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VOLUME 20, NO. 3, SUMMER 2015

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**Longitudinal Integrated Clerkships**

**Ontario Inpatient Medical Withdrawal Program**

**The Occasional Umbilical Venous Line**

# RURAL & REMOTE & **2016**

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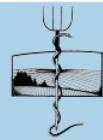
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Watercolour and gouache, 12" x 24",  
by Ann Sutherland Gruchy, S.C.A.  
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[www.anngruchy.com](http://www.anngruchy.com); agruchy2@gmail.com

"I attempted to capture the light and atmosphere, showing the vastness and ruggedness of the western landscape of Newfoundland."

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### SRPC AND THE ROUNDS

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The Rounds has been built specifically for physicians in Canada. The platform is free for any practising physician, and the SRPC group (for SRPC members only) has been designed specifically for rural collaboration. The platform will allow us to have more engaging conversations, and for those subscribed to the listserv (RuralMed), it will offer a new and exciting place to engage with familiar peers. Signing into The Rounds will immediately connect you with thousands of physicians and surgeons.

The Rounds platform offers a wide range of member benefits. We encourage you to sign up and join the official SRPC group here: [www.therounds.ca](http://www.therounds.ca)

### Rumours and prejudice

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**W**hen you live in a small town, people know who you are. They see you when you go to the post office to pick up your mail. While driving to the post office, you do so with only one hand on the wheel because the other is busy waving. They see you when you go for a walk or a bike ride. They are there to share both your triumphs and your failures.

For a physician living and practising in a rural community, all of these things are magnified. This does not necessarily mean that you are held to a higher standard, just to a different one.

In rural Newfoundland, for example, doctors are expected to be of a different race than the locals. It's not clear why, but it may be attributable to a tradition of international medical graduates earning their licences there. Regardless of your ethnicity or race, as a physician, you may be held to a different standard.

For example, I know of rural towns that are otherwise unlikely to hold a gay pride parade, but the members are quite accepting of rural doctors who happen to be homosexual.

By being in the "doctor" category, you are given enough leniency to avoid some of the usual prejudices that might

apply; but it's not a carte blanche. Some patients will not see the black doctor, or they may prefer the black doctor for their rectal exam over the homosexual doctor. However, I think there is a genuine willingness in small communities to see doctors as individuals.

Still, you need to be a bit careful to protect your reputation. Rumours do affect you.

Most of the time you can just ride out the rumour (e.g., that you are leaving town). However, if the rumour is centred on a case going bad, regardless of the court's take on your culpability, you will have to consider that your ability to treat a portion of the population will be impaired. You may have to leave town. It's a tough call that hopefully you will never need to make.

Being mindful of how your actions can play out is important. My somewhat flippant advice to new graduates is to always get a membership at the local golf club. It's not important that they actually play golf. It's just that when you buy a drink there, the rumour will start that you are working too hard. You buy a drink at the local bar, and you're a drunken louse.

They don't teach you that in medical school.

### Rumeurs et préjugés

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**Q**uand vous vivez dans une petite ville, les gens savent qui vous êtes. Ils vous voient quand vous passez prendre votre courrier au bureau de poste. En vous rendant au bureau de poste, vous n'avez qu'une main sur le volant parce que l'autre est occupé à saluer les gens. Ils vous voient quand vous allez faire une promenade ou une randonnée à vélo. Ils sont là pour partager vos victoires et vos échecs.

Pour un médecin qui vit et exerce la médecine dans une communauté rurale, toutes ces actions sont amplifiées. Cela ne signifie pas nécessairement que vous êtes assujetti à une norme plus élevée, mais simplement à une autre norme.

Dans les régions rurales de Terre-Neuve, par exemple, on s'attend à ce que les médecins soient d'une race différente de celle de la population locale. On ne sait trop pourquoi, mais cela est peut-être attribuable à une tradition de diplômés de facultés de médecine étrangères qui obtiennent leur permis d'exercice dans cette province. Mais peu importe votre origine ethnique ou votre race, en tant que médecin, vous pouvez être soumis à des normes différentes.

Par exemple, je connais des municipalités rurales où l'on n'organiserait pas un défilé de la fierté gaie, mais où les citoyens acceptent volontiers des médecins ruraux homosexuels.

En faisant partie de la catégorie « médecin », vous bénéficiez d'une clémence qui peut vous permettre d'échapper à certains des préjugés habituels, mais cela ne vous donne pas

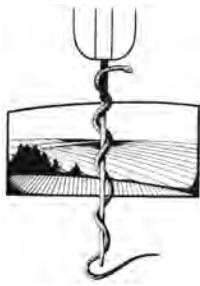
carte blanche. Par exemple, certains patients ne consulteront pas un médecin noir ou encore, ils préféreront un médecin noir pour un examen rectal plutôt qu'un médecin homosexuel. Je crois cependant qu'il y a une réelle volonté dans les petites municipalités d'accepter les médecins en tant qu'individus.

Il faut malgré tout faire preuve d'une certaine prudence pour protéger votre réputation, car vous n'êtes pas immunisé contre les rumeurs.

La plupart du temps, vous pouvez simplement laisser la rumeur suivre son cours (par exemple, que vous partez). Cependant, si la rumeur porte sur le cas d'un patient qui a mal tourné, peu importe le jugement du tribunal, vous devrez tenir compte du fait que votre capacité à traiter une partie de la population sera compromise. Vous devrez peut-être même partir. C'est une situation difficile et j'ose espérer que vous n'y serez jamais confronté.

Il est important d'avoir conscience des conséquences de vos actions. Le conseil à ne pas prendre (trop) à la légère que je donne aux nouveaux diplômés: devenez toujours membre du club de golf de votre localité, peu importe si vous jouez vraiment au golf ou non. C'est juste que, lorsque vous achetez une boisson au club de golf, la rumeur va commencer à circuler que vous travaillez trop fort. Alors que si vous achetez une consommation au bar local, vous êtes un ivrogne.

On ne vous apprend pas ce genre de chose à la faculté de médecine!



## EDITORIAL / ÉDITORIAL

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# President's message. Rural generalist medicine: moving forward together

This year the Rural and Remote conference was run in conjunction with The Second World Summit on Rural Medical Generalism. The goal of this meeting was to move forward from the first world summit, held in 2013 in Cairns, Australia, to better define and promote the concept of rural medical generalism. This was a challenging event for the SRPC to organize and run, but it was immensely worthwhile. I'd like to thank all who contributed to the success of this event, in particular, Dr. Braam de Klerk and Lee Teperman of the SRPC. Attendees from all over the world contributed their views on rural generalism and on how to increase recognition of the importance of generalists in providing care to rural populations.

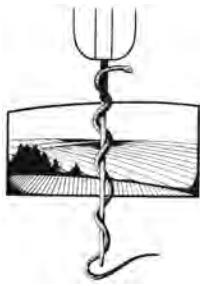
We had the opportunity to see the successes of rural generalism as a concept, not only in Canada, Australia and other developed countries, but also in rural Thailand and isolated Pacific islands. We spent time considering how best to determine community need, which must be the primary focus in determining what medical services need to be delivered by rural generalists. We discussed the concept of "rural proofing" — considering the potential rural consequences before implementation of programs and policies developed by government, training institutions and regulatory authorities. We examined the potential of foreign exchanges as a means of developing increased skill sets

not only for rural practitioners, but also for capacity building in low-resource countries.

We looked at indigenous health care in rural areas and its delivery. The challenges of delivering high-quality health care to these often isolated, relatively impoverished and less healthy populations are not unique to Canada. There is a huge role not only for rural generalist physicians but also for many other health care workers in providing this care. The model of comprehensive team-based care based on community need is a vital one in small isolated areas that may not be large enough for a practical physician-based model.

We looked at the evidence underpinning maintenance of competence, and in particular considered the relative unimportance of numbers in determining outcomes for many procedures. We looked at the evidence for enhanced surgical services provided by generalists. We considered the importance of ongoing research to support the concept and application of generalism.

We listened as 3 young Canadian physicians told us of how they came to be trained as rural generalists, expressed their excitement at the opportunities and experiences ahead of them, and reminded us of why we do what we do. As long as there are individuals like this ready, willing and able to step forward to provide the generalist care rural Canadians need, I will remain optimistic about the future of rural health care in Canada.



# Message du président. Médecine générale en milieu rural : aller de l'avant, ensemble

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Cette année, la conférence annuelle sur la médecine en régions rurales et éloignées s'est tenue en marge du deuxième Sommet mondial sur la médecine générale en milieu rural. Poursuivant sur la lancée du premier sommet tenu en 2013 à Cairns (Australie), la rencontre avait pour but de mieux définir et de mieux promouvoir le concept de médecine générale en milieu rural. Pour la Société de la médecine rurale du Canada (SMRC), l'organisation et la gestion de cet événement n'ont pas été exemptes de défis, mais le jeu en aura valu la chandelle. J'aimerais remercier tous ceux et celles qui ont contribué au succès de cet événement, en particulier le Dr Braam de Klerk et Lee Teperman, de la SMRC. Des participants du monde entier ont exprimé leurs points de vue sur la médecine générale en milieu rural et sur les façons de mieux faire reconnaître l'importance des généralistes en milieu rural et des soins qu'ils prodiguent.

La rencontre a été l'occasion de constater le succès du concept de médecine générale en milieu rural, non seulement au Canada, en Australie et dans d'autres pays développés, mais aussi en Thaïlande et dans des îles isolées du Pacifique. Il a en outre été question de la meilleure façon de cerner les besoins de la collectivité, éléments premiers pour établir l'offre de soins des généralistes en milieu rural. Également à l'ordre du jour: le concept de *rural proofing*, c'est-à-dire la prise en compte de l'incidence potentielle sur le milieu rural des programmes et politiques avant leur mise en place par les pouvoirs publics, les établissements d'enseignement et les organismes de réglementation. On a aussi examiné le potentiel des échanges internationaux non seulement pour développer les compétences des médecins

en milieu rural, mais également pour renforcer les capacités dans les pays où les ressources sont rares.

