotic.⁴⁰ In 2012, a meta-analysis of 23 studies found a 22% reduction in mortality with this antibiotic; the authors hypothesized that some of the benefit may be due to its anti-inflammatory properties.⁴⁰ The Canadian Paediatric Society has recently recommended against its use in pneumococcal pneumonia (the cause of 25%–50% of community-acquired pneumonia in some studies) due to the association with the development of resistance.^{35,41} The absence of microbiological data inhibit us from speculating on whether we are encountering more atypical causes of community-acquired pneumonia.

Short hospital stays are often seen as unnecessary or “social” admissions. In our setting, with patients travelling long distances back to their home community, prudent management may lead to short admissions to ensure the patient is safe to travel and to receive treatment back in their distant home community. Hospital admission and length of stay aside, the standardized mortality for respiratory disorders (excluding neoplasms) in northwestern Ontario is almost twice that of the rest of the province (0.7/1000 v. 0.4/1000, respectively).¹⁰ More research is needed to understand the role that social determinants of health, vaccination status and treatment play.

Limitations

Community of origin was not noted in our study. Therefore, we could not distinguish between members of the population who had easier access to the hospital and local clinics, and those in more remote areas. Sputum culture results were rarely available on the charts, particularly in the pediatric population.

CONCLUSION

Medical and socioeconomic risk factors for community-acquired pneumonia exist in rural First Nations populations. The etiology of community-acquired pneumonia in this population requires further study for better prevention. Increased microbiological surveillance, as well as community-specific variables (e.g., housing and air quality) would enhance our understanding of risk factors and best treatment options for community-acquired pneumonia in this region. Renal failure and nonreceipt of azithromycin were independently associated with poor outcomes of community-acquired pneumonia

in our study population. Pneumococcal vaccination in our region should be made a priority.

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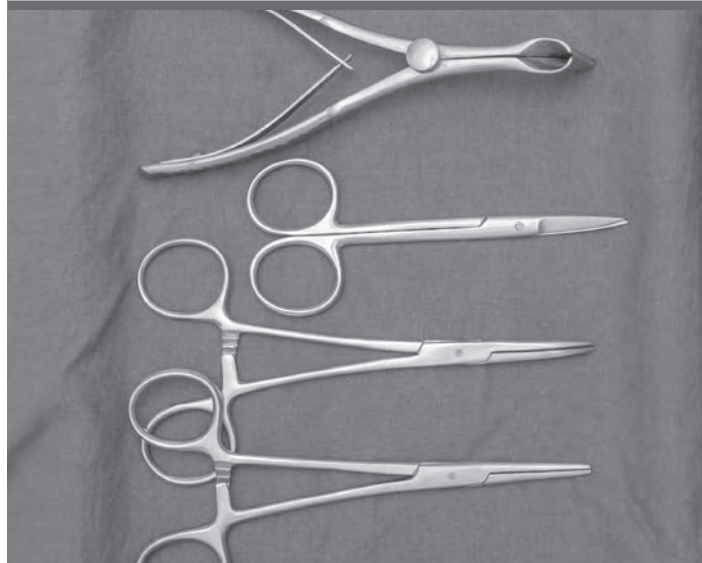
REFERENCES

- DesMeules M, Pong RW, Read Guernsey J, et al. Rural health status and determinants in Canada. In: Kulig JC, Williams AM, editors. *Health in rural Canada*. Vancouver: UBC Press; 2002. p. 37-43.
- Wheatley B, Paradis S. Exposure of Canadian Aboriginal peoples to methylmercury. *Water Air Soil Pollut* 1995;80:3-11.
- Shah BR, Gunraj N, Hux JE. Markers of access to and quality of primary care for Aboriginal people in Ontario, Canada. *Am J Public Health* 2003;93:798-802.
- Imbeault P, Findlay CS, Robidoux MA, et al. Dysregulation of cytokine response in Canadian First Nations communities: Is there an association with persistent organic pollutant levels? *PLoS ONE* 2012;7:e39931.
- Waldram JB, Herring DA, Young TK. *Aboriginal health in Canada: historical, cultural, and epidemiological perspectives*. Toronto: University of Toronto Press; 2006.
- Marrie TJ, Carriere KC, Jin Y, et al. Hospitalization for community-acquired pneumonia in Alberta First Nations Aboriginals compared with non-First Nations Albertans. *Can Respir J* 2004;11:336-42.
- Alaghehbandan R, Gates KD, MacDonald D. Hospitalization due to pneumonia among Innu, Inuit and non-Aboriginal communities, Newfoundland and Labrador, Canada. *Int J Infect Dis* 2007;11:23-8.
- Crichton EJ, Elliott SJ, Moineddin R, et al. An exploratory spatial analysis of pneumonia and influenza hospitalizations in Ontario by age and gender. *Epidemiol Infect* 2007;135:253-61.
- Walker R, St Pierre-Hansen N, Cromarty H, et al. Measuring cross-cultural patient safety: identifying barriers and developing performance indicators. *Healthc Q* 2010;13:64-71.
- Crichton EJ, Elliott SJ, Moineddin R, et al. A spatial analysis of the determinants of pneumonia and influenza hospitalizations in Ontario (1992-2001). *Soc Sci Med* 2007;64:1636-50.
- Canadian Institute for Health Information. CIHI portal. Available: www.cihi.ca/cihi-ext-portal/internet/en/document/types+of+care/hospital+care/cihi_portal (accessed 2013 June 10).
- Cortese MM, Wolff M, Almeida-Hill J, et al. High incidence rates of invasive pneumococcal disease in the White Mountain Apache population. *Arch Intern Med* 1992;152:2277-82.
- Scheifele D, Law B, Vaudry W, et al. Invasive pneumococcal infections among Canadian Aboriginal children. *Can Commun Dis Rep* 2003;29:37-42.
- Hennessy TW, Ritter T, Holman RC, et al. The relationship between in-home water service and the risk of respiratory tract, skin, and gastrointestinal tract infections among rural Alaska natives. *Am J Public Health* 2008;98:2072-8.
- Adelson N. The embodiment of inequity: health disparities in Aboriginal Canada. *Can J Public Health* 2005;96(Suppl 2):S45-61.
- Kovesi T. Respiratory disease in Canadian First Nations and Inuit children. *Paediatr Child Health* 2012;17:376-80.
- Cunningham PJ, Cornelius LJ. Access to ambulatory care for American Indians and Alaska Natives; the relative importance of personal and community resources. *Soc Sci Med* 1995;40:393-407.
- Jin Y, Marrie TJ, Carriere KC, et al. Variation in management of community-acquired pneumonia requiring admission to Alberta, Canada hospitals. *Epidemiol Infect* 2003;130:41-51.
- Kahlon S, Eurich DT, Padwal RS, et al. Obesity and outcomes in patients hospitalized with pneumonia. *Clin Microbiol Infect* 2013;19:709-16.
- Chong CP, Street PR. Pneumonia in the elderly: a review of the epidemiology, pathogenesis, microbiology, and clinical features. *South Med J* 2008;101:1141-5.
- Clark JE, Hammal D, Hampton F, et al. Epidemiology of community-acquired pneumonia in children seen in hospital. *Epidemiol Infect* 2007;135:262-9.
- Almirall J, Bolibar I, Serra-Prat M, et al. New evidence of risk factors for community-acquired pneumonia: a population-based study. *Eur Respir J* 2008;31:1274-84.
- Jackson ML, Nelson JC, Jackson LA. Risk factors for community-acquired pneumonia in immunocompetent seniors. *J Am Geriatr Soc* 2009;57:882-8.
- Health Canada. Diabetes in Canada: facts and figures from a public health perspective. Available: www.hc-sc.gc.ca/fniah-spnia/diseases-maladies/diabete/index-eng.php (accessed 2013 Aug. 26).
- Neuhaus T, Ewig S. Defining severe community-acquired pneumonia. *Med Clin North Am* 2001;85:1413-25.
- Carbonara S, Monno L, Longo B, et al. Community-acquired pneumonia. *Curr Opin Pulm Med* 2009;15:261-73.
- Manno D, Puoti M, Signorini L, et al. Risk factors and clinical characteristics associated with hospitalization for community-acquired bacterial pneumonia in HIV-positive patients according to the presence of liver cirrhosis. *Infection* 2009;37:334-9.
- Aliberti S, Myers JA, Peyrani P, et al. The role of neutropenia on outcomes of cancer patients with community-acquired pneumonia. *Eur Respir J* 2009;33:142-7.
- Gao S, Manns BJ, Culleton BF, et al. Prevalence of chronic kidney disease and survival among Aboriginal people. *J Am Soc Nephrol* 2007;18:2953-9.
- McCready W. Diabetic renal failure in First Nations patients in northwest Ontario [abstract]. In: 2009 Northern Health Research Conference; 2009 May 29; Thunder Bay (ON). p. 27.
- North West LHIN. Health services blueprint: building out future. Final report. Available: www.northwestlhin.on.ca/uploadedFiles/NW%20LHIN_Health%20Services%20Blueprint_Building%20Our%20Future%20-%20Final%20Report.pdf (accessed 2013 July 28).
- Joshi N, Caputo GM, Weitekamp MR, et al. Infections in patients with diabetes mellitus. *N Engl J Med* 1999;341:1906-12.
- Sethi S. Infection as a comorbidity of COPD. *Eur Respir J* 2010;35:1209-15.
- Grijalva CG, Griffin MR. Population-based impact of routine infant immunization with pneumococcal conjugate vaccine in the USA. *Expert Rev Vaccines* 2008;7:83-95.
- Update on pediatric invasive pneumococcal disease and recommended use of conjugate pneumococcal vaccines. *CCDR* 2010; 36:1-30. Available: www.phac-aspc.gc.ca/publicat/ccdr-rmtc/10vol36/acs-3 (accessed 2013 Oct. 26).
- Canadian immunization guide. 7th ed. Ottawa: Public Health Agency of Canada; 2006. Available: www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php (accessed 2013 Oct. 26).
- Fisman DN, Abrutyn E, Spaude KA, et al. Prior pneumococcal vaccination is associated with reduced death, complications, and length of stay among hospitalized adults with community-acquired pneumonia. *Clin Infect Dis* 2006;42:1093-101.
- Mykietiak A, Carratala J, Dominguez A, et al. Effect of prior pneumococcal vaccination on clinical outcome of hospitalized adults with community-acquired pneumococcal pneumonia. *Eur J Clin Microbiol Infect Dis* 2006;25:457-62.
- Johnstone J, Marrie TJ, Eurich DT, et al. Effect of pneumococcal vaccination in hospitalized adults with community-acquired pneumonia. *Arch Intern Med* 2007;167:1938-43.
- Asadi L, Sligl W, Eurich D, et al. Macrolide-based regimens and mortality in hospitalized patients with community-acquired pneumonia: a systematic review and meta-analysis. *Clin Infect Dis* 2012;55:371-80.
- Ovetchkine P, Reider M. Azithromycin use in paediatrics: a practical overview. *Paediatr Child Health* 2013;18:311-3.

