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Original Articles / Articles originaux

Procedural Series

Case Report

Book Review

Title: The Bird Sanctuary. 2004
Artist Name: Bryn Whittaker
Size ETC: Acrylic on canvas 16"x16".
Contact Information: Via homepage on the Art In Canada website. Also on Facebook as Bryn Whittaker (from Victoria).

A grandchild is introduced to the wonders of nature. Clifford Lee Bird sanctuary Edmonton, AB.

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Reflections on Summer 2020

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That summer that was and wasn't.

Wasn't, as in the world has changed in 2020 and things are substantially different. It is not even clear that normal will be coming back at all.

Was, as in certainly we have had summer in Rural Canada. With little COVID in rural parts, summer was "normalish" albeit with masks. I will grant that there are many fewer Americans than usual and those license plates we do see, are examined with gimlet eye as to their legitimate reasons for being here. However, Canadian citiots are appearing to compensate with their usual numbers and injuries. For political correctness, I hasten to add that a citiot refers to the subset of individuals with behaviour that makes rural residents roll their eyes.

For locals, the cottage/camp/cabin/chalet/bungalow (depending on which part of Rural Canada you hail from) continues to draw opportunities for taking some time off' some of them have also seemed to develop a rash of poor judgement and injuries that have accompanied opportunistic renovations accomplished between newly-found interests and the mostly safer hobbies of gardening and baking sour dough.

Locums were a lot easier to find. No one really knows for sure why. Some say it was because many city practices just closed in the face of COVID and did not need locums. Others said it is the continuing uncertainty, including a second wave, that has caused incumbents to stay put. Women on maternity leave have found that they could work virtually from home. Others state that their reluctance to start a new practice has been influenced by the delayed certification examination.

However, I suspect it may have been the general closure of walk-in clinics that probably had the largest effect on encouraging recent grads to try rural 'locumming'. I do not care much if this is true, or just local fortune, and am happy to have taken more weeks off this summer than ever in my history. Not that I do not like working. The new normal has been a challenge for people like me, who find meaning and depth face to face. There is palpable relief that at least some of 'that' medicine resumed this summer, even if its eye to eye above the mask.

What will the fall bring? Schools, I guess; we shall see how that plays out. I suspect that it will be fine if we do it with a close eye on the positive swab rates and react accordingly. Like it or not, here we go, and we will continue to adapt, 1 day at a time.

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Réflections sur l'été 2020

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L'été qui a été et qui n'a pas été.

Qui n'a pas été, puisque le monde a changé en 2020 et que tout a basculé. On ne sait même pas si on retournera éventuellement à la normale.

Qui a été, puisque nous avons certainement eu un été dans les régions rurales du Canada. Pratiquement pas de cas de COVID-19 qui vaille la peine de mentionner dans les régions rurales, donc un été presque normal, mais avec des masques. Je reconnais qu'il y a beaucoup moins d'Américains que d'habitude (et les quelques plaques d'immatriculation repérées sont vues d'un mauvais œil quant à leur raison légitime de se trouver ici, cela semble difficile à imaginer il y a à peine quelques mois), mais les vidiots canadiens semblent compenser par leur nombre et leurs blessures habituels. À des fins de rectitude politique, je m'empresse d'ajouter que le terme vidiot désigne le sous-groupe de personnes dont le comportement fait rouler les yeux aux résidants des régions rurales.

Pour les locaux, le camp/la cabine/le chalet/le bungalow (selon sa région rurale du Canada) continue d'offrir l'occasion de prendre des vacances. Certains ont aussi semblé développer une éruption de mauvais jugement et de blessures accompagnant les rénovations opportunistes réalisées entre les nouveaux intérêts et les loisirs beaucoup plus sécuritaires comme le jardinage et faire du pain.

Les médecins suppléants étaient beaucoup plus faciles à trouver. Personne ne sait vraiment pourquoi. Certains affirment que beaucoup de pratiques urbaines ont fermé durant la crise et n'ont pas eu besoin de suppléants. D'autres avancent que c'est l'incertitude tenace, y compris d'une deuxième vague, qui a immobilisé les titulaires de postes. Les femmes en congé de maternité ont découvert que le télétravail virtuel leur convenait bien. D'autres encore ont déclaré que leur hésitation à lancer une nouvelle pratique a été influencée par le fait que l'examen du CMFC a été repoussé.

Je suis par contre d'avis qu'il se pourrait que la fermeture générale des cliniques sans rendez-vous soit ce qui a encouragé le plus les nouveaux diplômés à tenter la suppléance rurale. Je me fous si c'est vrai, ou s'il s'agit simplement de la chance, et je me réjouis d'avoir pris plus de semaines de vacances cet été que jamais dans mon histoire. Ce n'est pas que je n'aime pas travailler. La nouvelle norme est difficile pour les gens comme moi, qui trouvent signification et profondeur dans le face-à-face. Au moins un peu de «cette» médecine est de retour cet été et le soulagement est immense, même si c'est les yeux dans les yeux, au-dessus du masque.

Qu'est-ce que l'automne nous réserve? Les écoles, je pense; on verra bien comment ça se passera. Je soupçonne que tout ira bien si on le fait en gardant l'œil sur le taux d'écouvillonnages positifs et en réagissant en conséquence. Qu'on le veuille ou non, la vie suit son cours et nous allons continuer de nous adapter, un jour à la fois.

President's Message. A rural lens on physician credentialing

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Along with warm weather and mosquitoes, summer 2020 brought yet another example of SRPC's important role. Our members highlighted concerns about changes to the College of Family Physicians of Canada (Emergency Medicine) (CFPC[EM])'s Practice Eligible Route (PER). Many hoping to challenge the examination were impacted, especially by the new requirement to have 'access to on-site… advanced imaging (such as formal ultrasound, computed tomography and/or magnetic resonance imaging)'.[1] Rural physicians know that a lack of on-site advanced diagnostics requires a keen set of skills to manage the acutely unwell patient. When faced with a decision to transport a patient for investigations, risks and benefits must be seriously considered.

While we cannot allow the credential creep of the CFPC (EM), this designation can play a positive role in rural communities. Certificates of Added Competence (CAC) should reflect advanced competencies and leadership in emergency medicine. Having colleagues with the CFPC (EM) in my community adds a skill set to enhance educational capacity and support rural critical care, allowing our generalist team to better meet the needs of the community. We also need to ensure that by choosing rural generalist practice, early career physicians are not putting future career decisions at a disadvantage.

These concerns were discussed during a meeting with the CFPC leadership. This meeting confirmed that many of the impacts affecting our rural colleagues were not intentional. It was clear that decisions by the CFPC Board of Examinations and Certification (BEC) lacked rural or practice eligible perspectives.

Moving forward, SRPC and CFPC have agreed to use the Rural Roadmap Implementation Committee (RRMIC) to bring a rural perspective to this issue. Through RRMIC, we will work to develop rurally relevant PER criteria and push for practice eligible and rural voices on BEC.

The RRMIC has been a successful forum for the SRPC to have input on many important issues. RRMIC work has included the rural and indigenous health competency development, rural patient transfer and repatriation national advisory group, federal rural health advocacy and national physician licensure model development.[2]

The CFPC (EM) PER issue is a perfect example of how SRPC members can identify a problem and through our strong partnerships propose and advocate for rural-friendly solutions. We must continue to focus our rural lens on policies that have the potential to threaten generalist practice needed by our communities.

REFERENCES

1. Available https://www.cfpc.ca/en/education-professional-development/examinations-and-certification/examination-of-added-competence-in-emergency-medic/eligibility-and-application [Last accessed on 2020 Sept 09].
2. Wilson CR, Rourke J, Oandasan IF, Bosco C. Progress made on access to rural health care in Canada. Can Fam Physician 2020;66:31-6.

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Message du Président. Dérive des titres de compétence

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En plus du temps chaud et des maringouins, l'été 2020 nous a donné un autre exemple du rôle important joué par la SMRC. Nos membres ont exprimé leurs inquiétudes quant aux changements apportés à la certification par la pratique en médecine d'urgence (MU) du Collège des médecins de famille du Canada (CMFC). Beaucoup de ceux qui espéraient faire l'examen ont été touchés, surtout par la nouvelle exigence de " compter des services… d'imagerie avancée (comme l'échographie formelle, la tomodensitométrie et/ou l'IRM) sur place »[1]. Les médecins en région rurale savent bien que l'absence sur place d'équipement diagnostique avancé les oblige à recourir à des compétences pointues pour prendre en charge les patients gravement malades. Avant de décider de transporter un patient aux fins d'investigations, il faut sérieusement tenir compte des risques et des bienfaits.

Nous ne pouvons permettre la dérive des titres de compétence du CMFC (MU), car cette désignation joue un rôle positif dans les communautés rurales. Ce CCA doit refléter les compétences avancées et le leadership en médecine d'urgence. Mes confrères et consœurs ayant obtenu le CMFC (MU) apportent à ma communauté une série de compétences qui améliorent la capacité formative et appuient les soins intensifs en milieu rural, ce qui permet à nos généralistes de mieux répondre aux besoins de la communauté. Nous devons également veiller à ce que les médecins en début de carrière qui optent pour la pratique générale en région rurale ne désavantagent pas leur carrière future.

Ces inquiétudes ont fait l'objet d'une réunion avec la direction du CMFC. La réunion a confirmé que les répercussions sur nos confrères et consœurs pratiquant en milieu rural n'étaient pas intentionnelles. Il était clair que les décisions prises par le Bureau des examens et de la certification (BEC) du CMFC n'ont pas tenu compte du milieu rural ni de la certification par la pratique.

Dorénavant, la SMRC et le CMFC SE sont entendus pour appuyer leurs décisions sur le Plan d'action pour la médecine rurale pour s'assurer que le point de vue rural soit entendu. Par l'entremise du Plan d'action pour la médecine rurale, nous allons formuler des critères pertinents à la certification par la pratique et pousser pour faire entendre le point de vue de la certification par la pratique et des médecins ruraux auprès du BEC.

Le Plan d'action pour la médecine rurale s'est avéré être un forum réussi pour la SMRC qui prend connaissance des commentaires sur de nombreuses questions importantes. Les travaux du Plan d'action pour la médecine rurale ont inclus l'acquisition de compétences en santé autochtone et des régions rurales, le transfert des patients des milieux ruraux et le rapatriement des modèles de développement du groupe consultatif national, du modèle fédéral de défense de la santé en région rurale et de l'obtention de permis d'exercer à l'échelle nationale[2].