La question des soins de santé pour les Autochtones en milieu rural a aussi été abordée. L'offre de soins de qualité à ces populations souvent isolées, relativement pauvres et moins en santé comporte des difficultés qui ne sont pas exclusives au Canada. Les médecins généralistes ruraux et bon nombre d'autres travailleurs du secteur de la santé jouent un rôle fondamental dans la prestation de ces soins. L'adoption d'un modèle reposant sur la prestation de soins en équipe et fondé sur les besoins de la collectivité est d'une importance vitale dans ces régions isolées, parfois trop petites pour qu'on y implante un modèle de prestation par des médecins.

Parmi les autres sujets abordés, il a été question des facteurs assurant le maintien de la compétence, et en particulier de l'importance somme toute faible du nombre d'interventions pratiquées par un médecin pour prévoir les résultats. Le thème de l'amélioration des services chirurgicaux offerts par les généralistes a aussi été traité. Enfin, les participants ont souligné l'importance de poursuivre les recherches afin de développer le concept de médecine générale en milieu rural et sa mise en pratique.

Trois jeunes médecins canadiens ont aussi raconté comment ils en sont venus à acquérir une formation de généraliste en milieu rural. En nous communiquant leur enthousiasme face à l'avenir, ils nous ont aussi rappelé les raisons pour lesquelles nous pratiquons ce métier. Tant qu'il y aura des gens comme eux, prêts et motivés à fournir les soins généraux en milieu rural dont ont besoin les Canadiens, je demeure optimiste quant à l'avenir de la médecine rurale au Canada.

## ORIGINAL ARTICLE ARTICLE ORIGINAL

# Rural longitudinal integrated clerkships: changing interests and demographics of medical students

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This article has been peer  
reviewed.

**Introduction:** The University of Calgary Longitudinal Integrated Clerkship (UCLIC) is an integrated curriculum of at least 32 weeks' duration based in rural communities. Rural LICs have been proposed as a method to respond to the needs of underserved rural communities; therefore, assessing evolving learner interest and demographics over time is of importance to rural communities.

**Methods:** Three surveys were administered to first-year medical students at the University of Calgary from the classes of 2009, 2010 and 2015. The surveys assessed demographic information as well as interest in and attitudes toward pursuing a rural-based LIC.

**Results:** Overall, 42% of students (76% of decided students) reported that they would consider the rural UCLIC. Between 2009 and 2010, the proportion of students who would not consider the UCLIC decreased from 25% to 8%, and thereafter was maintained at that level. Over the same period, interest among students considering Royal College of Physicians and Surgeons of Canada (RCPSC) specialties significantly increased. Although student attitudes about the value of the LIC were consistently positive, students remained concerned about social considerations.

**Conclusion:** There has been an increase in student willingness to consider a rural LIC, most significantly among students interested in RCPSC specialties. Career plans and demographics of students continue to influence their interest in and attitudes toward LICs

**Introduction :** Le stage intégré longitudinal (SIL) de l'Université de Calgary (ou UCLIC pour *University of Calgary Longitudinal Integrated Clerkship*) est un programme intégré d'une durée minimale de 32 semaines en communauté rurale. Les SIL ruraux ont été proposés comme moyen de répondre aux besoins des communautés rurales moins bien desservies; il est donc important pour les communautés rurales de suivre l'évolution des intérêts et des caractéristiques démographiques des stagiaires au fil du temps

**Méthodes :** Trois sondages ont été administrés à des étudiants de première année de médecine à l'Université de Calgary des promotions de 2009, 2010 et 2015. Les sondages portaient sur leurs données démographiques de même que sur leur intérêt et leurs attitudes à l'endroit d'un SIL en milieu rural.

**Résultats :** Dans l'ensemble, 42 % des étudiants (76 % des étudiants décidés) ont déclaré qu'ils envisageraient un SIL en milieu rural. Entre 2009 et 2010, la proportion d'étudiants qui n'envisageaient pas un tel stage a diminué de 25 %, à 8 %, et par la suite s'est maintenue à ce niveau. Au cours de la même période, l'intérêt à l'égard de ce stage chez les étudiants qui envisageaient une spécialisation du Collège royal des médecins et chirurgiens du Canada (CRMCC) a significativement augmenté. Même si leurs attitudes à propos de la valeur d'un SIL sont demeurées favorables, les étudiants ont dit se soucier des enjeux sociaux.

**Conclusion :** On a constaté que les étudiants envisagent plus volontiers un SIL en milieu rural s'ils souhaitent faire une spécialisation du CRMCC. Les plans de carrière et les caractéristiques démographiques continuent d'influer sur leurs intérêts et leurs attitudes à l'endroit des SIL.

## INTRODUCTION

Currently there are 2 dominant approaches to undergraduate medical school clerkship: the rotation-based clerkship (RBC) and the longitudinal integrated clerkship (LIC). The RBC remains the most commonly used. Medical students participate in short-term rotations of various lengths while they learn under the supervision of hospital-based, discipline-specific clinical preceptors.<sup>1,2</sup> The RBC offers a valuable variety of training opportunities, but it has been criticized for its lack of exposure to continuity of patient care.<sup>3</sup> In contrast, continuity is a fundamental principle of the LIC. Although designs vary by institution,<sup>4</sup> the LIC model supports the relationship of undergraduate medical students with the same patient population, preceptors and/or community over a period of at least 13 weeks and as long as 15 months.<sup>5</sup> Substantial relationships built over time are encouraged, and preceptors are provided with more opportunities to engage students for specific learning experiences, rather than relying on opportunistic encounters that typically occur during the short number of weeks comprising discrete rotations.<sup>3,6</sup>

The University of Calgary Longitudinal Integrated Clerkship (UCLIC) was designed to encour-

age experiences with continuity of patient care, as well as to increase student exposure to rural medicine and generalist principles. The UCLIC was established in 2008 and is the only LIC in the world to be delivered in the final year of study. Because of the intensive 3-year design, UCLIC students graduate immediately to residency in contradistinction to all other programs that return the learner to a tertiary-based fourth year. The target goal of the program is to provide a rural UCLIC placement for 20% of, or 30 students from, the medical class. The duration of the clerkship (52 wk) is the same as that of the University of Calgary RBC, but the integrated curriculum is delivered in rural communities where the students live for most of the time (32 wk). The number of elective weeks is the same as that of the RBC; however, in contrast to the RBC, elective booking is a collaborative process between students and preceptors, and is more flexible in timing than in the RBC. Shortened 4-week tertiary care rotations in pediatrics, general surgery and internal medicine generally occur at the end of the rural placement. Weekly schedules are flexible but are based in primary care with an explicit interprofessional experience (Table 1). Experienced teaching communities that fit published criteria<sup>7</sup> have been recruited, and the

**Table 1: Typical weekly structure of the University of Calgary Longitudinal Integrated Clerkship**

Monday	Tuesday	Wednesday	Thursday	Friday
Family medicine	Operating room	Family medicine	Academics	Labour and delivery
Interprofessional experience	Family medicine	Emergency department	Academics	Family medicine

**Table 2: Characteristics of rural communities of the University of Calgary Longitudinal Integrated Clerkship**

Site	Distance, km*	Population	Started	No. of students
A	116	2 610	2008	2
B	216	3 685	2008	2
C	1 791	19 234	2009	2
D	163	13 676	2012	2
E	137	8 029	2008	2
F	64	12 920	2008	2
G	105	12 317	2010	2
H	232	5 565	2008	1
I	214	6 933	2010	2
J	264	8 104	2009	2

\*From Calgary.

number of communities committed to the UCLIC has grown from the initial 5 to the current 10 sites. Characteristics of the individual communities are noted in Table 2. Most teaching sites do not have a specialist practice. The commitment of the rural communities to this program is evidenced by the lack of attrition of teaching sites and the continued commitment to the program during severe community disaster (e.g., the High River flood in 2013).

In the UCLIC, student assessment is based on the same tools used in the RBC, and structured academics are delivered synchronously via information technology. A substantial body of evidence has shown that the LIC model is pedagogically sound and academically equivalent to the RBC.<sup>8–13</sup> Differences suggest improved outcomes associated with longitudinal placements where patient-centred continuity of care can be more of a priority.

Enrolment into an LIC model is either mandated, as in the Northern Ontario School of Medicine, or voluntary, with a random selection process, as in most existing schools. Despite the random selection process in the UCLIC, residency selection and practice location remain the outputs of greatest interest to rural communities.

At the onset of the program, to gauge receptiveness and guide program development, students were surveyed regarding their demographic backgrounds, career plans and attitudes toward undertaking the UCLIC.<sup>14</sup> Students who participated in the survey generally recognized the educational value of the UCLIC program, but were concerned about the social and professional implications of leaving the Calgary site; this was particularly evident among the married students. Interest in pursuing the UCLIC program was highest among students considering family medicine as a career path.<sup>14</sup> However, because the LIC has been proposed as a method to respond to the health care needs of underserved rural communities, assessing possible changes in learner interest and demographics over time is important. This study investigates changes in attitudes toward the UCLIC and demographics of first-year medical students at 3 time points between 2008 and 2015.

## METHODS

First-year medical students from the University of Calgary's 3-year Undergraduate Medical Education Program were surveyed regarding their background demographics (i.e., sex, age, marital status, community of origin and residency plans), interest in pursuing the UCLIC program and attitudes toward

LICs. Self-reported community of origin consisted of 4 options (rural: population < 10 000; small city: population 10 000–49 999; medium city: population 50 000–200 000; and metropolitan: population > 200 000). In keeping with the funding arrangement of rural programming by the provincial government and the Statistics Canada<sup>15</sup> recommendation to select rurality based on the context of each rural issue under investigation, we grouped background data dichotomously (metropolitan v. nonmetropolitan origin) in the analyses. The study was conducted as a cross-sectional analysis at 3 intervals by administering the same 35-item, self-report instrument to the classes of 2009, 2010 and 2015.

The previously developed, 7-factor instrument consists of 35 positively worded questions measured on a 5-point Likert scale (i.e., 1 = strongly disagree to 5 = strongly agree).<sup>14</sup> The 7 discrete factors were as follows: 1) physician role/responsibility/exposure/preparation, 2) practice exposure/exam preparation, 3) collaboration with other health care professionals, 4) exposure to rural medicine, 5) support of undergraduate medical education program/medical school, 6) personal implications of a rural community placement, and 7) maintain existing/develop new professional relationships. An overall value for each factor was calculated by summing the mean value of the individual items comprising each factor and dividing by the number of items (Table 3).

