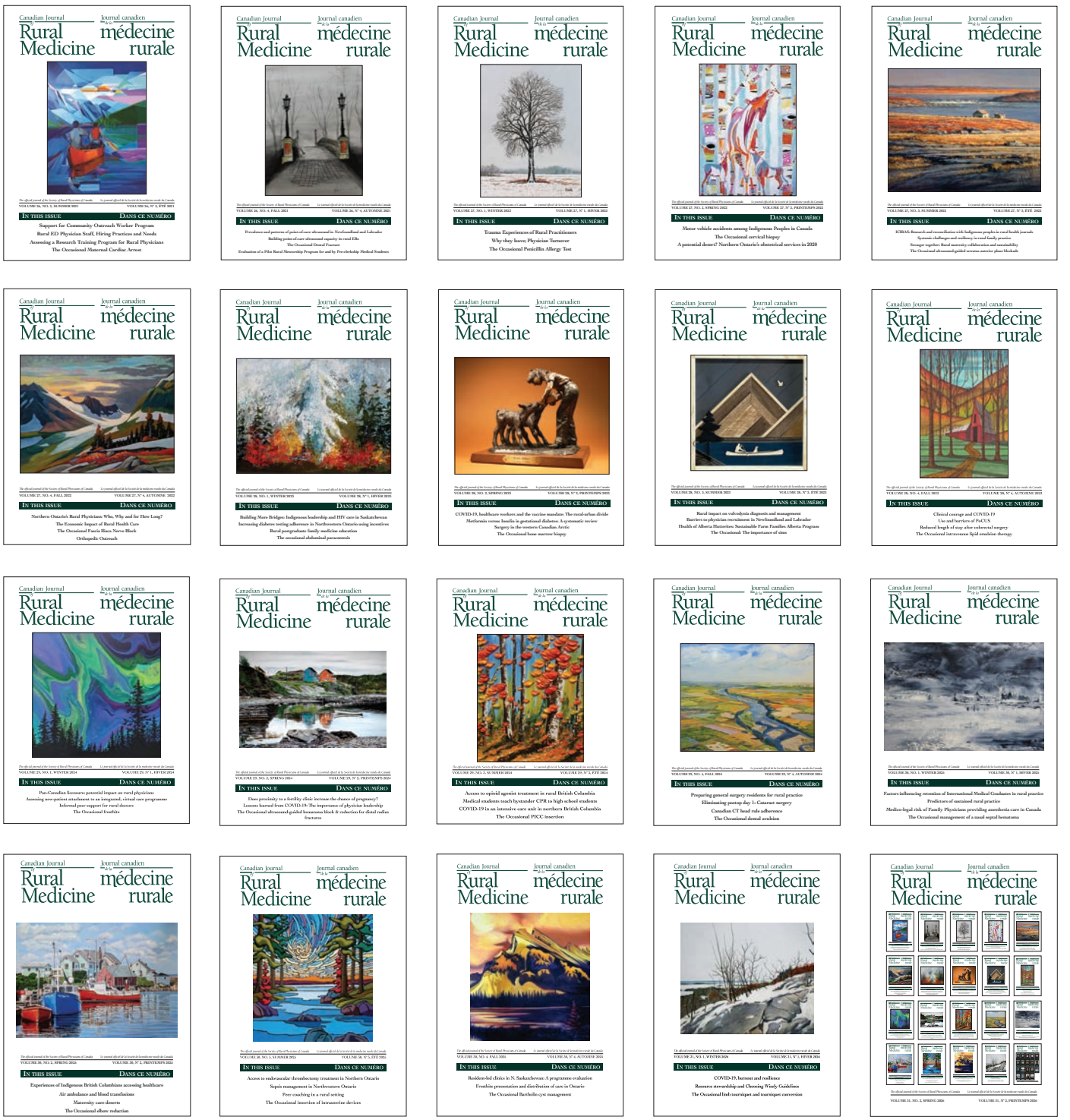
# Canadian Journal of Rural Medicine

# Journal canadien de la médecine rurale



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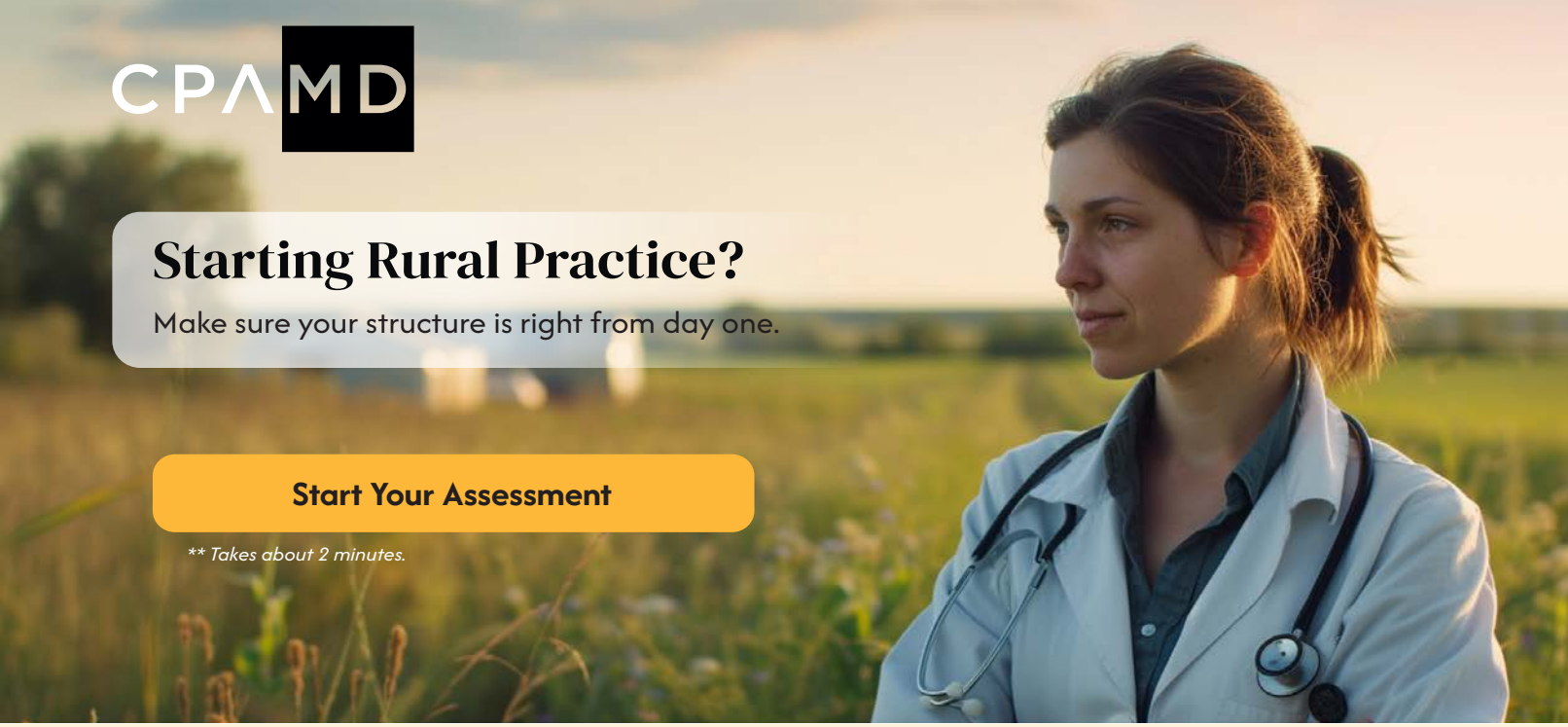

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# Canadian Journal of Rural Medicine / Journal canadien de la médecine rurale

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## Editorials / Éditoriaux



## President's Message/ Message du President



## Original Articles



## The Occasional



## Podium

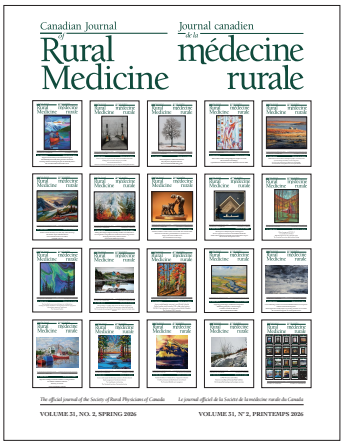


## Letter to Editor








*This issue marks the 30th anniversary of the CJRM. The cover represents the last 5 years.*

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# 30 years at the CJRM

*Peter Hutten-Czapski, MD*

*Scientific Editor CJRM*

*Correspondence to:*
*Peter Hutten-Czapski,*
*phc@srpc.ca*

The CJRM is 30 years old. During my tenure here for the last 18 years, everything has changed. When I started, everything was done by mail, the journal made money, the copyright was jealously guarded and we printed on paper and mailed the issues. Now, everything is done via a publishing portal; we still retain copyright but make conscious effort to have all our content freely available with open access. We still publish a few copies on paper, but only because we have history.

That wasn't the case in 1996 when we started as an audacious concept: 'that rural medicine has enough distinct content worthy of a journal'. The current generation of physicians finds it's a given. After all, they go to medical schools where they are exposed to our discipline (some of the schools are even distributed if not actually rural). They are taught at times by rural faculty. I hope that urban faculty now understand that the case that is being referred to them has not been 'mismanaged' in the periphery and 'dumped', but that despite resource limitations and with some significant efforts, the patient is being transferred to the most appropriate place for the care that they need. Fine, we are still working on that last one.

In fact, there are a lot of rural issues that make choosing an editorial topic a challenge of picking from the many. On my mind is filling the pages of this journal with rural-relevant content. Don't get me wrong, we are not starving for content, as we get two manuscripts a week and only can publish eight in an issue. Be that said there are certain types of papers that I particularly look forward to receiving and almost universally accept. One is 'The Podium' piece where an established rural doctor can write passionately about an issue that matters to them.

The other is our ongoing procedural series, 'The Occasional'. I am looking for things that are either not taught well or not widely done, but that can and should be done by rural generalist physicians if the circumstances warrant. If we have published the topic before, we are open to an update if the technology (e.g. the kit, POCUS) has moved on.

A 'Letter to the Editor' is useful if you have a comment, suggestion or correction, for anything that we have just published.

New authors are particularly welcome here at the CRJM, even if we are establishment now, we're always going to be rural. As listed in our masthead, it's just me, Suzanne Kingsmill (from the beginning) and some hard-working associate and assistant editors who are rural doctors like you. Feel free to pitch this editor directly with your ideas at phc@srpc.ca.

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# 30 ans au CJRM

*Peter Hutten-Czapski, MD*

*Rédacteur Scientifique, JCRM, Haileybury, ON, Canada*

*Correspondance: Peter Hutten-Czapski, phc@srpc.ca*

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Le JCMR a maintenant 30 ans. Au cours de mes 18 dernières années à ce poste, j'ai vu le paysage se transformer de fond en comble. Quand je suis arrivée, tout se faisait par la poste, la revue était rentable, on protégeait jalousement les droits d'auteur, puis on imprimait les numéros sur papier avant de les envoyer aux abonnés. Maintenant, tout passe par une plateforme d'édition. On conserve toujours nos droits d'auteur mais avec une volonté claire de rendre notre contenu accessible à tous en libre accès. On imprime encore quelques exemplaires papier, mais surtout par respect pour notre histoire.

En 1996, pourtant, l'idée était loin d'aller de soi. Fonder une revue consacrée à la médecine rurale relevait presque de l'audace : il fallait croire que cette pratique avait une réalité, une richesse et une spécificité suffisantes pour justifier sa propre publication scientifique. Aujourd'hui, pour la relève médicale, cela semble presque évident. Les étudiants en médecine sont désormais exposés à notre discipline pendant leur formation, parfois même dans des facultés décentralisées ou ancrées en milieu rural. Ils apprennent aussi auprès de médecins enseignants qui viennent directement de la pratique rurale.

J'ose espérer aussi que les professeurs et collègues des grands centres comprennent mieux aujourd'hui qu'un patient qui leur est transféré n'a pas été « mal pris en charge » en région, ni simplement « envoyé ailleurs pour s'en débarrasser ». Bien au contraire, malgré des ressources plus limitées, et souvent au prix d'efforts considérables, tout a été fait pour que cette personne soit dirigée vers l'endroit le plus approprié pour recevoir les soins dont elle a besoin. Bon… celui-là, disons qu'on continue encore d'y travailler.

En réalité, les enjeux propres au milieu rural sont si nombreux que le plus difficile, quand vient le temps de choisir un sujet éditorial, c'est surtout de décider lequel mettre de l'avant.

Ce qui m'occupe, avant tout, c'est de continuer à remplir les pages de cette revue avec du contenu pertinent pour la pratique rurale. Cela dit, qu'on se comprenne bien, on ne manque pas de textes. Nous recevons environ deux manuscrits par semaine, alors qu'on ne peut en publier que huit par numéro. Malgré tout, il y a certains types d'articles que j'attends avec un plaisir particulier — et que j'accepte presque toujours.

Il y a d'abord « The Podium », une tribune où un médecin rural d'expérience peut prendre la parole avec conviction sur un enjeu qui lui tient à cœur. Il y a aussi notre série de techniques et d'interventions, « The Occasional ». Ce que je cherche ici, ce sont des sujets qu'on enseigne mal ou qui ne sont pas encore largement pratiqués, mais que les omnipraticiens ruraux devraient pouvoir faire lorsque le contexte l'exige. Et si nous avons déjà traité d'un sujet, nous restons tout à fait ouverts à une mise à jour lorsque les pratiques ou les outils ont évolué — pensons, par exemple, à l'équipement ou au POCUS.

La section « Letter to the Editor » est aussi là pour ça. Si vous avez un commentaire, une suggestion ou une correction à propos d'un texte que nous venons de publier, elle vous est ouverte. Au JCMR, les nouvelles voix sont particulièrement bienvenues. Même si la revue est aujourd'hui bien établie, elle restera toujours profondément ancrée dans la réalité rurale. Comme l'indique notre cartouche de titre, il n'y a pas une grosse organisation impersonnelle. Il y a moi, Suzanne Kingsmill, qui est là depuis le tout début, ainsi que des rédacteurs adjoints et assistants dévoués qui sont eux aussi des médecins ruraux, comme vous.

N'hésitez pas à écrire directement à la rédactrice en chef pour proposer une idée : phc@srpc.ca

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# President's Message

# Reflecting

*Gavin Gerard Parker, MD*

*Department of Rural Medicine, Pincher Creek Health Centre, Pincher Creek, AB, Canada*

*Correspondence to: Gavin Gerard Parker, gavin.g.parker@gmail.com*



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Over the past several years, the Society of Rural Physicians of Canada (SRPC) has strengthened its advocacy on behalf of rural and remote communities. A significant milestone occurred in January, when Drs. Jon Witt, Brian Geller, Sarah Giles and I met in Saskatoon with Minister of Health Marjorie Michel, Secretary of State (Rural Development) Buckley Belanger, Nancy Hamzawi, President of the Public Health Agency of Canada and senior federal officials to address issues central to rural health care.

Our discussions focused on federal policy levers to improve access in rural and remote communities, better alignment to support workforce sustainability and areas where federal leadership could accelerate progress across jurisdictions. We highlighted the SRPC's National Advanced Skills Training Programme and the emerging post-training data demonstrating its lasting impact. Enhanced skills not only expand local capacity but also help retain physicians and patients within their communities – an outcome essential to long-term system stability.

Minister Michel challenged us to help convene a "summit of the willing," bringing together federal, provincial and territorial leaders to advance physician workforce portability and improve rural access to care. Particular attention was given to strengthening pathways for Internationally Trained Physicians to live and practise in rural and remote Canada. We emphasised that while recruitment often dominates policy discussions, retention is frequently overlooked. Sustaining a stable rural workforce depends on keeping physicians in the communities they serve.

We also discussed the upcoming Federal–Provincial–Territorial Health Ministers' Meeting. Minister Michel expressed support for ensuring that the SRPC's advocacy priorities are heard. With Manitoba hosting this fall, we are working to ensure rural health has a strong presence at that table.

Both Minister Michel and Secretary of State Belanger agreed that rural health care must be framed not simply as a cost, but as an economic driver and foundational enabler of national priorities. Strong rural health systems support workforce participation, community resilience and economic growth across Canada. The meeting was productive, and I extend sincere thanks to our SRPC staff for their exceptional coordination and preparation.

In parallel, the SRPC has completed a comprehensive governance review. The committee finalised its recommendations, Council members provided feedback and proposed bylaw changes have been presented to the membership. By the time you read this, our modernised governance structure may already be in place. I am grateful to Past President Dr. Sarah Lesperance for her leadership in strengthening our organisational foundation.

As this issue goes to print, Dr. Sarah Giles assumes the presidency of the SRPC. Her clarity of vision, commitment to rural and remote communities and strong leadership will serve the organisation well. It has been an honour to serve as your President, and I remain confident that together we will continue to advance meaningful change for rural Canadians.

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# Message du Président

## Réflexions

*Gavin Gerard Parker, MD*

*Department of Rural Medicine, Pincher Creek Health Centre, Pincher Creek, AB, Canada*

*Correspondance: Gavin Gerard Parker, gavin.g.parker@gmail.com*

Au cours des dernières années, la Société de la médecine rurale du Canada (SMRC) a renforcé son rôle de porte-parole pour les communautés rurales et éloignées. Un moment marquant a eu lieu en janvier, lorsque les docteurs Jon Witt, Brian Geller, Sarah Giles, et moi-même, avons rencontré à Saskatoon la ministre de la Santé, Marjorie Michel, le secrétaire d'État au Développement rural, Buckley Belanger, Nancy Hamzawi, présidente de l'Agence de la santé publique du Canada, ainsi que de hauts fonctionnaires fédéraux afin d'aborder des enjeux cruciaux pour les soins de santé en milieu rural.