Le problème lié à la certification par la pratique du CMFC (MU) est l'exemple parfait de la façon dont les membres de la SMRC identifient un problème et, par l'entremise de nos partenariats étroits, nous pouvons proposer et défendre des solutions qui conviennent aux régions rurales. Nous devons continuer de concentrer notre vision du monde rural sur les politiques ayant le potentiel de menacer la pratique générale dans nos communautés.

REFERENCES

1. https://www.cfpc.ca/en/education-professional-development/examinations-and-certification/examination-of-added-competence-in-emergency-medic/eligibility-and-application [Last accessed on 2020 Sept 09].
2. Wilson CR, Rourke J, Oandasan IF, Bosco C. Progress made on access to rural health care in Canada. Can Fam Physician 2020;66:31-6.

Original Article

Diabetes prevalence and demographics in 25 First Nations communities in northwest Ontario (2014–2017)

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Abstract

Introduction: First Nations communities are known to have high rates of diabetes. The rural First Nations communities in northwest (NW) Ontario are particularly affected. Regional studies in 1985 and 1994 found a high prevalence of diabetes. More recently, they are estimated to have the highest prevalence in Ontario at 19%, double the provincial norm. The purpose of this study is to examine the epidemiology and prevalence of diabetes in the total population and cardiovascular comorbidities in the adult population of 25 First Nations communities in NW Ontario.

Methods: This retrospective diabetes prevalence study used primary care electronic medical record data for a 3-year period, 1 August 2014–31 July 2017. Diabetes prevalence was calculated for both the total and the adult (18+) populations and comorbid hypertension and dyslipidaemia were identified in adults.

Results: The age-adjusted diabetes prevalence for the total population was 15.1% versus a Canadian prevalence of 8.8%. The age-adjusted adult prevalence was 14.1%, double Canada's average of 7.1%. The average age of adults with diabetes was 52 years (±14.9); 57% were female. Comorbid hypertension (58%) and dyslipidaemia (73%) were common. Metformin was the most commonly used medication (58%), followed by insulin/analogues (23%) and sulphonylureas (13%).

Conclusion: The diabetes prevalence in the First Nations population of NW Ontario is double Canada's norm. Addressing it will require addressing relevant social determinants of health, including poverty and food security.

Keywords: Diabetes, First Nations, prevalence

Résumé

Introduction : Les communautés des Premières nations sont reconnues pour leur taux élevé de diabète, particulièrement les communautés rurales des Premières nations du Nord-Ouest de l'Ontario. Des études régionales réalisées en 1985 et 1994 ont révélé une forte prévalence de diabète. Plus récemment, on a estimé que la prévalence dans ces communautés s'élevait à 19 %, la plus forte en Ontario et le double de la norme provinciale. Cette étude visait à examiner l'épidémiologie et la prévalence du diabète auprès de la population totale et les comorbidités

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cardiovasculaires auprès de la population adulte de 25 communautés des Premières nations du Nord-Ouest de l'Ontario.
Méthodologie : Cette étude rétrospective visant à évaluer la prévalence du diabète a eu recours aux données sur 3 ans des dossiers médicaux électroniques des cliniques de première ligne, soit du 1er août 2014 au 31 juillet 2017. La prévalence du diabète a été calculée dans les populations totale et d'adultes (18 ans et plus) et l'hypertension et la dyslipidémie ont été dépistées en concomitance chez les adultes.
Résultats: La prévalence du diabète ajustée en fonction de l'âge dans la population totale était de 15,1 % par rapport à la prévalence canadienne de 8,8 %. La prévalence ajustée en fonction de l'âge chez les adultes était de 14,1 %, soit le double de la prévalence canadienne de 7,1 %. L'âge moyen des adultes diabétiques était de 52 (±14,9) ans; et 57 % des participants étaient de sexe féminin. L'hypertension (58 %) et la dyslipidémie (73 %) étaient courantes en concomitance. La metformine était le médicament le plus fréquemment utilisé (58 %), suivie de l'insuline/analogues (23 %) et des sulfonylurées (13 %).
Conclusion: La prévalence du diabète dans les populations des Premières nations du Nord-Ouest de l'Ontario est le double de celle du Canada. Pour régler la situation, il faudra se pencher sur les déterminants sociaux de la santé pertinents tels que la pauvreté et l'insécurité alimentaire.

Mots-clés: Diabète, Premières nations, prévalence

INTRODUCTION

First Nations communities are known to have high rates of diabetes, particularly the rural First Nations communities in northwest (NW) Ontario. Regional studies in 1985 and 1994 found a high prevalence of diabetes and in a 2019 International Credential Evaluation Service report (ICES), they are estimated to have the highest prevalence in Ontario, at 19%, double the provincial norm of 8%.[1-3] These communities also have higher rates of lower limb amputations (×7) and advanced kidney disease (×2).[4-6] An accurate description of the regional scope of diabetes is needed to design appropriate initiatives and establish a baseline from which ongoing changes in disease presence can be measured. The purpose of this study is to examine the epidemiology and prevalence of diabetes in the total and adult population and associated cardiovascular comorbidities in diabetic adults in 25 First Nations communities in NW Ontario.

METHODS

Study design

This retrospective diabetes prevalence study used primary care electronic medical record (EMR) data for a 3-year period, 1 August 2014–31 July 2017. Diabetes prevalence was calculated for both the total and the adult (18+) population. Comorbid hypertension and dyslipidaemia prevalence was calculated for the adult population.

Setting and participants

The setting is 25 remote First Nations communities in NW Ontario, with a total population of 24,493, including 16,170 adults (18+). Each community receives primary care services from a local nursing station, with regular visits from community physicians, supported by the Sioux Lookout First Nations Health Authority (SLFNHA). Patients were included who had at least 1 primary care visit, at either one of the 25 nursing stations, or in the Sioux Lookout clinic, who were being investigated or treated for diabetes. Patients under age 18 were not included in the analysis of comorbidities.

Sources of data

Since 2013, all primary care clinical visits, laboratory investigations and prescriptions have been recorded in the OSCAR EMR in use by the practices of 30 community physicians. Data extraction and analysis was performed by the SLFNHA information technology department (JH) and verified by its public health epidemiologist (CM). The SLMHC laboratory performs all regional laboratory testing, with results automatically entered into the OSCAR. Medication prescribing is done exclusively through OSCAR and is linked to regional pharmacies.

Extracted data included demographics, laboratory results and prescribed medications. A 3-year time frame was chosen as most patients

with chronic conditions have at least one primary care visit in 2 years.[7,8] Data collection protocol approximated the validated Canadian Primary Care Sentinel Surveillance Network methods, but used a glycated haemoglobin level (A1c) of 6.5% rather than 7.0%.[9,10] Administrative data (physician billing and hospital diagnoses) were not used, but the use of EMR prescription and laboratory data has been shown to render equivalent results.[7]

Variables

Demographic and laboratory data included age, gender, low-density lipoprotein-cholesterol (LDL-C) and A1c. Prescribed medications were identified by the World Health Organization Anatomic Therapeutic Classification system.[11] This coding identifies all glucose and lipid-lowering and antihypertensive medications.

Diabetes was defined as a recorded A1c ≥6.5 mmol/l or a prescription of a glucose-lowering medication; hypertension was identified by the prescription of an antihypertensive medication and dyslipidaemia by an elevated LDL-C ≥ 2.0 mmol/L or the prescription of a lipid-lowering medication.

Statistical methods

The prevalence of diabetes was adjusted to the 2016 Canadian census population. The total population prevalence provided a comparator to national values, but most of the analysis focused on the adult prevalence, allowing comparison with other First Nations and the estimation of comorbid hypertension and dyslipidaemia. Data were presented as mean and standard deviation for continuous variables and proportions for discrete variables.

Ethics

SLFNHA requested and approved the study. The Sioux Lookout Meno Ya Win Research Review and Ethics Committee (#16-15) and the Lakehead University Research Ethics Board (#161 15-61) approved the study.

RESULTS

The age-adjusted population prevalence was 15.1%, with an adult (18+) prevalence of 14.4%. A total of 2960 patients were identified with diabetes, including 2888 adults. A1c testing occurred in 32% of the total adult population (5161/16,170). Females received A1c testing more often, 57% (2942/5161), and constituted 57% of the adult diabetic population (1657/2888).

Adult diabetic patients had a mean age of 52 years, 11 years older than the average adult age and had double the rate of comorbid hypertension (58%) and dyslipidaemia (73%) [Table 1 and Figure 1].

The average adult A1c was 8.6 mmol/l; 29.5% were ≤7.0%. The most common glucose-lowering medication was metformin, followed by insulin and sulphonylureas [Table 2].

The greatest increase in age group prevalence occurred in females aged 30–40 years, from 8.9% at age 30–34 years to 20.2% at 35–39 years [Figures 2 and 3]. There was a wide range in the adult prevalence among the 25 communities; crude rates varied from 9% to 32%.