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From the community to the classroom: the Aboriginal health curriculum at the Northern Ontario School of Medicine

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More undergraduate medical education programs are including curricula concerning the health, culture and history of Aboriginal people. This is in response to growing international recognition of the large divide in health status between Aboriginal and non-Aboriginal people, and the role medical education may play in achieving health equity. In this paper, we describe the development and delivery of the Aboriginal health curriculum at the Northern Ontario School of Medicine (NOSM). We describe a process for curriculum development and delivery, which includes ongoing engagement with Aboriginal communities as well as faculty expertise.

Aboriginal health is delivered as a core curriculum, and learning is evaluated in summative assessments. Aboriginal health objectives are present in 4 of 5 required courses, primarily in years 1 and 2. Students attend a required 4-week Aboriginal cultural immersion placement at the end of year 1. Resources of Aboriginal knowledge are integrated into learning.

In this paper, we reflect on the key challenges encountered in the development and delivery of the Aboriginal health curriculum. These include differences in Aboriginal and non-Aboriginal knowledge; risk of reinforcing stereotypes in case presentations; negotiation of curricular time; and faculty readiness and development. An organizational commitment to social accountability and the resulting community engagement model have been instrumental in creating a robust, sustainable program in Aboriginal health at NOSM.

Un plus grand nombre de programmes d'études de premier cycle en médecine comportent des cours sur la santé, la culture et l'histoire des peuples autochtones. En effet, on reconnaît de plus en plus, à l'échelle internationale, l'existence d'un important écart entre l'état de santé des peuples autochtones et celui des peuples non autochtones et le rôle que pourrait jouer la formation en médecine dans l'atteinte d'une équité en matière de santé. Dans le présent article, nous expliquons l'élaboration et la mise en œuvre du programme de formation en santé autochtone de l'École de médecine du Nord de l'Ontario (ÉMNO). Nous décrivons un processus d'élaboration et de mise en œuvre qui fait intervenir un engagement soutenu avec les communautés autochtones de même que le savoir-faire du corps professoral.

La santé autochtone fait partie du tronc commun du programme d'études et l'apprentissage est mesuré par des évaluations récapitulatives. Des objectifs liés à la santé autochtone sont à atteindre dans 4 des 5 cours obligatoires, principalement au cours des première et deuxième années du programme. À la fin de la première année, les étudiants font un séjour d'immersion obligatoire de 4 semaines dans la culture autochtone. Les ressources du savoir-faire autochtone font partie de l'apprentissage.

Dans cet article, nous réfléchissons aux importants défis que posent l'élaboration et la mise en œuvre d'un programme de formation en santé autochtone. Nous examinons aussi les différences entre les savoirs autochtone et non autochtone, le risque de renforcement des stéréotypes dans les présentations de cas, la négociation du temps à accorder à cette formation dans le programme d'études, la préparation et le perfectionnement du corps professoral. Un modèle d'engagement de l'organisation envers la responsabilité sociale et d'engagement de la communauté qui en résulte joue un rôle de premier plan dans la création d'un programme de formation robuste et durable en santé autochtone à l'ÉMNO.

INTRODUCTION

The Northern Ontario School of Medicine (NOSM) was the first new medical school established in Canada in more than 30 years. The school was created in 2005, in the decade of “social accountability.”¹ Administrators have been in a unique position to design a medical school with the ongoing ability to respond to the needs of people living in northern Ontario. With a large rural population and large land mass, northern Ontario has smaller and more geographically distant and dispersed urban centres, and overall poorer socioeconomic and health indicators² than southern Ontario. A number of resources concerning the school’s development are available.²⁻⁶

In this paper, we document the development of the undergraduate Aboriginal health curriculum. In

recognition of the dearth of information available concerning Aboriginal health curricula for medical learners globally, our goal is to provide a resource for other medical schools and health science faculties working on the development of a similar curriculum.

Rural health and medicine cannot be comprehensively understood without the explicit inclusion of knowledge and training concerning Aboriginal populations.⁷ Aboriginal people represent about 4.4% of the Canadian population.⁸ Ontario is home to 21.5% of all Aboriginal people in Canada, who make up about 2% of the province’s overall population. In northern Ontario, Aboriginal people make up 12% of the overall population, 23% of the population in the Northwestern Health District and 11% in the Northeastern Health District (Fig. 1). Of the reserves in Ontario, 83% are located in northern Ontario. Of

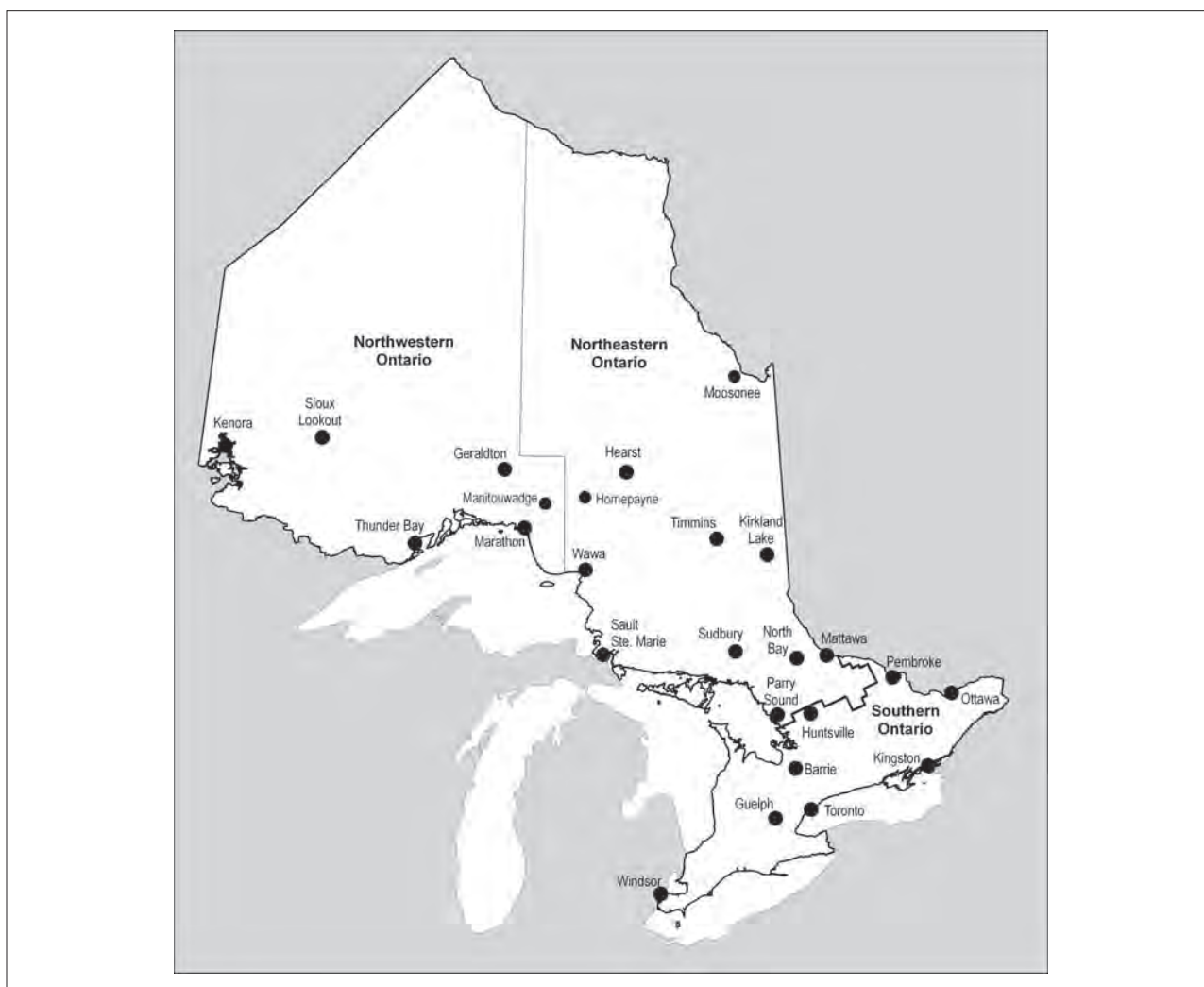


Fig. 1. Map of the geographic boundaries of northwestern and northeastern Ontario. (Used with permission: Centre for Rural and Northern Health Research [2011]. Map of northern Ontario. Using Local Health Integration Networks [boundary file Ministry of Health and Long-term Care, 2006, distributed by Land Information Ontario, Ministry of Natural Resources, through the Ontario Geospatial Data Exchange], and Populated Place Names [PPN], [Ontario point file, DMTI Spatial, Inc., 2010-08-15]; accessed through Scholars GeoPortal, Ontario Council of University Libraries. Produced [J. Sherman] using ArcGIS 9.3 [ESRI, Inc., Redlands, California]. Laurentian University, Sudbury, Ontario.)

these, 35% are remote (i.e., accessible by air or winter roads only), 51% are rural, and 14% are urban or periurban (i.e., small towns or First Nations communities in close proximity to urban centres).

Aboriginal people in Canada are overrepresented in their rates of virtually all infectious, chronic and mental illnesses, and they continue to have higher infant mortality and lower life expectancy than non-Aboriginal people.¹⁰ Poor health is attributed to a unique and complex set of Aboriginal determinants of health, including historical relationships with the federal government and access to adequate income, resources, education and health care.¹¹ Addressing health inequity through medical education is one way to begin to work toward improved health outcomes for marginalized populations such as Aboriginal people.¹²

Over the past decade, medical schools in countries with colonial legacies, such as Australia, Canada and the United States, initiated programs and practices aimed at increasing the number of Aboriginal physicians in the workforce and improving physician training concerning Aboriginal health. There are now 2 countries with national frameworks for Aboriginal health curricula for medical education: Australia (The Committee of Deans of Australian Medical Schools Indigenous Health Curriculum Framework¹³) and Canada (the First Nations, Inuit, Métis Health Core Competencies developed by the Indigenous Physicians Association of Canada and the Association of Faculties of Medicine of Canada¹⁴). The First Nations, Inuit, Métis Health Core Competencies¹⁴ outline an Aboriginal health curriculum framework for undergraduate medical education in Canada that is organized around the CanMEDS (Canadian Medical Education Directions for Specialists) Physician Competency Framework.¹⁵ In addition, some medical schools in Canada have independently developed Aboriginal health curricula as well as recruitment and retention programs.^{16–18} There is no national strategy in the United States, but several medical schools, such as the University of Washington School of Medicine¹⁹ and the University of North Dakota School of Medicine and Health Sciences,²⁰ have undertaken specific programs aimed at increasing the number of Native American physicians in the workforce and providing optional elective experiences in Aboriginal health programs.