All data were analyzed in Stata version 12.1 using the Pearson  $\chi^2$  or Fisher exact test for categorical demographic variables. Independent samples *t* tests were used to explore statistically significant changes in students' perceptions as measured by the attitude instrument. Logistic regression analysis was employed to identify the influence of predictor demographic and attitude variables on students' consideration of the UCLIC program; student interest was treated as a binary variable (i.e., "yes" to considering UCLIC v. "no" or "undecided"). Internal reliability of each factor, and the overall survey instrument, were estimated using the Cronbach  $\alpha$  statistic.

This study received ethics approval from the Conjoint Health Research Ethics Board of the University of Calgary.

## RESULTS

Overall, 321 (75%) students completed the survey. Response rates and student demographics within each class year are shown in Table 4. Participant demographics were reflective of those within each class. Between the classes of 2009 and 2010 there

was a substantial and maintained increase in the proportion of female respondents, and between the classes of 2010 and 2015 there was a significant decrease in the proportion of participants from communities with populations less than 50 000 (49%–33%,  $\chi^2 = 6.1$ ,  $p < 0.05$ ).

From the full sample, 134 students (42%) reported that they would consider participating in the UCLIC program, 42 (13%) that they would not consider participating and 145 (45%) that they were undecided. About three-quarters (76.1%) of decided participants (i.e., excluding undecided participants) identified that they would consider UCLIC. Within the decided group, there was no significant difference between female and male stu-

dents in interest in pursuing UCLIC ( $\chi^2 = 2.7$ ,  $p > 0.05$ ). Logistic regression analysis exploring the relation of a student's age and their consideration (yes or no) of the UCLIC program identified a significant trend. As age increased, so did consideration of UCLIC ( $\rho < 0.05$ , odds ratio 1.06, 95% CI 1.00–1.13). Further analysis identified that students 25 years of age and older were significantly more likely to have responded that they would consider application to the UCLIC program ( $\chi^2 = 6.0$ ,  $p < 0.05$ ). Similarly, older students were also more likely to consider UCLIC versus being undecided ( $\chi^2 = 4.8$ ,  $p < 0.05$ ). However, older students were just as likely as younger students to be present in the undecided group ( $\chi^2 = 2.7$ ,  $p > 0.05$ ).

**Table 3 (part 1 of 2): Survey results from first-year medical students from 3 different class years**

To what extent do you agree or disagree with the following statements about the University of Calgary Longitudinal Integrated Clerkship?	Class year; mean ± SD score*			
	2009 n = 92	2010 n = 108	2015 n = 121	Total n = 320
<b>Factor 1: Physician role/responsibility/exposure/preparation (9 items; <math>\alpha = 0.89</math>)</b>	4.0 ± 0.6	4.1 ± 0.6	4.0 ± 0.5	4.0 ± 0.6
Q12: Continuity with a small number of preceptors will be enhanced.	4.2 ± 0.7	4.2 ± 0.7	4.1 ± 0.6	4.2 ± 0.7
Q13: I will be given more responsibility for patient care than in the traditional clerkship.	4.2 ± 0.7	4.2 ± 0.7	4.1 ± 0.7	4.2 ± 0.7
Q14: I will have more opportunity for hands-on learning (procedures).	4.2 ± 0.7	4.4 ± 0.7	4.2 ± 0.7	4.3 ± 0.7
Q15: I will have more opportunity to become a valuable member of the medical team.	4.0 ± 0.7	4.2 ± 0.7	4.1 ± 0.8	4.1 ± 0.7
Q16: I will be better prepared to respond to comprehensive questions about patient care on the MCC exam.	3.7 ± 0.7	3.8 ± 0.8	3.5 ± 0.9†	3.7 ± 0.8
Q18: I will receive more extensive teaching/feedback than in the traditional clerkship.	3.7 ± 0.8	3.7 ± 0.8	3.8 ± 0.8	3.7 ± 0.8
Q19: My preceptors will be able to write a more impactful reference letter for CaRMS.	4.0 ± 0.9	4.0 ± 0.9	4.0 ± 0.8	4.0 ± 0.9
Q26: I will have a greater opportunity to develop personal relationships with my preceptors and other physicians.	4.2 ± 0.7	4.3 ± 0.6	4.2 ± 0.7	4.2 ± 0.7
Q29: I will be more effective when I begin residency training	3.4 ± 1.0	3.6 ± 0.9	3.5 ± 0.8	3.5 ± 0.9
<b>Factor 2: Practice exposure/exam preparation (7 items; <math>\alpha = 0.78</math>)</b>	3.7 ± 0.6	3.6 ± 0.5	3.6 ± 0.5	3.6 ± 0.5
Q1: I will receive sufficient exposure to all areas of medicine	3.7 ± 0.9	3.6 ± 0.8	3.6 ± 0.8	3.6 ± 0.8
Q2: I will receive sufficient exposure to different practice styles.	3.7 ± 0.8	3.7 ± 0.8	3.6 ± 0.7	3.7 ± 0.7
Q3: I will be well prepared to write the MCC exam.	3.9 ± 0.7	4.0 ± 0.6	3.8 ± 0.6†	3.9 ± 0.7
Q24: There will be more opportunity to understand how the management of a hospital/clinic is achieved.	3.9 ± 0.9	3.8 ± 0.9	3.7 ± 0.8	3.8 ± 0.8
Q25: I will have opportunity to learn more about all areas of medicine through patient-focused experiences.	3.8 ± 0.8	3.7 ± 0.9	3.7 ± 0.8	3.7 ± 0.8
Q28: I expect to be better prepared for clerkship assessment examinations.	3.3 ± 0.8	3.4 ± 0.9	3.4 ± 0.8	3.4 ± 0.8
Q38: I will receive more comprehensive exposure to clinical presentations offered in the UME curriculum.	3.5 ± 0.8	3.4 ± 0.8	3.4 ± 0.8	3.4 ± 0.8
<b>Factor 3: Collaboration with other health care professionals (5 items; <math>\alpha = 0.82</math>)</b>	3.9 ± 0.6	3.8 ± 0.6	3.8 ± 0.5	3.9 ± 0.6
Q9: It will give me greater opportunity to work with nurses one-on-one.	4.0 ± 0.7	4.0 ± 0.7	4.0 ± 0.7	4.0 ± 0.7
Q30: It will prepare me to be more patient-focused as a resident.	3.8 ± 0.8	3.8 ± 0.7	3.7 ± 0.8	3.8 ± 0.8
Q32: It will allow me to explore more comprehensive relationships with other allied health care professionals (e.g., pharmacists, nurses).	3.9 ± 0.7	3.7 ± 0.8	3.7 ± 0.7	3.8 ± 0.7
Q33: I will have more opportunity to get to know other members of the hospital/clinical community.	4.1 ± 0.7	4.0 ± 0.8	3.9 ± 0.7	4.0 ± 0.7
Q37: I expect to develop better collaborations with the other allied health care workers (e.g., pharmacists, nurses).	3.8 ± 0.8	3.7 ± 0.7	3.8 ± 0.7	3.8 ± 0.7

The results showed no difference between the married and single groups in interest in UCLIC ( $\chi^2 = 0.7, p > 0.05$ ). Respondents who identified their community of origin as nonmetropolitan were significantly more interested in pursuing UCLIC than students from a metropolitan background ( $\chi^2 = 4.1, p < 0.05$ ). Students who were interested in pursuing a career in family medicine were significantly more likely to consider UCLIC than students who were interested in Royal College of Physicians and Surgeons of Canada (RCPSC) specialties ( $\chi^2 = 24.7, p < 0.001$ ). The results also showed that there was no significant difference in decisiveness (either yes or no) toward considering UCLIC between students who were decided on a career path (family or other spe-

cialty) and those who were undecided ( $\chi^2 = 0.3, p > 0.05$ ). These results are summarized in Table 5.

Analysis of surveys from each of the class years identified important shifts in student attitudes and interests (Table 5). Within the class of 2009, 39% responded that they would consider UCLIC, 25% that they would not consider the program and 36% that they were undecided. In this class, students interested in family medicine were significantly more interested in pursuing UCLIC ( $\chi^2 = 15.1, p < 0.001$ ). In the class of 2010, 41% of students reported they would consider UCLIC, 8% that they would not consider UCLIC and 51% that they were undecided. Compared with the class of 2009, there was a significant decrease in the class of 2010 in the proportion of