DISCUSSION

Prevalence

The 15.1% overall age-adjusted prevalence of diabetes in these 25 First Nations communities was higher than the 2017 Canadian prevalence of 8.8%.[12] While higher than national values, the prevalence is lower than that in other First Nations studies; our adult-specific age-adjusted prevalence of 14.4% is higher than the Canadian adult prevalence of 7.1%, but is lower than the crude adult prevalence of 27% in the James Bay Cree and 35% in a 2016 Manitoba First Nations screening study (our crude adult prevalence was 18%).[13-15] Methodological variations exist in these comparator studies; both relied primarily on A1c laboratory data. However, they used different cohorts: James Bay prevalence was estimated in the context of a proactive community-based diabetic programme, whereas a self-referred screening population was used in Manitoba.[14,15] It is not clear how these differences affect prevalence estimates, but First Nations communities in NW Ontario appear to have a lower diabetes prevalence than other First Nations. Our assumption that the 3-year study period we used would identify most patients with diabetes seemed appropriate; Grevier's Canada-wide primary care EMR-based study found that diabetic patients

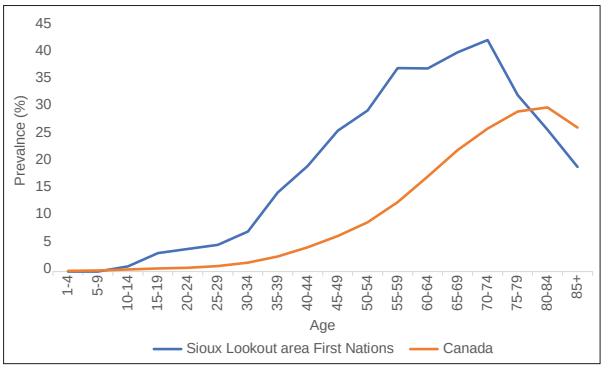


Figure 1: Diabetes prevalence by age in 25 First Nations communities in northwest Ontario 2014-2017 and Canada, 2013–2014

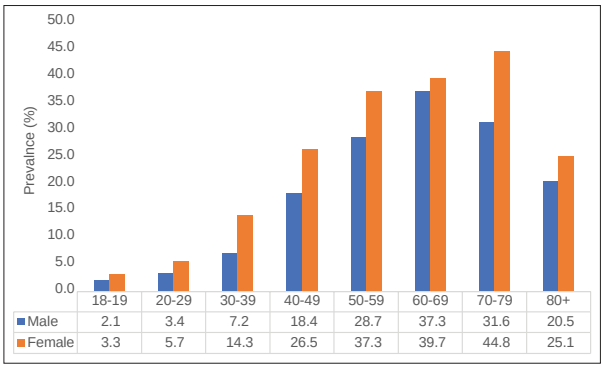


Figure 2: Adult (18+) diabetes prevalence by age and gender in 25 First Nations communities, northwest Ontario, 2014–2017.

Table 1: Demographics of total adult population and diabetic adult population in 25 First Nations communities, northwest Ontario, 2014–2017

Characteristics	Total adult population, *n* (%)	Diabetic adult population, *n* (%)
n (%)	16,170 (100)	2888 (18)
Mean age, SD	41 (16.9)	52 (14.9)
Female	8048 (50)	1657 (57)
Comorbidities		
Hypertension	3935 (24)	1675 (58)
Dyslipidaemia	5210 (32)	2108 (73)

SD: Standard deviation

Table 2: Adult use of diabetes medications (*n*=2888)

Class of drug	%
Biguanides (metformin)	58
Insulin/analogues	23
Sulphonylureas	13
DPP-4 inhibitors	3
Other medications	2
No medication	7

DPP-4: Dipeptidyl peptidase 4

were 1.4 times more likely to have a primary care visit in their 2-year study period and the diabetes programme in James Bay Cree communities found that 90% of the patients with diabetes had an A1c measurement within a 2-year period.[7,15]

Age and gender

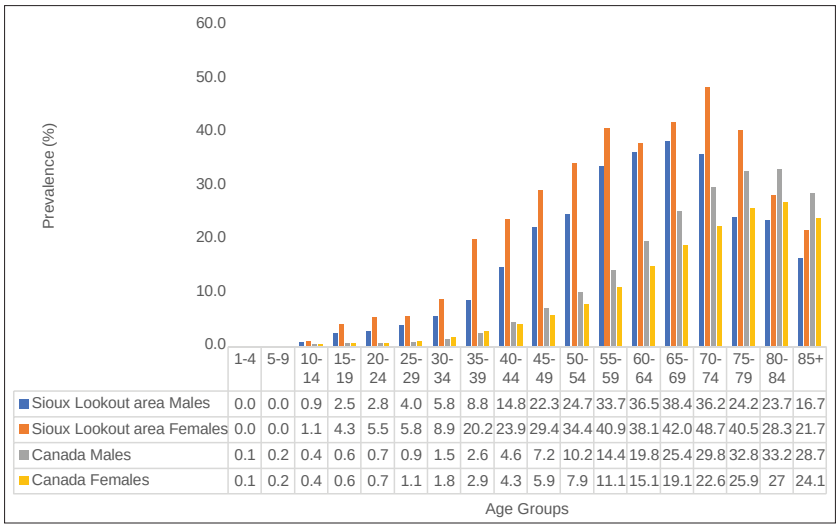
First Nations populations are known to develop diabetes at an earlier age than other Canadians. [16] The age-grouped results support this, demonstrating higher prevalence at younger ages [Figure 1]. Women were equally overrepresented (57%) in both the AIC-tested and diabetic populations. The largest diabetic cohort increase occurred in females in their 30s, where it doubled. Our regional population has a high birth rate, a high incidence of gestational diabetes and a high incidence of transition to overt Type 2 diabetes following gestational diabetes.[17-19] These contribute to the increased female prevalence of diabetes after age 30 and are consistent with a 1985 study of the same communities and other recent First Nations studies, which demonstrated a female preponderance[20-24] [Figure 2]. This contrasts with national values with a higher prevalence in males[25] [Figure 3].

Glycaemic control

The average A1c value in this adult diabetic population was 8.6%, higher than the 7.3%–8.2% in other primary care studies, with First Nations populations generally being at the higher end of that range[15,26-28] The target glycaemic control of A1c ≤7.0% was achieved in 29.5% of patients, compared to 39%–51% in other primary care studies.[28,29] Similarly, metformin was the most commonly prescribed glucose-lowering medication.[29,30]

Comorbidities

Hypertension co-prevalence (58%) in First Nations populations was similar to that in other Canadian diabetic populations (67.1%), but well below the 92% found in a 2011 study of 19 Canadian First Nations communities, whose methods included blood pressure measurement data in addition to antihypertensive medication records for 885 diabetic patients.[26,31] Dyslipidaemia co-prevalence of 73% was



	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Sioux Lookout area Males	0.0	0.0	0.9	2.5	2.8	4.0	5.8	8.8	14.8	22.3	24.7	33.7	36.5	38.4	36.2	24.2	23.7	16.7
Sioux Lookout area Females	0.0	0.0	1.1	4.3	5.5	5.8	8.9	20.2	23.9	29.4	34.4	40.9	38.1	42.0	48.7	40.5	28.3	21.7
Canada Males	0.1	0.2	0.4	0.6	0.7	0.9	1.5	2.6	4.6	7.2	10.2	14.4	19.8	25.4	29.8	32.8	33.2	28.7
Canada Females	0.1	0.2	0.4	0.6	0.7	1.1	1.8	2.9	4.3	5.9	7.9	11.1	15.1	19.1	22.6	25.9	27	24.1

Figure 3: Diabetes prevalence (cases/100) by age and gender in 25 First Nations communities in northwest Ontario 2014–2017 and Canada, 2013-2014.

between the 59% in Canada and 93% in other First Nations studies.[27,31]

Context

Estimates of diabetes prevalence tell only part of the story. The First Nations population experience increased diabetes-related morbidity and mortality.[32] Many factors contribute to this disease burden, including cultural and social determinants of health, poverty and food insecurity. Historic and political factors include inequities in employment and education, marginalisation, racism and intergenerational trauma resulting from governmental assimilation practices.[33-37] A similar disease profile exists in culturally and geographically distinct First Nations communities across Canada which reflects the impact of this shared history of colonisation and its ongoing detrimental effects.[33,36,37] Addressing these factors requires broad social and healthcare responses. The wide range of community-specific prevalence requires further examination to understand how genetic, epigenetic or environmental factors affect rates of diabetes.[38]

Limitations

A variety of methods and data are used in diabetes prevalence research. The Public Health Agency of Canada uses administrative data (hospital and physician diagnoses). We used laboratory and medication EMR data. Diagnostic codes for primary care visits were not available to us, as they are not automatically recorded in this EMR, which also precluded distinguishing between different classes of diabetes. We assumed a stable population as most communities are geographically isolated; but participation in the study did include northern patients who have moved to Sioux Lookout and some Sioux Lookout area residents.

CONCLUSION

The 25 First Nations communities in NW Ontario have a diabetes prevalence twice the Canadian average. Patients diagnosed with diabetes were younger, included more females and had significant levels of comorbid hypertension and dyslipidaemia. Social determinants of health and food security will need a culturally appropriate broad-based approach to address the environment in which diabetes thrives.

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Conflicts of interest: There are no conflicts of interest.

REFERENCES

1. Young TK, McIntyre LL, Dooley J, Rodriguez J. Epidemiologic features of diabetes mellitus among Indians in northwestern Ontario and northeastern Manitoba. Can Med Assoc J 1985;132:793-7.
2. Fox C, Harris SB, Whalen-Brough E. Diabetes among Native Canadians in Northwestern Ontario: 10 Years later. Chronic Dis Canada 1994;15:92-6.
3. Green ME, Jones CR, Walker JD, Shah BR, Jacklin K, Slater M, *et al.*, editors. First Nations and Diabetes in Ontario. Toronto, ON: ICES; 2019.
4. Tobe S, Gordon J, Hopko J, Madden S, Willms H, Kelly L. Chronic kidney disease prevalence in fist nations communities