ABORIGINAL INVOLVEMENT IN THE CURRICULUM DEVELOPMENT

The NOSM was established with a social accountability mandate to be responsive to the needs of the

people and communities of northern Ontario. Among the important populations of special interest in northern Ontario are Aboriginal people. The Aboriginal health curriculum for the NOSM undergraduate medical program was developed by faculty experts alongside an ongoing process of community engagement.⁴ The school's community engagement model is defined by the active participation of communities in shaping and delivering medical education. The NOSM began this process in 2003 when it hosted the "Follow Your Dreams" planning workshop with Aboriginal partners.²¹ The recommendations from this session helped to shape an organizational structure designed to facilitate perpetual community engagement. Since then, participation has been supported through direct involvement of Aboriginal people in the day-to-day activities of the school. This includes Aboriginal representation on the school's board of directors and academic council; the establishment of the Aboriginal Reference Group (advisors to the dean); the establishment of the office of Aboriginal Affairs; the hiring of Aboriginal staff; the involvement of Aboriginal faculty members, students and elders;²² and opportunities for Aboriginal community involvement in the development and delivery of the medical degree program curriculum. Two subsequent workshops, "Keeping the Vision" (2006) and "Living the Vision" (2011), have been held to review NOSM's progress from the perspective of the Aboriginal community (Table 1). Satisfaction with what had been implemented to date was noted at these workshops; however, ideas continue to be suggested to keep strengthening the curriculum and community engagement activities.^{23,24}

ABORIGINAL HEALTH CURRICULUM

The undergraduate curriculum is organized around 5 core courses delivered over 4 years: Northern and Rural Health, Personal and Professional Aspects of Medical Practice, Social and Population Health, Foundations of Medicine, and Clinical and Communication Skills in Health Care. Years 1 and 2 primarily involve classroom learning, combined with community and clinical learning experiences. In year 3, all students participate in an immersive experience of community-based medical education in a rural community, known as the Comprehensive Community Clerkship. Year 4 is a traditional clerkship at a tertiary care regional hospital. The Aboriginal health learning objectives are delivered in 4 of the 5 courses (excludes Foundations of Medicine), with the greatest emphasis in Northern and Rural Health (Table 2).

Table 1: Summary of recommendations for the Northern Ontario School of Medicine Aboriginal health curriculum from community engagement sessions

Category	Follow Your Dreams (2003)	Keeping the Vision (2006)	Living the Vision (2011)
Content	<ul style="list-style-type: none"> Aboriginal curriculum content should include the following: culture, history, health status, social issues, traditional medicine, colonization, residential schools 	<ul style="list-style-type: none"> Move focus away from cultural competency to awareness and sensitivity Provide instruction on using traditional medicine alongside Western medicine 	<ul style="list-style-type: none"> Revise curriculum to better prepare students for the 106 Integrated Community Experience Include teaching about traditional medicines in all years Expand opportunities for NOSM staff, faculty and learners to learn “culturally safe” behaviour
Process	<ul style="list-style-type: none"> Include teachings by Aboriginal healers Ensure curriculum is developed in consultation with Aboriginal advisors, healers and elders Include student placements in Aboriginal communities to facilitate experiential learning early in the medical degree program Ensure a mechanism for continuing consultation on the curriculum with elders, youth and communities 	<ul style="list-style-type: none"> Provide opportunities for longer-term student placements in Aboriginal communities (electives) Increase elder involvement in the curriculum 	<ul style="list-style-type: none"> Provide greater and more meaningful opportunities for Aboriginal communities to engage with the curriculum Facilitate greater involvement of nonacademic Aboriginal knowledge holders in the delivery of curriculum (e.g., elders and Aboriginal health professionals) Include more opportunities for students and staff to spend time in the Aboriginal communities Increase feedback opportunities from students and NOSM to community partners after placement
Structure	<ul style="list-style-type: none"> Ensure content is delivered throughout the curriculum 	<ul style="list-style-type: none"> Increase the number of Aboriginal faculty through active recruitment 	<ul style="list-style-type: none"> Ensure active involvement of the Aboriginal Reference Group members in all areas of NOSM

NOSM = Northern Ontario School of Medicine.

Table 2: Northern and Rural Health course: summary of undergraduate Aboriginal health curriculum, years 1 and 2

Learning topic	Summary of content
Aboriginal people in Canada	<ul style="list-style-type: none"> Terminology Treaties and political structures Cultural diversity
Aboriginal culture and history	<ul style="list-style-type: none"> Colonialism Historical and intergenerational trauma Resilience Empowerment Social determinants, social justice and health equity
Aboriginal health services	<ul style="list-style-type: none"> Policy and jurisdiction Models of care Indigenous healers Self-determination
Aboriginal culture and medicine	<ul style="list-style-type: none"> Indigenous health models The role of culture in health and healing
Disease trends in Aboriginal populations	<ul style="list-style-type: none"> Rates of chronic, infectious and mental illness Factors contributing to health outcomes
Aboriginal patient care	<ul style="list-style-type: none"> Explanatory models of illness Communication, interpreters Cultural safety Traditional medicine Bioethics
The role of the student in Aboriginal relationship development	<ul style="list-style-type: none"> Reflectio Advocacy
Aboriginal health research	<ul style="list-style-type: none"> Aboriginal research ethics

Table 3: Content of undergraduate Aboriginal health curriculum, years 1 and 2

Module	System	Aboriginal content*	Aboriginal focus†
Year 1			
CBM 101	Introduction	X	
CBM 102	Gastrointestinal	X	
CBM 103	Cardiovascular/respiratory	X	
CBM 104	Central and peripheral nervous	X	
CBM 105	Musculoskeletal		
CBM 106‡	Endocrine	X	X
Year 2			
CBM 107	Reproductive system	X	
CBM 108‡	Renal	X	
CBM 109	Hematology/immunology	X	X
CBM 110‡	Neurological/behavioural	X	
CBM 111	End of life issues	X	

CBM = case-based module.
 *Module contains objectives/content concerning Aboriginal health, but it is not the focus of the entire module.
 †Aboriginal health is the overall theme for human sciences content in the module.
 ‡Integrated Community Experience (4-week community placements during module).

Aboriginal health topics are interwoven through various curricular activities and are delivered in 10 of 11 case-based modules in years 1 and 2 (Table 3). Most of the Aboriginal health objectives are covered during case-based learning sessions. Aboriginal health objectives are also covered lightly in weekly topic-oriented sessions, in a whole-group session and a structured clinical skills session (Table 4). The Aboriginal health curriculum is “core” curriculum for all students and the objectives are assessed in formal summative assessments, including an Objective Structured Clinical Examination station.

Cultural immersion: the Integrated Community Experience

Through a process of partnership and consultation with Aboriginal communities in northern Ontario, NOSM implemented a mandatory 4-week Aboriginal cultural immersion experience for all students, beginning with its charter class. The school currently has long-term memorandums of understanding with 32 Aboriginal communities and organizations to facilitate the placement.⁶ The placement, known as the 106 Integrated Community Experience module, occurs during the final 6 weeks in year 1. The first 2 weeks include on-campus instruction on Aboriginal communities, culture, history and health, including sessions with elders, Aboriginal staff and faculty experts.

Once in the host community, students continue their medical education sessions using distributed learning technologies. The curriculum is adjusted to allow time to focus on cultural activities and community learning, as determined by the community partners. Students keep a personal reflective journal throughout the experience. Students track their community learning and prepare a reflective presentation on their experience that is presented to the community before they depart and again to their peers and faculty for summative evaluation upon returning to campus. Students must pass this assessment to progress to year 2 of the undergraduate program. At the end of the placement, partnering communities are provided with an opportunity to evaluate the experience from the communities’ perspective.

DISCUSSION

The NOSM’s development and integration of the Aboriginal health curriculum, using a community engagement approach, is consistent with calls for “decolonizing Aboriginal health.”⁷ It has required a sustained financial and time commitment, a support-

ive organizational culture and the trust of Aboriginal partners across northern Ontario. Our involvement with the development of the curriculum allows for reflection on the substantive challenges encountered and what we observe as possible signs of success in our early years.

First is our observation of conflict between Aboriginal and non-Aboriginal knowledge systems, with a bias toward Western medicine. Particular issues we have encountered include the need to advocate for the involvement of elders in teaching and the use of Aboriginal knowledge resources normally considered unconventional. The need for such an approach was identified during the first workshop consultation, with subsequent workshops reinforcing the need for this approach.^{21,23,24} This tension is representative of Willie Ermine’s discussions of an “ethical space” where power imbalances need to be addressed so that Aboriginal and non-Aboriginal ways of knowing can come together and be equally valued.²⁵ The immersion experience is one example of how NOSM was able to place value on Aboriginal knowledge.

The second significant challenge was the need to be sensitive to misconceptions and stereotypes associated with Aboriginal people and communities in Canada and to ensure our curriculum did not reinforce these in any way. The HIV case presented in Table 4 is an example of this challenge. Faculty, Aboriginal staff and community representatives created a carefully constructed case representing a likely scenario of HIV infection faced by many urban Aboriginal people; yet, at the same time, we recognized that the case presentation could reinforce stereotypes. In an attempt to highlight cultural strength and resilience and to balance the presentation of any negative stereotypes, we included a story of the process of this man’s spiritual, physical, mental and emotional healing as he and his partner embraced cultural teachings and practices to help cope with his HIV diagnosis. Despite this, the case has always been controversial and serves to remind us of our need for high-level oversight and vigilance when developing case presentations involving Aboriginal case participants.