**Table 3 (part 2 of 2): Survey results from first-year medical students from 3 different class years**

To what extent do you agree or disagree with the following statements about the University of Calgary Longitudinal Integrated Clerkship?	Class year; mean $\pm$ SD score*			
	2009 n = 92	2010 n = 108	2015 n = 121	Total n = 320
<b>Factor 4: Exposure to rural medicine (4 items; <math>\alpha = 0.71</math>)</b>	4.4 $\pm$ 0.5	4.4 $\pm$ 0.4	4.2 $\pm$ 0.5‡	4.3 $\pm$ 0.5
Q4: I will receive valuable exposure to allied health care in the community.	4.3 $\pm$ 0.6	4.3 $\pm$ 0.7	4.0 $\pm$ 0.7†	4.2 $\pm$ 0.7
Q6: I will gain valuable exposure to rural medical practice.	4.7 $\pm$ 0.7	4.7 $\pm$ 0.5	4.5 $\pm$ 0.7†	4.6 $\pm$ 0.7
Q20: I will receive extensive exposure to continuity of patient care.	4.2 $\pm$ 0.6	4.2 $\pm$ 0.7	4.1 $\pm$ 0.7	4.2 $\pm$ 0.7
Q27: I will learn more about the role of a physician in the community.	4.3 $\pm$ 0.6	4.4 $\pm$ 0.6	4.1 $\pm$ 0.7†	4.2 $\pm$ 0.6
<b>Factor 5: Support of UME program/medical school (4 items; <math>\alpha = 0.64</math>)</b>	3.8 $\pm$ 0.5	3.8 $\pm$ 0.6	3.7 $\pm$ 0.5	3.8 $\pm$ 0.5
Q7: I will be treated fairly academically by the UME office if a conflict with my preceptor arises.	4.1 $\pm$ 0.6	4.1 $\pm$ 0.8	4.1 $\pm$ 0.7	4.1 $\pm$ 0.7
Q10: I'm satisfied that there is an adequate "safety net" for students if the integrated community clerkship does not work out.	3.1 $\pm$ 0.8	3.3 $\pm$ 0.9	3.3 $\pm$ 0.7	3.2 $\pm$ 0.8
Q21: I will see a wide range of undifferentiated patient problems.	4.0 $\pm$ 0.7	3.8 $\pm$ 0.8†	3.7 $\pm$ 0.6	3.8 $\pm$ 0.7
Q34: I will receive the same support from the UME office as other clerkship options.	3.9 $\pm$ 0.7	3.8 $\pm$ 0.7	3.8 $\pm$ 0.7	3.8 $\pm$ 0.7
<b>Factor 6: Personal implications of a rural community placement (4 items; <math>\alpha = 0.57</math>)</b>	3.3 $\pm$ 0.8	3.1 $\pm$ 0.6	3.1 $\pm$ 0.7	3.2 $\pm$ 0.7
Q8: Moving (including my family) to a small community for 8 months is doable/practical.	3.0 $\pm$ 1.3	3.1 $\pm$ 1.2	3.1 $\pm$ 1.1	3.1 $\pm$ 1.2
Q17: I will receive greater exposure to physician lifestyle than in the traditional clerkship.	3.4 $\pm$ 0.9	3.5 $\pm$ 0.9	3.3 $\pm$ 0.9	3.4 $\pm$ 0.9
Q31: Costs (e.g., accommodations, travel) of participating in the ICC is manageable.	3.7 $\pm$ 0.8	3.3 $\pm$ 0.9†	3.3 $\pm$ 0.8	3.4 $\pm$ 0.8
Q35: I am not concerned about the social implications of living in a smaller community outside of the city.	3.0 $\pm$ 1.3	2.8 $\pm$ 1.3	2.9 $\pm$ 1.2	2.9 $\pm$ 1.2
<b>Factor 7: Maintain existing/develop new professional relationships (2 items; <math>\alpha = 0.40</math>)</b>	3.2 $\pm$ 0.7	3.2 $\pm$ 0.7	3.2 $\pm$ 0.7	3.2 $\pm$ 0.7
Q11: Although physically removed from the medical school I will be able to stay "connected" to my classmates.	3.0 $\pm$ 0.9	2.9 $\pm$ 0.9	2.9 $\pm$ 0.9	2.9 $\pm$ 0.9
Q36: I will receive more in-depth exposure to some specific areas of medicine.	3.4 $\pm$ 0.9	3.4 $\pm$ 1.0	3.5 $\pm$ 0.9	3.4 $\pm$ 0.9

CaRMS = Canadian Residency Matching Service; MCC = Medical Council of Canada; SD = standard deviation; UME = undergraduate medical education.

\*Using a 5-point Likert scale.

†Significant changes using the Student *t* test for unpaired samples with unequal variances at a critical level of 0.05 between 2 classes.

‡Significant changes using the Student *t* test for unpaired samples with unequal variances at a critical level of 0.005 between 2 time points.

students responding that they would not consider UCLIC ( $\chi^2 = 6.6$ ,  $p < 0.05$ ). This was accompanied by a decrease in the proportion of students interested in specialty disciplines responding that they would not consider UCLIC. That is, in the 2009 class 45% responded that they would not consider UCLIC compared with only 15% in the class of 2010 (Table 5). Although there were no significant changes between the classes of 2010 and 2015, there has been a trend of gradually increasing interest in the rural LIC, rising from 39% of participants considering UCLIC in 2009, to 41% in 2010 and 45% in 2015.

The previously validated instrument we used to investigate students' attitudes toward integrated clerkships was shown in this study to have high overall internal reliability (Cronbach  $\alpha = 0.9$ ). This tool describes 7 discrete factors (Table 3). Respondents were most in agreement with factor 4 (that UCLIC would give them exposure to rural medicine), and least in agreement with factor 6 (manageable personal implications of a rural community placement) and factor 7 (ability to maintain existing/develop new professional relationships). Of the 7 factors, only factor 4 (that UCLIC would give them exposure to rural medicine) showed a significant change between any of the time points; decreasing from a mean score of  $4.4 \pm 0.4$  standard deviations for the class of 2010 to a mean score of  $4.2 \pm 0.5$  for the class of 2015 ( $t =$

$3.2$ ,  $p < 0.005$ ). The student attitude toward this factor significantly decreased among the participants interested in family medicine ( $t = 2.1$ ,  $p < 0.05$ ), but not among those interested in nongeneralist specialties ( $t = 1.11$ ,  $p > 0.05$ ).

In general, student's attitudes toward UCLIC were positive, with an overall mean attitude score of  $3.8 \pm 0.4$ . Students showed the least agreement toward item 11 ("although physically removed from the medical school I will be able to stay 'connected' to my classmates") with a mean score of  $2.9 \pm 0.9$ , and item 35 ("I am not concerned about the social implications of living in a smaller community outside of the city") with a mean score of  $2.9 \pm 1.2$ . Student responses were most in agreement with item 6 ("I will gain valuable exposure to rural medical practice") with a mean score of  $4.6 \pm 0.7$ .

Students interested in pursuing a career in family medicine reported significantly more positive attitudes toward all 7 factors ( $p < 0.05$ ). Respondents from rural or regional backgrounds were significantly more positive toward factor 3 (collaboration with other health care professionals) ( $t = 2.3$ ,  $p < 0.05$ ) and factor 6 (personal implications of a rural community placement) ( $t = 3.9$ ,  $p < 0.001$ ). Female sex was significantly associated with more positive scores for factor 3 (collaboration with other health care professionals) ( $t = 2.7$ ,  $p < 0.05$ ). With

**Table 4: Survey response rates and demographics of first-year medical students who completed the survey**

Variable	Class year; no. (%)*			
	2009	2010	2015	Total
Response rate	92/125 (74)	108/135 (80)	121/170 (71)	321/430 (75)
Sex				
Male	47 (51)	41 (38)	49 (40)	137 (43)
Female	45 (49)	67 (62)	72 (60)	184 (57)
Age, mean $\pm$ SD, yr	24.8 $\pm$ 4.4	24.5 $\pm$ 3.1	25.3 $\pm$ 4.0	24.8 $\pm$ 3.8
Community of origin				
Nonmetropolitan (population < 200 000)	44 (48)	53 (49)	40 (33)	137 (43)
Metropolitan (population > 200 000)	48 (52)	55 (51)	81 (67)	184 (57)
Marital status				
Single	75 (82)	86 (80)	100 (83)	261 (81)
Married†	17 (18)	22 (20)	21 (17)	60 (19)
Career plans				
Family medicine	16 (17)	16 (15)	18 (15)	50 (16)
Specialty	40 (43)	40 (37)	55 (45)	135 (42)
Undecided	36 (39)	52 (48)	48 (40)	136 (42)

SD = standard deviation

\*Unless stated otherwise.

†Includes common-law relationships.

respect to marital status, students who were married (or in a common-law relationship) reported significantly more positive attitudes toward factor 1 (physician role/responsibility/exposure/preparation) ( $t = 2.1$ ,  $p < 0.05$ ) and factor 4 (exposure to rural community placement) ( $t = 2.5$ ,  $p < 0.05$ ). Students who were 25 years of age or older indicated more positive attitudes with respect to factor 1 (physician role/responsibility/exposure/preparation) ( $t = 2.4$ ,  $p < 0.05$ ), factor 2 (practice exposure/exam preparation) ( $t = 2.3$ ,  $p < 0.05$ ), factor 4 (exposure to rural medicine) ( $t = 3.0$ ,  $p < 0.05$ ) and factor 6 (personal implications of a rural community placement) ( $t = 2.7$ ,  $p < 0.05$ ).

## DISCUSSION

Across each of the 3 class years, students at the University of Calgary consistently reported positive attitudes toward the rural LIC program. The results described here demonstrate that there has been a significant shift among students interested in medical

specialties; they are now more likely to consider a rural LIC. These results further suggest that not only is the value of a rural LIC well recognized among students, there is also increasing consideration from students who were previously less interested.

The 7 factors defined by this survey instrument were previously identified and validated on a cohort of first-year medical students before the implementation of the UCLIC program.<sup>14</sup> Previous investigation suggested that even before the establishment of the UCLIC program, students recognized its educational value, but they expressed substantial concern about the social implications of moving to a rural community. The previous results also showed that students with an early intent on pursuing family medicine were significantly more likely to consider the UCLIC program, as compared with students interested in RCPSC specialties.<sup>14</sup>

The most substantial shift in interest toward pursuit of UCLIC occurred between the classes of 2009 and 2010, among students interested in medical specialties. In the class of 2009, students interested in

**Table 5: First-year medical students who would consider a rural integrated community clerkship, by class year, community of origin and identified interest in family medicine or a specialty discipline**

Class year	Community of origin	Career plans/residency discipline	Would consider UCLIC, %		
			Yes	No	Undecided
2009 ( <i>n</i> = 92)	Nonmetropolitan	Family ( <i>n</i> = 12)	83	0	17
		Specialty ( <i>n</i> = 18)	28	44	28
		Undecided ( <i>n</i> = 14)	57	7	36
	Metropolitan	Family ( <i>n</i> = 4)	50	0	50
		Other ( <i>n</i> = 22)	14	46	41
		Undecided ( <i>n</i> = 22)	36	18	46
2010 ( <i>n</i> = 108)	Nonmetropolitan	Family ( <i>n</i> = 8)	75	0	25
		Other ( <i>n</i> = 17)	24	18	59
		Undecided ( <i>n</i> = 28)	50	0	50
	Metropolitan	Family ( <i>n</i> = 8)	50	12	38
		Other ( <i>n</i> = 23)	30	13	56
		Undecided ( <i>n</i> = 24)	38	8	54
2015 ( <i>n</i> = 121)	Nonmetropolitan	Family ( <i>n</i> = 5)	80	0	20
		Other ( <i>n</i> = 22)	41	9	50
		Undecided ( <i>n</i> = 13)	46	0	54
	Metropolitan	Family ( <i>n</i> = 13)	69	8	23
		Other ( <i>n</i> = 33)	36	18	46
		Undecided ( <i>n</i> = 35)	40	3	57
Total ( <i>n</i> = 321)	Nonmetropolitan	Family ( <i>n</i> = 25)	80	0	20
		Other ( <i>n</i> = 57)	32	23	46
		Undecided ( <i>n</i> = 55)	51	2	47
	Metropolitan	Family ( <i>n</i> = 25)	60	8	32
		Other ( <i>n</i> = 78)	28	24	47
		Undecided ( <i>n</i> = 81)	38	9	53

UCLIC = University of Calgary Longitudinal Integrated Clerkship.

family medicine were significantly more likely to consider the UCLIC than students interested in specializations. Between the classes of 2009 and 2010, a greater proportion of the students interested in specialties identified themselves as considering UCLIC, or being undecided toward UCLIC, as opposed to responding that they would not consider the program. This change was maintained in the final year of the survey.