Nos échanges ont porté sur les leviers d'action dont dispose le gouvernement fédéral pour améliorer l'accès aux soins dans les communautés rurales et éloignées, sur la nécessité d'un meilleur arrimage pour soutenir la pérennité de la main-d'œuvre médicale, ainsi que sur les domaines où un leadership fédéral pourrait faire avancer plus rapidement les choses d'une province ou d'un territoire à l'autre. Nous avons notamment mis en lumière le Programme national de formation et compétences avancées de la SMRC, de même que les premières données post-formation, qui confirment son impact durable. Le développement de compétences bonifiées permet non seulement d'élargir l'offre locale de soins, mais aussi de favoriser le maintien en poste des médecins et le maintien des patients dans leur communauté; un élément essentiel à la stabilité du système à long terme.

La ministre Michel nous a lancé un défi clair : aider à réunir un « sommet des volontaires », rassemblant les dirigeants fédéraux, provinciaux et territoriaux afin de faire progresser la portabilité de la main-d'œuvre médicale et d'améliorer l'accès aux soins en milieu rural. Une attention particulière a aussi été accordée au renforcement des parcours permettant aux médecins formés à l'international de vivre et de pratiquer dans les régions rurales et éloignées du Canada. Nous avons rappelé que, si le recrutement occupe souvent toute la place dans les discussions politiques, la rétention, elle, demeure trop souvent négligée. Pourtant, la stabilité de l'effectif médical en milieu rural repose d'abord sur notre capacité à garder les médecins dans les communautés qu'ils desservent.

Nous avons également discuté de la prochaine rencontre fédérale-provinciale-territoriale des ministres de la Santé. La ministre Michel s'est montrée favorable à ce que les priorités de la SMRC en matière de représentation et de défense des intérêts soient entendues. Comme le Manitoba sera l'hôte de cette rencontre à l'automne, nous travaillons activement pour que la santé rurale y occupe une place de premier plan.

La ministre Michel et le secrétaire d'État Belanger se sont entendus sur un point fondamental : les soins de santé en milieu rural ne doivent pas être vus uniquement comme une dépense, mais bien comme un moteur économique et une condition de base à l'atteinte des grandes priorités nationales. Des systèmes de santé ruraux solides soutiennent la participation au marché du travail, renforcent la résilience des communautés et contribuent à la croissance économique partout au pays. Cette rencontre a été des plus constructives, et je tiens à remercier sincèrement l'équipe de la SMRC pour l'excellence de sa préparation et de sa coordination.

Parallèlement, la SMRC a mené à terme un examen approfondi de sa gouvernance. Le comité a finalisé ses recommandations, les membres du Conseil ont transmis leurs commentaires et les modifications proposées aux règlements ont été soumises aux membres. Au moment où vous lirez cette information, il est possible que notre structure de gouvernance modernisée soit déjà en vigueur. Je tiens à exprimer toute ma reconnaissance à la présidente sortante, Dre Sarah Lesperance, pour son leadership dans le renforcement des assises de notre organisation.

Alors que ce numéro prend le chemin de l'impression, Dre Sarah Giles accède à la présidence de la SMRC. Sa vision claire, son engagement envers les communautés rurales et éloignées, ainsi que la qualité de son leadership seront de précieux atouts pour l'organisation. Ce fut un grand privilège de vous servir à titre de présidente et je demeure convaincue qu'ensemble nous continuerons à faire progresser des changements porteurs pour les Canadiennes et Canadiens des régions rurales.

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ORIGINAL ARTICLE

# University of British Columbia rural training graduates: Trained for rural, did rural gain?

*Tracey Parnell, MD CCFP,*
*Carl Whiteside, MD CCFP*

*Department of Family Practice, Faculty of Medicine, University of British Columbia, Vancouver, Canada*

*Correspondence to:*
*Tracey Parnell,*
*drtaparnell@hotmail.com*

*This article has been peer reviewed.*

**Abstract**

**Introduction:** The University of British Columbia (UBC) implemented a Rural Training programme in 1982 to prepare rural generalist physicians. Our study is a cumulative evaluation to assess efficacy with regard to recruitment and retention of physicians to rural practice.

**Methods:** Comparative evaluation, Cox regression analysis and Kaplan–Meier survival graphs of information from a database containing annual practice location information from resident physician participants in the rural training programmes at UBC from 1982 to 2020 were compared with a database of urban-trained UBC residents from 2005 to 2020. Length of practice and duration in rural communities as defined by the BC Rural Subsidiary Agreement was determined, as well as trends over time and by site of undergraduate training. Outcomes of recruitment using the Rational Risk Taker (RRT) assessment were compared to the outcomes when it was not implemented.

**Results:** Kaplan–Meier survival graphs showed consistent trends that rural programmes increased the likelihood of doctors staying in rural communities, with almost half of all rural-trained doctors staying around 10 years initially, and nearly a third remaining in rural communities for 20-30 years. The RRT may increase the retention rate in rural communities for rurally trained doctors. Cox regression analysis determined that training urban was associated with a much higher likelihood of rurally recruited doctors not staying in rural communities (likelihood ratio of 14.18 $P$ = 0.003, positive coefficient 0.57).

**Conclusion:** The UBC rural training programme successfully increases the long-term retention rate for doctors who practise in rural communities. The RRT and other approaches it utilises may be useful in other jurisdictions to increase retention of rural doctors. Further long-term and ongoing analysis are warranted.

**Keywords:** Doctors, post-graduate training, retention, rural

**Résumé**

**Introduction:** L'Université de la Colombie-Britannique a mis sur pied, en 1982, un programme de formation rurale visant à préparer des médecins généralistes à la pratique en région. Notre étude propose une évaluation cumulative de ce programme afin d'en mesurer l'efficacité en matière de recrutement et de rétention des médecins en milieu rural.

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**Méthodes:** Nous avons réalisé une évaluation comparative à l'aide d'une analyse de régression de Cox et de courbes de survie de Kaplan-Meier. Les données provenaient d'une base recensant, année par année, le lieu de pratique des médecins ayant participé aux programmes de formation rurale de l'UBC entre 1982 et 2020. Ces données ont été comparées à celles d'un groupe de médecins formés en contexte urbain à l'UBC entre 2005 et 2020. Nous avons mesuré la durée de pratique et le temps passé en communauté rurale, selon la définition retenue dans le BC Rural Subsidiary Agreement, de même que les tendances dans le temps et selon le site de formation prédoctorale. Les résultats en matière de recrutement ont aussi été comparés selon l'utilisation, ou non, de l'outil d'évaluation Rational Risk Taker (RRT).

**Résultats:** Les courbes de survie de Kaplan-Meier montrent de façon constante que les programmes de formation rurale augmentent la probabilité pour les médecins de demeurer en milieu rural. Au départ, près de la moitié des médecins formés en contexte rural y sont restés environ 10 ans, et près du tiers ont poursuivi leur pratique en région pendant 20 à 30 ans. L'outil RRT pourrait également contribuer à améliorer la rétention des médecins formés en milieu rural. L'analyse de régression de Cox a montré qu'une formation urbaine était associée à une probabilité beaucoup plus élevée de quitter la pratique en milieu rural chez les médecins recrutés pour ces communautés (rapport de vraisemblance de 14,18; $P$ = 0,003; coefficient positif de 0,57).

**Conclusion:** Le programme de formation rurale de l'UBC contribue de façon significative à améliorer la rétention à long terme des médecins qui exercent en région rurale. Le RRT, ainsi que d'autres approches qui l'accompagnent, pourraient être utiles dans d'autres contextes afin de renforcer la rétention des médecins en milieu rural. Des analyses à plus long terme et un suivi continu demeurent toutefois nécessaires.

**Mots-clés:** Rétention des médecins, programmes de formation rurale, médecins formés en milieu rural, programme de formation rurale de l'UBC

## INTRODUCTION

The recruitment and retention of rural physicians in British Columbia (BC), throughout Canada and globally,[1] continues to be a significant challenge. In order to address the need for rural Physicians in BC the Department of Family Practice University of BC (UBC) initiated the Rural Training Programme in 1982.[2] This unique programme was at the forefront of community-based, rural training in Canada.[3] It also recognised the need for diverse, comprehensive training experiences that are now enshrined in the principles of generalist rural medicine as outlined in the 2014 Cairns Consensus (Australia), specifically a rural generalist who provides primary and emergency care to the community.[4]

Although the programme has grown and undergone several evaluations over the years, a cumulative longitudinal evaluation was needed to provide an in-depth assessment of trends of recruitment and, critically retention. These data are essential for building strategies for rural healthcare planning.[5]

Why a longitudinal evaluation now? The average physician completing training in their 30s, has a career of 35–40 years, and retires around age 70, with some gender differences.[6] Data have been collected on students in the rural graduate programme from 1982 onwards and maintained in a database with practice data updated annually. This data will now allow for a picture of the life cycle of graduates trained with a rural focus, as well as giving a snapshot of other mid and early career physicians, as compared to their urban-trained colleagues.

There have been limited longitudinal studies on our topic, mostly American[7,8] and Australian[9] with a few in the Canadian context.[10,11] None were identified that intentionally began to explore this question from the perspective of the entire career life of the clinician as ours does. Like many other aspects of healthcare, consistent, high-quality longitudinal care for rural populations won't happen without constant, deliberate effort and the policies to support and promote it.[12] Fragmentation eroding local services is an enduring threat and studies like ours are needed to address and better understand ways to mitigate and address rural health issues.

## METHODS

UBC's family medicine training programmes have grown over the years, but have generally provided three main streams – rural, urban and urban with an international medical graduate (IMG) focus. While the number of locations and

residency training programmes varied annually, the curriculum was consistent in content (1982–2016). Rural residency programmes would be based out of larger rural or smaller urban centres and have a significant number of their clinical rotations in rural communities.

UBC's 2-year Family Practice Post-graduate rural training curriculum was based on a 1st year (R1) focused on urban/regional rotations required for later licensure in BC. The 2nd year (R2) curriculum was rural based with 10 blocks rural/2 blocks elective and 1 block UBC based academic time. Block duration ranged from 4 to 16 weeks and could be individualised. All rural training sites were defined by those presently outlined as Rural Subsidiary Agreement Communities (RSAC) in BC.[13] RSAC is an agreement between the provincial government and the Doctors of BC whereby rural communities are defined according to agreed upon criteria, which has been refined over the years. RSAC are grouped into 4 tiers largely based on remoteness and services provided. In the four classifications, A through D, A is the most remote and isolated, D represents the larger rural communities. Residents would rotate through these communities for their rural rotations.

Physicians who completed a family medicine residency at UBC were identified as either those who completed a rural residency between 1982 and 2020 and those who completed an urban residency between 2005 and 2020. The urban residents were used as a comparison group. These UBC databases contained information on medical school location and graduation year and, gender, residency programme location and year of graduation from residency. It did not contain information on the background of the residents, in particular, whether or not they came from rural communities, which has been suggested as a possible contributor to rural retention. The evaluation included stratifying rural or urban residency trained as well as by where physicians obtained their MD from, UBC or other. We also did a stratification on retention outcomes based on 5-year aggregate groups to evaluate if there were differences that were specific to various time periods.

Details on physician practice status and location were determined for each year, extracted from publicly available registration directories including the BC College of Physicians and Surgeons (except 2004, which was not produced) and other Canadian and American public registry sources. Data on retirement and death were also sourced from these records, when and where available. Data on physicians who lived in an urban environment but who may have worked rurally or done rural locums were not available. The location of practice was categorised as rural if the community was identified as such by the BC Rural Practice Subsidiary Agreement as of 2020.

### Analysis

This information was formatted into an Excel spreadsheet to facilitate analysis and future evaluations. Simple descriptive statistical techniques were applied to each dataset. Stratified trend analysis was applied based on the location of original medical training, in Canada (Canadian Medical Graduates [CMGs]) or outside of Canada (IMGs). Additional statistical consultation resulted in calculations that included survival analysis for rural versus urban-trained physicians, by year of graduation, CMG versus IMG status and gender. Survival analysis graphs were performed and interpreted on these parameters. As well, Cox regression models were done on rural versus urban to answer the question of whether rural training matters to retention of physicians in rural communities. Many physicians were noted to have more than one episode of rural practice and the relevance of this was also analysed using Cox regression techniques.

### Ethics

This evaluation was granted exemption from the ethics review board.

## RESULTS

Eight-hundred and forty-eight physicians who completed a family medicine residency at UBC were identified. Of that group, 315 completed a rural residency (between 1982 and 2020) and 533 completed an urban residency (between 2005 and 2020). Twenty-point one percent were IMGs. Seventeen of the rural-trained doctors (315; 5.4%) were IMGs. However, only 2 of these 17 ended up practising in a rural community, and only 1 has stayed rural. There were 553 (28.9%) IMGs in the

urban stream (553). They included 124 doctors in the St. Paul's urban IMG training programme that had a rural return-of-service agreement for its graduates. If these are excluded, the proportion of IMG trainees in the urban programmes (7.3%) is comparable to that found in the rural stream, but only one of these doctors went into rural practice.

Only 5 of the physicians in the rural stream were identified as having retired (1.6%), and none in the urban stream, making it difficult to draw any conclusions about retirement in these groups. There were however 10 lost to follow up and 2 temporarily inactive and 3 deceased in the rural-trained group. In the urban-trained group, 4 were lost to follow up as of 2020, 6 were noted as temporarily inactive and 1 had died. The medical careers of those who had retired spanned from 25 to 31 years in length, with an average of 28.4 years. All 5 spent most of their career in rural communities, although one was in rural Alberta, not BC.

During the analysis, it was noted that there was an unexpected pattern of initial recruitment to rural practice for several years, then time in urban practice and a return to rural practice for many doctors. These multi-changes were considerably more notable in the rural-trained cohort than the urban control group (20% vs. 4.3%). The rural multi-movers did spend 77.8% of their total practice years in rural, despite moving more than once. This complicated the analysis and will need to be further explored in future evaluations; for the purposes of this assessment, the initial period of rural practice and subsequent leaving was used for the determination of survival analysis (Kaplan–Meier graphs). For the statistical cumulative analyses, the total years spent in rural was determined and applied.

Analysis included a cumulative total of 4004 years of practice in BC for the urban-trained physicians (244 years practiced out of province) and 3896 years of cumulative practice in BC for rural-trained doctors (456 years out of province). Of these years, rural-trained doctors spent 45.2% of them in rural communities, whereas urban-trained doctors went on to spend only 12.4% of their career years in a rural community.

Table 1 presents the breakdown of rural career years by stream and RSAC category. Urban-trained doctors who do go into rural practice are more likely than their rural-trained colleagues to practise in less isolated rural posts as designated by category A and B.

Cox regression analysis determined that training urban was associated with a much higher likelihood of rurally recruited doctors not staying in rural communities (likelihood ratio of 14.18 $P$ = 0.003, positive coefficient 0.57). As shown in Figure 1, a Kaplan–Meier survival graph of the two training streams shows divergence in retention rates for rural versus urban-trained physicians, starting about year 3. This showed a consistent pattern of urban physicians leaving rural communities at greater rates than their rural-trained colleagues. This difference started at year 3 with 64% of rural-trained graduates staying in rural communities versus their urban-trained colleagues at 53%. This pattern persisted, reaching a peak discrepancy at year 11 with 44% of rural-trained doctors staying in rural communities versus 31% of urban-trained physicians.

There were no notable differences between rural retention irrespective of the year in which the physician started residency [Figure 2]. However, a sub-analysis of those physicians who were recruited to rural-training programmes during the years that the Rational Risk Taker (RRT) Assessment was used tended to stay in rural communities at a higher rate than those recruited without this tool [Figure 3].

Analysis of all rural residency trainees demonstrated a tendency for UBC graduates to stay in rural communities at a greater rate than their non-UBC trained colleagues [Figure 4]. This was even more notable when sub-analysis was performed of UBC rural trainees with a persistent pattern of rural trainees staying in rural communities at much higher rates than their urban counterparts after year 5. However, those doctors who stay longer than 25 years in a rural community are likely to continue to stay at equal rates, regardless of what medical school they graduated from [Figure 5].

Doctors who obtained their MD at a medical school other than UBC, but who trained in a UBC rural programme, who then went into rural practice, are more likely to stay than those who received their MD training elsewhere. For urban-trained doctors this pattern is reversed: Doctors who choose rural, but who did not study at UBC for their undergraduate medical degree,

are more likely to stay in rural practice than their UBC urban-trained colleagues, from about 4 years onwards, despite coming from an urban-focused training scheme [Figure 6].

Men and women were equally likely to stay in rural communities for the first 8 years after UBC family practise residency training [Figure 7]. After that women were more likely to leave than men; after 13 years, the retention rate for men stabilised at around 44%. Women, however, continued to leave with a persistent downward trend up to 28 years. This pattern was persistent with sub-analysis of rural programme trainees [Figure 8].

## DISCUSSION

Our study shows that the forward thinking and action of doctors at UBC in 1982 resulted in a programme that provides substantial long-term recruitment to rural practice, with nearly half of all rural trainees staying in a rural community initially for about 10 years, and a third staying between 20 and 30 years. Cox regression analysis supported this finding with a likelihood ratio for urban trainees leaving rural of 14.18 $P$ = 0.003, positive coefficient 0.57. There is a unique bimodal pattern of retention for rural doctors, where they enter rural practice, stay for a number of years, leave and then return. This has not been well described in the literature and is worth further investigation.