in NW Ontario: Prevalence of CKD and comorbidities. CMAJ Open 2019;7:E568-72.
5. Loewen K, Vigliarolo J, Lance B, Rockley M, Schreiber Y, Kivi C, *et al*. Diabetes, foot ulcers, amputation rates in NW Ontario: An incidence study and the introduction of a standardized diabetic foot ulcer management protocol. CJRM 2017;22:100-7.
6. Booth GL, Polsky JY, Gozdyra G, Cauch-Dudek K, Kiran T, Shah BR, *et al*. Regional Measures of Diabetes Burden in Ontario. Toronto: Institute for Clinical Evaluative Sciences; 2012. Available from: https://www.ices.on.ca/Publications/Atlases-and-Reports/2012/Regional-Measures-of-Diabetes-Burdenin-Ontario. [Last accessed on 2019 Nov 25].
7. Greiver M, Williamson T, Bennett TL, Drummond N, Savage C, Aliarzadeh B, *et al*. Developing a method to estimate practice denominators for a national Canadian electronic medical record database. Fam Pract 2013;30:347-54.
8. Sibley LM, Moineddin R, Agha MM, Glazier RH. Risk adjustment using administrative data-based and survey-derived methods for explaining physician utilization. Med Care 2010;48:175-82.
9. CPCSSN Disease Definitions Version 2. Kingston (ON): Canadian Primary Care Sentinel Surveillance Network; 2019. Available from: http://cpcssn.ca/wp-content/uploads/2019/07/CPCSSN-Case-Definitions-v2.pdf. [Last accessed on 2020 Aug 05]
10. Williamson T, Green ME, Birthwhistle R, Khan S, Garies S, Wong S, *et al*. Validating the 8 CPSSN case definitions for chronic disease in a primary care database of electronic health records. Ann Fam Med 2014;12:367-72.
11. Guidelines for ATC Classification and DDD Assignment 2019. Oslo: WHO Collaborating Centre for Drug Statistics Methodology; 2018. Available from: http://www.whocc.no/filearchive/publications/_guidelines_web.pdf. [Last accessed on 2019 Nov 27].
12. Public Health Agency of Canada. At a Glance- Twenty Years of Diabetes Surveillance Using the Canadian Chronic Surveillance System. Available from: https://www.canada.ca/en/public-health/services/reports-publications/health-promotion-chronic-disease-prevention-canada-research-policy-practice/vol-39-no-11-2019/twenty-years-diabetes-surveillance.html. [Last accessed on 2019 Nov 22].
13. Statistics Canada. Diabetes by age Group. Available from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310009607. [Last accessed on 2019 Nov 20].
14. Komenda P, Lavallee B, Ferguson TW, Tangri N, Chartrand C, McLeod L, *et al*. The prevalence of CKD in rural Canadian indigenous peoples: Results from the First Nations community based screening to improve kidney health and prevent dialysis (FINISHED) Screen, triage, and treat program. Am J Kidney Dis 2016;68:582-90.
15. Cree Board of Health and Social Services of James Bay. Summary Health Profile March 11, 2016. Background Summary Statistical Profile of Health and Health Determinants in Eeyou Istchee for the Health Assembly. Available from: https://www.creehealth.org/sites/default/files/A%20Health%20Profile%20for%20Health%20Assembly.pdf. [Last accessed on 2019 Nov 05].
16. Oster RT, Johnson JA, Balko SU, Svenson LW, Toth EL. Increasing rates of diabetes amongst status Aboriginal youth in Alberta, Canada. Int J Circumpolar Health 2012;71:1-7.
17. Hummelen R, Kattini R, Poirier J, Kelly L, Madden S, Ockenden H, Dooley J. Demographics, prevalence and outcomes of diabetes in pregnancy in NW Ontario and small Ontario obstetrical programs. CJRM 2020;3:99-104.
18. Sioux Lookout First Nations Health Authority. Our Children and Youth Health Report. Sioux Lookout, Ontario; 2018. Available from: https://slfnha.com/application/files/62154022/0883/CHSR_FINAL_-_Web_Version.pdf. [Last accessed on 2019 Jun 10].
19. Mohamed N, Dooley J. Gestational diabetes and subsequent development of NIDDM in aboriginal women of northwestern Ontario. Int J Circumpolar Health 1998;57 Suppl 1:355-8.
20. Hemond J, Robbins RB, Young PC. The Effects of Maternal Obesity on Neonates, Infants, Children, Adolescents, and Adults. Clin Obstet Gynecol 2016;59:216-27.
21. Harris S, Naqshbandi M, Bhattacharyya O, Hanley A, Esler J, Zinman B On behalf of the CIRCLE Study Group Major gaps in diabetes clinical care among Canada's First Nations: Results of the CIRCLE study. Diabetes Res Clin Practice 2011;92:272-9.
22. Dyck R, Osgood N, Lin TH, Gao A, Stang MR. Epidemiology of diabetes mellitus among First Nations and non-First Nations adults. CMAJ 2010;182:249-56.
23. Oster RT, Johnson JA, Hemmelgarn BR, King M, Balko SU, Svenson LW, *et al*. Recent epidemiologic trends of diabetes mellitus among status Aboriginal adults. CMAJ 2011;183:E803-8.
24. Young TK, Reading J, Elias B, O'Neil JD. Type 2 diabetes mellitus in Canada's First Nations: Status of an epidemic in progress. CMAJ 2000;163:561-6.
25. Statistics Canada. Health Fact Sheet. Diabetes; 2017. Available from: https://www150.statcan.gc.ca/n1/pub/82-625-x/2018001/article/54982-eng.htm. [Last accessed on 2019 Nov 19].
26. Harris S, Naqshbandi MM, Bhattacharyya O. Major gaps in diabetes clinical care among Canada's First Nations: Results of the CIRCLE study Diabetes Res Clin Pract 2011;92:272-9.
27. Harris SB, Kapor J, Lank CN, Willan AR, Houston T. Clinical inertia in patients with T2DM requiring insulin in family practice. Can Fam Physician 2010;56:e418-24.
28. Leiter L, Berard L, Bowering K, Cheng Y, Dawson K, Ekoe J, *et al*. Type 2 diabetes mellitus in Canada: Is it improving? Canadian J Diabetes 2013;37:82-9.
29. Greiver M, Williamson T, Barber D, Birtwhistle R, Aliarzadeh B, Khan S, *et al*. Prevalence and epidemiology of diabetes in Canadian primary care practices: A report from the Canadian Primary Care Sentinel Surveillance Network. Can J Diabetes 2014;38:179-85.
30. Spann SJ, Nutting PA, Galliher JM, Peterson KA, Pavlik VN, Dickinson LM, *et al*. Management of type 2 diabetes in the primary care setting: A practice-based research network study. Ann Fam Med 2006;4:23-31.
31. Padwal R, Bienek A, McAlister F, Campbell N. Research task force of the Canadian hypertension education program. Epidemiology of hypertension in Canada: An update. Canadian J Cardiol 2016;32:687-94.
32. Crowshoe L, Dannenbaum D, Green M, Henderson R, Naqshbandi Hayward M, *et al*. Diabetes Canada clinical practice guidelines expert committee. Diabetes Canada 2018 clinical practice guidelines for the prevention and management of diabetes in Canada" Type 2 diabetes and indigenous peoples. Can J Diabetes 2018;42 Suppl 1:S1-325.
33. Allan B, Smylie J. First Peoples, Second Class Treatment: The role of Racism in the Health and Wellbeing of Indigenous Peoples in Canada. Toronto: Wellesley Institute; 2015.
34. An overview of Aboriginal Health. National Collaborating Centre for Indigenous Health 2013. Prince George B.C. Available from: https://www.ccnsa-nccah.ca/docs/context/FS-OverviewAbororiginalHealth-EN.pdf. [Last accessed on 2019 Aug 08].
35. Jacklin KM, Henderson RI, Green ME, Walker LM, Calam B, Crowshoe LJ. Health care experiences of Indigenous people living with type 2 diabetes in Canada. CMAJ 2017;189:E106-12.
36. Halseth R. The Prevalence of Type 2 Diabetes among First Nations and Considerations for Prevention. Prince George, BC: National Collaborating Centre for Aboriginal Health; 2019.
37. Smylie J, Phillips-Beck W. Truth, respect and recognition: Addressing barriers to Indigenous maternity care. CMAJ 2019;191:E207-E208.
38. Sterns JD, Smith CB, Steele JR, Stevenson KL, Gallicano GI. Epigenetics and type II diabetes mellitus: Underlying mechanisms of prenatal predisposition. Front Cell Dev Biol 2014;2:15.

ORIGINAL ARTICLE

Defining rural teaching hospitals in Canada: Developing and testing a new definition

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Abstract

Introduction: The current definition of 'teaching hospital' provided by Canadian Institute of Health Information (CIHI) focuses on large academic teaching hospitals. High-quality rural training experiences have been identified as a key component of training the future rural medical workforce. Identifying communities and hospitals where this training is currently available and taking place is important in understanding the current landscape of available rural training but is hampered by the lack of an agreed upon definition of 'rural teaching hospital'. This limits the understanding of current rural training landscapes, comparison across regions and research in this area. We propose a definition of a 'rural teaching hospital'.

Methods: Using the CIHI definition of rural as an initial reference point, we used accessible data from the University of Calgary and University of Alberta Distributed Medical Education (DME) programs to develop a definition of a 'rural teaching hospital'. We then identified rural Alberta hospitals to show how this definition would work in practice.

Results: Our definition of a rural teaching hospital is a hospital situated in a town of <30,000 people, teaching occurs at least 36 h a week and that teaching includes at least Family Medicine clerkship OR Family Medicine residency rotations. We identified 104 Alberta rural hospitals. The University of Calgary and University of Alberta DME programs included 70 communities and 44 of these communities met all three proposed criteria for rural teaching hospitals.

Conclusion: Creating a working definition of a 'rural teaching hospital' is of high importance for both research and for day-to-day operations of rural educational units.

Keywords: Definitions, Distributed Medical Education, medical education, rural hospitals

Résumé

Introduction: La définition du terme « hôpital d'enseignement » selon l'Institut canadien d'information sur la santé (ICIS) désigne surtout les grands hôpitaux universitaires. L'expérience de formation de bonne qualité en milieu rural est un élément essentiel de la formation du futur personnel médical en milieu rural. Il importe de déterminer quels sont les communautés et les hôpitaux où cette formation a lieu

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pour comprendre le contexte actuel de la formation rurale offerte, mais l'on se bute à une définition du terme « hôpital d'enseignement rural » qui ne fait pas consensus. Cela limite la compréhension des contextes actuels de formation en milieu rural, la comparaison entre régions et la recherche sur cette question. Nous proposons donc une définition du terme « hôpital d'enseignement rural ».

Méthodologie: Avec la définition de l'ICIS de l'adjectif rural comme point de départ, nous avons utilisé les données accessibles des programmes d'éducation médicale satellite de l'Université de Calgary et de l'Université de l'Alberta pour formuler une définition du terme « hôpital d'enseignement rural ». Nous avons ensuite identifié les hôpitaux de l'Alberta pour illustrer comment la définition s'insère dans la pratique.

Résultats: Selon nous, un hôpital d'enseignement rural désigne un hôpital situé dans une ville de < 30 000 personnes, l'enseignement y a lieu pendant au moins 36 h par semaine et il inclut au moins un stage en médecine familiale OU des rotations de résidence en médecine familiale. Au total, 104 hôpitaux ruraux de l'Alberta répondaient à cette définition. Les programmes d'éducation médicale satellite de l'Université de Calgary et de l'Université de l'Alberta comptaient 70 communautés et 44 d'entre elles remplissaient les trois critères proposés pour être reconnues avoir un hôpital d'enseignement rural.

Conclusion: Il est très important de formuler une définition de travail du terme « hôpital d'enseignement rural » tant pour la recherche que pour les activités quotidiennes des unités d'éducation en milieu rural.