Although these results do describe a shift over time in demographic interest toward LICs, it remains a limitation that we cannot clearly differentiate between attitude changes over time and changes between classes resulting from shifts in admission criteria and applicant pools.

Although the reasons were not explored as part of this investigation, it is reasonable to speculate that a number of different factors may have contributed to the attitude shift among students interested in specialties. Given the inherent competition for residency, students may be seeking strategies to improve their chances for a residency match by undertaking programs that may distinguish them. Based on anecdotal information from UCLIC students, very high match rates with first-choice residency program have occurred for UCLIC students. This information may be reaching students and affecting their perceptions. Alternately, with the recently reported underemployment of medical specialists in Canada,<sup>16</sup> students may be exploring previously unconsidered practice locations. Lastly, as LIC programs become more common, and as educational equivalency has been demonstrated, students may simply feel more comfortable with a career based in generalism.

At each survey administration, student attitudes were generally positive toward the different aspects of the UCLIC, and overall trends suggest increasing student interest between classes. Student career plans and demographics appear to have a substantial influence on their perceptions of specific aspects of rural LICs. Consistent with observations at other schools, female students, students older than 25 years, students from smaller communities and students interested in family medicine were more positive toward individual aspects of rural LICs and were more likely to consider the UCLIC program.<sup>17</sup> These general trends in sex, age and background have been previously identified among rural LIC programs.<sup>17,18</sup> However no other program has yet reported increasing interest in rural LICs specifically among students intending to pursue medical specialty disciplines.

We observed an increase in consideration of UCLIC among students with a declared early interest in specialty medical careers; this self-reported interest indicates a need for further research. Whereas Brooks and colleagues<sup>17</sup> noted a stable career plan for rural LIC graduates over time, the increase in consideration of UCLIC early in a specialty-focused career may translate into a shift in career interest away from rural primary care. This shift in student interest may therefore negatively impact one of the social accountability goals of LICs to respond to the needs of underserved rural communities. In contradistinction, if the proportion of students with an early career interest in specialties increases in the UCLIC program, and if program outcomes for primary care and rural practice remain stable, the program must be affecting the career choices of participants, and the determinants must be delineated and transferred to other programs.

## CONCLUSION

Students at the University of Calgary have consistently expressed generally positive attitudes toward specific educational and experiential aspects of rural LICs. Our results show that there has been increasing student interest between class years that may reflect a trend over time, particularly among students from urban backgrounds intending to pursue RCPSC specialties. This shift must be studied to determine whether this increased interest from students interested in specialties affects the number of graduates who go on to practise in a rural location. Student demographics and career interests continue to have a substantial effect on whether a student will consider participating in a rural LIC.

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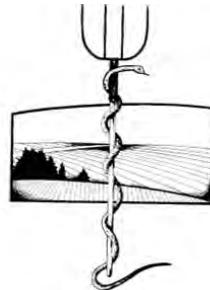
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# Evaluation of an inpatient medical withdrawal program in rural Ontario: a 1-year prospective study

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reviewed.

**Introduction:** We present a 1-year program evaluation of the Medical Withdrawal Support Service (MWSS) provided at the Sioux Lookout Meno Ya Win Health Centre. The centre's service area includes 4 rural municipalities and 28 First Nations communities. The program involves inpatient detoxification for opioid dependence with the use of buprenorphine–naloxone.

**Methods:** Data were collected from preadmission interviews (i.e., medical history, substance use history, previous counselling, social history, previous addiction treatment and screening tools used during the interview); discharge forms (i.e., length of stay, maximum dose of prescribed buprenorphine–naloxone and client goals); and postdischarge interviews.

**Results:** Overall, 81% of the clients successfully completed the program. Two weeks after discharge, 48% of clients reported continued abstinence. At 3-month follow-up, 32% were abstinent, and at 6 months, 30% were abstinent.

**Conclusion:** The MWSS shows positive outcomes for many clients, their families and communities. Clients returned to work and school, became more engaged in healthy meal preparation and exercise, spent more time with family and were more involved as leaders in their communities.

**Introduction :** Nous présentons l'évaluation d'un programme d'un an offert par les Medical Withdrawal Support Services (MWSS) au Centre de santé Sioux Lookout Meno Ya Win. La zone desservie par le Centre englobe 4 municipalités rurales et 28 communautés des Premières Nations. Il s'agit d'un programme de désintoxication au moyen de buprénorphine–naloxone offert en établissement à des patients qui souffrent d'une dépendance aux opiacés.

**Méthodes :** Des données ont été recueillies à partir d'entrevues précédant l'admission (incluant antécédents médicaux, antécédents de toxicomanie, thérapies antérieures, histoire sociale, traitements antérieurs contre les dépendances et outils de dépistage appliqués en cours d'entrevue), des sommaires d'hospitalisation (c.-à-d., durée du séjour, dose maximum de buprénorphine–naloxone prescrite et objectifs du client) et d'entrevues consécutives au congé.

**Résultats :** Dans l'ensemble, 81 % des clients ont terminé le programme avec succès. Deux semaines après leur congé, 48 % des clients disaient être demeurés abstinents. Au suivi de 3 mois, 32 % étaient encore abstinents et après 6 mois, 30 % l'étaient toujours.

**Conclusion :** Les MWSS donnent des résultats positifs pour de nombreux clients, leurs familles et les communautés. Les clients sont retournés au travail ou à l'école, ont adopté de meilleures habitudes en ce qui concerne la préparation de repas santé et la pratique d'exercice, ont passé plus de temps en famille et ont davantage agi comme leaders dans leur communauté.

## INTRODUCTION

This article presents the findings of a 1-year inpatient program evaluation of the Medical Withdrawal Support Service (MWSS) provided at the Sioux Lookout Meno Ya Win Health Centre in Ontario. The centre's service area includes 4 municipalities and 28 First Nations communities, most of which are accessible only by air, with the farthest more than 700 km away.<sup>1</sup> In 2014, opiate use was epidemic, with some remote First Nations communities documenting an age-adjusted adult rate of over 40%.<sup>2</sup>

The MWSS is an inpatient adult program held in a 5-bed secure unit. The service offers medical management for withdrawal from substance use, primarily opiates and alcohol. Admission is voluntary, and clients are referred by health service providers or by self-referral. An exclusion criteria is pregnancy, with addiction services for pregnant clients provided through the prenatal program of the Sioux Lookout Meno Ya Win Health Centre.<sup>3</sup>

Program design and evaluation are responsive to current practices for addiction treatment that recognize addiction as more than the severity of symptoms, but also as an experience that has repercussions on quality of daily life.<sup>4</sup> There is a combination of psycho-educational groups and skills groups held throughout the day, including meal preparation, budgeting, stress management, sexual health, relapse-prevention strategies, daily exercise and beadwork. The unit is smoke-free, and clients are offered nicotine replacement therapy and counselling for smoking cessation.

### Focus of research

We focused on withdrawal from opiates, including symptom management (e.g., clonidine) and/or use of sublingual buprenorphine–naloxone, a substitution medication that combines buprenorphine, a partial opioid agonist, and naltrexone, an opioid antagonist.<sup>5</sup> Because of the limited availability of outpatient maintenance programs using buprenorphine–naloxone in the remote First Nations communities and restrictions on the number of people who can be admitted to the 5-bed inpatient service, most inpatients were tapered off buprenorphine–naloxone before discharge.

### Methadone versus buprenorphine–naloxone

The challenges associated with the medical monitoring of substitution pharmaceuticals preclude the use of methadone in our setting. Methadone is not con-

sidered feasible because it has a long half-life, a lengthy tapering period and a long duration of withdrawal effects, and it is not available for posttreatment maintenance in remote communities. Buprenorphine–naloxone as a substitution therapy is found to have higher retention rates than methadone for substitution programs.<sup>6</sup> This may be related to buprenorphine (its opioid agonist component) having a more immediate effect (20–30 min) on relief of withdrawal symptoms.<sup>6</sup> Buprenorphine–naloxone is also gaining acceptance in outpatient settings, including unsupervised "home starts" in several primary care settings in the United States, with narcotic abstinence rates up to 50%.<sup>7–11</sup>

### OxyContin use

In 2012, OxyContin was delisted in Ontario and replaced by OxyNEO for pharmaceutical purposes.<sup>12</sup> Within the Sioux Lookout region, OxyContin 80 mg pills were frequently purchased with costs shared among a collective of people, and generally the pills were quartered. At the time of delisting, the cost of a quarter tablet (20 mg) skyrocketed from \$80 to \$250. Individuals who were using OxyContin, therefore, tended to use relatively small doses but at a high financial cost that resulted in selling all personal items and exchanging sex for drugs. Throughout 2012, OxyContin remained the primary substance being abused in our region, despite being delisted, followed by morphine. This study evaluates the outcomes of the first year of operation of the MWSS to treat this epidemic of opioid dependence.

### METHODS

This program evaluation includes clients whose admission dates were between Jan. 1, 2012, and Dec. 1, 2012, the program's first year of operation. The program evaluation was designed prospectively. Qualitative data collection was integrated into therapeutic activities, and was performed by program staff, primarily nurses, occupational therapists and counsellors.

There were 3 primary sources of data. Before admission, an extensive initial intake interview was conducted, predominantly by telephone. Data collected included a medical history, substance use history, current substance use, previous counselling, social history, previous addiction treatment and screening tools used during the interview. Medical examinations and histories were performed on admission.

The second stage of data collection occurred at discharge. Staff completed a discharge form, recording information such as length of stay and maximum dose of prescribed buprenorphine–naloxone. Clients were also requested to write their personal goals for discharge. Clients were encouraged to consider goals beyond substance use and include other changes they wanted to achieve or maintain.