Rural-trained doctors who graduated from UBC are more likely than their non-UBC colleagues to stay longer in rural communities, while non-UBC grads in post-graduate urban training programmes gravitated to more rural communities than their UBC medical student peers. Urban trainees, however, who chose rural practice were more likely to practise in less rural areas as compared to rural programme graduates, as defined by the Rural Subsidiary Agreement. According to the Canadian Medical Association data from 2001 to 2005, 8% of rural doctors were likely to move to urban cities and towns, versus 0.5% who moved from urban to rural. This could represent the bimodal pattern that was noted in this evaluation. It could be speculated that this

**Table 1: Percentage of BC rural career years spent in rural subsidiary communities by category, with D representing the more isolated and remote communities, A is the larger rural communities as determined by rural subsidiary agreement communities**

| | A | B | C | D |
|---|---|---|---|---|
| Rural residency | 32.7 | 15.8 | 49.5 | 20 |
| Urban residency | 52.5 | 20.9 | 25.4 | 1.2 |

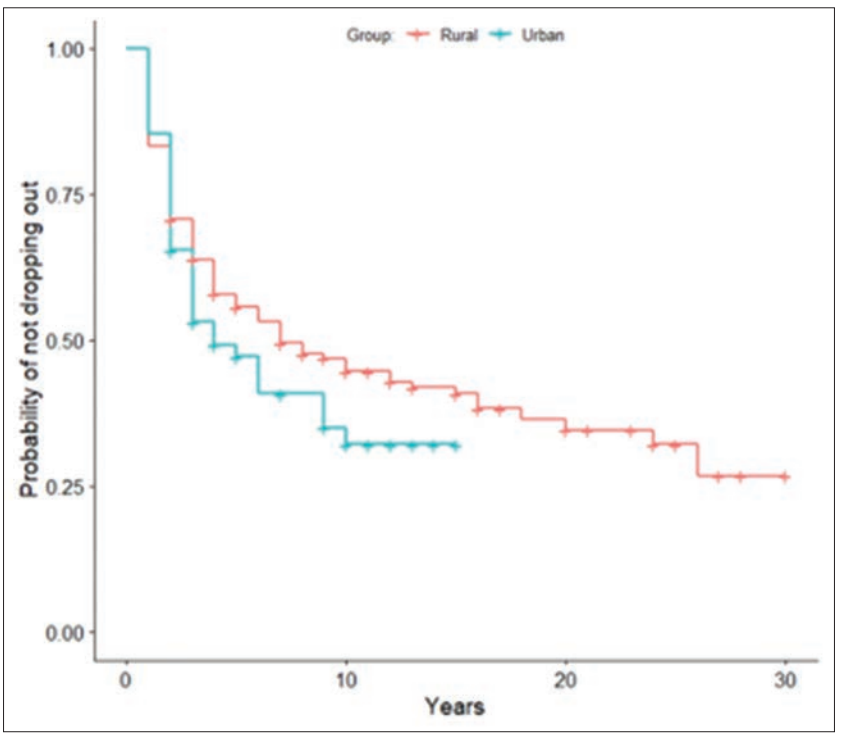


**Figure 1: Rural versus urban University of British Columbia trained physicians and long term retention in rural communities.**

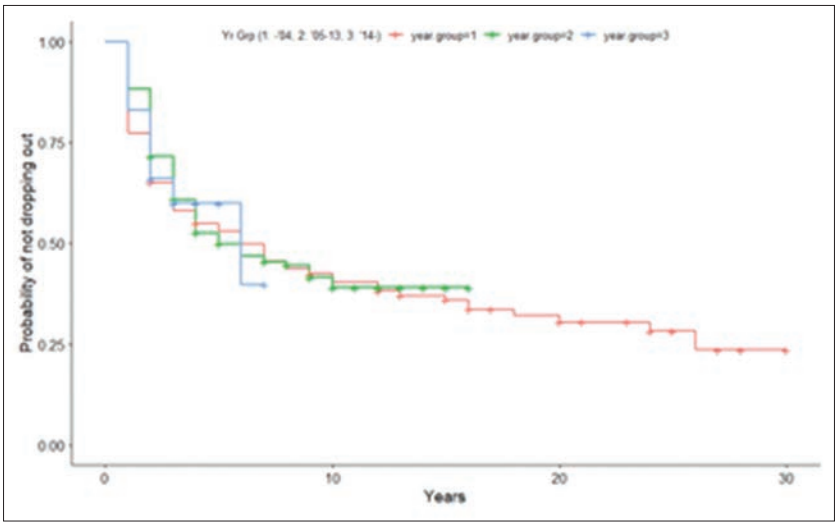


**Figure 2: Rural retention by year of graduation (5-year aggregates) for all physicians trained in University of British Columbia rural and urban family practice residency programmes.**

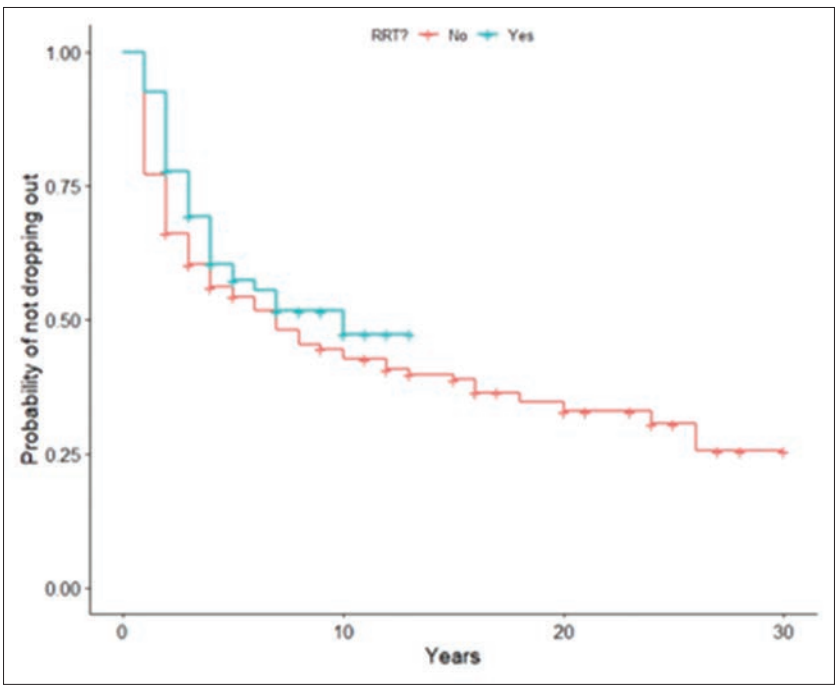


**Figure 3: Rural retention of University of British Columbia rural physicians who were screened using the rational risk taker evaluation versus those who were not. RRT: Rational risk taker.**

bimodal pattern may correlate with life events such as children's educational requirements, but further research is required. UBC rural training is generalist in nature, but details of whether the physicians who stay longer have a more general practice needs to be evaluated.

It is known that a number of factors influence an individual's decision to practise rurally.[14] Very little data are available on long-term retention, although some commentaries mention retention rates of up to 50% for 20 plus years.[15] However, the published data on programmes such as the Jefferson Medical College's Physician Shortage Area Programme find data of 32% rural retention for a 5–15-year career span (graduated from 1992 to 2002, practice location in 2007). An earlier study on graduates from 1982 to 1986 found a retention rate of 39% for a similar duration of practice.[16]

The use of the RRT assessment tool is one which was very forward thinking, and which has subsequently been supported by additional research.[17-19] There is a growing

body of evidence that rural doctors are more likely to have personalities that demonstrate 'low harm avoidance, high self-directedness and persistence',[20,21] which fits with the concepts of the RRT. This is the first known publication that demonstrates that an evaluation tool incorporating

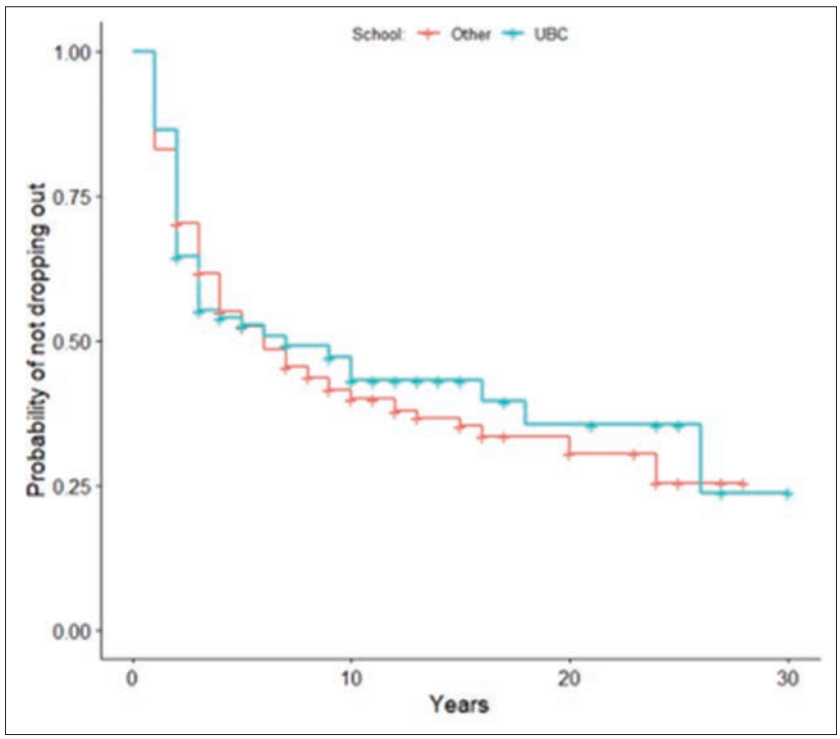


**Figure 4: Rural retention for University of British Columbia (UBC) medical school graduates versus graduates from other schools for MD, rural and urban UBC residency training programmes. UBC: University of British Columbia.**

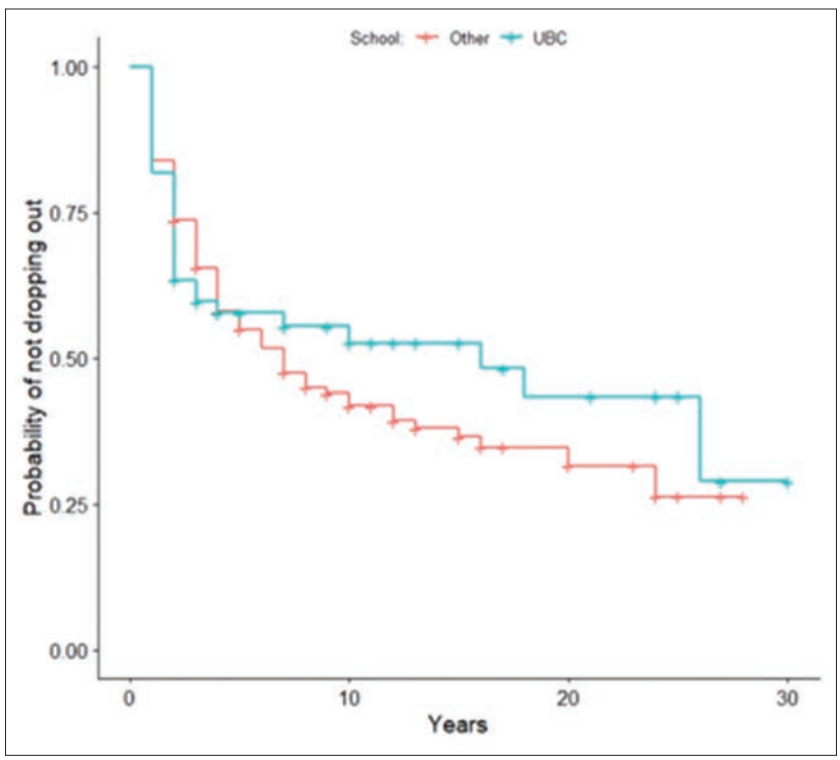


**Figure 5: University of British Columbia MD undergraduates versus those receiving their MD elsewhere, rural residency programmes.**

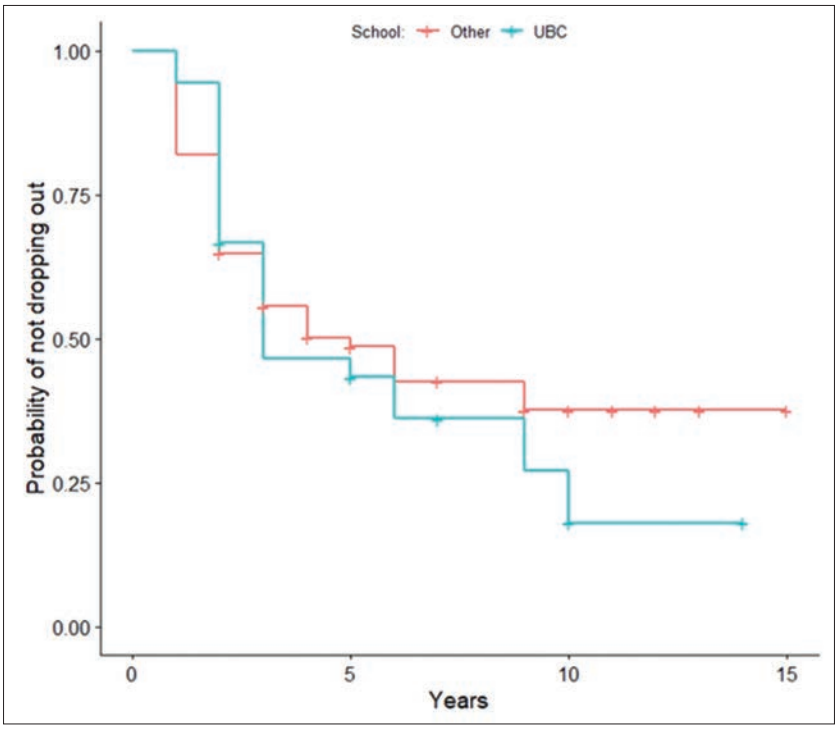


**Figure 6: University of British Columbia MD undergraduates versus those receiving their MD elsewhere, urban residency programmes. UBC: University of British Columbia.**

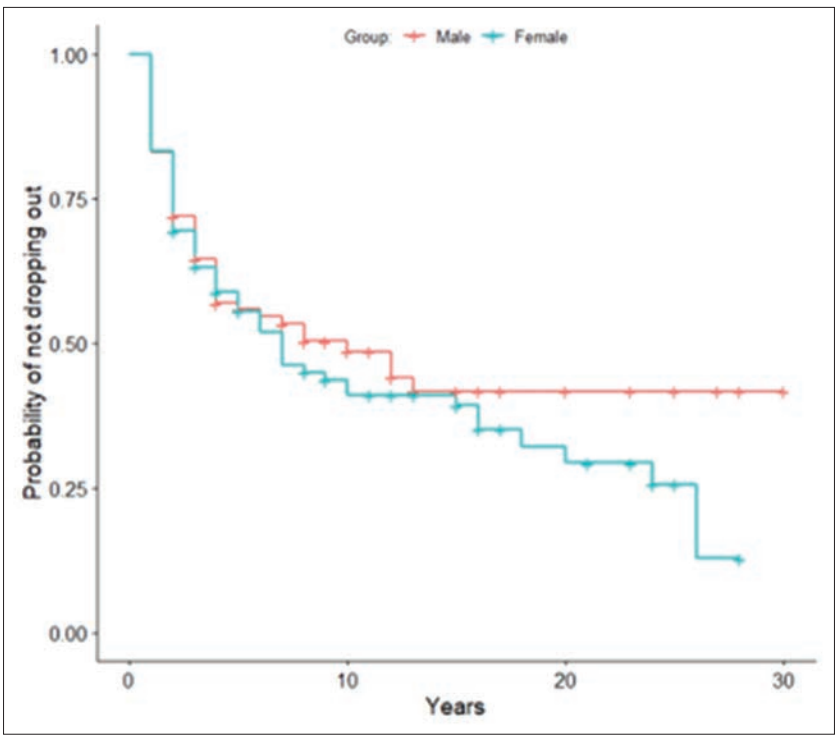


**Figure 7: Rural retention in male versus female graduates of University of British Columbia rural and urban family practice residency programmes.**

these concepts may improve rural retention. As such, further evaluation and exploration of the RRT instrument should be a priority.

Men were more likely than women to stay practising rurally for >20 years. Exploration of this, particularly considering the increase in

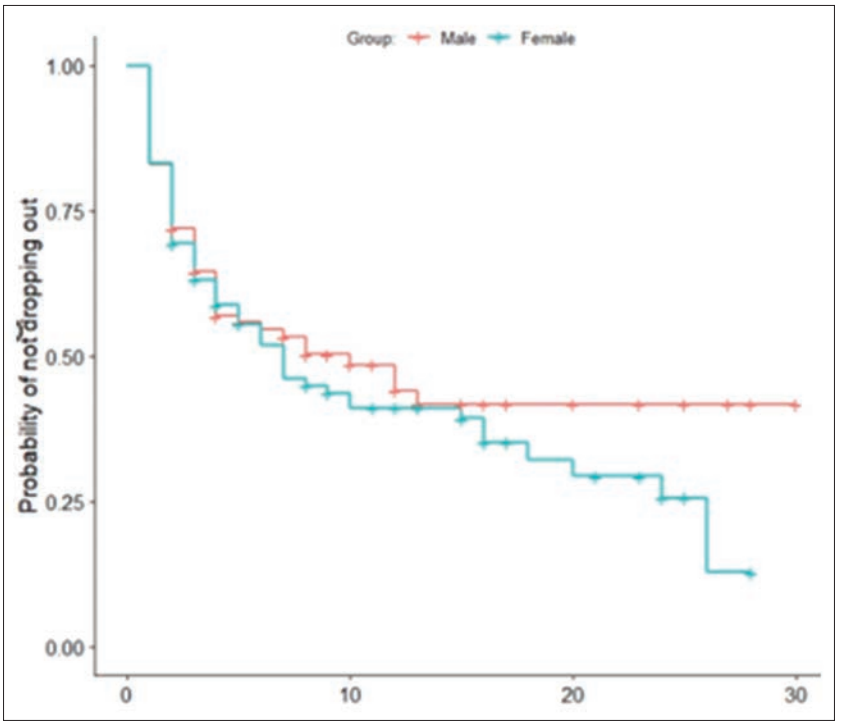


**Figure 8: Rural retention in male versus female graduates of University of British Columbia rural family practice residency programmes.**

female physicians over the years, is important.[22] It can be hypothesised that perhaps this is related to raising children or supporting aging parents.[23] Future studies will need to explore the bimodal pattern of long-term retention that was noted here and possibly include some qualitative interview evaluation of physicians in this category to better elucidate the reasons for this decision. This will allow for strategies to be developed to perhaps aid these doctors in staying in their rural communities.