Negotiating space in the curriculum was less of an issue at NOSM, where our social accountability mandate and curricular structure supports learning in 3 courses primarily concerned with human sciences content: Northern and Rural Health, Personal and Professional Aspects of Medical Practice, and Social and Population Health. The notion that something must be dropped from the curriculum every time something new is added is a common concern in traditional medical school curricula,

Table 4: A snapshot of the delivery of the Aboriginal health curriculum

Curricular session	Description	Session structure	Example
Case-based learning	Weekly small-group, facilitated sessions primarily covering course objectives from the following: Northern and Rural Health; Personal and Professional Aspects of Medicine; Social and Population Health	<ul style="list-style-type: none"> • Small group • Nonexpert facilitated • Objective driven • Case presentation • Structured discussion • Required resources 	<p>Session title: “Preparing for the Journey”</p> <p>An exploration of local Aboriginal beliefs and practices surrounding death and dying</p> <p>Topics: Aboriginal palliative care; Diversity and cultural beliefs; Spirituality; Bioethics, noninterference and truth-telling; Cultural safety; The use of technology in Aboriginal patient care</p> <p>The case: A First Nations man is diagnosed with colon cancer. He prefers to return to his First Nation community to die.</p> <p>Structured discussion:</p> <ol style="list-style-type: none"> 1) Consideration of Aboriginal peoples’ views on death and dying in northern Ontario, including the role of the family, diversity of Aboriginal beliefs, and how culture may influence the patient’s choices at end of life. 2) Consideration of the physician’s role in facilitating choices Aboriginal patients may make about their end-of-life care. <p>Resources: Commissioned article on Anishinaabe views on death and dying by a local Anishinaabe elder, and national Aboriginal palliative care resources (print and video)</p>
Topic-oriented session	Weekly small-group, facilitated sessions primarily covering course objectives from Foundations of Medicine	<ul style="list-style-type: none"> • Small group • Nonexpert facilitated • Objective driven • Case presentation • Semistructured discussion • Required resources 	<p>Session Title: “Patient Encounter: Steve and Maggie”</p> <p>An exploration of issues concerning HIV/AIDS in Aboriginal people</p> <p>Topics: Culturally safe health promotion; Ethics — risk and disclosure; Incidence and prevalence; Stigma; Transmission; Life-cycle and clinical course of HIV</p> <ul style="list-style-type: none"> • Clinical management of HIV <p>The case: The case features an Aboriginal physician and describes at length how her Aboriginal client became infected with HIV by injection drug abuse and overcame a drug addiction through an Aboriginal Restorative Justice Program in Toronto. It describes how the man turned back to the Aboriginal community, traditions and medicines to heal from his addiction. The case description is much longer to accommodate detailed information students must understand about the life history of the Aboriginal case participants.</p> <p>Semistructured learning: Within this context students explore</p> <ol style="list-style-type: none"> 1) biomedical aspects of HIV transmission; 2) clinical management of HIV; 3) exploration of how health care is experienced by Aboriginal people, the role of culture in healing, and the need for culturally sensitive approaches and care. <p>Linkages: The case participants reappear in a case-based learning session where students more thoroughly examine population health data on HIV/AIDS in Aboriginal people and Aboriginal-specific messages about risk, health promotion and prevention.</p> <p>Resources: Journal articles, medical texts and literature published by Aboriginal organizations.</p>
Whole-group sessions	Weekly 3-hour didactic sessions, which primarily cover objectives from the Foundations of Medicine course	<ul style="list-style-type: none"> • Large group • Objective driven • Lecture • Required resources 	<p>Session title: “Medicine, Health and the History of Relations Between Aboriginal and non-Aboriginal Peoples”</p> <p>Topics: Colonization and its impacts; Historical and contemporary government policy; Policy as a determinant of health; Treaties; Indigenous self-determination in health; The importance of culture in healing; Relevant developments in international, national, and provincial indigenous health policies; Contemporary Aboriginal health programs and health services; Recent challenges and advances in Aboriginal health; Resilience; Terminology</p> <p>Resources: Journal articles, books, media reports, materials published by Aboriginal and federal health organizations, and relevant websites</p>
Structured clinical skills	Weekly 3-hour instruction and practice sessions, which primarily cover objectives from the Clinical Skills course	<ul style="list-style-type: none"> • Small group • Clinical instructor • Standardized patients • Required resources 	<p>Students currently have 1 structured clinical skills session focused on Aboriginal cross-cultural communication in their first year. In the encounter students must elicit an Aboriginal patient’s health beliefs and negotiate a culturally sensitive treatment plan. During this session students are also introduced to techniques when working through an interpreter.</p>

which are constrained by discipline and lecture-based courses. The NOSM curriculum includes the same learning objectives of other medical school curricula (primarily in the Foundations of Medicine, and Clinical and Communication Skills in Health Care courses), as well as covering human sciences learning objectives, which generally are not well covered in traditional curricula. However, despite this emphasis, it has been our experience that curriculum committees are still primarily concerned with accreditation standards and licensing examinations, and are largely controlled by those coming from medical/Western epistemologies. This creates an environment where space and resources for Aboriginal health must be continually justified. This struggle is most obviously reflected at NOSM in the drop off in Aboriginal health learning objectives in years 3 and 4, in which students are on clinical placements. We suggest that negotiation of space will continue to be a problem for Aboriginal health curricula at all medical schools until there is greater acceptance of Aboriginal ways of knowing and Aboriginal health is given more prominence in the Medical Council of Canada Qualifying Examination and accreditation standards.

Finally, an equally important challenge has been faculty readiness. With our emphasis on self-directed learning, the skills of tutors, facilitators and preceptors are crucial. Many of NOSM's faculty members have never benefited from the same education concerning Aboriginal health that our students receive and may not be able to provide appropriate mentorship on this topic. The school does not require faculty who are facilitating Aboriginal health sessions to have expertise in a subject or participate in any training on the topic. This sometimes results in contradictory messages being relayed in the "hidden curriculum," especially during clinical teaching. Although NOSM has provided numerous faculty development sessions on Aboriginal health, participation remains low.

Measuring the impact of such a curricular program is challenging, and efforts are underway to begin to track specific outcomes. We can gauge success at this point in history only in relation to 1) the thoroughness and robustness of the resulting curriculum (Table 2); 2) our ability to respond to ongoing guidance from Aboriginal community partners, which is possible through sustained organizational commitments ensuring retention of faculty expertise, Aboriginal staff and programs, and Aboriginal participation in the school; 3) the establishment of 32 long-term formalized relationships with Aboriginal communities across northern

Ontario; and 4) the degree of satisfaction reported by community partners to date.^{23,24} Our success in meeting our long-term goal of contributing to health equity for Aboriginal populations in northern Ontario will take many years to be realized.

SUMMARY

Social accountability is the mandate that guides the development of the Aboriginal health curriculum at NOSM. Community engagement is the mechanism that has allowed us to fulfill this mandate in a way that is responsive to, and respectful of, Aboriginal communities. This model ensures that Aboriginal people in northern Ontario have influence over the development and delivery of the curriculum. Their vision, shared with us, includes a school that welcomes inclusion, representation and participation of Aboriginal people in all aspects of the school, as well as a curriculum that is reflective of their culture and health care beliefs and requires students to step out of the classroom and experience life in an Aboriginal community.

What we have reported on represents a moment in time of a grassroots model of medical education. It encompasses all of the elements of community-based participatory approaches and community–university partnerships. It is our contention that this strong commitment to community has resulted in an ethical space for the development and delivery of Aboriginal health in undergraduate medical education at NOSM.

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Competing interests: Kristen Jacklin and Roger Strasser are employed by the Northern Ontario School of Medicine. No other competing interests were declared.

REFERENCES

1. Boelen C, Heck JE. *Defining and measuring the social accountability of medical schools*. Geneva: World Health Organization; 2005.
2. Strasser R, Lanphear J. The Northern Ontario School of Medicine: responding to the needs of the people and communities of northern Ontario. *Educ Health* 2008;21:212.
3. Strasser RP. Community engagement: a key to successful rural clinical education. *Rural Remote Health* 2010;10:1543.
4. Strasser RP, Lanphear JH, McCready WG, et al. Canada's new medical school: the Northern Ontario School of Medicine: social accountability through distributed community engaged learning. *Acad Med* 2009;84:1459-64.

5. Tesson G, Hudson G, Strasser R, et al. *The making of the Northern Ontario School of Medicine: a case study in the history of medical education*. Quebec: McGill-Queen's University Press; 2009.
6. Strasser R, Hogenbirk JC, Minore B, et al. Transforming health professional education through social accountability: Canada's Northern Ontario School of Medicine. *Med Teach* 2013;35:490-6.
7. Jacklin K, Warry W. Decolonizing First Nations health. In: Kulig JC, Williams AM, editors. *Health in rural Canada*. Vancouver: University of British Columbia Press; 2012. p. 373-89.
8. Statistics Canada. Aboriginal peoples in Canada in 2006: Inuit, Métis and First Nations, 2006 census. Available: www12.statcan.ca/census-recensement/2006/as-sa/97-558/pdf/97-558-XIE2006001.pdf (accessed 2014 Feb 22).
10. Gracey M, King M. Indigenous health part 1: determinants and disease patterns. *Lancet* 2009;374:65-75.
11. King M, Smith A, Gracey M. Indigenous health part 2: the underlying causes of the health gap. *Lancet* 2009;374:76-85.
12. Cooper LA, Beach MC, Johnson RL, et al. Delving below the surface: understanding how race and ethnicity influence relationships in health care. *J Gen Intern Med* 2006;21(Suppl 1):S21-7.
13. Phillips G. CDAMS Indigenous Health Curriculum Framework, C.o.D.o.A.M. Schools, 2004; VicHealth Koori Health Research and Community Development Unit. Available: www.medicaldeans.org.au/wp-content/uploads/CDAMS-Indigenous-Health-Curriculum-Framework.pdf (accessed 2014 Feb. 18).
14. IPAC-AFMC (Indigenous Physicians Association of Canada and the Association of Faculties of Medicine of Canada). First Nations, Inuit, Métis Health core competencies: a curriculum framework for undergraduate medical education. 2008. Available: www.afmc.ca/pdf/CoreCompetenciesEng.pdf (accessed 2014 Feb. 18).
15. Royal College of Physicians and Surgeons Canada. CanMEDS: 2005 framework. Available: www.royalcollege.ca/portal/page/portal/rc/common/documents/canmeds/framework/the_7_canmeds_roles_e.pdf (accessed 2014 Feb. 18).
16. Crowshoe L, Bickford J, Decottingnes M. Interactive drama: teaching Aboriginal health medical education. *Med Educ* 2005;39:521-2.
17. Kilpatrick K. New Aboriginal health course increases awareness. *CMAJ* 2004;170:1780.
18. Spencer A, Young T, Williams S, et al. Survey on Aboriginal issues within Canadian medical programmes. *Med Educ* 2005;39:1101-9.
19. Acosta D, Olsen P. Meeting the needs of regional minority groups: the University of Washington's programs to increase the American Indian and Alaskan native physician workforce. *Acad Med* 2006;81:863-70.
20. University of North Dakota School of Medicine and Health Sciences Indians into Medicine Program. Available: www.med.und.edu/inmed (accessed 2014 Feb. 18).
21. Northern Ontario School of Medicine. Report of the NOMS Aboriginal workshop "Follow Your Dreams." Available: www.nosm.ca/uploadedFiles/About_Us/Media_Room/Publications_and_Reports/2003_06_03_FollowYourDreams_en.pdf (accessed 2014 Feb. 18).
22. Northern Ontario School of Medicine. Elders handbook: how the medical school engages and works with Aboriginal elders, 2011. Available: www.nosm.ca/uploadedFiles/Communities/Aboriginal_Affairs_Unit/Publications/Elders_Handbook_-_for_web.pdf (accessed 2014 Feb. 18).
23. Northern Ontario School of Medicine. Mii Kwen Daan Keeping the Vision, 2006. Available: www.nosm.ca/aboriginalreports (accessed 2014 Feb. 18).
24. Northern Ontario School of Medicine. Keeping the Vision, 2011. Available: www.nosm.ca/aboriginalreports (accessed 2014 Feb. 22).
25. Ermine W. The ethical space of engagement. *Indigenous Law Journal* 2007;6(1). Available: <https://tspace.library.utoronto.ca/bitstream/1807/17129/1/ILJ-6.1-Ermine.pdf> (accessed 2014 Feb. 18).