The third stage of data collection involved follow-up telephone interviews after discharge, at 2 weeks, 3 months and 6 months. These follow-up interviews, in the 91 available clients, included data about substance use after discharge, subsequent counselling or addictions services, subjective evaluation of the MWSS program and client evaluation of progress on the goals they identified for themselves at discharge.

All clients were included in the data analysis (intention-to-treat analysis).

## RESULTS

In 2012, there were 112 admissions, which included 109 clients in total (72 women and 37 men). The age of the clients ranged from 18 to 70 years.

There was a fairly high amount of polydrug use (i.e., marijuana and cocaine in addition to oxycodone); however, in most cases there was one substance of importance for management of withdrawal. Of the 109 clients, 5 were admitted for substitution from methadone to buprenorphine–naloxone (3 women and 2 men aged 24–42 yr), 1 of whom was still injecting oxycodone daily at the time of admission; 16 for alcohol withdrawal (11 women and 5 men aged 18–70 yr); and 88 for withdrawal from unprescribed opiate use (i.e., oxycodone, morphine, hydromorphone, oxycodone–acetaminophen and/or codeine) (57 women and 31 men aged 18–44 yr). Of the 88 clients who used illicit opiates (including 1 client taking illicit methadone), 69 (78%) administered by injection. Twenty-eight (32%) clients reported snorting, and 6 (7%) reported smoking the crushed pills.

The length of stay ranged from 1 to 29 days, with a mean of 12 days. Length of stay was determined according to client tolerance for tapering and experience of severity of withdrawal symptoms.

Successful completion of the program for alcohol was defined as 7 days' admission or completion of medically facilitated withdrawal plus 3 days free of medications for withdrawal management. Successful completion of opiate withdrawal included tapering off buprenorphine–naloxone completely or

to an established maintenance dose, plus 3 days without a medication for withdrawal management. Using these definitions, 91 of the 112 admissions (81%) were successfully completed. Successful completion was achieved in 13 of 16 admissions (81%) for alcohol withdrawal, 3 of 5 admissions (60%) for methadone and 75 of 92 admissions (82%) for opiates.

Eighty clients were prescribed buprenorphine–naloxone as inpatients. Doses ranged from 4 mg to 22 mg, and the dose did not correlate with the amount of illicit opiates used by the clients before admission. The maximum doses of buprenorphine–naloxone are shown in Figure 1. Twenty-seven people were discharged on a maintenance dose of buprenorphine–naloxone, with doses ranging from 4 mg to 22 mg. The mode and median maintenance dose at the time of discharge was 8 mg.

## Substance use after discharge

Because 3 clients were readmitted to the MWSS, there were 91 admissions for opiate use; these are reported as discrete events ("individuals") in the remainder of this section. A total of 72 individuals (79%) were contacted for follow-up interviews; participants were not available for interviews at all time points. At 2 weeks after discharge, 66 (73%) individuals were interviewed; at 3 months, 49 (54%) were interviewed; and at 6 months, 33 (36%) were interviewed.

A summary of substance use after discharge is provided in Table 1. Opiate use was classified as no opiate use, lapse, reduced use or relapse. Reduced use was considered important from a harm-reduction

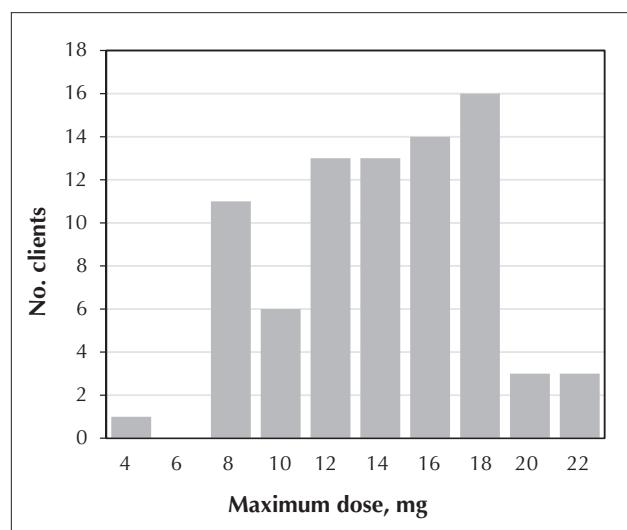


Fig. 1. Maximum prescribed doses of buprenorphine–naloxone.

perspective, because clients' risks for physical harm, financial instability and impact on performance in daily activities would be decreased. There was insufficient data for a comparative analysis; however, it was observed that a lapse or reduced use did not necessarily predict a relapse.

Overall, 97% of clients contacted at the 2-week interview said that they would recommend the program to others, or already had. The other 3% (2 clients) were not sure, with one of them clarifying that it was hard to be away from home.

When asked about what was helpful to achieve goals after discharge, clients described the importance of "keeping busy" and spending time with people who are supportive of their goals (Box 1). The following are examples of client responses:

- "Keep busy. Keep self away from friends. Right now, trying to keep myself healthy and clean and keep my life together. I'm with people who support me. I don't lie or hide the truth. Focus on future goals."
- "Positive attitude; more to life than drugs; seeing a whole new world."

Clients reported becoming more involved in community events, going fishing, doing yoga, walking, journaling, beadwork, attending pow wows, and caring for children or grandchildren as examples of healthy activities. Some clients spoke about needing to move from their home community to support goals of abstinence. Where available, community-based maintenance programs using buprenorphine–naloxone were also beneficial to many.

Asked about the challenges of achieving goals, clients explained that some friends and family members were not supportive, it was difficult to find work and there was a lack of opportunities to receive counselling.

## DISCUSSION

In this program evaluation, we found that the MWSS has high success rates. Success is measured in several ways, including successful completion of the program, abstinence, a reduction in substance use, a change in the administration route (e.g., from intravenous to snorting) and achievement of individual goals. One of the factors that might be associated with outcomes is the quality of therapeutic engagement during the program, facilitated by a safe, respectful alliance between the health providers and clients.<sup>13</sup>

Comparatively, retention rates vary broadly in other programs described in the literature. One short-term residential medical withdrawal program in Ohio reported that 26% of their clients were discharged against medical advice over a 15-month period.<sup>14</sup> Another US study involving 644 people who attended short-term inpatient withdrawal services to establish buprenorphine or methadone maintenance doses reported retention rates of 83% and an average length of stay of 4 days.<sup>6</sup> We found that the MWSS had relatively high retention rates with a longer mean length of stay (12 d) and with most clients being tapered off buprenorphine–naloxone. One of the reasons that rates of successful completion were high may be Health Canada's Non-Insured Health Benefits Program for First Nations and Inuit people, which will fund travel for medical appointments. If a client is discharged "against medical advice," he or she must pay for the return flight out of pocket.

Many clients who continued to abstain from opiates at 3 months and 6 months after discharge were administered buprenorphine–naloxone at community-based treatment programs. However, a considerable number of clients who were discharged without

**Table 1: Reported opiate use after discharge, n = 91**

Length of time after discharge	Reported opiate use	Lapse*	No. (%) of clients		
			Reduced use†	Relapse‡	No follow-up
2 wk	42 (46)	9 (10)	7 (8)	8 (9)	21 (23)
3 mo	29 (32)	5 (5)	6 (7)	9 (10)	42 (46)
6 mo	27 (30)	NA	3 (3)	3 (3)	58 (64)

NA = not applicable.

\*Opiate use once or twice after discharge.

†A return to opiate use at a quantity ≤ 25% of opiate use at intake, which in some cases involved less frequent weekly use.

‡A return to substance use at a quantity and frequency similar to intake or ≥ 25% of the intake dose and frequency.

maintenance medication successfully abstained from opiate use. In fact, even clients who did not successfully complete the program according to the define criteria were able to maintain abstinence and achieve the goals that they had set on discharge.

Many program evaluations for addiction treatment programs included only the clients who successfully completed the program and were available for follow-up, thereby inflating abstinence rates for comparison with intention-to-treat methods. The MWSS had success rates comparable to other program evaluations that included numerous exclusion criteria for data analysis. When comparing program outcomes, the MWSS rates of abstinence, lapse, and relapse include all clients (including those who left against medical advice and those lost to follow-up) and are similar to the finding of other programs after exclusion criteria for research have been applied.<sup>14</sup> Few rural comparators exist. A 2007 evaluation involving 604 clients enrolled in treatment programs in rural

Kentucky found beneficial effects from short-term detoxification with buprenorphine–naloxone, measured as a substantial drop in criminal activity and increased employment at 6-month follow-up.<sup>15</sup>

According to Waldorf and colleagues,<sup>16</sup> “what keeps many heavy users from falling into the abyss of abuse, and what helps pull back those who do fall, is precisely this *stake in conventional life*. Jobs, family, friends — the ingredients of a normal identity.” The clients interviewed for our study echo this in their descriptions of goal attainment that highlight the need to restructure daily routine. Clients returned to work and school, became more engaged in healthy meal preparation and exercise, spent more time with family and were more involved as leaders in their communities. Certainly, medications that manage withdrawal symptoms and cravings can play an important role in supporting abstinence. However, the goals that clients achieved extended beyond abstinence toward the creation of a better life for themselves and their families.

An important success of the MWSS is the positive feedback from clients about the program and the staff. Many clients experience stigma and negative judgment from health professionals, which results in avoiding requesting help when it is needed. Although not all clients achieved their goals or remained abstinent from substance use, they continue to call the unit for ongoing support when needed and have developed trusting relationships with health professionals. A positive experience with the MWSS may act to increase the likelihood that clients will access support in the future when they decide to make changes.

The need for clients to leave their community and family for a lengthy period with restricted contact is a deterrent for many people to attend distant, longer term residential programs. The MWSS, therefore, provides an essential and effective service because of its short duration. There is a parallel, ongoing need to support more community-based services, continuity of counselling before and after addiction intervention, outpatient buprenorphine–naloxone programs and family-based treatment programs in home communities.<sup>5,17</sup> These approaches would offer health care to far more people, reduce the financial burden of relying on inpatient services and potentially serve a preventative role. Community-based case management can support goals, such as securing employment, coordinating mental health counselling and access to other health services, and prevent relapse.<sup>18</sup> Inpatient withdrawal programs are recognized as particularly effective for individuals who have a short history of substance use before progression to injection, which reflects the recent experience in our region<sup>2,19</sup>.