### Limitations

This study was limited in that many of the physicians in the database have not yet completed their careers, so this at best gives a snapshot in time of their decisions for practice location. It also reflects only one provincial jurisdiction and there may be other factors influencing retention that may not apply elsewhere. Doing ongoing analyses on a 5-year basis will allow for further clarification of the pattern of practice for these physicians, including long-term retention characteristics. Other challenges to this study include significant cultural and practice changes that may make it difficult to apply these findings to new groups of learners.

While acknowledging that numerous changes in society, culture and medicine have occurred over the timeframe, of our study, including the matching process (CaRMS), the applicability of our study's results to the present situation must be cautiously applied; it is important to try and identify factors that impact rural recruitment and retention through the career of physicians in various rural communities. This is necessary when evaluating the impact of rural training programmes on these trends.

## CONCLUSION

It is known that there is still a great disparity in health access for rural populations.[24] Our study is unique in that it evaluates comparative populations of rural versus urban-trained physicians at the University of BC, with the evidence supporting the conclusion that the programmes are providing physicians to rural communities, many of whom stay for a considerable length of time.

Further exploration of the use of the RRT evaluation process as a potential tool to enhance the long-term retention of rural physicians is warranted as is the reason for the bimodal pattern of long-term physician retention. Both should be explored with some urgency. It may well provide insight that may allow policy to be developed to address concerns that result in the initial physician

migration from rural to urban. Our data should provide additional evidence to help support and develop rural retention policies.

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ORIGINAL ARTICLE

# Tensions and contradictions: Understanding the forces that surround the creation of a rural psychiatry post-graduate education training site

*Lara Hazelton, MD, MEd, FRCPC, DRCPC[1], Adewale Raji, MBBS, MA, FRCPC[2], Owen Connolly, BSc[1], Mandy Esliger, MMed[1], Mark Bosma, MD, FRCPC[1], Alexandra Manning, MD, FRCPC[1], Peggy Alexiadis-Brown, MEd[3]*

*[1]Department of Psychiatry, Faculty of Medicine, Dalhousie University, Halifax, NS, Canada, [2]Department of Psychiatry, Faculty of Medicine, Dalhousie University, Sydney, NS, Canada, [3]Faculty of Medicine, Dalhousie University, Halifax, NS, Canada*

*Correspondence to: Mandy Esliger, mandy.esliger@dal.ca*

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**Abstract**

**Introduction:** Distributed medical education (DME) has been recognised as a valuable approach to addressing physician shortages in rural areas. There are certain factors, such as effective community engagement and communication, that have been identified as important for the success of distributed sites. However, an approach to site development that focuses primarily on identifying and mitigating barriers may not capture the complexity underpinning the process. Our study sought to identify the factors influencing the development of a month-long inpatient training experience for psychiatry residents in Cape Breton, Nova Scotia.

**Methods:** Before the implementation at the Cape Breton site, our team carried out a focus group with Dalhousie residents and faculty in January of 2023 and also conducted key informant interviews from August 2022 to November 2022. Thematic analysis and a dialectical approach were used to analyse the data.

**Results:** Four key informants were individually interviewed, and a focus group of 8 was conducted. Five key tensions were identified: (1) individual needs versus systemic needs, (2) enthusiasm versus hesitation, (3) site integration versus site autonomy, (4) uniqueness versus universality of experience and (5) permanence versus transience of rotation.

**Conclusion:** The development of a new DME site involves contradictory dynamic processes that may be understood by applying a dialectical lens. Recognising these tensions may be useful for educators as they work towards the successful implementation of new DME training experiences.

**Keywords:** Dialectical approach, distributed medical education, psychiatry

**Résumé**

**Introduction:** La formation médicale décentralisée est de plus en plus reconnue comme une avenue importante pour contrer la pénurie de médecins en milieu rural. Certains éléments — notamment un engagement réel des communautés et une

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communication efficace — sont déjà considérés comme essentiels au succès de ces milieux de formation. Cela dit, une approche centrée surtout sur l'identification des obstacles et leur atténuation ne rend pas pleinement compte de la complexité du processus. Notre étude visait à cerner les facteurs ayant influencé la mise sur pied d'un stage d'un mois en psychiatrie hospitalière destiné aux résidents à Cape Breton, en Nouvelle-Écosse.
**Méthodes:** Avant l'implantation du site de Cape Breton, notre équipe a tenu un groupe de discussion avec des résidents et des membres du corps professoral de l'Université Dalhousie en janvier 2023. Des entrevues avec des informateurs clés ont aussi été réalisées entre août et novembre 2022. Les données ont été analysées au moyen d'une analyse thématique et d'une approche dialectique.
**Résultats:** Quatre informateurs clés ont été rencontrés en entrevue individuelle, et un groupe de discussion réunissant huit personnes a également été tenu. Cinq tensions principales ont émergé de l'analyse: (1) les besoins individuels versus les besoins du système; (2) l'enthousiasme versus l'hésitation; (3) l'intégration au site versus l'autonomie du site; (4) le caractère de l'expérience versus sa portée plus universelle; (5) la permanence versus le caractère temporaire du stage.
**Conclusion:** La mise en place d'un nouveau site de formation médicale décentralisée s'inscrit dans des dynamiques à la fois mouvantes et contradictoires, qu'une lecture dialectique permet de mieux comprendre. La reconnaissance de ces tensions peut être utile aux personnes impliquées en formation médicale lorsqu'elles cherchent à implanter avec succès de nouvelles expériences de formation décentralisée.

**Mots-clés:** Formation médicale décentralisée, psychiatrie, approche dialectique

## INTRODUCTION

The low number of physicians in rural Canada is a recognised problem, with many patients lacking access to primary and specialty care.[1] Efforts to address shortages through medical education and training have included adapting medical school admissions processes to identify students who are more likely to practise in rural areas,[2] increasing support of rural teachers[3] and offering exposure to rural practice through distributed medical education (DME).[4-8] DME has been implemented in both undergraduate medical education (UGME) and post-graduate medical education (PGME) and has been successful in promoting recruitment to rural practice.[9-11]

According to the Canadian Psychiatric Association, there are currently about 4770 psychiatrists practising in Canada, with many areas of the country lacking access to psychiatric services, particularly in rural and northern areas.[12] Rural training during psychiatry residency offers a potential solution, with evidence that clinical experience in rural areas during psychiatry residency training may increase the likelihood of graduates choosing to pursue rural practice.[13-15] Rural training experiences provide first-hand knowledge of the healthcare systems in small communities[16] and encourage generalism, an approach to clinical practice which emphasises the breadth of knowledge and integration.[17]

The factors that must be taken into account when setting up a DME training site include choosing a site that allows learners to meet training requirements while providing novel or unique experiences; building and maintaining relationships that are based on shared values and clear communication and engaging and supporting faculty who are committed to the programme.[9,18,19] The quality of the experience and the connections that are forged could influence whether a trainee chooses to stay on to practise within a community.[11,19,20]

For many years, communities in Nova Scotia, outside of the large urban centre, have struggled to recruit and retain psychiatrists. Other than a few weeks spent in Saint John, New Brunswick during their 1st year, Dalhousie's psychiatry residents have historically trained in the Halifax Regional Municipality, where Dalhousie Medical School and its major teaching hospitals are located. A recent survey of psychiatrists at other sites in Nova Scotia and New Brunswick identified a high level of interest in supervising and training learners and the need to develop strategies around resource allocation, policy modifications and incentive structures to support this training.[21] These findings reflect efforts being pursued by the medical school and provincial government to encourage medical training outside of Halifax.

In 2022, the Dalhousie psychiatry residency programme expanded its training to include a 1-month inpatient rotation at the Cape Breton Regional Hospital in Sydney, Nova Scotia, which is located more than 4 h from Halifax. Statistics

Canada defines Sydney as a 'Small Population Centre'.[22] In contrast, Halifax is a 'Large Urban Population Centre'.[22] This was part of a larger project to expand residency training capacity with the goal of eventually establishing a rural training stream. Our team, which included faculty representation from both Halifax and Cape Breton, conducted a needs assessment to explore the opportunities and challenges associated with the new residency training experience at Cape Breton. Through this process, we also hoped to develop an outcome framework that could be used to evaluate the programme's progress.

## METHODS

This qualitative study is grounded in social constructivist theory which assumes that life experiences, social interactions and culture shape how individuals, including researchers, construct knowledge and view the world.[23,24] To understand our positionality and contextualise our results, we are a team of 4 psychiatrists (LH, RA, MB and AM) with educational leadership roles within the department. One is located at the Cape Breton DME site (RA), and 2 (LH and AM) have experience in dialectical behavioural therapy (DBT).[25] There are 2 evaluation specialists (ME and PAB) and a university student research assistant (OC). Two team members have master's degrees in education (LH and ME), 1 team member has a bachelor of education degree (AM) and all have experience conducting qualitative research. Many are known to the study participants to varying degrees.

We work in Dalhousie University's Department of Psychiatry, a clinical academic department with a 5-year residency programme. Our 45 residents are primarily trained in the urban core of the Halifax Regional Municipality in Nova Scotia, with training opportunities at DME sites across the Maritime provinces. Our study population included Dalhousie Psychiatry residents, department members involved in psychiatry residency education and key informants who are education leads from other DME sites. These participants were selected using purposive sampling to ensure they had the experience necessary to enrich our data.[26]

A semi-structured interview guide was created, informed by our study objectives, to ensure the collection of essential data and invitations were sent out in July of 2022. Questions focused on gaps, barriers, facilitators and opportunities related to establishing the Cape Breton site. Key informants were invited to 1-h, semi-structured individual interviews at times best suited to them that were conducted from August 2022 to November 2022.[27-29] On January 9, 2023, residents and faculty who were members of the residency programme committee (RPC) were invited to a 1-h focus group that followed a regular Halifax RPC meeting for convenience. A research assistant (OC) arranged, conducted and recorded the focus group and individual interviews on Microsoft Teams and de-identified the transcripts.

Initially, a thematic analysis was conducted to identify and generate the themes.[30] Transcripts were hand-coded independently by 3 of the team members (LH, AM and OC) and then reviewed and revised through a consensus process. During this process, the psychiatrists with DBT experience (LH and AM) recognised that their clinical experience was influencing them to approach analysis through a dialectical lens, potentially bringing a unique perspective to the study's findings. Dialectical approaches recognise the dynamic and complex nature of systems and 'integrate dimensions of contradiction, change and system transformation over time'.[31] They regard the contradictions in narratives and experiences as dynamic, interrelated elements that exist in a 'continuous process of emergent change'.[32] While dialectical methods are not widely used in medical education research, they offer a useful approach to understanding processes with complex interpersonal and systemic elements.[33]

To ensure trustworthiness of the analytical process,[34] multiple authors (LH, AM and OC) independently carried out inductive coding of the transcripts. The team met several times to discuss their individual codes, review the transcripts collaboratively and co-construct themes. Discussions and decisions were documented. One author (LH) presented the analysis at the 2024 Association of Faculties of Medicine of Canada DME Network Research Day,[35] where audience feedback contributed to triangulation. All authors subsequently reviewed and provided feedback on the final findings.

The Dalhousie University Research Ethics Board determined this study was a programme evaluation and exempt from formal review.

## RESULTS

The 4 key informant interviews took place. At the focus group, there were 5 residents and 3 faculty members, 2 of whom also were interviewed as key informants. Drawing upon a dialectical approach, 5 conflicting narratives/themes were recognised and organised with supporting participant quotes to demonstrate the conflicting and competing perspectives related to setting up the Cape Breton site. Quotes were chosen for representativeness and relevance; themes did not have to be voiced by both residents and key informants, allowing for distinct group representation.

### Conflicting narratives #1: Needs of individual versus needs of system

Participants identified [Table 1] complex individual and systemic factors, comprising the needs of individuals (residents and faculty) and those of institutions and society. An element of urgency was noted in the timing behind the site's development, with systemic influences from academic institutions (curricular enrichment and social accountability) and health/government (psychiatrist recruitment). Many of the individual issues that arose focused on potential negative impacts upon residents due to the distance from Halifax (potential for isolation from family and peers, disconnection from the home department). To mitigate these, opportunities for residents to engage with the community and efforts by the department to connect with distributed faculty were recommended. Some elements were both individual and systemic, such as challenges with recruiting and supporting faculty to teach residents and a lack of available housing, which was identified as a factor affecting individuals (residents) that would require a systemic approach to address effectively.

**Table 1: Supporting participant quotes for the needs of the individual versus the needs of the system**

| Needs of individual | Needs of system |
|---|---|
| Resident 1: It's really far away. So, residents are separated from their families, and it's especially difficult for those who have young children | Key informant 1: Honestly, I think politically it's a win. There's a lot of pressure from both the government and the university to provide this type of distributed learning |
| Resident 4: I think any measures would be helpful … to prevent it from being really isolated and making sure that the residents still maintain some community while they're away | Key informant 3: …there are some housing challenges around finding housing, but that's not … specific to Cape Breton |
| Key informant 4: Creating opportunities that will help faculty to feel more involved in a way that's meaningful to those faculty members (is important) | Key informant 4: I think service is always something that we talk about in balancing the service and learning needs in our training programmes. … (The rotation) may help for recruitment and retainment of … new grads as they leave, which is something that I think we're all thinking about now |

**Table 2: Supporting participant quotes for enthusiasm versus hesitation**

| Enthusiasm | Hesitation |
|---|---|
| Resident 2: It's somewhere that I would potentially want to live so kind of seeing what a career in psychiatry would look like in Cape Breton in that more rural setting would be really helpful | Resident 4: I think just the implications on lifestyle for kind of packing up your life and being just away from your routines … I think that could potentially have an impact on some resident's wellness |
| Key informant 1: The tone seems to have shifted away from 'we need bodies to see patients' to 'we want to have a flourishing academic site that provides an excellent training experience for residents across the spectrum' | Key informant 3: Already, there's been some concerns about the stability of staff (complement) |

### Conflicting narratives #2: Enthusiasm versus hesitation

Participants expressed [Table 2] both excitement and reservations about the new site arising from the individual and systemic issues discussed above. While some residents were hesitant to disconnect from their daily lives and uncertain about the unfamiliar rotation, others who are originally from the area were enthusiastic about opportunities to train in their home community. The key informants expressed enthusiasm for training residents and the potential for recruitment, while also expressing concern about the practical implementation of the rotation.

### Conflicting narratives #3: Site integration versus site autonomy

The participants identified [Table 3] the tension between empowering the Cape Breton site to function autonomously and ensuring its integration with the Halifax-based department. Approaches

included understanding the local context, encouraging local decision-making, assigning responsibilities, ensuring accreditation standards are met, providing oversight and support, fostering faculty engagement, improving communication between sites, establishing partnerships with faculty and assessing the impact of the rotation on the site and the home programme.

### Conflicting narratives #4: Uniqueness versus universality

Participants identified [Table 4] a tension between standardised and contextualised learning. Programme accreditation by the Royal College requires a degree of standardisation to ensure that residents receive training that meets requirements regardless of where training takes place. However, the concept of standardised teaching and learning conflicts with the fundamental rationale for distributed training to provide unique experiences within the local healthcare system.

**Table 3: Supporting participant quotes for site integration versus site autonomy**

| Site integration | Site autonomy |
|---|---|
| Key informant 4: Including them (Cape Breton faculty), making sure that they're included in a lot of our academic activities … or some sort of communication or involvement with our programme. And other leadership opportunities within our academic department. I think it'd help generate engagement<br>Key informant 1: Enrich the academic environment for the psychiatrists who work there … by allowing them to supervise and teach. That's only going to stimulate further, hopefully, their interest in doing that kind of work | Key informant 2: As much as possible to have the local people make that decision about how to do things. … I think that the local areas may have the best means of measurement<br>Key informant 3: I don't know that it's for us to do, but it's for us to work with for example, (site education lead), to help him to figure out, how do we increase engagement? |

**Table 4: Supporting participant quotes for uniqueness versus universality**

| Uniqueness | Universality |
|---|---|
| Key informant 3: I think the advantage of distributed learning is to have exposure to different styles of practice, different service offerings, seeing how locally (residents) deal with any resource challenges in a way that you know, maybe they're unfamiliar with. Which can also even if they choose not to practise outside of central zone will help in the future with leadership opportunities or in their career in terms of problem-solving in different ways when resource challenges come up | Key informant 3: From a capacity piece, assuming all of their learning was done there, (residents) would have to be able to meet all of the Royal College requirements, provide sufficient training in all the different components, like addictions, outpatient and inpatients |

### Conflicting narratives #5: Permanence versus transience

In the comments from the participants [Table 5], there was a tension between commitment/permanence (we are doing this) and experimentation/transience (we are trying this). Elements of this tension include risk, potential for success or failure and future growth and development. Factors that might contribute to stability included supportive leadership from various levels, faculty who are committed to supervising residents and contributing to the department's academic mandate and faculty development offerings to support and prepare supervisors for their teaching role. When considering the future, participants emphasised the importance of programme evaluation and recommended a multi-faceted approach to collecting formal and informal feedback, such as check-ins, post-rotation evaluations by faculty and residents, exit surveys and interviews and monitoring of competency completion.

## DISCUSSION

By applying a dialectical lens, our analysis revealed 5 primary tensions related to the creation of a psychiatry residency training experience outside a major urban centre. The advantage of using this approach is that it frames these as fluid conversations rather than focusing on specific factors that influence outcomes (the 'barriers and facilitators' approach). There are different ways of managing the conflicts exposed through dialectical approaches.[33] One perspective may be prioritised over the other ('We are definitely doing this') or the contradiction may be left ambiguous and unresolved ('We are both fully committed to doing this and at the same time, only experimenting'). We have included quotes that show how participants sometimes prioritised one view over another or attempted to identify

**Table 5: Supporting participant quotes for permanence versus transience**

| Permanence | Transience |
|---|---|
| Key informant 3: It comes down to the willingness of the people and also the ability to demonstrate that they are able to maintain a programme. … There has to be long-term commitment to providing that long-term support for faculty and educators, the administrators. … It really goes beyond just the department of psychiatry or our residency programme to ensure that there's enough support there | Key informant 3: So, part of piloting the rotation this year is to really determine whether or not there are some gaps that we're missing. … (Proving) that they have sufficient resources, not just like borrowed from, but allocated to provide that in long term, not just in a short-term capacity because otherwise it's not going to be sustainable |
| Key informant 3: It becomes a bit of a self-fulfilling thing. Once we start it, the more it kind of also starts to propagate itself or perpetuate itself | Key informant 1: I would say that the post-graduate programme doesn't know some of the psychiatrists there particularly well. So there's also a question of do they actually have a good teaching skill set or are they going to be able to, even if they're physically there, deliver good supervision and provide appropriate assessment and feedback? |

strategies that could help to achieve goals for the site. Nonetheless, the underlying dialectical themes are not likely to be resolvable and will continue to shape how the site evolves.