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Country cardiograms case 52

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reviewed.

A 46-year-old man is brought to the emergency department, by emergency medical personnel, with acute-onset retrosternal chest pain that the patient describes as feeling like a “rock” on his chest. He reports that the pain developed suddenly while he was at rest 90 minutes before presentation and radiated to his left arm. The patient also reports a feeling of faintness and excessive sweating. He has had no similar episodes previous to this. His only relevant medical history is a smoking history of 20 packs per year. He is taking no regular medications, and denies use of cocaine or amphetamine.

On physical examination, the patient is mildly obese and appears to

be in mild distress. His heart rate is 57 beats/min and blood pressure is 107/66 mm Hg, equal in both arms. The remainder of the examination is unremarkable. At the time of the initial assessment, laboratory investigations are pending. The patient’s initial electrocardiogram (ECG) is shown in Figure 1. What changes in the ECG warrant concern, and why? How would you manage this patient’s treatment?

For the answer, see page 156.

Competing interests: None declared.

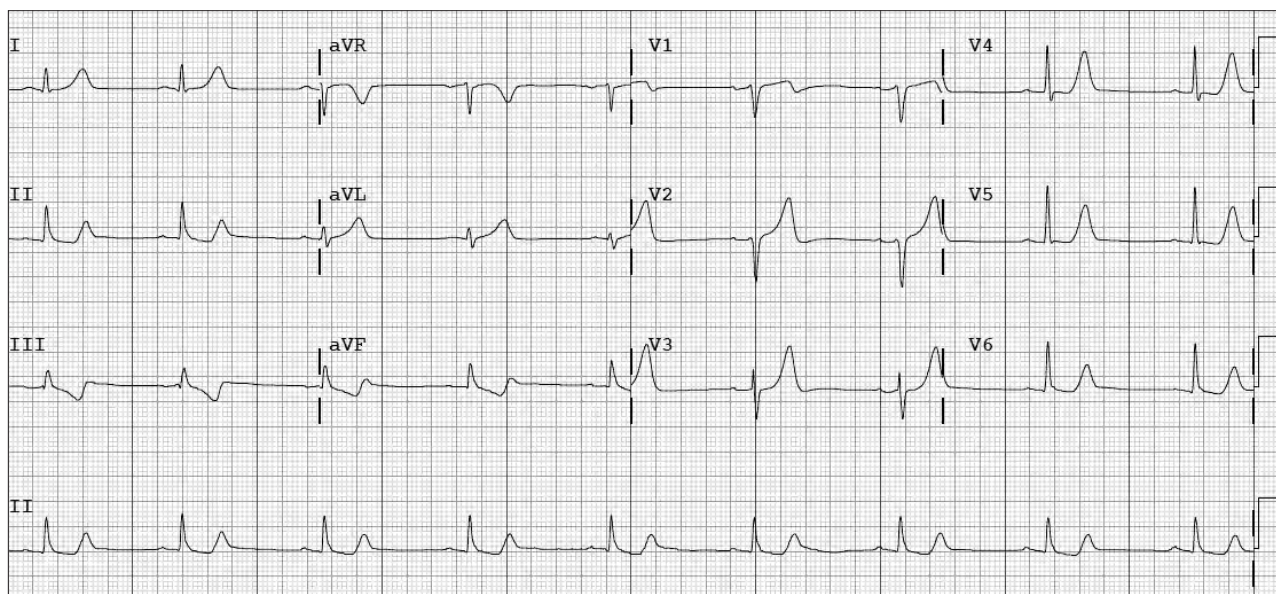


Fig. 1. Electrocardiogram in a 46-year-old man with chest pain.

“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.

The occasional greater occipital nerve block

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Greater occipital nerve block is a simple technique used to both diagnose and treat the greater occipital nerve subtype of occipital neuralgia (itself a basket term for “neuralgic pain in the distribution of the greater or lesser occipital nerve or of the third occipital nerve”).¹ The technique is simple and relatively complication-free. Both the greater and lesser occipital nerves may be blocked, but this article will concern itself with block of the greater nerve (Fig. 1).

ANATOMY AND PATHOPHYSIOLOGY

The greater occipital nerve (or nerve of Arnold) is a spinal nerve providing for sensation of the scalp. It arises from the medial branch of the dorsal ramus of the C2 nerve (along with the lesser occipital nerve) emerging from between the first and second cervical vertebrae.

It then runs posteriorly behind the spinal articular processes and extends up the neck, over the dorsal surface of the rectus capitis posterior muscle, then passes through the trapezius muscle. Ultimately, it exits the trapezius and runs subcutaneously to innervate the skin of the posterior portion of the scalp, from the occiput to the vertex of the skull^{2,3} (Fig. 1).

The term neuralgia has traditionally been used to mean nerve pain for which there is no demonstrable pathologic change in the nerve and the exact pathophysiology is unclear. The currently accepted view is that greater occipital nerve neuralgia results from the chronic entrapment of the greater occipital nerve by the posterior neck and scalp muscles.^{4,5}

However, other mechanisms, including neck instability, trauma, inflammation and compression by the occipital artery, may be operative in individual patients.⁵

INCIDENCE

No data are available on the incidence of occipital nerve neuralgia in the primary care population.⁵

SYMPTOMS

Patients often describe an occipital headache of relatively recent onset, with hard-to-describe, but fairly severe, pain that originates in the upper neck and spreads to the vertex. The disorder may be bilateral and seems to develop in most patients without an obvious provoking cause. The pain tends to be of a neuropathic quality, described as stabbing or electric-shock-like, with a dull and chronic discomfort often present between the paroxysms. Pain may appear to be spontaneous, or may be provoked by such factors as neck movement, hair brushing or cold.^{2,5}

SIGNS

The key signs are described below.⁵

- Pressure, palpation or percussion over the greater occipital nerve in the area of its emergence, about 1.5 cm below the superior nuchal line and 1.5 cm medial to the lateral border of the trapezius (Fig. 2), will provoke pain (a Tinel sign) or elicit paresthesia over the distribution of the nerve. There may be some pain provoked on cervical movement, although generally not markedly.

- There may be a decrease in range of motion of the cervical spine along with some local spasms of the posterior cervical muscle.
- There may be an area of diminished sensation or dysesthesia over the distribution area of the greater occipital nerve, but this is hard to elicit. The important fact is that the neurologic examination is otherwise normal, and any abnormality thereof should raise suspicion of a more serious cause of the pain.

DIAGNOSTIC CRITERIA

The diagnostic criteria are as follows:⁵

- Paroxysmal stabbing pain, with or without persistent aching between the paroxysms of pain, in the upper neck and posterior occiput, radiating to the vertex.
- Pain reproduced by pressure over the greater occipital nerve.
- Pain that is eased, at least temporarily, by local anesthetic block of the greater occipital nerve.

Imaging is generally not required to make the diagnosis.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of pain in the occipital area includes the following:

- Cervical spine disease (i.e., osteoarthritis, neoplasm or injury). There will likely be more prominent symptoms of cervical spine disease.

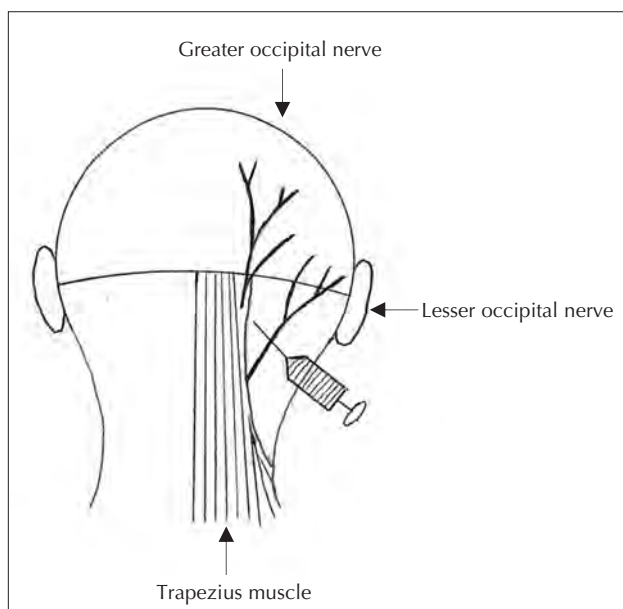


Fig. 1. Greater and lesser occipital nerves and needle position for the block.

Magnetic resonance imaging (MRI) may be ultimately needed, especially if there is no response to injection (see below).

- Posterior fossa disease. The neurologic examination may be abnormal. Computed tomography or MRI is indicated.
- Myofascial pain syndromes of the trapezius and sternomastoid muscles. This diagnosis is not mutually exclusive of greater occipital neuralgia, because compression of the greater occipital nerve within a tense trapezius muscle may be one of several mechanisms in the pathogenesis of greater occipital neuralgia. In myofascial pain syndrome there will be a single large tender pressure point, or multiple smaller tender pressure points, as opposed to the relatively small area of tenderness over the greater occipital nerve that is seen in occipital neuralgia.
- Trigeminal neuralgia. In this case the neuropathic pain tends to involve the face.

NERVE BLOCK PROCEDURE

Nerve block of the greater occipital nerve is both diagnostic and therapeutic.^{2,6}

As with all injections, contraindications include infection or cellulitis over the injection site, or allergy to any of the components of the local anesthetic.

1. Prepare the equipment you will need (Fig. 3):

- a 3–5 mL syringe with a 25-gauge 5/8" or 1-1/2" needle, depending on the patient's size
- 1–3 mL of 1% or 2% lidocaine and 1 mL (40 mg) of methylprednisolone solution
- your usual skin-preparation materials for sterile technique

2. As always, the best anxiolytic is a careful explanation by the physician.



Fig. 2. Point of tenderness of the greater occipital nerve.

3. I use a height-adjustable surgical tray. My technique is usually to position the patient sitting, with neck and thorax flexed, resting the forehead on the forearms, which are on the surgical tray (Fig. 4).
4. Prepare the skin with your usual method.
5. Identify the point of tenderness of the nerve, about 1.5 cm below the superior nuchal line, 1.5 cm medial to the lateral border of the trapezius (Fig. 2).
6. Introduce the needle there at a 90° angle to the skin; insert until the bone (skull) is hit and then withdrawal slightly. Aspirate to ensure there is no return of blood (the occipital artery lies just laterally) or cerebrospinal fluid (Figs. 1 and 5).
7. Inject 1 mL of solution over the nerve, then about 1 mL to the left of the nerve and a further 1 mL to the right, in a semilunar configuration
8. After the needle is withdrawn, maintain pressure over the injection site, to “bathe” the nerve in the solution and maintain hemostasis, because of the rich vascularity of the scalp.
9. Evaluate the patient after 15 minutes. Relief of the pain previously produced by pressure over the nerve is indicative of a successful injection.
10. Explain to the patient that there will be relief of the pain for several hours, but pain will return in a few hours because of the effect of the lidocaine wearing off. The patient can use ice and acetaminophen for the local pain. The patient can be told to expect relief lasting for several months or longer, beginning in 1–2 days.