#### Box 1: Sources of support after discharge

##### Physical

###### Internal

- Exercise
- Good sleep

###### External

- Staying away from people who use
- Moved communities
- Methadone/buprenorphine–naloxone
- Counselling
- Elders

##### Emotional

- “My kids”
- “Seeing my wife and kids happy”
- “Talking to someone I trust”
- Being positive
- “My kids are coming to me and hugging me more. I used to say ‘don’t hug me.’ Now I hug back and don’t feel tense or annoyed.”

##### Mental

- Keeping busy
- Working
- Writing music
- Self-awareness
- Following a schedule
- Knowing that help is available

##### Spiritual

- Taking things a day at a time
- Praying
- Traditional practices (e.g., sweat lodges)

## Limitations

Data collection was performed as a component of the health providers' role of assessment and information gathering. This shared duty had the advantage of making data collection feasible and sustainable; however, it posed a limitation to the rigour of data collection because therapeutic rapport was prioritized over collection of research data. A second limitation to the interpretation of the program outcomes may be the therapeutic nature of the follow-up interview, which had value that altered clients' perspective. Third, contacting clients after discharge was a challenge. Many clients reported that having a cellphone was a risk for relapse, so they disconnected their service; some clients moved; and others were attending a residential treatment program at the time of follow-up. Clients who relapsed may have chosen not to respond to follow-up telephone calls. Although simple telephone follow-up is not ideal, it was used because it was cost-effective and was used in many other primary care addiction programs described in the literature.

## CONCLUSION

Hospital-based withdrawal and stabilization on buprenorphine–naloxone are relatively costly. However, given the context — a paucity of alternative services available that have comparable effectiveness — this approach is warranted. The MWSS provides an opportunity to address substance use that is not otherwise available to the residents in northwestern Ontario, and the program had positive outcomes for many clients, as well as for their families and communities.

**Competing interests:** None declared.

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# THE PRACTITIONER LE PRATICIEN

## The occasional umbilical venous line

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This article has been peer  
reviewed.

**A**s an obstetrician in a community hospital, I have found that assisting at neonatal resuscitation is often necessary, especially when human resources are limited. Our family physicians do an excellent job in these situations, and I can be most helpful by

starting an umbilical line in the newborn. Most pediatricians and neonatologists transect the cord and insert the catheter into the cut end of the umbilical vein. Traction on the vein is usually necessary to pass the catheter through the umbilicus, and this can be difficult



Fig. 1. Rotate the cord until the umbilical vein is visible.



Fig. 3. After the vein is entered with scissors, stretch the opening with the lacrimal dilator.



Fig. 2. Excise the amniotic membrane over the vein.



Fig. 4. Advance the umbilical catheter into the umbilical vein.

I have found an alternative method for inserting the umbilical line. As physicians, we are usually more accustomed to starting an intravenous line or taking blood from an intact rather than a severed vein. I suggest the following technique for inserting an umbilical line.

## EQUIPMENT

- 3.5- or 5.0-Fr umbilical catheter
- 10 mL syringe
- 3-way stopcock
- Scalpel
- Hemostat
- Iris scissors
- Lacrimal probe
- Needle driver
- 3-0 black silk suture
- Suture scissors

## PROCEDURE

1. Flush out a 3.5- or 5.0-Fr umbilical catheter with a 10 mL syringe of saline, leaving the syringe attached to a 3-way stopcock (Fig. 1). Cleanse the cord between the cord clamp and the umbilicus. Rotate the cord until the umbilical vein is visible.
2. Make a cut through the amniotic membrane (that covers the cord) over the vein (Fig. 2). With a hemostat, bluntly remove any Wharton jelly away from the vein.
3. Take small bites using the iris scissors to make a small cut into the superficial wall of the vein (Fig. 3). Once the lumen has been penetrated, there is usually a small leakage of blood. Using a lacrimal probe, stretch the opening.



Fig. 5. Prepare the 3-0 black silk suture to anchor the line.

4. Pass the gastric tube through the opening into the vein (Fig. 4). Through application of traction on the cord clamp, the catheter will pass through the abdominal wall into the intra-abdominal portion of the umbilical vein. Advance the catheter into the umbilical vein 3–5 cm from the skin surface.
5. Draw back on the syringe. A venous flush ensures that the line is within the vein (Figs. 5 and 6). Secure the tube within the vein by passing a suture (3-0 black silk) through the cord around the vein and tie the tube in place.
6. Pass the suture around the tube above the entry point into the vein (Fig. 7).
7. Tape the tube to the cord clamp to ensure that it will not be dislodged.

An occasional umbilical venous line can readily be achieved within 5 minutes.

**Competing interests:** None declared.



Fig. 6. Pass the suture through the cord around the umbilical vein (with catheter).



Fig. 7. Tie a knot though the cord holding the catheter in place. Tie an additional knot around the catheter above the entry point (similar to anchoring a drain).

### Country cardiograms case 54

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This article has been peer  
reviewed.

A 37-year-old man presented to his local emergency department with 3 days of progressive shortness of breath. On the day he presented he reported an inability to get out of bed, without feeling short of breath. He also reported concurrent near syncope on standing. He had no similar episodes previous to this. His medical history was significant only for regular cigar smoking. He took nutritional supplements but was not taking any regular medications. He denied excessive alcohol or illicit drug use.

On physical examination, the patient was in no distress at rest. Vital signs included a heart rate of 31 beats/

min and a blood pressure reading of 129/62 mm Hg, equal in both arms. He had a large-volume pulse and cannon a waves on assessment of his jugular venous pressure. The remainder of the examination was unremarkable. Initial routine laboratory investigations were unremarkable, including a negative troponin test. The patient's initial electrocardiogram (ECG) is shown in Figure 1. What findings on the ECG explain the patient's symptoms? What might the underlying etiology be in a young, previously well individual?

For the answer, see page 103.

Competing interests: None declared.

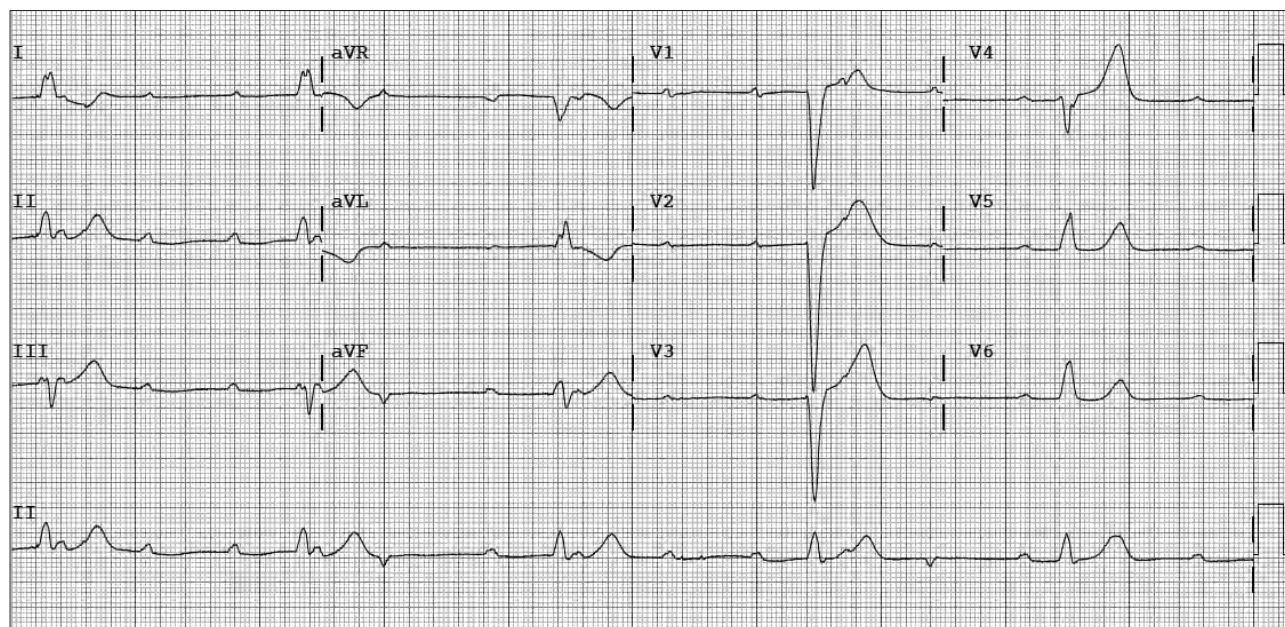


Fig. 1. Electrocardiogram in a 37-year-old man with shortness of breath and near syncope.

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## WELLENS SYNDROME

I always love getting my copy of *CJRM* in my mailbox, and one of my favourite features is the Country Cardiograms. However, to my surprise, I disagree with the conclusions drawn by the author in the Spring 2015 issue.<sup>1</sup>

Charles Helm suggests that, because the patient with acute chest pain has evidence of an intermittent left bundle branch block (LBBB) (on the first electrocardiogram [ECG]) and evidence of ischemia without ST elevation (on the second ECG), he is not having an ST elevation myocardial infarction (STEMI) and should not be given thrombolytics. In fact, I believe the second ECG shows Wellens syndrome, as defined by the marked T wave inversion across the precordial leads. ST segment depression or elevation is not necessarily a component of this syndrome. Wellens syndrome is known to be associated with high-grade stenosis of the left anterior descending artery and has a very high death rate, with STEMI developing within days in 75% of patients, even with optimum medical management (i.e., those excluding percutaneous coronary interventional therapies). The treatment for Wellens syndrome is invasive therapy with angioplasty, as it is known that med-

ically managed patients have much poorer outcomes.<sup>2</sup>

If I were caring for this patient with active chest pain in a rural community that was without timely access to emergent cardiac catheterization, I would certainly consider thrombolysis while the patient awaited transfer to an interventional site. At the very least I would review the patient and the ECG with my friendly cardiologist.

I think this is a very interesting set of ECGs, and I thank Dr. Helm for his ongoing efforts to produce this excellent feature.

**Tandi Wilkinson, MD,  
CCFP(EM)**

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## THE AUTHOR RESPONDS

Thank you for your welcome and thought-provoking query. The teaching points in this Country Cardiograms article were as follows: that LBBB is sometimes intermittent (which allows us potentially to avoid unnecessary thrombolysis); and that this particular set of ECGs allows for

a good understanding of how ischemic changes may manifest in a patient with LBBB. In this case, the second ECG allows us to see how ischemic changes contributed to the atypical left bundle branch pattern in the initial ECG.