The 5 themes we identified are highly interdependent and may be organised according to contextual and relational dialectics, with contextual dialectics focused on the social sphere and relational dialectics on interactions between individuals.[33] The dialectics related to the site ('Integration versus Autonomy' and 'Uniqueness versus Universality') are contextual, referring to organisational factors such as curriculum and accreditation standards. In relation to 'Integration versus Autonomy', we see how independence of the site may conflict with the organisational need for integration with the home programme. Integration forefronts collaboration as a positive force but may also imply a hierarchical relationship and an implicit bias about the agency or capabilities of the distributed sites. Fostering site autonomy can help to create educational experiences and administrative strategies that are novel and effective, even as this contributes to the tensions inherent in 'Uniqueness versus Universality', where adherence to accreditation standards (universality) may be in contradiction to the desire for unique, context-specific training experiences.

The dialectics of 'Individual needs versus System needs' and 'Enthusiasm versus Hesitation' are more relational and interpersonal, with the human factor central to both. In our interview data, expressions of hesitation were most evident among the psychiatry residents, who were being asked to disconnect from their regular lives to spend 1 month in an unfamiliar location. The disruption of moving and the isolation from their community of learners was a serious concern for many even if they appreciated the unique learning experiences and recognised the value of expanded training to foster rural recruitment and retention. It is worth noting that this may be less of a concern for residency programmes where the primary site is in a rural community, rather than just a month-long rotation. However, it is likely these tensions would still be present if a Cape Breton-based resident were required to travel to Halifax for 1 month.

Of the 5 themes, perhaps the most fundamental tension was between the contradictory yet coexisting views of the rotation as a permanent, stable entity to which there was an organisational commitment versus a fragile and potentially impermanent experiment. When discussing this, the participants talked about the need for appropriate administrative support and a stable cohort of faculty members who are willing to act as preceptors. These findings are in line with factors identified in the literature as requirements for establishing and sustaining a rural training site for PGME.[36] This theme of 'Permanence versus Transience' was related to the 'Enthusiasm versus Hesitation' dialectic. However, there are factors beyond enthusiasm on the part of individuals and systems that will be needed. To date, the collaborative culture within the faculty group at the Cape Breton site, support from the health authority leadership team and communication with the department of psychiatry in Halifax have supported the maintenance of the rotation for the past 3 years. However, retention of psychiatrists in Cape Breton has jeopardised the rotation at various points in the past and may remain a serious threat for the future. Thus, the dialectic between stability and instability is likely to continue shifting for as long as the site exists.

### Implications

Our study has implications for theory, research and educational practice. One of our aims was to develop a framework that could be used in evaluating a DME site after a period of operation. Dialectical approaches recognise the dynamic nature of phenomena, and in this, they complement other programme evaluation dimensions, including resource utilisation, educational outcomes and participant satisfaction. The 5 dialectical themes we have identified can be included in the qualitative site evaluation processes to obtain information about how tensions related to the site are evolving. For example, an awareness of how dynamics of integration and autonomy are shifting (or not) could be helpful for framing approaches to enhanced communication and leader development.

Our results align with previous studies[18] that highlight the importance of selecting distributed locations that meet training requirements while providing unique experiences, engaging committed faculty and fostering relationships based on shared values and clear communication. Our study also provides a reminder that the needs of the individual and the system are sometimes in tension. Plans for DME may not fully recognise that residents are individuals with families, obligations and emotional responses. If a resident has a poor or unsupported experience, including suboptimal housing, this will undermine efforts to build positive engagement. Tracking residents who return to Cape Breton for electives or permanent positions would help to clarify the long-term impacts.

Our study contributes to the growing body of literature on developing successful rural DME sites, particularly for training psychiatry residents. Strengths of our study include a diverse team of investigators, including current (AM) and past (MB and DP) residency directors and a Cape Breton-based faculty member (RA).

### Limitations

Limitations of our study include a focus on a single rural DME site whose context may not align with other programmes. In addition, most of our study participants were based in Halifax, including the psychiatry residents, none of whom had yet had the opportunity to rotate through the Cape Breton site. Thus, our data largely (although not exclusively) represent the perspectives of people whose knowledge of the site was from an outsider's perspective. While we believe the 5 dialectical themes are likely to still be applicable, we will ensure that future interviews will draw upon the experiences of Cape Breton faculty to a greater extent and include the perspectives of residents who have completed their rotations there.

### Future research

A comprehensive formal programme evaluation is being planned to take place after 5 years of operation in 2027. This will consider how the individual and systemic needs have been prioritised and whether there has been a shift in the relative degrees of enthusiasm and hesitation about the rotation. It will also explore how the issues of autonomy and uniqueness have been negotiated within the organisational requirements of the programme. Finally, we will seek to understand how the question of permanence and sustainability has been addressed. With this information, we hope to improve the rotation and gain insights that can be used to support further expansion of DME in our department.

## CONCLUSION

By applying a dialectical lens, it is possible to identify shifting tensions that underpin the development and continuing existence of distributed education sites. Paying explicit attention to how these evolve over time provides opportunities to better understand the status of these sites and identify actions to support their success.

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ORIGINAL ARTICLE

# Family +1 enhanced surgical skills: A descriptive study of awareness and opinions

*Clay Kiiskila, MD[1], Kathrin H. Stoll, PhD[1], Claire Connors, MD[2], Aaron Johnston, MD[3,4], Calista Lytle, MD[5], Mark Prins, MD[6], Srishti Shrivastav, MD[5], Daniel Ward, BSc[6], Nina Wingate, MD[5], Jude Kornelsen, PhD[1]*

*[1]Department of Family Practice, University of British Columbia, Vancouver, Canada, [2]Department of Obstetrics and Gynecology, University of Calgary, Calgary, Canada, [3]Department of Family Medicine, University of Calgary, Calgary, Canada, [4]Department of Emergency Medicine, University of Calgary, Calgary, Canada, [5]Department of Family Medicine, University of Saskatchewan, Saskatoon, Canada, [6]Department of Family Practice, University of Alberta, Edmonton, Canada*

*Correspondence to: Clay Kiiskila, kiiskila@student.ubc.ca*

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**Abstract**

**Introduction:** Canada's healthcare system faces growing challenges to its sustainability, equity and efficacy, especially in rural areas. The centralisation of specialist services in urban centres is contributing to this. Historically, family physicians with enhanced surgical skills (FPESS) provided a key role in stabilising rural health care. Maintaining this model is contingent on the interest of medical trainees pursuing additional postgraduate training.

**Methods:** A survey developed by medical students was conducted to assess the awareness, attitudes and interests of and in FPESS by medical students and Family Medicine residents in Western Canada.

**Results:** We received 477 responses to emailed and social media queries and analysed 373 surveys. One-third of participants reported interest in pursuing careers as Family Physicians with enhanced surgical skills (ESS) (34.0%) despite limited awareness of the programmes, and the majority (87.9%) believed ESS physicians were needed to support rural health care.

**Conclusion:** Boosting ESS visibility and knowledge during early medical education is crucial for recruiting and sustaining ESS practitioners, which is key to mitigating healthcare disparities.

**Keywords:** Enhanced surgical skills, family medicine resident, medical education, medical student, rural medicine

**Résumé**

**Introduction:** Le système de santé canadien fait face à des défis croissants en matière de viabilité, d'équité et d'efficacité, particulièrement en milieu rural. La centralisation des services spécialisés dans les grands centres urbains contribue à cette réalité. Historiquement, les médecins de famille possédant des compétences chirurgicales avancées ont joué un rôle important dans le maintien de l'offre de soins en région rurale. La pérennité de ce modèle dépend toutefois de l'intérêt des apprenants en médecine à poursuivre une formation postdoctorale supplémentaire dans ce domaine.

**Méthodes:** Un sondage conçu par des étudiantes et étudiants en médecine a été mené afin d'évaluer, chez les étudiants en médecine et les résidents en médecine familiale de l'Ouest canadien, leur niveau de connaissance du parcours en compétences chirurgicales avancées, leurs perceptions à son égard et leur intérêt envers cette pratique.

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**Résultats:** Au total, *477* réponses ont été reçues à la suite d'invitations transmises par courriel et sur les médias sociaux, et *373* questionnaires ont été retenus pour l'analyse. Malgré une connaissance limitée des programmes, le tiers des participantes et participants ont indiqué envisager une carrière comme médecins de famille avec compétences chirurgicales avancées (34,0 %). La grande majorité (87,9 %) estimait par ailleurs que ces médecins en compétences chirurgicales avancées sont nécessaires pour soutenir les soins de santé en milieu rural.
**Conclusion:** Mieux faire connaître les compétences chirurgicales avancées et accroître leur visibilité dès le début de la formation médicale est essentiel pour recruter et maintenir en poste des médecins possédant cette expertise. Il s'agit d'un levier important pour réduire les inégalités d'accès aux soins.

**Mots-clés:** Médecine rurale, formation médicale, étudiant en médecine, résident en médecine familiale, compétences chirurgicales avancées

## INTRODUCTION

Canada's healthcare system is strained due to a confluence of factors, including challenges in recruiting and retaining healthcare professionals, an ageing population, and the legacy impact of the COVID-19 pandemic. In Western Canada, Family Physicians with Enhanced Surgical Skills (FPESS) are a cornerstone of rural surgical programmes and are essential to providing general, obstetrical and gynaecological operative care. A subset of enhanced surgical skills (ESS) physicians, known as obstetrical surgical skills (OSS), perform a narrowed scope of obstetrical procedures. OSS and ESS provide services in rural contexts alongside, or in communities unable to support, specialist surgeons. These surgical providers are most prevalent in Canada's western provinces and territories.[1] However, current data show a decline in ESS-trained physicians in Canada.[2] This is largely due to the historical reliance on internationally trained medical graduates who sustained these programmes; decreased availability of these providers has resulted in the need to rely on locally trained providers.[3,4] In response, the College of Family Physicians of Canada (CFPC) has standardised the ESS curriculum[5] as well as having provided a designation through Certificates of Added Competence in an attempt to attract Canadian medical trainees into these programmes.[6,7] Nonetheless, the training capacity remains limited. Until recently, the single comprehensive ESS training programme in Canada was in Saskatchewan and graduated up to two trainees per year. An additional training seat was recently added at the University of Alberta (UofA).[8] OSS training, which can be done through the University of British Columbia (UBC), the University of Manitoba, and Northern Ontario School of Medicine University, collectively has four graduates per year.[8] Although the limited seats currently available may reflect applicant interest, the dearth of applicants may also reflect a lack of awareness of the practice pathway. Our study set out to understand the awareness of and attitudes towards ESS training by medical students and residents in Western Canada. Our results will lend themselves to determining the appropriate educational resources for future rural health care providers.

## METHODS

### Survey development and administration

This survey was developed by medical students from the UBC, University of Calgary (UofC), UofA and University of Saskatchewan (UofS), along with guidance from faculty mentors and experts in rural health. It was administered before the recent addition of the single ESS training seat at the UofA. Questions were based on existing knowledge and research in a Canadian context[9] as well as the lived experience of those providing instruction in medical education programmes.

The survey was divided into six sections: demographics, awareness and experiences of ESS/OSS, interest in ESS/OSS and attitudes towards ESS. Questions with predefined and open-ended response options were included. The study design was influenced by Bacenas *et al.*'s prior work,[9] and refined through feedback and pilot testing before its administration. The survey was administered using the Qualtrics survey platform and was open from March 2022 to September 2022.

### Study population and analysis

Medical students and family medicine residents from the UofA, UBC, UofC and UofS were recruited with multiple requests to participate through institutional email distribution and posts on social media. Inclusion criteria included undergraduate medical students of all years, and Canadian Medical Graduates in a Family Practice Residency in any year of training at the UofA, UBC, UofC and UofS. Exclusion criteria included those not training at the above institutions, as well as International Medical Graduates, due to possible exposure to Enhanced Surgical Skill providers in a different medical context.

Descriptive statistics were performed for all quantitative items included in the survey, as well as an analysis of interprovincial differences and variations by socio-demographic factors.

An inductive approach was used to thematically analyse open-ended text responses, including exposure to ESS, factors that might encourage or discourage ESS pursuit and strategies to encourage ESS pursuit.

Two medical student team members with experience in qualitative analysis independently coded responses through an iterative process to generate themes. The independent codebooks were consolidated and then applied to the larger dataset to ensure accuracy.

The study was approved by the Research Ethics Boards at all sites.

## RESULTS

There were 447 responses to the survey. After removing 46 participants who did not complete all data fields and 28 participants who were ineligible to take part in the study (20 international graduates; 4 who replied to the question 'What stage in your medical training are you at?' with 'Other'; and 4 who were training in locations outside of BC, AB and SK), the final sample size for analysis was 373. Of the participants included in the analysis, 131 (35.1%) indicated they were in preclerkship, 167 (44.8%) in clerkship and 75 (20.1%) in residency. The invitation was sent to approximately 3258 medical students and residents in the three provinces; the 373 responses translated into a response rate of 11.4%. Table 1 includes sociodemographic characteristics of the respondents.

### Awareness of enhanced surgical skills and obstetrical surgical skills

When asked about the extent of their knowledge of ESS, 60.3% indicated they knew 'a little', while 19.3% reported they had not previously heard of ESS [Table 2]. Twenty point four percent reported they knew 'quite a bit' about ESS. When asked what procedures respondents believed ESS-trained physicians performed, the most commonly reported were cesarean section, vasectomy and upper gastrointestinal endoscopy. Thirty point eight percent of trainees indicated that they were unsure of what procedures were within the scope of ESS practice. The majority (67.3%) reported a lack of ESS-related content in their curriculum, yet 62.8% felt they had adequate information to consider ESS as a career.

Fifty-six point three percent of participants indicated that they knew 'a little' about OSS before taking the survey, and 29.0% reported that they had not heard of the programme.

### Interest in enhanced surgical skills and obstetrical surgical skills

One in three (34.0%, 30.6%) participants expressed interest in pursuing ESS and OSS, respectively, and an additional third (34.3%, 29.2% respectively) were uncertain [Table 3]. Interest was highest in ESS and OSS in participants in clerkship (47.3%, 43.7%, respectively), followed by preclerkship (30.5%, 22.9%, respectively) and residency (10.7%, 14.7% respectively). The proportion of respondents unsure about interest in ESS and OSS, respectively, was highest in preclerkship (42%, 38.2%), followed by clerkship (31.7%, 23.4%) and residency (26.7%, 26.7%). Participants were asked to select factors that would encourage them to pursue ESS and OSS, the most common being the ability to do more procedures (73.5%), the ability to improve patient outcomes (64.3%) and confidence in ESS/OSS abilities (57.4%). A lack of knowledge about the programme (37.5%), concern about the limited scope of practice (27.9%) and competitiveness of the programme (25.5%) were the most frequently reported factors preventing students from pursuing ESS, while a lack of knowledge (30.8%) and concern for lack of support from specialists (23.9%) were the most reported for OSS. Amongst respondents interested in pursuing

**Table 1: Characteristics of respondents**

| | *n* (%) |
|---|---|
| What is your current age? | |
| 24 or under | 125 (34.1) |
| 25–29 | 177 (48.2) |
| 30–34 | 49 (13.4) |
| 35+ | 16 (4.4) |
| Missing | 7 |
| My current gender identity is best described as* | |
| Man (cisgender and transgender) | 105 (28.2) |
| Woman (cisgender and transgender) | 255 (68.4) |
| Another gender identity (including non-binary, Gender nonconforming, Genderqueer and two-spirit) | 15 (3.5) |
| Prefer not to answer | 1 (0.3) |
| Which of the following identities best describes you?* | |
| Indigenous to Canada: First Nations, Métis or Inuk (Inuit) | 10 (2.7) |
| Indigenous to another region or country | 6 (1.6) |
| Black, African, Afro-Caribbean | 18 (4.7) |
| Asian | 113 (30.3) |
| Hispanic/Latinx | 9 (2.4) |
| Middle Eastern | 19 (5.1) |
| White | 257 (68.9) |
| Other | 8 (2.2) |
| What stage in your medical training are you at? | |
| Pre-clerkship | 131 (35.1) |
| Clerkship | 167 (44.8) |
| Residency | 75 (20.1) |
| Were you raised in an urban or rural community (population <10,000 and more than 1 h from a major urban centre)? | |
| Rural | 109 (29.4) |
| Urban | 259 (69.8) |
| Not sure | 3 (0.8) |
| Have you lived in a rural community (population <10,000 and more than 1 h from a major urban centre)? | |
| Yes | 181 (48.5) |
| No | 192 (51.5) |

| Programme and stage of training | Number of completed surveys | Proportion of respondents (%) |
|---|---|---|
| UBC medical students | 103 | 27.6 |
| UBC residents | 26 | 7.0 |
| UofA medical students | 61 | 16.4 |
| UofA residents | 26 | 7.0 |
| UofC medical students | 53 | 14.2 |
| UofC residents | 8 | 2.1 |
| UofS medical students | 81 | 21.7 |
| UofS residents | 15 | 4.0 |

*This is a 'select all that apply' question, so percentages may not add up to 100. UBC: University of British Columbia, UofA: University of Alberta, UofC: University of Calgary, UofS: University of Saskatchewan

ESS and OSS, the most common choice of location for training and practising was British Columbia.