Fig. 3. Equipment needed for the nerve block procedure.

CAVEAT

As mentioned earlier, anesthetic block of the nerve is both diagnostic and therapeutic. However, it should be appreciated that relief of the pain by greater occipital nerve block (the “final common pathway”) is not 100% specific for pain that is of a presumed idiopathic neuralgic origin. Any of the mechanisms for occipital nerve pain — as mentioned in the “Differential diagnosis” section — such as trapezius muscle spasm, could still be underlying and require treatment in its own right.

COMPLICATIONS

Because of the superficial location of the nerve and the ease of injection, complications, besides inadvertent intravascular injection, are few. There may be some transient paresthesia due to irritation of the nerve by the needle or bleeding. Most patients are able to drive and return to work immediately afterwards.⁵



Fig. 4. Position the patient.



Fig. 5. Introduce the needle.

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REFERENCES

1. Classification IHS. Occipital neuralgia. Available: http://ihs-classification.org/en/02_klassifikation/04_teil3/13.08.00_facial_pain.html (accessed 2014 May 14).
2. Ward JB. Greater occipital nerve block. *Semin Neurol* 2003;23:59-62. Available: [https://wiki.umms.med.umich.edu/download/attach](https://wiki.umms.med.umich.edu/download/attachments/90734989/Greater+Occipital+Nerve+Block.pdf)
3. Anatomy Expert. Greater occipital nerve. Available: www.anatomyexpert.com/structure_detail/6552/22186 (accessed 2014 May 12).
4. Janis JE, Hatef DA, Ducic I, et al. The anatomy of the greater occipital nerve. *Plast Reconstr Surg* 2010;126:1563-72.
5. UpToDate. Occipital neuralgia. Available: www.uptodate.com/contents/occipital-neuralgia (accessed 2014 May 06).
6. Beliveau P. Infiltrations. Montréal: Editions Sciences et Culture; 1990. p. 42-3.

Life, death and whatever else ... snippets from a medical life

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AN EMBROIDERED LIFE

She stitched herself an ordered
and meticulous life.
Threads of her embroidery lay
down tidily side-by-side.
Colours rich and varied storied
her life fulfilling

Yet she began to stitch herself
a random and other life.
Threads of her embroidery now
lay hesitant side-by-side.
Colours jarring and unvaried
storied a life vacant, without
meaning.

Now rare those stitched glimpses.
Born of brief fleeting memories
She had once stitched herself
an ordered and meticulous life.

A HUNTER'S JOURNEY

He sits on his bed
In his room
Table, chair, and dresser, a tableau
Of his meager surroundings
To my greeting
His native eyes look away
As is his custom

He waits
Your results are back
He knows
It is cancer I tell him
I wait
For his help
OK he says
His gaze directs me
To the wall by his bed
A photograph grainy

Black and white
Human subjects indistinct
That is my uncle
He says

That is my cousin
My nephew
Myself
From where I come from

He lies on his bed
In his hospital room
Table, chair, and dresser, a tableau
Of his meager surroundings
A glass of water at bedside
His temporary possession
He is focused
Determined in the work
of his dying

I wait
For his help
He gestures for water
I help him drink
A nod of thanks
As I see
His uncle grainy and distinct
The hunter
He waits

Country cardiograms case 52: Answer

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The electrocardiogram (ECG) shown in Figure 1 (on page 151) shows sinus bradycardia at a rate of 52 beats/min. There are prominent T waves in precordial leads V2 to V6 and ST-segment depression in limb leads III and aVF. There is no evidence of ST-segment elevation that would meet diagnostic significance. No previous ECGs were available for comparison. The prominent nature of the anterior T waves was suggestive of hyperacute T waves. This interpretation was supported by the presence of inferior ST-segment depression, which was interpreted as representing reciprocal changes. Based on these findings and the clinical history, acute myocardial infarction (MI) in the anterior distribution was diagnosed. The patient was sent for emergent coronary angiography.

Hyperacute T waves refer to positive-deflection, tall-amplitude, primary T wave abnormalities associated with acute MI. A T wave amplitude that is

less than two-thirds of the R wave amplitude is generally accepted as normal. More specifically, the T waves should be less than 0.5 mV in limb leads and less than 1.5 mV in the precordial leads. However, factors such as body habitus and lead placement can make these criteria unreliable. In practice, making the correct diagnosis requires a high index of suspicion while placing the ECG findings in the clinical context

The modern classification of MI makes a distinction between those with ST-segment elevation (i.e., representing transmural ischemia) and those without. This classification has important diagnostic, treatment and prognostic utility.¹ In the setting of an acute ST-segment elevation MI (STEMI), the most recognizable ECG feature is elevation of the ST segment. However, hyperacute T waves are often the first ECG sign of complete coronary artery occlusion and may be present within minutes of symptom onset.² In most

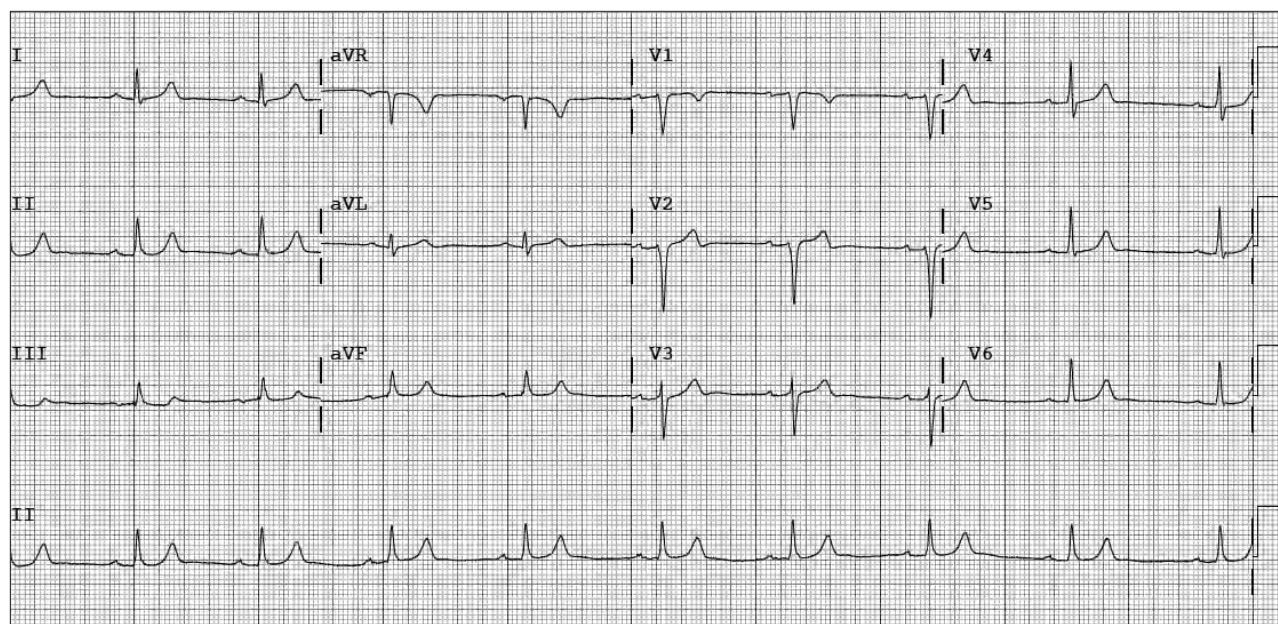


Fig. 2. Repeat electrocardiogram after percutaneous coronary intervention.

patients with hyperacute T waves, these changes are transient, and subsequent ECG analysis shows evolution of typical ST-segment elevation. However, in 2%–8% of patients with a transmural anterior MI, hyperacute T waves persist without the evolution of ST-segment elevation.^{3,4} Previous evidence suggested that patients with only hyperacute T waves on ECG may have collateral circulation and, as a result, have less cardiac necrosis and lower risk of mortality.^{3,5,6} However, more recent evidence from this patient population using cardiac magnetic resonance imaging has shown typical transmural necrosis — the same changes observed in patients with STEMI.⁷ As a result, this ECG pattern requires prompt recognition and revascularization.

The differential diagnosis for prominent T waves commonly includes acute MI, hyperkalemia, left ventricular hypertrophy and benign early repolarization. The term hyperacute specifically refers to the T wave associated with acute MI. This T wave is often symmetric and broad-based. Importantly, it may be associated with ST depression in reciprocal ECG leads in much the same manner as might be seen with ST-segment elevation. In contrast, the T wave of hyperkalemia is symmetric, tall and narrow, and peaked at the apex. In left ventricular hypertrophy, the T wave has a concave upslope with a strain pattern, and the voltage criteria of left ventricular hypertrophy are also observed. In benign early repolarization, the T wave has a concave upslope, is asymmetric, appears similarly in all leads and has associated ST elevation.^{2,8}

Hyperacute T waves on ECG have been found to be associated with complete occlusion of the proximal left anterior descending coronary artery.^{4–6,9} Besides hyperacute T waves, biphasic T wave changes have also been associated with disease of the proximal left anterior descending coronary artery.¹⁰ Reciprocal ST-segment depression in the inferior leads may not always be present but, when present, can aid in making the correct diagnosis. However, if the ST-segment depression is misinterpreted, this could lead to a misdiagnosis of a non-STEMI, particularly if the T wave changes go unrecognized. Current guidelines from the Canadian Cardiovascular Society do not recommend fibrinolytic therapy in the absence of ST-segment elevation.¹¹ From a rural medicine perspective, it is therefore critical to seek expert consultation if this pattern is identified on ECG in a patient with chest pain. Subsequent ECGs should be obtained to see if frank ST elevation develops, which is an indication of fibrinolysis. However, one must consider that ST-segment elevation

may not occur, and timely transport to a site equipped with cardiac catheterization facilities must be arranged. Urgent referral to a centre equipped for catheterization should be considered for patients with refractory cardiogenic shock or ventricular arrhythmias, in addition to patients with acute coronary syndrome.

Our patient underwent emergent cardiac catheterization, which revealed total occlusion of the proximal left anterior descending coronary artery. He received stenting, with excellent results. An ECG taken after percutaneous coronary intervention showed resolution of the hyperacute T waves and normalization of the inferior ST segments (Fig. 2). The patient did well and had only minimal elevation of cardiac enzymes. Echocardiography revealed only a mild reduction in left ventricular systolic function, with an ejection fraction of 51%. This good clinical outcome was likely directly related to prompt diagnosis and treatment.

For the question, see page 151.

Competing interests: None declared.