The conclusion was that STEMI was not present and that thrombolysis was not indicated. Further management beyond the above-mentioned teaching points was not discussed.

Dr. Wilkinson questions Wellens syndrome (which is a clinical syndrome and not purely an ECG diagnosis). This is conceivable, although the ECG in Wellens syndrome typically refers to a patient who is not experiencing chest pain at the time. I do not believe that in this case one could consider the brief clinical picture presented, along with the ECGs, and conclude that this represents Wellens syndrome, other than to include it in a differential diagnosis.

Discussion with a cardiologist would certainly be useful, and this patient may well require urgent referral and intervention. However, I am not aware of evidence that thrombolysis for an ischemic presentation without ST elevation (in the absence of LBBB) would be indicated.

**Charles Helm, MD, CCFP**

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## Country cardiograms case 54: Answer

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The electrocardiogram (ECG) shown in Figure 1 (on page 100) reveals third-degree atrioventricular (AV) block with an underlying nonconducting sinus rhythm at a rate of about 80 beats/min and a ventricular escape rhythm at a rate of 30 beats/min. The ventricular escape rhythm has a left bundle branch block morphology. The patient was transferred to the coronary care unit of the Mazankowski Alberta Heart Institute for further investigation and management.

Patients with third-degree AV block, accompanied by a slow ventricular escape rhythm, often present with symptoms that include shortness of breath, near syncope and syncope. Symptoms of

heart failure as well as angina may be worsened by the slow ventricular rate. The etiology of third-degree AV block is diverse. In the general population, the most common causes of AV block are idiopathic progressive cardiac conduction disease due to degenerative fibrosis of the conduction system and ischemic heart disease.<sup>1</sup> However, these conditions occur predominantly in older patients. In younger patients, one should also consider hypertrophic cardiomyopathy, infiltrative processes such as amyloidosis and sarcoidosis, and myocarditis due to conditions such as rheumatic fever, viral infections, Lyme disease, systemic lupus erythematosus, bacterial endocarditis and syphilis.<sup>2,3</sup> Common

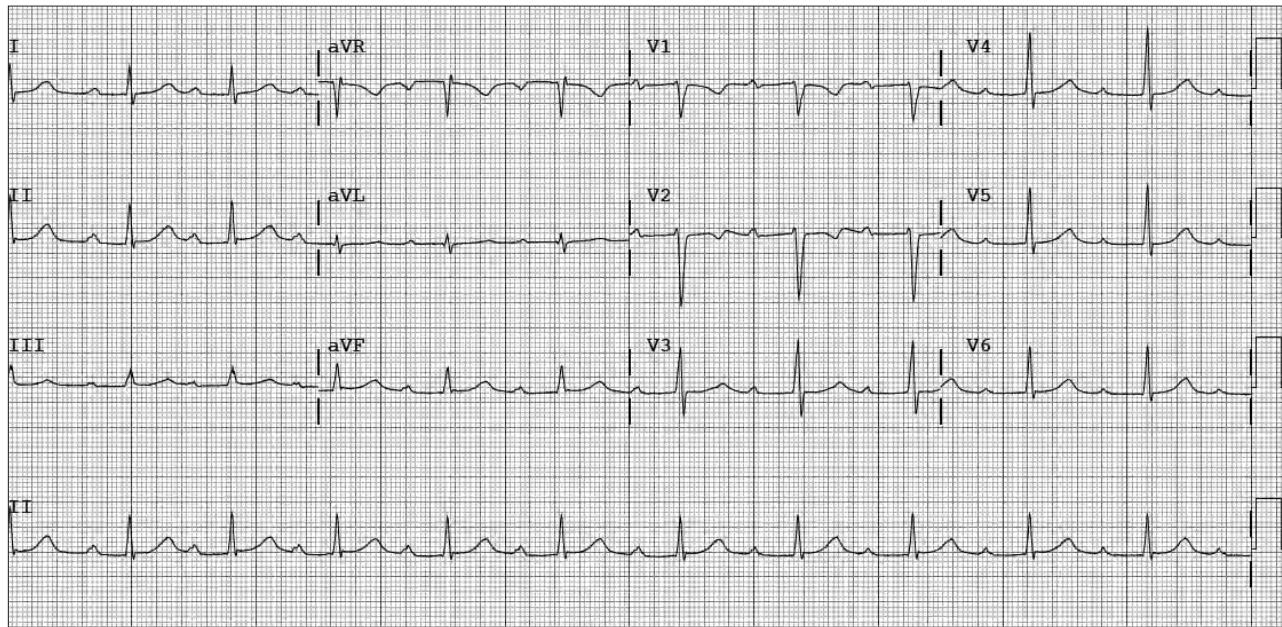


Fig. 2. Repeat electrocardiogram after several days of antibiotic treatment.

"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](mailto:cjrm@cjrm.net).

iatrogenic causes of AV block include medications, such as digitalis,  $\beta$ -blockers and nondihydropyridine calcium channel blockers; cardiac surgery; and catheter ablation for arrhythmia.

In our patient, it was subsequently discovered that he had recently been bitten by a tick at his primary residence in the northeastern United States. The infectious disease service was consulted and the patient was tested for *Borrelia burgdorferi* infection. Initial serology was positive for Lyme disease. Cardiac magnetic resonance imaging revealed a small area of gadolinium enhancement in the basal septum, further supporting the diagnosis. As a result, the patient was given empirical intravenous ceftriaxone for presumed Lyme carditis. Subsequent Western blot testing confirmed the diagnosis.

Lyme disease is the most common tick-borne infection in the northern hemisphere.<sup>4,5</sup> It is a multi-systemic condition caused by the spirochete *B. burgdorferi*. In the United States, it is endemic in the northeastern and mid-Atlantic regions, as well as the upper midwest and northern Pacific Coast.<sup>4,6</sup> In Canada, the ticks that can carry Lyme disease are found in southwestern Quebec, southern and eastern Ontario, southeastern Manitoba, New Brunswick, Nova Scotia and southern British Columbia.<sup>7</sup>

The clinical course of Lyme disease is typically divided into 3 stages: early localized, early disseminated and late disease. Early localized disease generally occurs after an incubation period of several days up to a month and is characterized by development of the erythema migrans rash and flu-like symptoms.<sup>8</sup> The early disseminated stage occurs weeks to months after the rash first appears and is the stage during which cardiac symptoms often manifest.<sup>5</sup> Finally, the late phase presentation includes arthritis and neurologic dysfunction, often months to years after the initial rash.<sup>8,9</sup> The diagnosis is suspected based on the clinical presentation, supported by positive serology on enzyme-linked immunosorbent assay and confirmed through a Western blot analysis.<sup>8</sup>

About 4–10% of patients with Lyme disease have cardiac involvement on initial presentation.<sup>9</sup> Cardiac manifestations typically occur during the early disseminated phase of the illness and consist of varying degrees of AV block, tachyarrhythmia, heart failure, myopericarditis and intraventricular conduction disturbance.<sup>9–11</sup> Transient AV block is the most common cardiac manifestation.<sup>5,6,8–11</sup> Electrophysiological studies suggest that the heart block usually occurs above the bundle of His, typically within the AV node. However, other levels of the

conduction system may be affected, including the sinoatrial node, intra-atrial pathways and below the bundle of His.<sup>9,10</sup> Patients with first-degree AV block and a PR interval less than 300 ms are at low risk and can receive treatment as outpatients.<sup>12</sup> For patients presenting with first-degree AV block with a PR interval greater than 300 ms, or those with a higher degree of AV block, inpatient treatment with parenteral ceftriaxone is recommended by the Infectious Diseases Society of America.<sup>13</sup> Most cases of Lyme carditis resolve in 1 to 2 weeks with antibiotics and do not require insertion of a permanent pacemaker.<sup>6,12</sup>

Our patient was given expectant treatment, and no temporary venous pacing was required. Over several days, his conduction abnormality began to improve, initially evidenced by a narrowing of his QRS complex followed by improvement in AV nodal conduction from third-degree to first-degree heart block (Fig. 2). He was discharged in stable condition.

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For the question, see page 100.

Competing interests: None declared.

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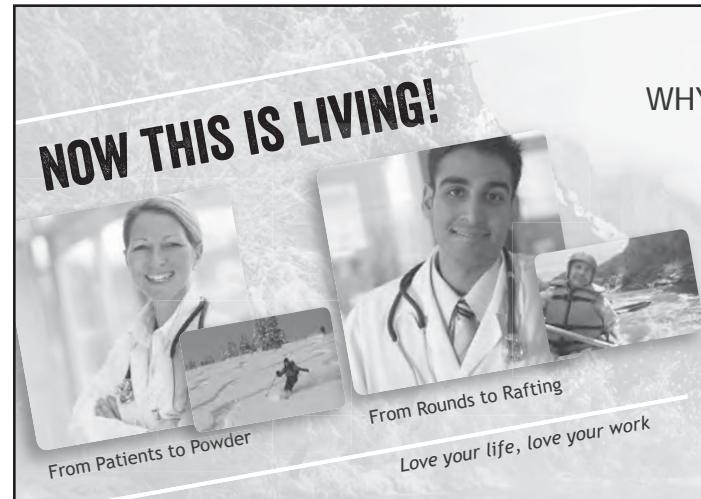
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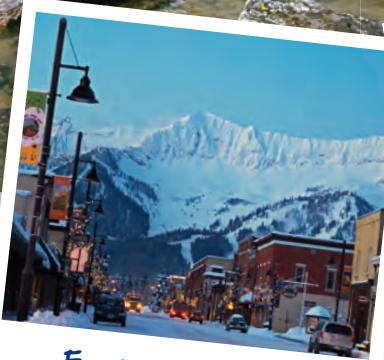
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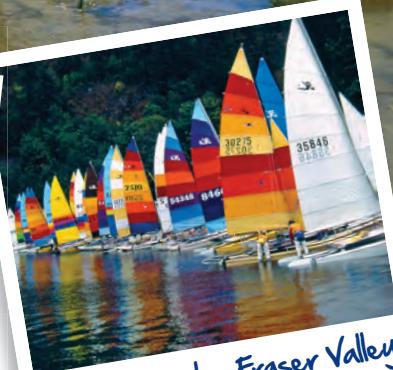
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