Mots-clés: Définitions, éducation médicale satellite, éducation médicale, hôpitaux ruraux

INTRODUCTION

High-quality rural training experiences have been identified as a key component for training the future rural medical workforce.[1,2] However, at present, there is no agreed upon definition of a 'rural teaching hospital'. This limits our understanding of the current landscape of rural training and has potential impact in terms of resource allocation, the identification of potential rural sites for capacity building and comparisons across regions. The absence of a working definition of a 'rural teaching hospital' also affects the ability to distinguish these hospitals in data sets and restricts scholarly work seeking to understand the particular characteristics, challenges and successes of medical education in the rural settings.

The Canadian Institute of Health Information (CIHI) defines a teaching hospital in Canada through a data element called the Teaching Status code: 'This data element applies to logical facilities that provide medical education programs approved by the appropriate authorities. These programs must be intended for major clinical instruction in at least the medical disciplines of internal medicine and general surgery to undergraduate medical students in their final 2 years.'[3] However, this definition excludes family-physician-centered rural hospitals with significant teaching roles that support the education of the future rural medical workforce.

In this paper we propose a definition for 'rural teaching hospital' similar in structure to the CIHI definition.[3]

METHODS

We used the existing CIHI definition[3] as an initial reference point in developing our definition. As our overall goal was to produce a definition that could be easily used at any institution, we focused on using data that would be available without specific research and without ethics approval and be similar across jurisdicitons. We applied the definition to Distributed Medical Education (DME) sites associated with the University of Calgary and the University of Alberta. We also describe the key characteristics of hospitals identified or excluded from our working definition, to demonstrate its utility as a classification system.

We focused on type of teaching and amount of teaching, both elements of the CIHI definition, and added location. The amount of teaching and type of teaching chosen were specific to this definition.

Data sources

The data used in this study include population data[4,5] and data about DME sites from Key Performance Indicators (KPIs), reports to government by the office of Distributed Learning and Rural Initiatives at the University of Calgary[6]

and the Office of Rural and Regional Health at the University of Alberta.[7] We focused on the data about teaching load and specialty at rural sites. We chose these data elements because they are particularly relevant to the proposed definition and they are likely to be available in a similar form at all medical schools. More specifically, for each community identified, we used administrative and statistical data[4-7] to determine if the criteria in the proposed definition were met. Type of community was assessed using population demographic data.[4,5] Amount and type of teaching was assessed using KPI data.[6,7]

Choosing the term 'rural teaching hospital

The goal of creating a definition of a rural teaching hospital is to allow easy and consistent identification of rural hospitals significantly involved in teaching. We also recognize that teaching in distributed medical settings is not exclusive to the hospital and also takes place in the community in a variety of settings (e.g., clinics, home visits and long-term care). However, we have chosen to use the term 'rural teaching hospital' rather than the term 'rural teaching community'. Our rationale was the potential for confusion between the terms 'community teaching'[8] as a description of teaching done in the community and 'teaching community'[9] in medical education as a description for a group of physician educators.

RESULTS

The definition we developed has three domains: (i) community size, (ii) amount of teaching and (iii) type of teaching [Table 1].

For community size, the Statistics Canada definition of a rural area (population <1000) or a small population centre (population 1000–29,999) indicates locations on the rural-urban continuum where a rural teaching hospital might be located.[10] We chose not to use the CIHI Definition of Community Small Hospitals[11] which is based on case load as this could include small urban and suburban hospitals, while busy rural hospitals may not fit this classification.

Amount of teaching is reflected in the wording of the CIHI teaching hospital's definition as 'logical facilities'.[3] We felt it was important to recognize the importance of the consistent presence of learners in an active teaching hospital. We chose 36 weeks of total teaching per year as a minimum threshold for this domain. The rationale for choosing 36 weeks for smaller hospitals stemmed from consideration that some hospitals may not choose to take learners during periods of increased locum coverage, such as summer months or winter holiday period. Thirty-six weeks, or 9 teaching blocks of 4 weeks, would represent consistent teaching across time, except during blocks with increased locum coverage. Although the CIHI definition specifies learners at the undergraduate medical education (UME), we felt that distinction between UME and post graduate medical education (PGME) medical learners is artificial and that the 36 weeks of teaching could encompass both UME and PGME learners.

For the third component in our definition, type of teaching, we considered that a rural teaching hospital would at least be training the rural family physicians of the future. Therefore, we included teaching in Family Medicine clerkship or Family Medicine residency in the definition to reflect this.

Applying the definition of a rural teaching hospital

We identified a total of 104 Alberta Hospitals and Health Centres located outside of Calgary

Table 1: Proposed definition of a rural teaching hospital

Proposed element	Element detail
Type of community	Hospital located in a community, meeting the Statistics Canada definition of rural or small population area (population <30,000)
Amount of teaching	Teaching occurs at least 36 weeks/year
Type of teaching	Teaching includes at least Family Medicine clerkship (UME) or Family Medicine residency (PGME) rotations

UME: Undergraduate medical education, PGME: Post graduate medical education

Table 2: Characteristics of rural teaching hospitals in Alberta (*n*=44)

	Average	Low	High
Population	7837	1206	25085
UME teaching weeks	57.8	0	155.6
PGME teaching weeks	57.3	0	229.2
Total teaching weeks	115.1	38	270

UME: Undergraduate medical education, PGME: Post graduate medical education

and Edmonton.[12] The University of Calgary and University of Alberta Distributed Medical Education Programs include 67 communities in Alberta, 2 in the Northwest Territories and 1 in the Yukon. Sixty-two of these communities have a hospital or health centre. For each community we used administrative and statistical data[4-7] to determine if the criteria in the proposed definition were met.

Type of community: 64 of 70 communities had populations <30,000. The 6 communities that did not meet the criterion included 4 heavily used tertiary care regional hospitals.

Amount of teaching: 48 of 70 communities had at least 36 weeks of teaching per year. The 23 excluded communities had an average of 13.4 weeks of teaching: per year with a range of 0.4–32 weeks.

Type of teaching: 61 of 70 communities included Family Medicine clerkship or Family Medicine residency rotations. The 10 excluded communities were all sites teaching occasional elective UME and PGME learners.

Overall, 44 of 70 communities met all three proposed criteria for rural teaching hospitals. Key characteristics of the identified rural teaching hospitals are summarized in Table 2. Community size varied between 1206 and 25,085. The average number of teaching weeks was 113.9. Half of identified rural teaching hospitals (22/44) were sites involved in Longitudinal Integrated Clerkships, a longitudinal Family Medicine-based clerkship experience.

DISCUSSION

The proposed definition of a rural teaching hospital focuses on data that is likely to be available for a given hospital through DME units at each medical school and publicly accessible demographic data. It is important that such a definition be simple to implement and not only assessable in the context of research.

Applying the proposed definition to data from the University of Calgary and the University of Alberta successfully identified rural hospitals with substantial teaching commitments and excluded sites with less frequent teaching and sites not teaching Family Medicine clerkship or residents. This is useful in terms of recognizing active teaching sites and also in identifying areas where capacity could be developed. The proposed definition also successfully differentiated urban DME sites, which might be more appropriately classified as teaching hospitals by the CIHI definition, from sites located in more rural settings.

Teaching sites that act as role models for generalist practices are influential in producing future generalist physicians. Although a community's expression of generalism was not measured directly, the sites identified by this definition do reflect sites with a focus on generalist practice. This definition may be a marker for this key trait.

Limitations

One limitation of the definition concerns rural hospitals that accept learners from multiple institutions. In our data set 29 of the 70 identified sites had learners from both Alberta medical schools. If this definition were adopted and reported, some coordination between the medical schools and reporting agencies would be required to provide accurate data and prevent any undue burden of work falling to rural hospitals themselves. A second potential limitation of the definition would be the potential for identification of suburban sites as rural. This did not occur in the Alberta data set, but would need to be tested in other regions.

The importance of accessible data meant that some factors important for rural training,[13] such as a teaching philosophy grounded in generalism, and the generalist practice patterns of individual teachers could not be considered for inclusion in the definition because such data does not exist, or exists as research data only for some hospitals.

CONCLUSION

Creating a working definition for rural teaching hospitals is of high importance for both research and for day-to-day operations of rural educational units. Having a consistent and measurable definition can allow deeper understanding of teaching sites, focus development efforts, identify the important contribution of rural hospitals to medical education and allow research and scholarly work to be conducted across jurisdictions.

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REFERENCES

1. Advancing Rural Family Medicine: The Canadian Collaborative Taskforce. The Rural Roadmap for Action: Directions. Mississauga, ON: Advancing Rural Family Medicine, The Canadian Collaborative Taskforce; 2017.
2. Increasing Access to Health Workers in Remote and Rural Areas Through Improved Retention: Global Policy Recommendations. Geneva: World Health Organization; 2010. Available from: https://www.ncbi.nlm.nih.gov/books/NBK138618/. [last accessed on 2019 Oct 06].
3. Canadian MIS Database Data Submission Specification Requirements 2018-2019. Canadian Institute for Health Information. p. 31.
4. Municipal Affairs Population List. Strategic Policy and Planning Branch, Alberta Municipal Affairs; 2018. Available from: http://www.municipalaffairs.gov.ab.ca/documents/2018_MAPL_web.pdf. [Last accessed on 2020 Jan 04].
5. Canada Census Data, Statistics Canada; 2016. Available from: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/. [Last accessed on 2020 Jan 04].
6. Distributed Learning and Rural Initiatives -CSM- Key Performance Indicators 2018-19 Academic Year. University of Calgary; 2020.
7. University of Alberta; Rural and Regional Health Key Performance Indicators 2018-19 Academic Year. University of Alberta; 2020.
8. Hays R. Community-oriented medical education. Teach Teach Educ Int J Res Stud 2007;23: 286-93.
9. Steinert Y. Faculty development: From workshops to communities of practice. Med Teach 2010;32:5, 425-8.
10. Statistics Canada Community Size Definitions. Available from: https://www.statcan.gc.ca/eng/subjects/standard/pcrac/2016/introduction. [Last accessed on 2019 Oct 06].
11. Indicator Library: Peer Group Methodology. Canadian Institute of Health Information; November, 2019.
12. Hospital Services in Alberta – General Hospital (Active Treatment/Acute Care). Alberta Health, Health Facilities Planning Branch; July, 2018. Available from: https://open.alberta.ca/dataset/17cd1980-a2d0-4a10-8517-dd3f2b6dc777/resource/95e871b2-69b9-4858-8f44-a67711df2c31/download/hospital-services-alberta-2018-07.pdf. [Last accessed on 2020 Jan 13].
13. The Rural Way; Implementation of a National Rural Generalist Pathway. Australian College of Rural and Remote Medicine; 2014.