Interest in ESS and OSS was highest amongst the 14 trainees who identified as LGBTQ+ (85.7% 71.4%, respectively), followed by cis women (35.2%, 36%) and cis men (25.5%, 12.7%). Interest in ESS and OSS was lower amongst trainees aged 30 or older: of respondents between the ages of 30 and 34, 32.7% and 28.6% were interested in a career in ESS and OSS, respectively, compared to 41.6% and 39.2% of those aged 24 or younger. More respondents with a rural upbringing had an interest

| Table 2: Awareness of Enhanced surgical skills and obstetrical surgical skills | | |
|---|---|---|
| Survey question and response options | ESS, *n* (%) | OSS, *n* (%) |
| Did you know what ESS/OSS are, prior to taking this survey? | | |
| Yes, I know quite a bit about ESS/OSS | 76 (20.4) | 55 (14.7) |
| Yes, I know a little about ESS/OSS | 225 (60.3) | 210 (56.3) |
| No, I have not heard about ESS/OSS | 72 (19.3) | 108 (29.0) |
| How did you learn about ESS/OSS? | | |
| Curriculum | 100 (26.8) | 87 (23.3) |
| Placement | 57 (15.3) | 59 (15.8) |
| Extracurricular (school interest group, elective shadowing experiences, etc.) | 129 (34.6) | 119 (31.9) |
| Other | 60 (16.1) | 45 (12.1) |
| Do you know the number of seats your province offers for ESS training? | | |
| Yes | 68 (22.7) | |
| No | 219 (73.0) | |
| Not applicable, my province does not offer ESS/OSS training | 13 (4.3) | |
| Please indicate your agreement with the following statement: There was enough information about ESS in the curriculum for me to make an informed decision about whether I want to pursue ESS as part of my medical career | | |
| Strongly disagree | 6 (5.0) | |
| Disagree | 39 (32.2) | |
| Agree | 71 (58.7) | |
| Strongly agree | 5 (4.1) | |
| Which of the following procedures do those trained in ESS perform to the extent of your knowledge? | | |
| Caesarean section | 164 (44.0) | |
| Vasectomy | 149 (39.9) | |
| Upper GI endoscopy | 147 (39.4) | |
| D and Cs (miscarriage/incomplete abortion) | 135 (36.2) | |
| Colonoscopy | 126 (33.8) | |
| Neonatal circumcision | 122 (32.7) | |
| I am unsure of the procedures an ESS trained physician can perform | 115 (30.8) | |
| Umbilical Hernia repair | 109 (29.2) | |
| Carpal tunnel release | 100 (26.8) | |
| Repair 4$^{th}$ degree perineal tear | 95 (25.5) | |
| Tonsillectomy | 68 (18.2) | |
| Post-partum tubal ligation | 61 (16.4) | |
| Endometrial ablation | 48 (12.9) | |
| Laparoscopic management of ectopic pregnancy | 41 (11.0) | |
| Open management of ectopic pregnancy | 36 (9.7) | |
| Hydrocelectomy | 30 (8.0) | |
| Eschars | 13 (3.5) | |

ESS: Enhanced surgical skills, OSS: Obstetrical surgical skills, GI: Gastrointestinal

in ESS (58.7%) and OSS (56.0%) compared to those who grew up in urban areas (23.6% and 19.7%, respectively).

### Factors influencing personal perceptions of enhanced surgical skill

Respondents were asked to rate the extent to which certain factors influenced their perceptions of ESS (large influence, small influence or no influence). The most influential factors were personal experience in medical school (34.0%), personal experience shadowing an ESS provider (30.1%) and medical interest groups (30.6%). Almost half of the respondents indicated that the undergraduate medical curriculum (47.2%) and residency curriculum (48.9%) did not influence their perceptions about ESS [Figure 1].

### Association between knowledge and career plans

Trainees who knew quite a bit about enhanced

**Table 3: Interest in enhanced surgical skills and obstetrical surgical skills**

| Survey question and response options | *n* (%) | Survey question and response options | *n* (%) |
|---|---|---|---|
| Are you interested in pursuing a career in ESS? | | Are you interested in pursuing a career in OSS? | |
| Yes | 127 (34.0) | Yes | 114 (30.6) |
| No | 118 (31.6) | No | 150 (40.2) |
| Unsure | 128 (34.3) | Unsure | 109 (29.2) |
| Where would you ideally do your ESS training? | | Where would you ideally do your OSS training? | |
| UofS - Prince Albert | 17 (13.4) | UBC | 46 (40.4) |
| I would ideally do my training in British Columbia if there was a training programme available | 67 (52.8) | University of Manitoba | 3 (2.6) |
| I would ideally do my training in Alberta if there was a training programme available | 27 (21.3) | Northern Ontario School of Medicine | 2 (1.8) |
| I would ideally do my training in Manitoba if there was a training programme available | 0 | I would ideally do my training in Alberta if there was a training programme available | 38 (33.3) |
| I don't care where I would do my training, as long as I have a seat in the programme | 15 (11.8) | Saskatchewan if there was a training programme available | 12 (10.5) |
| N/A not interested in ESS | 1 (0.8) | I don't care where I would do my training, as long as I have a seat in the programme | 13 (11.4) |
| Where would you like to practice ESS? Select all that apply | | Where would you like to practice OSS? Select all that apply | |
| British Columbia | 93 (24.9) | British Columbia | 71 (19.0) |
| Alberta | 58 (15.5) | Alberta | 54 (14.5) |
| Saskatchewan | 36 (9.7) | Saskatchewan | 28 (7.5) |
| Manitoba | 7 (1.9) | Manitoba | 9 (2.4) |
| Territories | 15 (4.0) | Territories | 13 (3.5) |
| Other provinces | 20 (5.4) | Other provinces | 13 (3.5) |
| Below is a list of factors that physicians consider when deciding about their career options. Please select all items that might encourage you to pursue training in ESS | | Below is a list of factors that physicians consider when deciding about their career options. Please select all items that might encourage you to pursue training in OSS | |
| Ability to do more procedures | 274 (73.5) | Ability to do more procedures | 238 (63.8) |
| Ability to improve patient outcomes | 240 (64.3) | Ability to improve patient outcomes | 227 (60.9) |
| Confidence in ESS abilities | 214 (57.4) | Confidence in OSS abilities | 180 (48.3) |
| More autonomy | 213 (57.1) | More autonomy | 178 (47.7) |
| Increased pay | 211 (56.6) | Increased pay | 177 (47.5) |
| Work-life balance | 208 (55.8) | Work-life balance | 138 (37.0) |
| Working in rural and/or remote communities | 177 (47.5) | Working in rural and/or remote communities | 168 (45.0) |
| Length of training required (i.e. 1 year) | 174 (46.6) | Length of training required (i.e. 6 months) | 122 (32.7) |
| Ease of licensing | 76 (20.4) | Ease of licensing | 69 (18.5) |
| Are the following preventing you from pursuing ESS? Please select all that apply | | Are the following preventing you from pursuing OSS? Please select all that apply | |
| Did not know/lack of knowledge about the programme | 140 (37.5) | Did not know / lack of knowledge about the programme | 115 (30.8) |
| Concerns about lack of support from specialists | 113 (30.3) | Concerns about lack of support from specialists | 89 (23.9) |
| Rural community size will not support full scope of skills | 104 (27.9) | Rural community size will not support full scope of skills | 77 (20.6) |
| The competitiveness of the programme | 95 (25.5) | The competitiveness of the programme | 72 (19.3) |
| Work-life balance | 77 (20.6) | Work-life balance | 84 (22.5) |
| Medicolegal implications | 52 (13.9) | Medicolegal implications | 59 (15.8) |
| Training programme is too far away | 50 (13.4) | Training programme is too far away | 37 (9.9) |
| Applied to the ESS programme but did not get a seat in the training programme | 32 (8.6) | Applied to the OSS programme but did not get a seat in the training programme | 33 (8.8) |
| Training programme is not long enough (i.e. 1 year) | 21 (5.6) | Training programme is not long enough (i.e. 6 months) | 30 (8.0) |
| Training programme is too long (i.e. 1 year) | 16 (4.3) | Training programme is too long (i.e. 6 months) | 8 (2.1) |

ESS: Enhanced surgical skills, OSS: Obstetrical surgical skills, N/A: Not available, UBC: University of British Columbia, UofS: University of Saskatchewan

skills practice were more likely to want to pursue these career options, although the majority of respondents interested in ESS and OSS knew only a little about either [Figure 2]. Knowing a little did not appear to relate to career plans.

### Qualitative results

The thematic analysis of the open-text responses resulted in six themes: Exposure to Enhanced Skills, Attitudes towards Enhanced Skills, Factors Encouraging ESS, Barriers to Pursuing ESS, Incentives to Pursue ESS and Need for ESS.

Mechanisms of how respondents learned about ESS included through the curriculum, extra-curricular events, word-of-mouth, personal exploration and meeting or working with an ESS physician. Most of the participants described very limited or no exposure to enhanced skills.

Participants identified hearing both positive and negative opinions from others regarding enhanced skills. Positive descriptions included the reward of ESS practice, being valuable to one's community, professional satisfaction through practising with an expanded scope, and being able to perform low-acuity surgery with a decreased training length. As one participant noted, 'Rural and remote communities are so often underserved, and having physicians who can step into these additional roles is so valuable, and the physicians I've spoken to who do this work have all described it as very rewarding'. Negative opinions included the level of competition to be accepted into a training programme with limited training

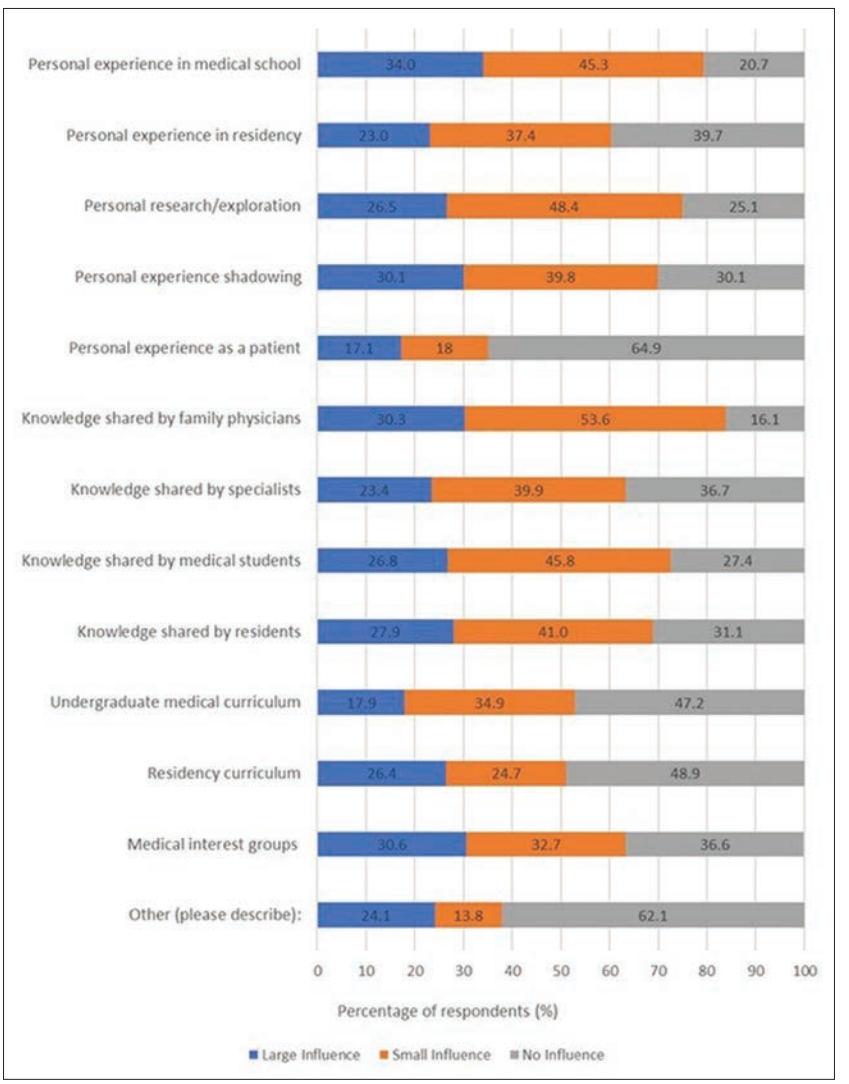


**Figure 1: Factors influencing personal perceptions of enhanced surgical skills.**

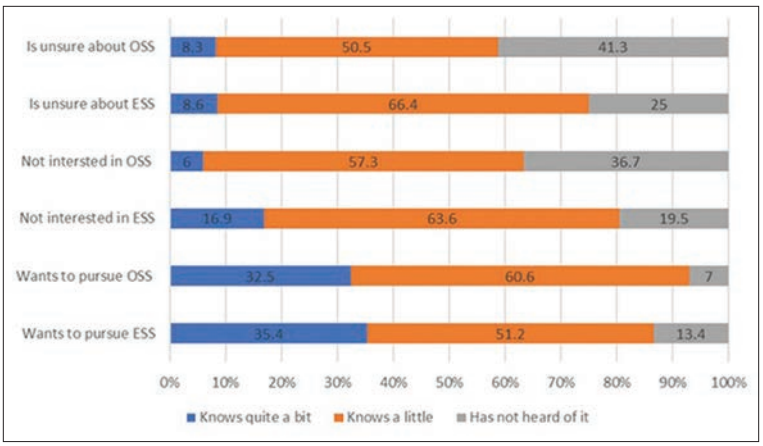


**Figure 2: Association between knowledge of enhanced surgical skills and obstetrical surgical skill and career plans.**

seats, being limited to rural practice and having insufficient patient volume to maintain skills. Participants also reported hearing comments on the perceived inadequacy of ESS training, mostly due to the reduced training time when compared to specialist training, which was believed to potentially affect patient safety.

Factors deemed supportive of ESS included its capacity to address community need, enhance the scope of practice and the attendant increase in clinical confidence, and having positive training experiences with ESS providers. Barriers to pursuing ESS included a general lack of information on ESS within the curriculum, a limited number of training sites and seats, negative perceptions of ESS practice by specialists, increased clinical risk, disruption to lifestyle, extra funding needed to pursue training, concerns about licensing and privileging and being unable to practise in urban settings. As one respondent noted, 'I have heard it can be hard to get privileges to practise the ESS scope, and that specialists are not always supportive. This intimidates me, even though I see the real value and need for rural surgical competency'.

Incentives suggested by respondents to increase interest in ESS included improved access to information on ESS, increased ESS training programme sites and seats, increasing ESS exposure through the curriculum and extra-curricular activities, and financial incentives such as increased compensation during residency and while in practice. There was a high level of agreement on the importance of ESS due to unmet specialist needs in rural communities and as a safety net to support local maternity care through local access to caesarean section.

## DISCUSSION

To the best of our knowledge, this is the first study on enhanced surgical skills that solicited input from students and residents in all three Western Canadian provinces. Results suggest that these medical trainees have an interest in ESS as a career, despite having limited knowledge regarding the scope and training options available. However, there was a considerable number of participants who were unaware of ESS or OSS before the survey, which indicates the need for additional exposure through undergraduate and postgraduate training.

Overall, 1 in 5 participants (19.3%) were unaware of ESS, which is similar to the proportion Bacenas *et al.* reported (17.9%) in their study of family medicine residents in BC, Alberta and Saskatchewan.[9] This enduring lack of awareness points to the opportunity to better communicate the advantages of the practice pathway, built on the growing evidence that reflects the safe and quality care provided.[10-13] Early exposure to training pathways plays a significant role in shaping the career choices of medical students.[14]

Even more respondents were not aware of OSS (29.0%). The lack of awareness of mechanisms available to support local access to cesarean section in low-volume settings is concerning in a climate marked by the pan-Canadian attrition of rural maternity services and the concomitant adverse outcomes that are correlated with travel to facilities that provide maternity care.[10,15] As the sustainability of maternity services is enhanced by local access to cesarean section, this knowledge gap is essential to address.

Interest in ESS and OSS was highest amongst those in clerkship, which may be due to having exposure to surgical specialities at this stage, while these trainees are still in the process of solidifying their career plans. Uncertainty regarding interest in ESS and OSS was highest amongst those in preclerkship and generally decreased as the stage of training progressed. Notably, although only one-third of respondents indicated that they had the opportunity to learn about ESS, nearly two-thirds (62.8%) felt there was enough information in the curriculum to make an informed decision on ESS as a career. While respondents who knew quite a bit about enhanced skills practice were more likely to be interested in pursuing these career options, the majority interested in ESS and OSS only knew a little about either. We hypothesise that due to the medical training structure in Canada, trainees are forced to make decisions regarding their careers early and with limited information.

We observed an interesting gender bias in interest in OSS, with nearly three times more interested in those identifying as cis-women (36.0%) than cis-men (12.7%). This aligns more closely with the difference observed in obstetrician/gynaecologist residents, where 85% are female.[16] A very high proportion of participants identifying as LGBTQ2+ expressed interest in ESS (85.7%) and OSS (71.4%). Surgical subspecialties, notably general surgery, are perceived as the least welcoming for LGBTQ2+ trainees, leading to heightened reluctance among these students to pursue careers within these fields.[17] We hypothesise that ESS may be regarded as a more welcoming training and career environment, perhaps due to its kinship with family medicine. Alternatively, LGBTQ2+ trainees may be more interested in rural medicine, which may contribute to the high proportion in this study expressing interest in ESS and OSS. The rural interest of LQBTQ2+ trainees has not been explored to our knowledge.

Interest in ESS and OSS was greater in younger respondents, which may be due to older medical trainees being more likely to have families and less willing or able to undertake additional training. This aligns with previous research demonstrating that medical students who are younger and single are more likely to be interested in a surgical specialty.[18,19] Not surprisingly, a greater proportion of participants who identified as growing up in a rural area were interested in ESS (58.7%) and OSS (56.0%) compared to those raised in an urban area (23.6% and 19.7%, respectively), which aligns with literature that supports a rural background predicting rural practice intentions.[20-22] Rural individuals may have been exposed to enhanced skills while living in a rural community or simply understand through lived experience the challenges of rural practice. Furthermore, being unable to practise in an urban setting was identified as a barrier to pursuing ESS by participants in the qualitative data.