REFERENCES

1. Fuchs RM, Achuff SC, Grunwald L, et al. Electrocardiographic localization of coronary artery narrowings: studies during myocardial ischemia and infarction in patients with one-vessel disease. *Circulation* 1982;66:1168–76.
2. Somers MP, Brady WJ, Perron AD, et al. The prominent T wave: electrocardiographic differential diagnosis. *Am J Emerg Med* 2002; 20:243–51.
3. Bimbaum Y, Sclarovsky S, Blum A, et al. Prognostic significance of the initial electrocardiographic pattern in a first acute anterior wall myocardial infarction. *Chest* 1993;103:1681–7.
4. Verouden N, Koch K, Peters R, et al. Persistent precordial “hyperacute” T-waves signify proximal left anterior descending artery occlusion. *Heart* 2009;95:1701–6.
5. Sagie A, Sclarovsky S, Strasberg B, et al. Acute anterior wall myocardial infarction presenting with positive T waves and without ST segment shift. *Chest* 1989;95:1211–5.
6. Zhong-qun Z, Nikus KC, Sclarovsky S. Prominent precordial T waves as a sign of acute anterior myocardial infarction: electrocardiographic and angiographic correlations. *J Electrocardiol* 2011;44:533–7.
7. Zorzi A, Perazzolo Marra M, Migliore F, et al. Interpretation of acute myocardial infarction with persistent “hyperacute T waves” by cardiac magnetic resonance. *Eur Heart J Acute Cardiovasc Care* 2012;1:344–8.
8. Genzlinger M, Eberhardt M. Analyzing prominent T waves and ST-segment abnormalities in acute myocardial infarction. *J Emerg Med* 2012;43:e81–5.
9. de Winter RJ, Verouden NJW, Wellens HJJ, et al. A new ECG sign of proximal LAD occlusion. *N Engl J Med* 2008;359:2071–3.
10. de Zwaan C, Bar FWHM, Wellens HJJ. Characteristic electrocardiographic pattern indicating a critical stenosis high in left anterior descending coronary artery in patients admitted because of impending myocardial infarction. *Am Heart J* 1982;103:730–6.
11. Antman EM, Anbe DT, Armstrong PW, et al. ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction — executive summary. *Circulation* 2004;110:588–636.

The evolving nature of narcotic use in northwestern Ontario

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In our careers, we witness changes in medical practice and disease profiles, but not often in our own backyard. One of the most interesting aspects of doing research in a rural area is the capacity to follow and study a locally developing clinical trend. Such is the case in northwestern Ontario, which has experienced high rates of opioid abuse in the past 10 years.^{1,2}

NARCOTIC USE IN PREGNANCY

Narcotic use in pregnancy has been a noticeable clinical development confronting the nursing and medical staff at the Sioux Lookout Meno Ya Win Health Centre.³ This regional maternity centre provides prenatal services and obstetric services to a catchment area of 28 000 primarily First Nations people.⁴ The services include 400 deliveries annually.

Narcotic use during pregnancy became a clinical issue in early 2009 as clinicians noted an increasing trend.⁵ Rates of narcotic use in pregnancy, measured over 3 consecutive 6-month periods, went from 8.4% to 17.2% and averaged out to 13.0% (Table 1).³ Neonatal abstinence syndrome (NAS)

affected 29.5% of these narcotic-exposed pregnancies. The clinical response included development of the nursing and medical expertise for recognition and management of narcotic use in pregnancy and subsequent neonatal withdrawal, when it occurred.⁷ The clinicians also developed an integrated prenatal program, in which routine prenatal care, narcotic management and narcotic ordering took place in a single setting. Male partners were also encouraged to attend to receive addiction services, if needed (30 received treatment in 2012–2013).⁵

Because NAS was a clinical concern, and stressful for affected neonates and families, one of the aims of the integrated prenatal program was to encourage safe narcotic tapering, or weaning, whenever possible, to decrease the incidence of NAS.⁶ The tapering program, using a long-acting morphine, began in January 2012 and contributed to a significant drop in the rates of NAS, without adverse neonatal outcomes.⁶ Rates of NAS in narcotic-exposed pregnancies fell from 29.5% in 2010 to 18% in 2013 ($p < 0.001$). Over a 5.5-year period (2009–2014) data showed a decreasing trend ($p = 0.123$).⁶ The rate of NAS appears to have stabilized

Table 1. Narcotic use in pregnancy over 5.5 years^{3,5,6}

Variable	No. (%)			<i>p</i> value (Jan 2009– June 2014)
	18 mo (Jan 2009–June 2010)	36 mo (June 2010–June 2013)	12 mo (June 2013–June 2014)	
Total births	482	1206	431	
Narcotic exposure	61/482 (13.0)	300/1206 (25.0)	113/431 (26.2)	$p < 0.001$
NAS/all births	21/482 (4.4)	54/1206 (4.5)	23/431 (5.3)	$p = 0.729$
NAS/exposed	18/61 (29.5)	54/300 (18.0)*	23/113 (20.4)	$p = 0.123$

NAS = neonatal abstinence syndrome.

* $p = 0.040$.

at about 20% of narcotic-exposed pregnancies in 2014. Cases of more severe withdrawal (Finnegan scores > 7) requiring consideration of pharmacologic treatment also stabilized at 7% of narcotic-exposed pregnancies. During this time, the clinical burden of disease has increased: daily and intravenous use of narcotics have become the most common user profile, whereas snorting and occasional use once predominated.^{3,5}

COMMUNITY-BASED SUBSTITUTION THERAPY PROGRAMS

In 2013–2014, we began to encounter pregnant patients who had conceived while receiving opioid substitution therapy, and we have begun to follow the outcomes of these pregnancies. These patients, who live in remote northern communities, have benefitted from the recent development of community-based programs for treatment of opioid dependence. Along with culturally appropriate addictions counselling, narcotic substitution therapy with sublingual buprenorphine–naloxone is undertaken.⁸ The buprenorphine is for suppression of opioid cravings, and the naloxone is meant to deter diversion to intravenous use. These holistic addiction treatment programs have developed in 16 of the 30 remote First Nations communities in our region. Substitution therapy with buprenorphine–naloxone has become commonplace, which highlights the extent of the problem with opioid dependence in our region. Community organizations are beginning to partner with local researchers to evaluate such community-based programs, which grow out of a clinical and social imperative with limited funding support. Local researchers have recently partnered with northern communities that have age-adjusted adult addiction rates exceeding 50% to document the effects of such widespread addiction and the success of community-based treatment programs.⁸

Although buprenorphine–naloxone is officially contraindicated during pregnancy because of the theoretical risk of the naloxone component precipitating acute narcotic withdrawal, its use in pregnancy is gradually becoming accepted.⁹ If a patient wishes to conceive, it is optimal to transfer her from buprenorphine–naloxone to the single narcotic component, buprenorphine, but this involves a complex application process to Health Canada and the manufacturer. Patients have often completed most of their pregnancy by the time the

single-component drug is available to them.

The increasing number of women receiving opioid substitution therapy throughout pregnancy is preferable to the vacillation of dosing and withdrawal encountered through access to illicit narcotics. In 2013–2014, we have managed the treatment of 28 women who conceived while receiving opioid substitution therapy, and we will continue to monitor this evolving trend.

CONCLUSION

The opioid abuse epidemic in northwestern Ontario has challenged the communities and the health care system. The response has included many positive developments. First, generalist nurses, physicians and counsellors in our region have developed expertise in the management of narcotic use in pregnancy and subsequent neonatal withdrawal. Second, a team of community members, nurses and physicians has developed unique community programs for culturally appropriate addictions treatment and substitution therapy, resulting in a local capacity to treat narcotic use in pregnancy. Third, rural researchers are conducting ongoing surveillance of the scope of the problem and evaluation of program outcomes, and contributing to an evolving treatment approach. Finally, Ontario's first rural unit for inpatient withdrawal management was established (although it was recently closed because of program cuts).¹⁰

Additional needs remain. It is important that Health Canada recognize the need for robust program support for the unprecedented rates of opioid dependence being encountered. Also, we must address social and psychological needs in remote First Nations communities, which are suffering the effects of decades of intergenerational trauma and are dealing with high rates of addiction.

Competing interests: None declared.

REFERENCES

1. Resolution #09/92: prescription drug abuse state of emergency. Thunder Bay (ON): Nishnawbe Aski Nation. 2009.
2. Dhalla I, Mamdani M, Sivilotti M, et al. Prescribing of opioid analgesics and related mortality before and after the introduction of long-acting oxycodone. *CMAJ* 2009;181:891-6.
3. Kelly L, Cromarty H, Minty B, et al. Narcotic-exposed neonates in a First Nations population in northwestern Ontario: incidence and implications. *Can Fam Physician* 2011;57:e441-7.

4. Dooley J, Kelly L, St Pierre-Hansen N, et al. A rural family physician-managed aboriginal obstetrical program: Sioux Lookout Meno Ya Win Obstetrics. *Can J Rural Med* 2009;14:75-9.
5. Dooley J, Gerber Finn L, Antone I, et al. Narcotic use in pregnancy in northwest Ontario: a 3 year prospective study of an increasing challenge. *Can Fam Physician*. In press.
6. Dooley J, Gerber Finn L, Antone I, et al. Narcotic tapering in pregnancy using long-acting morphine: an 18 month year prospective study in northwest Ontario. *Can Fam Physician*. In press.
7. Kelly L, Minty B, Madden S, et al. The occasional management of narcotic exposure in neonates. *Can J Rural Med* 2011;16:98-101.
8. Katt M, Chase C, Samokhvalov A, et al. Feasibility and outcomes of a community-based taper-to-low-dose-maintenance suboxone treatment program for prescription opioid dependence in a remote First Nations community in northern Ontario. *Journal of Aboriginal Health* 2012;9:52-9.
9. Poon S, Pupco A, Koren G, et al. Safety of the newer class of opioid antagonist in pregnancy. *Can Fam Physician* 2014;60:631-2.
10. Kiepek N, Hancock L, Topozini D, et al. Facilitating medical withdrawal from opiates in rural Ontario. *Rural Remote Health* 2012;12:2193-9.