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PROCEDURAL SERIES

The occasional low-flow priapism

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INTRODUCTION

Priapism refers to a state of penile erection that is painful, occurs without sexual stimulation and persists for at least 4 h.[1] Possible aetiologies include trauma, the use of various drugs (e.g., erectile dysfunction pharmacotherapy, antihypertensives, antidepressants, anticoagulants, recreational drugs and hormone supplements), corporal injections, neurologic conditions (e.g., cerebrovascular accidents and brain/spinal injuries), malignancies (primary or metastatic), haematologic abnormalities (e.g., sickle cell disease and thalassaemia) and metabolic disorders (e.g., amyloidosis and diabetes), or it could be idiopathic.[2,3]

Priapism is typically diagnosed clinically,[3] and it can be classified based on its aetiology and presentation. There are three different subtypes of priapism, as follows:[4]

1. Low-flow (or ischaemic) occurs when there is little or no intracavernous blood flow. It is typically painful, and irreversible damage can occur after 4–6 h, making it a medical emergency.
2. Stuttering (or intermittent) involves recurrent, alternating periods of ischaemia and detumescence (typically self-limited and lasts about 3 h). There is a risk of permanent injury, implying the importance of early intervention.
3. High-flow (or non-ischaemic) occurs when there is unregulated blood flow into the corpus cavernosa. The cavernosa may not be fully rigid, and the condition may be non-painful and non-emergent.

Priapism is relatively uncommon; however, because it can be a medical emergency, it requires prompt evaluation and possible procedural intervention.[5] In fact, the incidence of priapism-related erectile dysfunction and impotence is associated with the duration of symptoms.[6] As such, physicians in rural emergency departments should be familiar with an approach to its management.

This procedural series article will focus on one approach to treating low-flow priapism. Additional methodologies, as well as the management of high-flow and stuttering priapism, are discussed elsewhere in the literature.

CASE HISTORY

A 24-year-old Caucasian male from rural Newfoundland presented with an erection that had been present since awakening that morning and was sustained over 8 h. The patient

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reported a similar episode of priapism 2 weeks prior that resolved spontaneously. He was in good general health. Medications included buprenorphine/ naloxone, salbutamol, fluticasone, sertraline and zopiclone. He denied any known drug allergies. He also denied any alcohol or recreational drug use. Physical examination revealed a healthy-looking male with stable vital signs. The patient had a rigid erection that was tender to palpation. There was no erythema or effusion over the penis or scrotum. There were no signs of trauma or discharge from the meatus.

EQUIPMENT LIST

All the equipment detailed in Table 1 should be procured prior to initiating procedural intervention for low-flow priapism in an emergency department:

The types of antiseptic, anaesthetic and sympathomimetic may vary based on location and availability. Furthermore, the gauges of the needles used may vary slightly based on the preferences of the treating physician and nursing staff.

THE PROCEDURE

As with any procedure, there may be times when patient-specific considerations (e.g., anticoagulant use, localised cellulitis and allergies) may necessitate delayed intervention or alternate means of treatment, and these factors should be screened for, prior to performing any procedural or medical interventions. The following describes a technique for treating low-flow priapism and is based on methodologies described by several sources:[1,4,6]

1. With the patient in a supine position, prep the skin on the penile shaft, scrotum, lower abdomen and upper legs, using an antiseptic solution.
2. Place a sterile drape around the base of the penile shaft, exposing the penis, and a small portion of the lower abdomen [Figure 1].
3. Perform a dorsal penile nerve block using a small-bore needle. To do so, insert the needle at the dorsal base of the penile shaft at the 10 and 2 o'clock positions angled slightly towards the midline. First, aspirate to ensure that the needle is not intravascular and then inject roughly 2 mL of lidocaine 1% (without epinephrine) [Figure 2].

Table 1: Equipment list for treating low-flow priapism

Item #	Procedure Equipment
1	Sterile gloves
2	Sterile drape
3	Sterile dressings and tape
4	Sterile basin
5	Antiseptic skin prep (e.g., chlorhexidine, povidone-iodine)
6	Syringes, 5 and 10 mL
7	Straight needles, 1.5″ 18G (for drawing up medications)
8	Straight needles, 1.5″ 19- or 21-G
9	*Optional*: Butterfly infusion needles, 19- or 21-G
10	Local anaesthetic (e.g., lidocaine 1% without epinephrine)
11	*Possible requirement*: Phenylephrine* diluted with normal saline to a concentration of 200-500 µg/mL (i.e., combine 0.4–1 mg of phenylephrine in 2 mL of normal saline)

*Other sympathomimetics can be used, but phenylephrine is recommended because it is a selective alpha-1 adrenergic receptor agonist and is therefore less likely to have systemic effects. The sympathomimetic and normal saline should be readily available; however, it may be prudent to delay drawing up this medication, as it may not be required

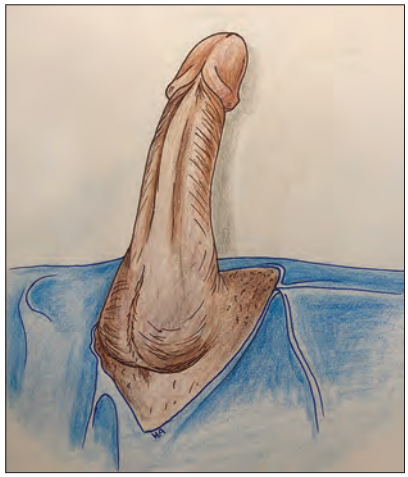

Figure 1: Penile erection surrounded by sterile drape.

4. Option 1*: Insert a butterfly infusion needle (19- or 21-G) somewhere between the base and the mid-shaft of the right cavernosal body around the 10 o'clock position [Figure 3]. Keep the needle *in situ* for several minutes and drain a quantity of blood into a small, sterile basin. Initially, dark venous blood may emerge from the corpora, but drainage should continue until red, well-oxygenated blood appears and a sufficient amount has been removed as to cause the penis to become less engorged and the pain to be reduced
   - Option 2*: Insert a 10-mL syringe with a 1.5″ straight needle (19- or 21G) between

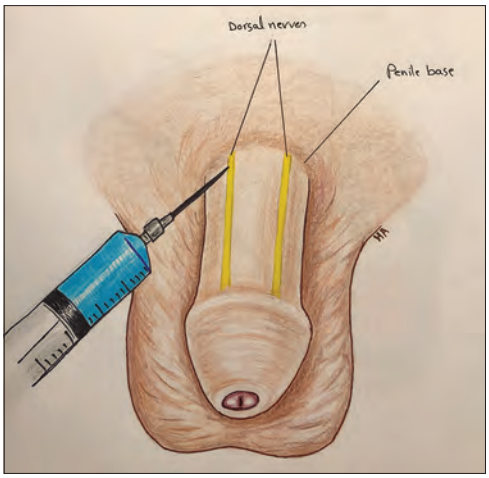

Figure 2: Approach to a dorsal penile nerve block.

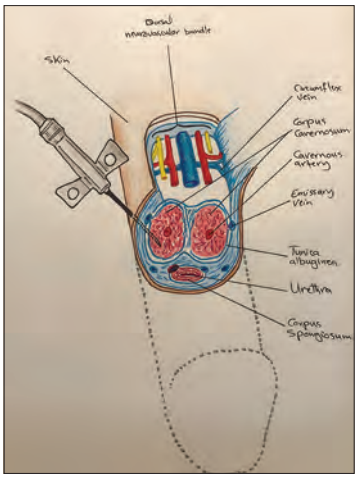

Figure 3: Approach to draining the right corpus cavernosum using a butterfly infusion needle.

the base and the mid-shaft of the right cavernosal body around the 10 o'clock position. It may be necessary to detach and empty the syringe into a sterile basin several times until enough fresh, red blood has been aspirated as to cause the penis to become less engorged and the pain to be reduced.

*Note: Ventral approaches should be avoided due to the risk of injury to the urethra and corpus spongiosum.

5. There is anatomical communication between the two cavernosal bodies, meaning drainage/aspiration of only one side of the penis may be required. However, if the erection persists, options 1 or 2 of step 4 should be repeated by placing a second butterfly infusion needle or straight needle/syringe into the left cavernosal body at the 2 o'clock position for drainage or aspiration. Remove the needle once enough blood has been drained or aspirated as to cause the penis to become flaccid.
6. If the erection does not resolve or quickly recurs, additional drainage or aspiration is not recommended. Instead, an injection of phenylephrine* 0.4–1 mg diluted in 2 mL of normal saline (giving a concentration of 200–500 µg/mL) should be administered into the corpus cavernosa, with half the dose going into the left cavernosal body and the other half into the right. This can be repeated every 5–10 min up to a maximum total dose of 1 mg until the erection resolves.

*Note: Side effects of sympathomimetics (e.g., phenylephrine) include hypertension, headache, reflex bradycardia, tachycardia, palpitations and arrhythmias. Patients should be monitored for these symptoms. Malignant or poorly controlled hypertension is a relative contraindication to treatment with this class of medication.

POSSIBLE TREATMENT OUTCOMES

After completing the procedures described above, two primary outcomes are possible:

Outcome 1 – Resolution: If priapism resolves in the emergency department, arrange for follow-up in an outpatient urology clinic the following day (or as soon as possible).

Outcome 2 – Persistence: If priapism persists for over 1 h despite the first- and second-line procedural interventions described above, surgical intervention may be indicated. Emergent urological consult should be sought and transport to a tertiary care centre may be required.