Although the largest barrier to pursuing ESS and OSS identified by participants was a lack of knowledge of the programme, a perceived lack of support from specialists was another factor dissuading the pursuit of enhanced skills. This was similarly reported by Bacenas *et al*.[9] and points to the importance of interprofessional networks of support in determining sustainable practice.[23]

Universities, as public institutions, have a mandate to serve the population, which includes addressing health disparities such as those experienced by rural Canadians. This includes providing rural populations with reasonable access to surgical care without financial and logistical barriers due to travel, where possible. To achieve the vision of reduced health disparities and health equity for rural populations, provinces, healthcare systems and universities need to invest in exposing learners to ESS throughout their medical training so that they may view it as a viable career option. Medical trainees in this survey resoundingly indicated that they are interested in ESS, and this work supports the need for more seats, training programmes and healthcare system work to stabilise rural surgical programmes.

Future research is needed to investigate the awareness and attitudes of other potential ESS candidates such as practising family physicians, international graduates and residents from other provinces. Insights from specialists collaborating with ESS, healthcare administrators and policymakers overseeing these programmes, are critical to identify obstacles and support mechanisms for ESS in rural healthcare.

Our research found that medical students in British Columbia, Alberta and Saskatchewan

are interested in ESS and OSS as a career pathway. It builds on the work of Bacenas *et al*.[9] by demonstrating continued interest in ESS from family medicine residents. Since the Bacenas *et al.* article was published in 2015,[9] however, several changes to the ESS training programme have been made. Notably, ESS has been designated as a Category One Enhanced Skills programme by the CFPC, which recognises the additional scope of practice in a particular area with a Certificate of Added Competence.[6] In addition, since 2021, the ESS application process has gone through the Canadian Residency Matching Service, which has increased the visibility of the programme.[8] Finally, the addition of a single ESS training seat in Alberta in 2025[8] occurred after our survey was distributed.

### Limitations

Despite survey distribution multiple times with social media recruitment, the 11.4% response rate raises the potential for nonresponse bias, with possibly higher participation from those interested in ESS, mirroring findings from Bacenas *et al*.[9] The cross-sectional design of the study prevented us from understanding causality; it's unclear if interest in ESS results from curriculum exposure or preexisting career inclinations. With its regional focus and low response rate, the results are not readily generalised at a national level. Finally, expressing interest in ESS does not necessarily predict actual career pursuit.

## CONCLUSION

Our study casts light on prevailing perceptions and interests regarding ESS programmes amongst medical trainees in British Columbia, Alberta and Saskatchewan. The reported level of interest of participants indicates an existing demand for more structured and expansive training opportunities for ESS in Western Canada. The factors most influential on trainees' perception of ESS were personal experiences in medical school and shadowing an ESS provider, as well as medical interest groups, while nearly half of the respondents indicated that the undergraduate medical and residency curriculum did not influence their perceptions of ESS. A general lack of ESS awareness and limited educational exposures emphasises the pressing need for curriculum enhancements. The difficult task of addressing the lack of surgical access in rural and remote settings through surgical task sharing with non-Royal College trained surgical providers requires meaningful engagement by leaders in the surgical specialties. Overcoming the barriers identified in our study, and supporting the safety and sustainability of an ESS/OSS practice model necessitates trusting relationships between surgeons and family physicians embedded within strong care networks.

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# The occasional toxic alcohol ingestion

*Adam Steiner, BA[1], Emily Austin, MD, FRCPC[2,3,4], Sarah M. Giles, MD, CCFP (EM)[5,6]*

*[1]Michael Degroote School of Medicine, McMaster University, Hamilton, Ontario, Canada, [2]Ontario Poison Centre, Toronto, Ontario, Canada, [3]St. Michael's Hospital, Toronto, Ontario, Canada, [4]Department of Medicine, Division of Emergency Medicine, University of Toronto, Toronto, Ontario, Canada, [5]Department of Family Medicine, Northern Ontario School of Medicine, Thunder Bay, Ontario, Canada, [6]Lake of the Woods District Hospital, Kenora, Ontario, Canada*

*Correspondence to: Sarah M. Giles, sgiles@lwdh.on.ca*

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## INTRODUCTION

Toxic alcohol ingestions – most commonly methanol and ethylene glycol – are time-sensitive emergencies with potentially serious consequences, including vision loss, renal failure, severe metabolic acidosis and death.[1] These alcohols are found in everyday products such as windshield fluid, antifreeze and paint thinner. Exposures to toxic alcohols may be intentional or unintentional, and outbreaks affecting multiple individuals have been reported worldwide.[2,3]

Toxic alcohol poisoning presents a clinical challenge for providers in all practice settings, both in diagnosis and management. These challenges may be particularly pronounced in rural healthcare settings due to limited availability of diagnostic testing, treatment modalities, and/or speciality services, as well as the need to transport patients over long distances. Rural generalists and emergency medicine providers must therefore be familiar with the clinical presentations of toxic alcohol poisoning, have a structured approach to ordering and interpreting diagnostic tests and be prepared to initiate treatment, when appropriate, based on reasonable clinical suspicion.

## PATHOPHYSIOLOGY

Like other simple alcohols, toxic alcohols are rapidly absorbed and reach peak serum concentration shortly after ingestion.[1] Methanol poisoning through inhalation or dermal absorption can also occur.[1] Although methanol and ethylene glycol themselves are relatively non-toxic in their parent forms, they undergo hepatic metabolism to highly toxic compounds, initially through alcohol dehydrogenase [Figure 1]. Consequently, the onset of clinical toxicity is typically delayed, with symptoms emerging only after the parent compounds have been converted to their toxic metabolites [Table 1]. In the absence of diagnosis and treatment, ingestion of these alcohols can lead to irreversible neurological, cardiopulmonary and renal damage within 72 h.[1]

Formate – the primary toxic metabolite of methanol – inhibits mitochondrial function, eventually leading to cellular hypoxia and an accumulation of lactic acid. Additionally, formate is particularly toxic to retinal and optic nerve tissues and can cause retinal injury leading to blindness.[4] Formate is also toxic to neurons in the basal ganglia, and patients have developed parkinsonism after poisoning.

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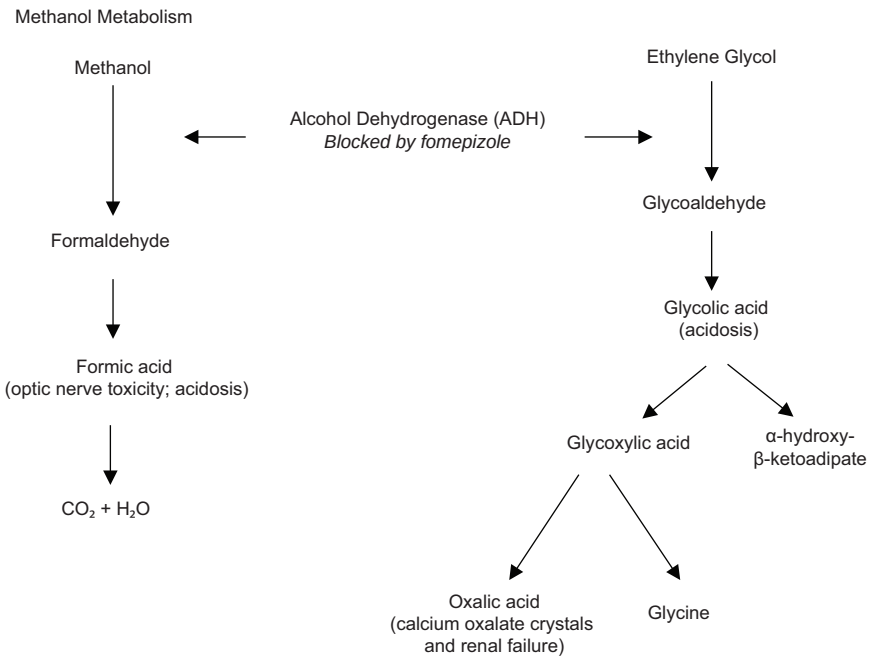


**Figure 1: Mechanistic pathway of toxic alcohol metabolism and its inhibition by fomepizole. Fomepizole inhibits alcohol dehydrogenase, preventing conversion of toxic alcohols into their toxic metabolites and limiting the progression to high anion gap metabolic acidosis (based on Kraut and Mullins, 2018).**

**Table 1: Common toxic alcohols and their effects**

| Alcohol | Source examples | Toxic metabolite | Clinical features[1] |
|---|---|---|---|
| Methanol | Windshield-washer fluid | Formate | Visual disturbances, leading to blindness |
| | Camp stove fuel | | CNS depression |
| | Adulterated ethanol | | High anion-gap metabolic acidosis |
| | Paint thinner | | |
| Ethylene glycol | Antifreeze solution | Glycolic acid, oxalic acid | Acute kidney injury |
| | Engine coolants | | Hypocalcaemia |
| | Deicing fluids | | CNS depression |
| | | | High anion-gap metabolic acidosis |

CNS: Central nervous system

Glycolic acid – the primary toxic metabolite of ethylene glycol – accumulates and causes a high anion gap metabolic acidosis that impairs cellular function and contributes to central nervous system (CNS) depression.[5] Oxalic acid, another metabolite of ethylene glycol, can form calcium oxalate crystals that deposit in multiple tissues including kidneys, heart and lungs and lead to organ dysfunction.[1]

In both methanol and ethylene glycol ingestions, the accumulation of toxic acid metabolites causes a high anion gap metabolic acidosis to develop.[6] The resulting acidaemia allows formate to cross the blood–brain barrier, further worsening CNS toxicity. Importantly, while ingestion of isopropyl alcohol from products such as hand sanitiser or rubbing alcohol can present in a manner similar to methanol or ethylene glycol poisoning, it does not contribute to a high anion gap metabolic acidosis and follows a different, more conservative, course of treatment.[7]

## CLINICAL PRESENTATION

### History and physical

Collecting a good history, when possible, is the starting point for managing patients with suspected toxic alcohol poisoning. Attempt to gather the following pertinent information from the patient:

- The suspected substance, the route of ingestion, quantity taken and timing

- Whether any coingestants – such as ethanol – were taken, which can delay toxicity onset
- Intent of the exposure – to achieve intoxication versus self-harm.

Patients with toxic alcohol poisoning may present with a wide range of clinical features, depending on the time elapsed between exposure and presentation. Early in the course, when the parent alcohol predominates in circulation, patients may exhibit signs of inebriation, which are often subtle in cases of methanol ingestion. With delayed presentation, clinical manifestations reflect the toxic effects of metabolic by-products. The presence of severe symptoms such as coma, seizures, hyperpnoea (deep rapid breathing) and/or hypotension suggests that a significant portion of the parent alcohol has already been metabolised into its toxic by-products.[8] In such cases, specific physical examination findings may help identify the particular toxic alcohol involved.[8]

- Methanol-specific findings
  - Afferent pupillary defect
  - Mydriasis
  - Retinal oedema
- Ethylene glycol-specific findings
  - Cranial nerve palsies
  - Tetany
  - Oliguria/haematuria.

Once a history and physical examination have been performed, ordering laboratory tests is the next step.

## LABORATORY TESTS

Laboratory evaluation is central to the diagnosis of toxic alcohol poisoning. The diagnostic gold standard is measurement of serum methanol or ethylene glycol concentrations; however, these assays are typically available only through specialised toxicology laboratories, often at large referral centres.

In settings where direct measurement of toxic alcohols is unavailable, the following laboratory studies should be obtained at presentation in patients with clinical suspicion of toxic alcohol poisoning:

1. Blood gas (venous or arterial)
2. Serum lactate
3. Basic metabolic panel and additional chemistries, including sodium, potassium, chloride, bicarbonate, creatinine, blood urea nitrogen, amylase or lipase, glucose, calcium, magnesium and phosphate
4. Measured serum osmolality
5. Serum ethanol concentration (required for calculation of the osmolar gap).

Depending on the clinical context, additional laboratory testing may be appropriate, including:

- Beta-human chorionic gonadotropin
- Serum acetaminophen and salicylate concentrations
- Alanine aminotransferase, aspartate aminotransferase, international normalised ratio
- Urinalysis.

Urine microscopy demonstrating calcium oxalate crystals lacks sufficient sensitivity and specificity to reliably diagnose ethylene glycol exposure.

Speak to the receiving tertiary care hospital and draw the appropriate extra tube of blood that can be sent with the patient, if they are transferred, to allow for testing the levels of methanol or ethylene glycol initially present.

In the absence of serum osmolality and ethanol levels, clinicians should rely on the anion gap, exposure history and clinical findings to guide diagnosis.

### Interpretation of laboratories

When toxic alcohol ingestion is suspected, calculation of the osmolal gap and anion gap can assist in both diagnosis and management. These calculations are available in medical calculator applications, but careful attention must be paid to the units used.

The osmolal gap is used to assess the presence of unmeasured osmoles in the bloodstream, including parent toxic alcohols such as methanol or ethylene glycol. It is calculated using the following formula,[9] in which all concentrations are expressed in mmol/L:

$$Osmolal\ gap = Measured\ osmolality - [2 \times Na + glucose + urea + 1.25\,(ethanol)]$$

A useful mnemonic to remember this calculation is 'measured osmolality minus two salts

and a sticky bun with a drink'. A normal osmolal gap typically ranges from –10 to 10 mOsm/kg $H_2O$. Although an elevated osmolal gap is neither sensitive nor specific for toxic alcohol ingestion, a normal osmolal gap likewise does not exclude the presence of a toxic alcohol. An osmolal gap >50 mmol/L is most commonly explained by the presence of a toxic alcohol, such as methanol or ethylene glycol. Ingestion of isopropyl alcohol may also produce an elevated osmolal gap, reflecting the presence of the parent compound. However, isopropyl alcohol is metabolised to acetone, a ketone that does not generate an anion-gap metabolic acidosis.[7]

An elevated anion gap is a key diagnostic finding in toxic alcohol poisoning and reflects the accumulation of acidic metabolites, such as formic acid or glycolic acid, produced when parent alcohols are metabolised by alcohol dehydrogenase (ADH). It is calculated as:

$$Anion\ gap\ (mmol/L) = [Na] - ([Cl] + [HCO3])$$

An anion gap >12 mmol/L is considered elevated. In addition to other causes of a high anion gap metabolic acidosis, such as lactic acidosis and ketoacidosis, toxic alcohol exposure must be considered.

Interpretation of the osmolal gap and anion gap in the setting of a toxic alcohol exposure varies based on the time elapsed since the exposure. Shortly after ingestion, the osmolal gap is elevated due to the presence of the unmetabolised parent alcohol. It subsequently declines as metabolism ensues.[1] In contrast, the anion gap is usually normal early in the course, and rises later, as the toxic metabolites begin to accumulate.[9]

In a patient presenting early, after ingestion of methanol or ethylene glycol, the osmolal gap may be high while the anion gap remains normal [Figure 2]. With delayed presentation, the osmolal gap may normalise as the anion gap increases. Although an elevated anion gap is an important diagnostic clue, its absence does not exclude toxic alcohol poisoning. The anion gap may remain normal in early presentations or in cases of concomitant ethanol ingestion, as ethanol competitively inhibits ADH and delays metabolism of the toxic alcohol.

Once substantial metabolism of the parent alcohol has occurred, venous blood gas analysis typically demonstrates a metabolic acidosis,

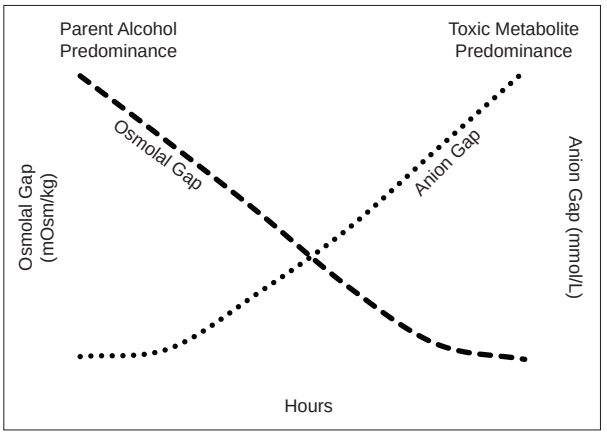


**Figure 2: Evolution of the osmolal and anion gaps after toxic alcohol ingestion. The osmolal gap is initially high due to parent alcohol predominance and declines as metabolism occurs, while the anion gap increases as acidic metabolites accumulate (based on Kraut and Mullins, 2018).**

characterised by a pH <7.35 and serum bicarbonate <22 mEq/L. The $pCO_2$ may be decreased (reflecting appropriate respiratory compensation) or normal, depending on the adequacy of ventilatory response.

In resource-limited or rural settings where direct measurement of serum osmolality is unavailable, clinicians should rely on the anion gap, exposure history and clinical findings to guide diagnosis.

## DIFFERENTIAL DIAGNOSIS

The differential diagnosis in a patient with simultaneous elevation of both the osmolal gap and the anion gap is relatively limited. Although a high anion gap metabolic acidosis alone has a broad differential, summarised by the GOLDMARK mnemonic (glycols, oxoproline, L-lactate, D-lactate, methanol, acetylsalicylic acid, renal failure and ketoacidosis), the concurrent presence of an elevated osmolal gap substantially narrows the possibilities.

Toxic alcohols, most notably methanol and ethylene glycol, are the principal causes of concurrent elevations in both gaps: the parent alcohol increases the osmolal gap, while its acidic metabolites raise the anion gap. Other conditions may produce overlapping laboratory findings but are typically distinguishable. Diabetic or alcoholic ketoacidosis is characterised by the presence of ketones in blood or urine, with only modest increases in the osmolal gap.[10] Lactic acidosis does not meaningfully elevate the osmolal gap.[11] Renal failure

is generally accompanied by elevated creatinine and clinical uraemia rather than a significant osmolal disturbance.[12] In the absence of these features, toxic alcohol ingestion should be strongly considered.

It is important to reiterate that either gap may be normal depending on the timing of presentation. Serial measurements and characteristic clinical features of toxic alcohol poisoning [Table 1] provide additional diagnostic clues.