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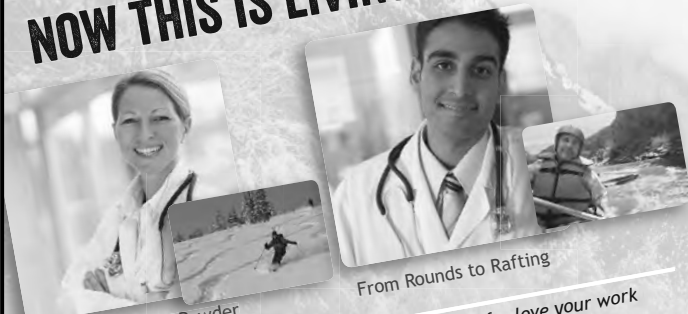
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FAMILY PHYSICIAN: BC – Ashcroft. Ashcroft Hospital and Community Health Centre is a Level 1 Community Hospital with four emergency beds, 24 extended care beds, and one respite care. Ashcroft (population: 1,664) rests along the banks of the Thompson River, deep in the heart of British Columbia's desert country. The town is set amid a spectacular recreational environment where hiking, golfing, and fishing thrive. Remuneration is fee-for-service \$300-350,000+/-, plus rural retention incentives and on-call availability payment. Overhead is around 20% and the office has a fully integrated EMR. For more information email physicianrecruitment@interiorhealth.ca or online www.betterhere.ca –RM-318

FAMILY PHYSICIAN: BC – Clearwater. Family physicians wanted to join the medical team in this beautiful community. Rural setting, relaxed pace of work, newer hospital, and an amazing provincial park as your backyard. Known for world-class recreation, enriched culture, and vibrant community life, Clearwater offers the balanced lifestyle you have been looking for. Enjoy working in a single group practice with electronic medical records, a modern acute care facility, and a 21-bed residential care facility. Payment structure is fee-for-service plus multiple incentives: The Rural Physicians for British Columbia incentive provides a one-time incentive payment of \$100,000 for a 3-year return of service; recruitment incentive \$20,000; retention fee premium 21.14%; retention flat fee \$18,482.40; and relocation reimbursement. For more information contact: email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-281a

FAMILY PHYSICIANS: BC – Cranbrook is a thriving city with an approximate population of 20,000 and a catchment population of approximately 26,000. Seeking permanent and locum family physicians. Located in the middle of the broad Rocky Mountain Trench, the stunning surroundings and idyllic climate present perfect conditions for outdoor activities such as horse riding, hiking and biking or a relaxing afternoon boating on the lake. The winter brings great opportunities for alpine skiing at Kimberley Alpine Resort just a short 30 km drive. Choose the clinic you prefer. Our division of family practice, the four clinics and our Cranbrook community are working together to draw the best people to our town and realize our goal of making Cranbrook the best place to live and work in Canada. Remuneration is fee-for-service, ranging from \$165,000 to \$300,000 with excellent rural incentives. For more information, email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-327

FAMILY PHYSICIAN: BC – Lillooet. Five-physician, unopposed fee-for-service practice seeks sixth family physician with ER skills. Clinic

group focus is on balance of work and lifestyle. Easy access to lower mainland, Whistler and interior of province. Call currently 1-in-5. Regular schedule includes one week off every fifth week. Full Rural Physician Recruitment and Retention benefits eligibility, including 38 days rural locum coverage for holidays. World-class wilderness at your doorstep for skiing, hiking, fishing, whitewater kayaking and mountain biking. Full service rural hospital with GP Surgeon and Anesthetist on staff. For more information email physicianrecruitment@interiorhealth.ca or view online at Web site www.betterhere.ca

–RM-282b

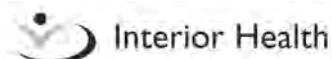
FAMILY PHYSICIAN: BC – Logan Lake is situated in the Heart of the Highland Valley; a pristine natural environment of mountains, lakes and forests. Logan Lake is a growing, progressive and family-oriented community. This is a full service family practice with acute care clinic coverage. We have a turnkey operation with Wolf EMR and no startup costs for a new physician. Also, only 60 km away is a tertiary level hospital, Royal Inland Hospital, Kamloops. Remuneration is fee-for-service \$300-500,000+/-, plus rural retention incentives and on-call availability payment. For more information email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-317

FAMILY PHYSICIANS: BC – Merritt. Rolling hills, sparkling lakes and over 2,030 hours of sunshine every year make Merritt a haven for four-season outdoor recreation. We have a need for family physicians in their choice of clinic. Nicola Valley Hospital and Health Centre is a 24-hour Level 1 community hospital with a 24-hour Emergency Room. Also, only 86 km away is a tertiary level hospital, Royal Inland Hospital, Kamloops. Remuneration is fee-for-service \$250-\$450,000+, rural retention incentives and on-call availability payment. For more information email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-311

FAMILY PHYSICIANS: BC – Nelson. The city of Nelson is seeking family physicians for their vibrant, active community. There are both part-time and full-time opportunities available in well-established clinics. With supportive colleagues to share the responsibilities of in-hospital patients, clinics operate with EMR systems, along with very efficient and friendly staff. Clinic physicians are very supportive to new colleagues establishing their practice and providing coverage for hospital inpatients. Specialist support is available at the local hospital, including internal medicine, ophthalmology, neurology and pediatrics, with additional services regionally. There is also the additional option of doing emergency room work and obstetric care. Room for growth! With its friendly people and scenic location among rivers, mountains, and lakes, the area offers a wide range of year-round outdoor recreational opportunities. Remuneration can be discussed when determining which clinic is a good match for you, plus multiple incentives: recruitment \$15,000; retention fee premium 11.62%; with a retention flat fee \$12,107.96. For more information email physicianrecruitment@interiorhealth.ca or view us online at our Web site www.betterhere.ca –RM-293

FAMILY PHYSICIANS: BC – Princeton. Family physicians wanted to join our dynamic team of four GPs and one NP for our busy clinic and hospital. We have a six-bed inpatient hospital with a 24 hour ER, which is attached to the Cascade Medical Centre providing full family practice services to a community population of 3,000 and a surrounding catchment population of approximately 6,000. Fee-for-service, \$250,000 to \$400,000, with excellent rural incentives and on-call availability payment. For more information, email physicianrecruitment@interiorhealth.ca or view online www.betterhere.ca –RM-328

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FAMILY PHYSICIAN OPPORTUNITIES Vancouver Island, B.C.

Your career can be a demanding one ... so why not consider a location where the benefits are *naturally distracting*?

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- Fee-for-Service Premium
- Annual Retention Payment
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RM-329

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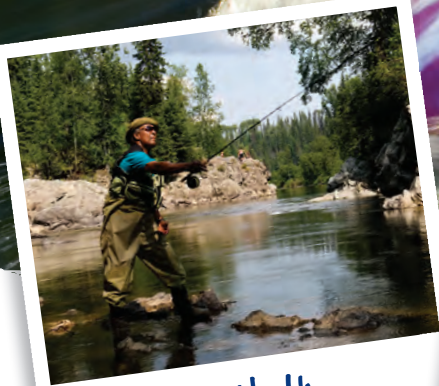
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Open up to a LAMA option in COPD

IMPROVED PATIENTS' QUALITY OF LIFE

(LS mean change in SGRQ total score vs. placebo, -3.32; $p < 0.001$)^{1,2†}



ONCE-DAILY ^{Pr} SEEBRI® BREEZHALER® DEMONSTRATED 5-MINUTE ONSET AND 24-HOUR BRONCHODILATION

- ▶ FEV₁ improvement shown 5 minutes after first dose (0.093 L vs. placebo, $p < 0.001$, serial spirometry)^{1,3‡}
- ▶ Significantly greater LS mean FEV₁ vs. placebo demonstrated at all time points over 24 hours (LS mean FEV₁ [L] vs. placebo after first dose, $p < 0.001$; time points were 5 min, 15 min, 30 min, 1 hr, 2 hrs, 3 hrs, 4 hrs, 6 hrs, 8 hrs, 10 hrs, 12 hrs, 23 hrs 15 min, 23 hrs 45 min)^{4§}

Indication & clinical use:

SEEBRI® BREEZHALER® is indicated as a long-term once-daily maintenance bronchodilator treatment in patients with chronic obstructive pulmonary disease (COPD), including chronic bronchitis and emphysema.

- ▶ Not indicated for the relief of an acute deterioration of COPD
- ▶ Can be used at the recommended dose in elderly patients 65 years of age and older
- ▶ Should not be used in patients under 18 years of age

Relevant warnings and precautions:

- ▶ Not indicated for treatment of acute episodes of bronchospasm
- ▶ Not indicated for treatment of acutely deteriorating COPD
- ▶ Worsening of narrow-angle glaucoma
- ▶ Worsening of urinary retention
- ▶ In severe renal impairment, use only if the expected benefit outweighs the potential risk
- ▶ Paradoxical bronchospasm

For more information:

Please consult the Product Monograph at www.novartis.ca/asknovartispharma/download.htm?res=seebri%20breezhaler_scrip_e.pdf&resTitleId=665 for important information relating to adverse events, drug interactions, and dosing information which have not been discussed in this piece. The Product Monograph is also available by calling the Medical Information Department at 1-800-363-8883.

LAMA: long-acting muscarinic antagonist; COPD: chronic obstructive pulmonary disease; LS: least square; SGRQ: St. George's Respiratory Questionnaire, measures health-related quality of life in symptoms, activities and impact on daily life⁵; FEV₁: forced expiratory volume in 1 second.

‡ GLOW2: A 52-week, randomized, double-blind, placebo-controlled parallel-group study of 1,060 patients with COPD. Patients received either SEEBRI® BREEZHALER® (glycopyrronium 50 mcg o.d.; n=525), placebo (n=268), or open-label tiotropium (18 mcg o.d.; n=267) as an active control. Primary endpoint was 24-hour post-dose (trough) FEV₁ following 12 weeks of treatment.

‡ GLOW1: A 26-week, randomized, double-blind, placebo-controlled parallel-group study to assess the efficacy, safety and tolerability of once-daily SEEBRI® BREEZHALER® (50 mcg) in patients with COPD (n=550); placebo (n=267).

§ LS mean FEV₁ (L) after first dose; SEEBRI® BREEZHALER® (n=169) vs. placebo (n=83), respectively: 5 min: 1.39 vs. 1.30; 15 min: 1.43 vs. 1.28; 30 min: 1.44 vs. 1.28; 1 hr: 1.47 vs. 1.28; 2 hrs: 1.53 vs. 1.34; 3 hrs: 1.53 vs. 1.35; 4 hrs: 1.52 vs. 1.35; 6 hrs: 1.48 vs. 1.33; 8 hrs: 1.47 vs. 1.33; 10 hrs: 1.47 vs. 1.32; 12 hrs: 1.45 vs. 1.31; 23 hrs 15 min: 1.37 vs. 1.27; 23 hrs 45 min: 1.39 vs. 1.31; $p < 0.001$ for all time points.

References: 1. SEEBRI® BREEZHALER® Product Monograph. Novartis Pharmaceuticals Canada Inc., December 3, 2013. 2. Kenwin E, Hébert J, Gallagher N et al. Efficacy and safety of NVA237 versus placebo and tiotropium in patients with COPD: the GLOW2 study. *Eur Respir J* 2012;40:1106-14. 3. D'Urzo A, Ferguson GT, van Noord JA et al. Efficacy and safety of once-daily NVA237 in patients with moderate-to-severe COPD: the GLOW1 trial. *Respir Res* 2011;12(156):1-13. 4. Data on file. Novartis Pharmaceuticals Canada Inc. 5. Jones P. St. George's Respiratory Questionnaire Manual. Available from: www.healthstatus.sgul.ac.uk/SGRQ_download/SGRQ%20Manual%20June%202009.pdf. Accessed May 16, 2014.

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