PATIENT PROCEDURE IN THE EMERGENCY DEPARTMENT AND OUTCOME

The patient was prepped and anaesthetised as described above, and drainage of the cavernosal bodies was done using a butterfly infusion needle. Following the drainage, the patient's penis became flaccid for only a short time (seconds) before becoming engorged again. At this time, 0.5 mL of phenylephrine in 2 mL of normal saline was prepared and injected into the cavernosal bodies bilaterally (i.e., approximately 1.25 mL into both the left and right corpus cavernosa). Within minutes of the phenylephrine injection,

the patient's priapism resolved. Arrangements were made for follow-up in a urology clinic, and the patient was discharged home.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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REFERENCES

1. Shigehara K, Mamiki M. Clinical management of priapism: A review. World J Men's Health 2016;34:1-8.
2. Huang Y, Harraz A, Shindel A, Lue, T. Evaluation and management of priapism: 2009 update. Nat Rev Urol 2009;6:262-71.
3. Cherian J, Rao AR, Thwaini A, Kapasi F, Shergill IS, Samman R. Medical and surgical management of priapism. Postgrad Med J 2006;82:89-94.
4. Song PH, Moon KH. Priapism: Current updates in clinical management. Korean J Urol 2013;54:816-23.
5. American Urological Association Guideline Update Panel. Management of Priapism. American Urological Association Education and Research; 2010. Available from: https://www.auanet.org/guidelines/priapism-guideline. [Last accessed on 2019 Nov 07].
6. Glauser J, Lally J. Priapism: Evaluation and emergency management. Emerg Med Rep 2015;36:173-82.

Case Report

Bacterial endocarditis diagnosed with point-of-care ultrasound in a rural emergency department

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INTRODUCTION

Bacterial endocarditis (BE) is defined as the infection of a native or prosthetic heart valve, the surface of the endocardium or an intracardiac device.[1] It is rare but notoriously difficult to diagnose promptly with devastating morbidity and mortality for delayed definitive management. It may be even more difficult in rural resource-limited settings, without the investigative capabilities of a tertiary care centre. BE is a condition infrequently seen in rural emergency departments. There are few epidemiologic studies on its rural incidence. One study in rural New York found 4.4 cases/100,000 person years for people 18 years or older.[2] The worldwide incidence estimates range from 3 to 10/100,000 people yearly.[3] However, despite its rarity, BE can be life-threatening. In-hospital mortality reaches 20% and 6-month mortality reaches 30%,[1] which is worse than many malignancies. Delayed or missed diagnosis is extremely common, which contributes to the high morbidity and mortality, as definitive management is delayed.[1] The clinical presentation is quite varied and non-specific,[1] and, as Osler observed, 'Few diseases present greater difficulties in the way of diagnosis than malignant endocarditis, difficulties which in many cases are practically insurmountable.'[4] A study in Japan noted that it took a median of 14 days for definitive diagnosis of BE, which resulted in 65% of patients receiving inappropriate antibiotics. Unsurprisingly, 80% of those who died in the study were recipients of inappropriate antibiotics.[5]

However, with increasing emergency department use of point-of-care ultrasound (POCUS), physicians now have an additional tool that can help them more promptly diagnose BE.[6]

CASE REPORT

A 34-year-old female presented to our rural emergency department with a 3-week history of progressive pedal oedema and worsening 'rash' to her lower legs bilaterally. She denied any other symptoms such as chest pain, shortness of breath, B symptoms and increased bleeding, or bruising. She did admit to intravenous drug use with various opiates. Her past medical history was otherwise unremarkable.

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Her initial vital signs were as follows: blood pressure 95/65, heart rate 132 bpm (sinus), temperature 36.7°C (peripheral) and 38.6°C (rectal), respiratory rate 20/min and SpO_2 96% on room air.

Physical examination revealed an unkempt female with poor hygiene. Her 'rash' was bilateral petechiae extending from her forefoot to her knees, in addition to pedal oedema. There were no signs of petechiae or ecchymosis elsewhere. Her cardiovascular examination revealed a normal S1/S2, no S3/S4 and no obvious murmur. She had good air entry to both bases with no associated wheezes, rhonchi or crackles. She did not have any splinter haemorrhages or Janeway lesions. Her examination was otherwise unremarkable.

Her initial investigations revealed a white blood cell count of 25 × 10^9/L, haemoglobin of 79 g/L and platelets of 45 × 10^9/L. Her sodium was 116 mmol/L, potassium was 4 mmol/L, chloride was 74 mmol/L, creatinine was 331 µmol/L, urea was 26.5 mmol/L, troponin was 14 ng/L and erythrocyte sedimentation rate was 47. Her initial venous blood gas was pH 7.40/$PaCO_2$ 34 mmHg/HCO_3 22 mmHg/base excess –3 mmol/L with a lactate of 3.5 mmol/L. Her chest X-ray revealed multiple septic emboli.

POCUS was performed revealing a vegetative lesion on her tricuspid valve [Figure 1], confirming the diagnosis of BE. She was started on intravenous piperacillin-tazobactam 4.5 g and vancomycin 2 g, as per our septic protocol, and transferred to the nearest intensive care unit. The next day, her Gram stain revealed Gram-positive cocci in clusters, likely representing *Staphylococcus aureus*.

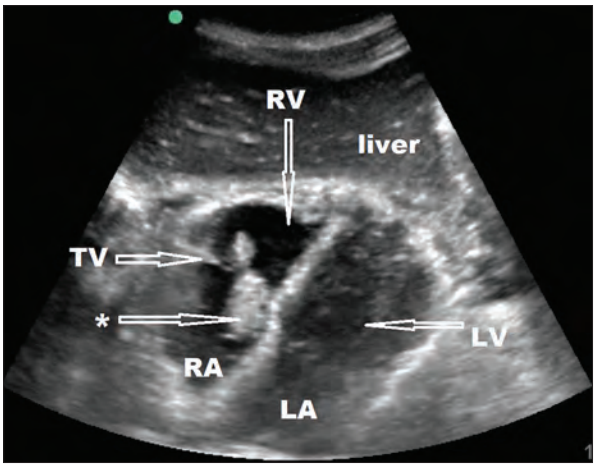

Figure 1: Ultrasound – subxiphoid view of the heart (*-vegetative lesion extending over both sides of the tricuspid valve, TV: Tricuspid valve, RV: Right ventricle, RA: Right atrium, LV: Left ventricle, LA: Left atrium).

DISCUSSION

Despite the rarity of BE, it is a clinical entity with high morbidity and mortality, for which prompt diagnosis and definitive treatment can make a major difference in outcome.[5] Factors that place the rural population at higher risk include an older age demographic with higher rates of diabetes.[7] Other risk factors include intracardiac devices,[8] prosthetic valves,[9] haemodialysis,[10] cancer,[1] congenital heart disease[1] and intravenous drug use.[1,2] Most cases have delayed diagnosis and delayed definitive treatment, due to challenges in diagnosis.[5] Clinical manifestations are notoriously non-specific. Pathognomonic signs, such as Janeway lesions and Osler nodes, are rare.[1] Even a murmur is only present in 85% and a fever in 90% of patients presenting with BE.[1] Furthermore, 10% have blood cultures that show no growth.[1]

Rural emergency departments are often resource limited, with some lacking even basic laboratory investigation capabilities.[11] However, portable ultrasound machines are becoming ubiquitous, even in these settings.[12] For native-valve endocarditis, bedside echocardiography is moderately sensitive (75%) and specific (over 90%) for detecting vegetation.[6] POCUS can also provide information on the mechanism and haemodynamic severity of the valve lesion, along with assessment of left and right ventricular function.[1] In the case where POCUS does not show a vegetation, but clinical suspicion is high, the next step should be a transoesophageal echocardiogram (TEE),[1] which will generally require transport to a larger centre. Transport may be complicated by weather and the availability of a medical evacuation team, so the authors recommend transporting such a patient to a higher level of care as soon as possible, before the patient deteriorates or the transportation window closes. This should occur regardless of whether a TEE is locally available, and regardless of whether the TEE is positive or negative, as the patient will need to be in a location where cardiac surgery is available for definitive treatment.[13] Broad-spectrum intravenous antibiotics (coverage

Table 1: Modified Duke Criteria[15]			
Definitive BE		Probable BE	No BE
Pathological criteria	Clinical criteria	Clinical criteria	
Microorganism identified by culture or histology	Two major criteria, OR	One major and one minor, OR	Firm alternate diagnosis
Pathologic lesions: Vegetation or abscess presence confirmed by histology	One major and three minor, OR	Three minor	Resolution of symptoms and signs with antibiotic therapy for 4 days or less
	Five minor		No pathologic evidence of BE at surgery or autopsy, with antibiotic therapy for 4 days or less

BE: Bacterial endocarditis

Box 1: Major and minor criteria for Table 1
Major criteria
Blood culture positive for BE
Typical microorganisms consistent with BE from two separate blood cultures
Streptococcus viridans, *Streptococcus bovis*, HACEK group, *Staphylococcus aureus*, Enterococci
Microorganism consistent with BE from persistently positive blood cultures
At least two positive blood cultures drawn >12 h apart, OR
All three or a majority of four or more separate blood cultures positive, with first and last drawn at least 1 h apart
Single positive blood culture for *Coxiella burnetii* or antiphase I IgG antibody titre >1:800
Evidence of endocardial involvement
Echocardiogram positive for BE
New valvular regurgitation
Minor criteria
Predisposition, predisposing heart condition or injection drug use
Fever, temperature >38°C
Vascular phenomena, major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial haemorrhage, conjunctival haemorrhages and Janeway lesions
Immunologic phenomena: Glomerulonephritis, Osler nodes, Roth spots, rheumatoid factor
Microbiological evidence: Positive blood culture but does not meet a major criterion

BE: Bacterial endocarditis

required for methicillin-susceptible *S. aureus*, methicillin-resistant *S. aureus*, Streptococci, HACEK species, *Bartonella* and non-HACEK Gram-negative pathogens) should be started immediately while awaiting transport. Blood cultures should be drawn and sent together with the patient. If clinical suspicion is lower, the authors suggest coverage with the same broad-spectrum intravenous antibiotics while awaiting results from three blood cultures drawn.[14] At the same time, they suggest continuing search for an alternate diagnosis and monitoring for additional signs from the Modified Duke Criteria [Table 1], [Box 1] to emerge.[14,15] If an alternate diagnosis is found, or symptoms resolve within 4 days of antibiotic therapy, one can rule out BE.[15] If BE is confirmed, the patient will need to be transported to a cardiac centre for potential surgery.[13]

CONCLUSION

This case highlights a diagnosis made promptly in a rural emergency department using POCUS as an adjunct to history, physical examination and other investigations, which may have limited availability in rural and remote settings. Nevertheless, there remain barriers to using POCUS rurally, including insufficient training, funding, quality assurance and an inability to maintain skills as cited by rural physicians.[16] Corrective measures must be taken so that the benefits of POCUS are extended to patients in rural Canada where, arguably, it has the greatest potential for benefit when access to advanced imaging is not readily available.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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REFERENCES