## TREATMENT

The management of toxic alcohol poisoning relies on early recognition, prompt initiation of antidote therapy, correction of metabolic derangements and initiation of dialysis when appropriate. In settings where confirmatory testing cannot be obtained, therapy should be initiated based on suspicion. The goals of treatment are three-fold: (i) inhibit alcohol dehydrogenase, (ii) correct the acidosis and (iii) enhance elimination of parent alcohols and toxic by-products and provide supportive care to prevent end-organ damage.

### Initial management and stabilisation

- Contact the regional poison centre for additional guidance
- Consult nephrology if severe symptoms – marked high anion gap metabolic acidosis, a significantly elevated osmolal gap or, when available, elevated serum toxic alcohol concentrations
- Place the patient on continuous cardiac monitoring with hourly vitals and neurologic checks
- Place 2 large bore intravenous catheters (IVs)
- Correct severe acidaemia (pH <7.00 or $HCO_3$ <8) with IV sodium bicarbonate boluses and infusions to goal of a minimum of pH >7.2
- Provide supportive care, including monitoring for compensatory hyperventilation and administering IV fluids for hypotension.

### Antidotal therapy

- Fomepizole is a competitive antagonist of alcohol dehydrogenase and the first-line antidote
  - Dose: 15 mg/kg IV followed by 10 mg/kg IV every 12 h for at least 4 doses. In patients undergoing dialysis, the dosing interval should be adjusted to account for clearance of fomepizole.[13]
- Fomepizole is generally very well tolerated, though expensive[14]
  - Fomepizole is sometimes avoided due to cost in resource-limited settings (~$1000/vial, with an average of 4 vials needed per patient), but this cost can be offset by potential avoidance of transfer or intensive care unit admission.[15]
- If fomepizole is unavailable, ethanol can be used to reduce the production of toxic metabolites, with dosing titrated to maintain serum ethanol of 22 mmol/L[16] (requires frequent monitoring of ethanol levels). Consultation with a regional poison centre is suggested to discuss dosing and administration, since IV ethanol is unavailable in Canada
- If, in conjunction with the poison experts, isopropyl alcohol toxicity is suspected, rather than methanol or ethylene glycol, do not administer fomepizole as it can prolong isopropanol elimination by inhibiting ADH-mediated metabolism. In this case, treatment is primarily supportive.

### Cofactor therapy

- If methanol poisoning is suspected
  - Folic acid 50 mg IV every 4 h to enhance formate metabolism to carbon dioxide and water.
- If ethylene glycol poisoning is suspected
  - Thiamine 100 mg IV every 8 h
  - Pyridoxine 50 mg IV every 6 h to facilitate conversion of glyoxylate into non-toxic metabolites.
- If unsure which toxic alcohol was ingested, folic acid, thiamine and pyridoxine should all be given.

### Continued treatment and indications for haemodialysis

- Monitor vital signs and repeat laboratories frequently
  - If fomepizole has been started, repeat laboratories q12 h

- If the patient is on dialysis, repeat q4 h
- If methanol/ethylene glycol levels are not available and fomepizole is not given, repeat laboratory intervals are determined on a case-by-case basis in consultation with a toxicologist
- If the patient requires a bicarbonate infusion, electrolytes and VBG should be monitored q2 h.

- Continue fomepizole and cofactor therapy until the serum concentration of ethylene glycol or methanol falls below 3–5 mmol/L or 6–9 mmol/L, respectively.

In cases of severe poisoning, initiate transportation to a medical centre that can provide haemodialysis.

## STOPPING RULES

Once initiated, review indications for stopping therapy with your local poison centre.

## CONCLUSION

Toxic alcohol ingestion is a time-critical emergency that can be particularly challenging to diagnose in rural and resource-limited settings where key laboratory investigations may not be immediately available. Toxic alcohol ingestion should be high on a clinician's differential diagnosis when a patient presents with symptoms of intoxication, or altered level of consciousness (LOC), and has an unexplained high anion gap metabolic acidosis. Clinicians should initiate empiric therapy with fomepizole (or ethanol if unavailable) and cofactors, correct the acidaemia and consult with a regional poison centre. Some patients may require urgent transfer to a haemodialysis centre. Early recognition and rapid treatment can prevent catastrophic outcomes, including blindness, renal failure and death.

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PODIUM

# Midnight calls and false alarms: Why rural patients deserve better laboratory services

*Malvinder S. Parmar, MB, MS, FRCPC, FASN*

*Professor, Clinical Sciences Division, Northern Ontario School of Medicine University, Sudbury, Ontario, Canada*

*Correspondence to: Malvinder S. Parmar, wittykidney@outlook.com*

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It's 1:17 AM. My phone rings. It's LifeLabs. The agent informs me that my patient's serum potassium is 6.9 mmol/L, a dangerously high level that could cause fatal cardiac arrhythmias. I call the patient, wake them from sleep and direct them to drive to the emergency department (ED) immediately. They arrive anxious and frightened. The ED physician orders repeat blood work. The potassium comes back at 5.1 mmol/L.

The laboratory made no error. The specimen was fine when the patient's blood was drawn yesterday morning at the local collection centre. But by the time the specimen reached the regional processing laboratory hours away, the blood sat unprocessed at the collection centre, and possibly during transport, potassium leaked from the cells. The result was spurious. The alarm was false. The midnight drive was unnecessary.

I have been a nephrologist in Northern Ontario for 35 years. This scenario has happened to me and to my patients, hundreds of times. I am writing to highlight a preventable system problem that disproportionately affects rural Canadians.

## THE PROBLEM IS REAL, QUANTIFIABLE AND GETTING WORSE

A 2025 Ontario study by Chiu *et al.* quantified what rural clinicians have known for years: among over 65 million potassium measurements, 57,607 adults had outpatient hyperkalaemia >6.2 mmol/L. Of these, 13% were sent to EDs within 24 h. On repeat testing, the average potassium level dropped by 1.5 mmol/L – compelling evidence that thousands of these critical alerts were spurious, not true medical emergencies.[1]

Thousands of Canadians each year receive terrifying phone calls, make midnight drives to EDs and experience profound anxiety, all because of a laboratory service delivery model that treats specimen processing delays as acceptable rather than preventable.

And the problem is intensifying. Since the Chiu study[1] ended, laboratory service consolidation has accelerated. Small rural hospitals have discontinued outpatient laboratory services. Private commercial laboratories have expanded their networks of collection-only sites, now over 280 in Ontario alone, where blood

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is drawn but not processed.[2] Recently, LifeLabs announced the closure of its Sudbury laboratory, necessitating routing specimens to Toronto for processing, further extending transport times for Northern Ontario communities.[3] Without on-site centrifugation in a timely manner, specimens spend hours at collection centres before cells are separated from serum. Potassium leaks. Results become artifactually elevated. And rural patients bear the consequences.

The laboratory science is well-documented. Potassium increases 3.1% within 1 h and 7.7% within 5 h when blood sits unprocessed at room temperature.[4] These are predictable pre-analytical errors. While other factors may contribute, like haemolysis from traumatic blood draws, inappropriate tubes and cold storage, the structural problem is collection sites without timely processing, serving the populations in rural communities. This creates a systematic disadvantage for rural patients that most urban patients do not face.

There is also a bidirectional risk. The same delays that create spurious hyperkalaemia can mask true hypokalaemia, a serious emergency causing cardiac arrhythmias and respiratory compromise. Patients with genuine hypokalaemia may receive falsely reassuring results, leading to missed diagnoses and delayed treatment.

## THE INEQUITY SHOULD OUTRAGE US

When rural patients receive laboratory results 16–24 h later than urban patients, and when those delayed results are more likely to be artifactually abnormal, this violates the Canada Health Act's principles of universality and accessibility. Timely, accurate diagnostic testing should not depend on postal code.

Urban patients have blood drawn at facilities with on-site processing and receive results within hours. Rural patients wait for courier transport and receive results the next day or overnight, when spurious critical values trigger those dreaded phone calls. This erodes trust, desensitises clinicians to critical alerts, creates unnecessary emergency visits and burdens rural communities already facing healthcare access challenges.

## THE SOLUTIONS ARE ACHIEVABLE, PRACTICAL AND COST-EFFECTIVE

### Partnership agreements between private laboratories and rural hospitals

Time-sensitive tests could be routed to the nearest hospital laboratory for same-day processing with per-test reimbursement, leveraging existing infrastructure while preventing delays.

### Targeted provincial funding

Selected rural hospitals could receive funding to re-establish outpatient processing for critical analytes. Extrapolating from the Chiu data, several thousand potentially avoidable ED visits likely occur annually in rural Ontario. At $500–800 per ED visit, physician billing of $75–100 and repeat laboratory costs of $15–30, annual costs from spurious hyperkalaemia likely reach several hundred thousand dollars provincially.[5-7] Local processing costs are minimal, primarily $2–5 in reagent costs per test, as the infrastructure exists.[8] We spend $500–800 downstream to avoid spending $5–10 upfront. This is bad medicine and worse economics.

### Quality improvement within current systems

Flag results from specimens with prolonged delays. Clearly indicate serum versus plasma (plasma potassium runs 0.3–0.5 mmol/L lower). Require on-site centrifugation at collection centres with regular audits. Conduct root cause analysis to identify sites with elevated haemolysis rates.

### Research to build the evidence base

We need studies quantifying spurious hyperkalaemia frequency in rural versus urban settings, characterising centrifugation practices, assessing patient outcomes and conducting cost-effectiveness analyses.

## A CALL TO ACTION

My colleagues in rural communities: you have witnessed this problem. You know the frustration of explaining to anxious patients at 3 AM that 'the lab made a mistake', except it wasn't a mistake, it

was a predictable consequence of a flawed service delivery model.

You have the credibility to advocate for change. Bring this to your hospital boards. Raise it with laboratory directors. Frame it as what it is: a patient safety and healthcare equity problem requiring urgent attention. Use the Chiu study and cost-effectiveness to support your arguments.

Rural patients deserve laboratory services as accurate and timely as those in urban centres. This is not unreasonable. It is a basic requirement of equitable health care.

## WHY THIS MATTERS NOW

For years, this remained anecdotal – something clinicians experienced but could not quantify. The Chiu study[1] changed that, providing population-level evidence identifying *57,607* cases of outpatient hyperkalaemia, of which 13% of patients were sent to EDs showing up to 1.5 mmol/L drop in serum potassium on repeat testing. This transformed our understanding from 'this seems to happen often' to 'this affects thousands of Canadians annually'.

Now that we have quantitative evidence, we can no longer dismiss it as isolated incidents. The data demand action. The challenge is not technological. We have the infrastructure and expertise. What we lack is the organisational will and policy commitment to prioritise rural healthcare equity in laboratory service delivery.

As EDs struggle with capacity, we cannot afford thousands of avoidable visits driven by artifactual results. As healthcare costs spiral, we cannot justify spending hundreds of dollars downstream to avoid spending a few dollars upfront. As rural communities fight to maintain services, we cannot accept yet another system that treats them as second-class.

It is time for change. Our rural patients deserve better. The solutions exist. We just need to implement these.

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Letter to Editor

# Letter to the editor concerning 'Improving resource stewardship in post-pandemic primary care: Insights into choosing wisely Canada guidelines'

*Neeraj Singh, MD[1], Monika Srivastav, PhD[2]*

*[1]Dr. D. Y. Patil Medical College Hospital and Research Centre, Dr. D. Y. Patil Vidyapeeth (Deemed-to-be-University), Pune, Maharashtra, India, [2]Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth (Deemed-to-be-University), Pune, Maharashtra, India*

*Correspondence to: Neeraj Singh, neeraj.singh.work@proton.me*

Dear Editor,

We read with interest the survey by Jeffery *et al*. examining primary care physicians' engagement with Choosing Wisely Canada (CWC) recommendations in the post-coronavirus disease 2019 environment.[1] The integration of quantitative trends with thematic analysis offers a useful snapshot of frontline perceptions, particularly regarding rural practice pressures. However, several interpretive issues warrant further consideration.

The reported equivalence in awareness and practice patterns across geography and experience may reflect the limitations in analytic granularity rather than true uniformity. Collapsing heterogeneous practice environments into broad categories can obscure clinically meaningful gradients in access, referral latency and diagnostic risk tolerance.[2] For resource stewardship initiatives, these microcontextual differences are decisive because physicians in geographically constrained settings often adopt precautionary testing thresholds that differ from urban norms.[3] Stratified modelling using rurality index bands or practice volume metrics may have clarified whether apparent homogeneity masks operational divergence.

A second concern relates to the interpretation of awareness metrics as proxies for implementation readiness. The finding that 97.6% of respondents were aware of CWC recommendations contrasts with much lower familiarity with post-pandemic adaptations.[4] This discordance suggests a potential knowledge-to-action gap that is not fully interrogated. From a clinical workflow perspective, awareness without point-of-care integration rarely translates into behaviour change. Linking survey responses to electronic medical record prompts or audit feedback exposure would provide a more behaviourally anchored estimate of stewardship uptake.

The qualitative theme of patient expectation misalignment is compelling but remains insufficiently contextualised within contemporary information ecosystems. Physicians attributed testing pressure largely to social media influence, yet the study does not differentiate between misinformation exposure and

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legitimate patient safety concerns following pandemic-related care disruptions. This distinction matters because stewardship strategies based solely on patient education may underperform if diagnostic uncertainty or access delays are the dominant drivers of testing behaviour.[5]

We commend the authors for addressing an important post-pandemic stewardship challenge and for foregrounding rural primary care perspectives. Future work that integrates behavioural implementation metrics with digitally embedded decision support may refine how CWC recommendations translate into sustainable, high-value primary care delivery.

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# Response

Drs. Patil and Vidyapeeth raise an important point regarding the potential influence of analytic granularity when examining the differences across geography and experience. In our study, geographic categories were intentionally simplified to facilitate interpretation within a modest sample size. While this approach allowed us to identify broad trends, we agree that rural practice environments are heterogeneous and that factors such as referral pathways, diagnostic resource availability and practice volume may influence testing thresholds. Future studies employing larger samples and more detailed stratification – such as defined rurality indices (which are currently not agreed upon in the Canadian context) and practice workload measures – may provide additional insight into these micro contextual differences. This may further clarify how stewardship decisions vary across practice settings.

The distinction between the awareness of Choosing Wisely Canada (CWC) recommendations and readiness for implementation was also highlighted by the correspondents to this original article. Our finding of high overall awareness alongside lower familiarity with post-pandemic adaptations likely reflects a broader knowledge-to-action gap that has been described in other guideline implementation contexts.[1-3] As noted in our discussion, awareness alone does not necessarily translate into behavioural change, particularly in the busy clinical environments. We agree that integrating stewardship guidance into electronic medical record decision support tools, audit and feedback mechanisms or other workflow-embedded strategies could provide a more direct measure of implementation and may enhance the adoption of CWC recommendations in everyday practice. Future research on educating care providers on the integration of resource stewardship into rural practice environments is already underway by several researchers within the rural areas of the province of Ontario.

Finally, we appreciate the physicians' comments regarding the qualitative theme of patient expectation misalignment. Our survey responses suggested that physicians frequently perceive patient expectations as a driver of testing, with some respondents attributing these pressures to information encountered through online or social media sources. However, we agree that this phenomenon likely reflects a complex interplay between information exposure, pandemic-related care

disruptions and ongoing diagnostic uncertainty. Future qualitative work exploring how patients form expectations around testing – and how clinicians navigate these expectations in different practice environments – would help refine stewardship strategies beyond patient education alone.

Nathan Jeffery, MD, Div Patel, MSc, MD,
Taylor Marshall, MD (c), Lisa Allen, PhD,
Roy Kirkpatrick, MD

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## Country Cardiograms: Submit a case!

Have you encountered a challenging ECG lately?
In most issues of the CJRM, we present an ECG and pose a few questions. On another page, we discuss the case and provide answers to the questions.

Please submit cases, including a copy of the ECG to Suzanne Kingsmill, Managing Editor, CJRM, email to manedcjrm@gmail.com

### Cardiogrammes ruraux

Avez-vous eu à décrypter un ECG particulièrement difficile récemment?
Dans la plupart des numéros du JCMR, nous présentons un ECG assorti de questions. Les réponses et une discussion du cas sont affichées sur une autre page.
Veuillez présenter les cas, accompagnés d'une copy de l'ECG, à Suzanne Kingsmill, rédactrice administrative, JCMR,
manedcjrm@gmail.com

SRPC AWARDS

## CONGRATULATIONS TO OUR SRPC AWARD RECIPIENTS!

**Top Student Research Poster**
Emily Parsons

**Top Resident Research Poster**
Dr. Dennis Brown and Dr. Maya Venkataraman

**Rural Student Essay**
Ms. Melissa Yeo

**Rural Resident Essay**
Dr. Kapilan Panchendrabose

**Rural Student Leadership Award**
Ms. Kristina LeDrew
Miss Alanna Pullen

**Rural Resident Leadership Award**
Dr. Kathleen MacMillan

**Rural Community Impact Award**
Dr. Rosy Khurana

**Rural Health Champion Award**
Ida Anishinabie

**Rural Mentorship Award**
Dr. Jason Malinowski

**Rural Heart Award**
Dr. Mark Biernacki

**Rural Specialist Merit Award**
Dr. Jesse Guscott

**Keith Award**
Université Laval

**Rural Medical Education Award**
Memorial University of Newfoundland

**Rural Service Award**
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Dr. Rithesh Ram
Dr. Lindsey Sutherland
Dr. Andrew Halladay
Dr. Frances Kilbertus
Dr. Nichole Currie
Dr. Andrew Hunt
Dr. Paul Dhillon
Dr. Tania Sullivan
Dr. Greg Linton

**Rural Long Service Award**
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Dr. Oswaldo Ramirez
Dr. Jason Malinowski
Dr. Robin Kennie
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Dr. Stephanie Langlois
Dr. Roy Kirkpatrick

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Dr. David Whittaker
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Dr. Robin Kennie
Dr. Jason Malinowski
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Dr. Nicholas Potvin

**Lifetime Member Award**
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