1. Cahill TJ, Prendergast BD. "Infective endocarditis." Lancet 2016;387:882-93.
2. Fatima S, Dao B, Jameel A, Sharma K, Strogatz D, Scribani M, *et al*. Epidemiology of infective endocarditis in rural upstate New York, 2011-2016. J Clin Med Res 2017;9:754-8.
3. Slipczuk L, Codolosa JN, Davila CD, Romero-Corral A, Yun J, Pressman GS, *et al*. Infective endocarditis epidemiology over five decades: A systematic review. PLoS One 2013;8:e82665.
4. Osler W. "The Gulstonian lectures, on malignant endocarditis." BMJ 1885;1:577-9.
5. Fukuchi T, Iwata K, Ohji G. "Failure of early diagnosis of infective endocarditis in Japan–a retrospective descriptive analysis." Medicine (Baltimore) 2014;93:e237.
6. Habib G, Badano L, Tribouilloy C, Vilacosta I, Zamorano JL. Recommendations for the practice of echocardiography in infective endocarditis. Eur J Echocardiogr 2010;11:202-19.
7. Canadian Institute for Health Information. Disparities in Primary Health Care Experiences Among Canadians with Ambulatory Care Sensitive Conditions. Ottawa, ON: Canadian Institute for Health Information; 2012.
8. Cabell CH, Heidenreich PA, Chu VH, Moore CM, Stryjewski ME, *et al*. "Increasing rates of cardiac device infections among medicare beneficiaries: 1990-1999," Am Heart J 2004;147:582-6.
9. Darouiche RO. Treatment of infections associated with surgical implants. N Engl J Med 2004;350:1422-9.
10. McCarthy JT, Steckelberg JM. Infective endocarditis in patients receiving long-term hemodialysis. Mayo Clin Proc 2000;75:1008-14.
11. Blattner K, Beazley CJ, Nixon G, Herd G, Wigglesworth J, Rogers-Koroheke MG. The impact of the introduction of a point-of-care haematology analyser in a New Zealand rural hospital with no onsite laboratory. Rural Remote Health 2019;19:4934.
12. Léger P, Fleet R, Maltais-Giguère J, Plant J, Piette É, Légaré F, *et al*. A majority of rural emergency departments in the province of Quebec use point-of-care ultrasound: A cross-sectional survey. BMC Emerg Med 2015;15:36.
13. Moreillon P, Que YA. "Infective endocarditis," Lancet 2004;363:139-49.
14. Habib G, Hoen B, Tornos P, Thuny F, Prendergast B, Vilacosta I, *et al*. Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009): The Task force on the prevention, diagnosis, and treatment of infective endocarditis of the European society of cardiology (ESC). Endorsed by the European society of clinical microbiology and infectious diseases (ESCMID) and the international society of chemotherapy (ISC) for infection and cancer. Eur Heart J 2009;30:2369-413.
15. Durack D, Lukes A, Bright D, Duke Endocarditis Service. "New Criteria for Diagnosis of Infective Endocarditis: Utilization of Specific Echocardiographic Findings. The American Journal of Medicine 1994;96:200-9.
16. Micks T, Sue K, Rogers P. Barriers to point-of-care ultrasound use in rural emergency departments. CJEM 2016;18:475-9.

The SRPC would like to express our support for all of those responding to COVID-19 who are committed to providing safe and quality care to patients across Canada.

We encourage all members to join the RuralMed and or Rural Anesthesia Listservs. A lot of good, detailed COVID-19 information has come from these email lists and has proven to be a great resource.

A working group with representatives from all the provinces and territories that have isolated fly-in communities has been formed to share concerns and offer advice.

We will keep you posted on further initiatives.
Together we can work towards keeping everyone connected, safe, and up to date.

Visit the SRPC.CA home page to find
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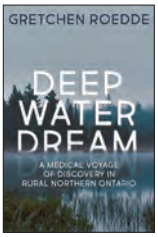
Book Review

Deep Water Dream



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'The issues of faith in the midst of adversity, whether professional or personal, are powerful themes in this reflective and complex memoir of joyful resilience'. Thus, begins a thought-provoking and powerful memoir from author and physician Dr. Gretchen Roedde. Readers will join Dr. Roedde as she begins her practice of Family Medicine in the rural First Nations Community of Bear Island in Temagami, Ontario. She shares her challenges both as a new physician and as a new mother. With great honesty and humility, she describes her successes and failures trying to provide care for those who have so little, herself included.

Through story-telling, readers share both her lived experiences working with marginalised and underserviced populations in the north and what she learnt about the effect of inequity on health outcomes. While there is much sadness in this book, there is also great resilience demonstrated by Gretchen, her family and friends, and the patients she treats. This resilience leaves the reader with a sense of hopefulness for true reconciliation, health, and well-being of Canada's Indigenous people.

While the book does not specify a target audience, I would recommend it to any healthcare providers who are committed to reconciliation and decolonisation of our Indigenous people, or who wish to provide care to any of the many other marginalised populations in Northern Ontario.

On a personal note, I have had the pleasure of working alongside Dr. Roedde for the last 10 years in the city of Temiskaming Shores, and yet much of what I now know about this remarkable woman's early clinical accomplishments was unknown to me, before reading this book. I believe that this reflects Gretchen's philosophy of making change for the better, without fanfare or personal recognition.

A dedicated physician, mother (now grandmother!) and teacher, Dr. Roedde does not disappoint with *Deep Water Dream.*

Deep Water Dream by Gretchen Roedde.
Publishers: Dundurn, Toronto
ISBN: 9781459743298

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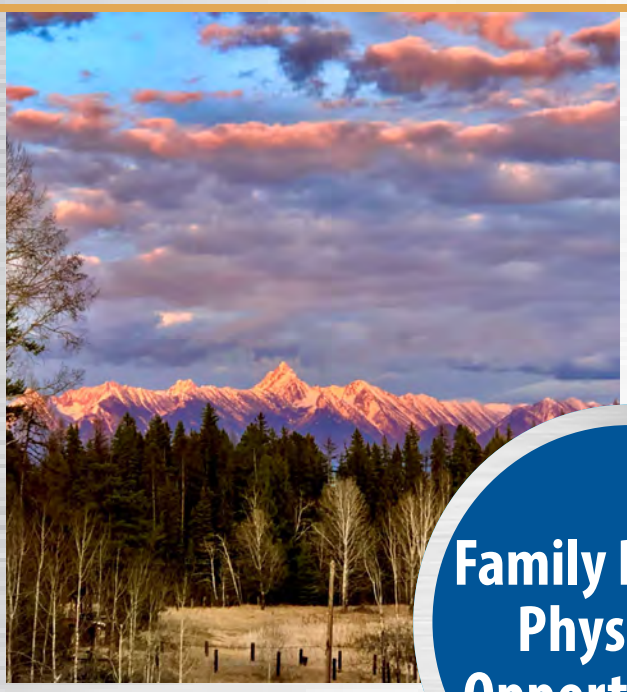

Cranbrook, British Columbia

Private practice opportunities in Cranbrook, BC Located in heart of the Canadian Rockies in the East Kootenay region, the area offers an abundance of recreational activities, collegial network of supportive physicians, arts and culture, with an overall lower cost of living!

Photo credit: Lee Orr Photography

Family Practice Physician Opportunities

Photo credit: Dr. Shaun Van Zyl

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Be part of well-established upgraded practice with the opportunity to work in the upgrade 24/7 ED in Nakusp, BC. The exceptional year round recreation provides a great work/life balance. The opportunities are endless here and there are no traffic lights for 100km!

For more information and to apply, contact

Charlene.Pawluk@interiorhealth.ca

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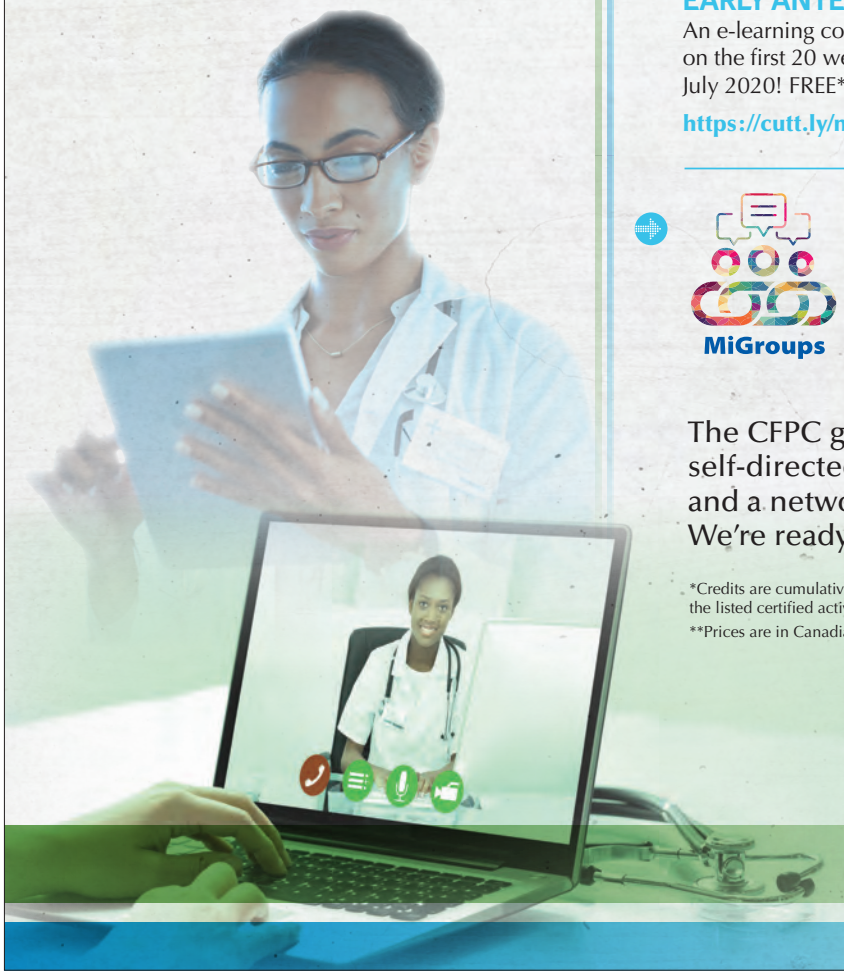

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