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The Occasional ICUD

Contribution to the Rural Doctor Supply by MUN's Medical School

The Ages and Stages Questionnaires



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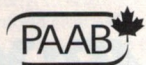
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Northern Passage
Acrylic on canvas, 20" x 30"
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Changing of the guard at *CJRM*

John Wootton, MD
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Scientific editor, *CJRM*

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SEVEN “dog years” are said to be equivalent to 1 human year, so that at 2 years of age a dog may be considered to be an adolescent, and at 3 a young adult. With this paradigm in mind I would like to propose a similar structure for the age of a rural journal.

Twelve years ago *CJRM* was a mere twinkle in the eye — a rough sketch on a table napkin that did little more than outline what the cover might look like. That seed fell on fertile ground, however, and from its first issue it was clear that the journal had found a niche and a reason for existing.

That was its infancy.

In its early years it struggled to gain legitimacy, both financially (in the eyes of the SRPC) and academically in the eyes of its peers, and in particular in the eyes of Index Medicus, a stern master who failed it twice before giving it the necessary passing grade.

It graduated.

At 12 years it could now be considered a young adult (the ratio thus being about 2:1, journal years to human), testing new ground, meeting new writers and readers, broadening, perhaps, its base, and gaining confidence, but taking

nothing for granted. Most importantly, it is set to cut some ties to its infancy, much as parents need fortitude and wisdom to let their children loose to make their own way in the world.

As founding editor I find myself ready (like the metaphorical parent) to pass the role of Scientific Editor on to other hands. SRPC Council will conduct its search for a new editor in due course.

The editor is, however, only one small part of the team that must collaborate to bring each issue to fruition. The success that *CJRM* has enjoyed is in no small measure owing to the combined efforts and dedication of its Assistant and Associate Editors, its Managing Editor, and the crew at the Canadian Medical Association that pulls it all together. This team remains in place to guide and support the transition. I would like to thank them for the critical contributions they have made and continue to make. I would also like to thank all of *CJRM*'s authors and reviewers.

CJRM is an important anchor for rural medicine in this country, and, increasingly, beyond our borders. The future is promising. I wish it well.



La relève de la garde au *JCRM*

John Wootton, MD
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Rédacteur scientifique,
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O n dit que sept « années de vie de chien » équivalent à une année humaine, ce qui fait qu'à deux ans, un chien peut être considéré comme un ado et à trois ans, un jeune adulte. C'est dans cette optique que j'aimerais proposer une structure semblable pour l'âge d'un journal rural.

Il y a 12 ans, le *JCRM* était une simple idée — une esquisse tracée sur une serviette de table pour donner une idée de ce à quoi pourrait ressembler la page couverture. La graine est toutefois tombée en sol fertile et dès le premier numéro, il était clair que le journal avait trouvé un créneau et une raison d'être.

Ce fut sa petite enfance.

Au début, le journal a lutté pour acquérir sa légitimité, sur le plan tant financier (aux yeux de la SMRC) qu'universitaire aux yeux de ses pairs et en particulier d'Index Medicus, maître sévère qui lui a infligé deux échecs avant de lui accorder la note de passage nécessaire.

Le journal a gradué.

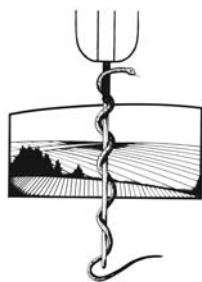
À 12 ans, on pourrait maintenant le considérer comme un jeune adulte (le ratio serait alors d'environ 2:1 années journal:année humaine) qui se lance en pays inconnu, rencontre de nouveaux rédacteurs et lecteurs, élargit peut-être sa base et prend confiance en lui, mais

ne tient rien pour acquis. Le plus important, c'est qu'il est sur le point de rompre des liens avec sa petite enfance — et les parents ont besoin de sagesse et de force pour laisser leurs enfants aller tracer leur propre voie dans le monde.

Comme rédacteur fondateur, je me trouve prêt, tout comme un parent, à transmettre le rôle de rédacteur scientifique. Le Conseil de la SMRC cherchera un nouveau rédacteur en temps et lieu.

Le rédacteur en chef n'est toutefois qu'un des rouages de l'équipe qui doit collaborer pour produire chaque numéro. Le succès du *JCRM* est attribuable en très grande partie aux efforts combinés et au dévouement de ses rédacteurs adjoints et associés, de sa directrice de la rédaction et de l'équipe de l'Association médicale canadienne qui chapeaute le tout. L'équipe demeure en place pour guider et appuyer la transition. Je remercie ses membres de leurs contributions critiques d'hier et d'aujourd'hui. Je remercie aussi tous les auteurs et les examinateurs du *JCRM*.

Le *JCRM* est un important phare pour la médecine rurale au Canada et, de plus en plus, à l'étranger. L'avenir est prometteur. Je lui souhaite bonne chance.



President's message. ACRRM/SRPC/CJRM

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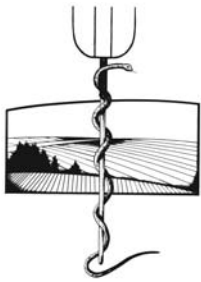
Rural doctors are true generalists with broad, enhanced competencies in many procedural skills. We enjoy our work and we can take pride in being real generalists. We continue with the struggle to increase the number of rural docs and to enhance our skill sets so that the patients in our rural communities can have the same access to services that other Canadians take for granted.

We can learn a lot from our Australian colleagues who have similar challenges with geography and the rural–urban divide. Rural physicians in Australia have blazed their own trail, forming the Australian College of Rural and Remote Medicine (ACRRM), which this year was legislated as an accrediting body for rural medicine. We in Canada do not have any accreditation for Rural Medicine. Dr. Dennis Pashen, the president of ACRRM, will be speaking at our next Rural and Remote Medicine Conference, April 17–19, 2008. At the conference we will have a forum to discuss the future of rural medicine in Canada and I hope many of you will attend, bringing with you your passion for rural medicine. I always find the Rural and Remote Medicine conferences invigorating, and I inevitably leave the conference with a pride in my chosen profession and feeling a sense of belonging to a group of physicians who are doing a great job in rural medicine.

The SRPC continues to grow, with an increase in membership of 25% in the past year, bringing us to our current total of 2500 members. Attendance at our

annual Rural and Remote Conference in Halifax, Nova Scotia, April 17–19, 2008 is expected to be over 400 this year. This attendance is tremendous considering that our members are dispersed to all corners of Canada, remote, rural and urban. We appreciate our urban members whose hearts and souls remain in rural Canada, for their ongoing support of rural health care. SRPC has always stated that if Canadians are to be proud of the Canadian medicare system, the benchmark for that success must be measured by how well the health care system is working in remote and rural Canada.

CJRM is the flagship of the SRPC. Dr. John Wootton has made a tremendous contribution to rural health as the founding scientific editor. During his tenure as editor, the journal was accepted into Index Medicus. After over a decade of service to *CJRM* as the scientific editor, John feels the need to pass the torch, thereby providing an opportunity for renewal. Over the next few months he will be overseeing the transition and SRPC will be looking for a new scientific editor. Thank you very much John for your contribution to our journal. We also need to acknowledge the continuing contribution of Suzanne Kingsmill who is a superb managing editor. The SRPC has organized a search committee to seek a successor to John. We look forward to maintaining the high standard of excellence in rural medical publishing that has been established by John and Suzanne.



Message du président. ACRRM/SMRC/JCMR

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Les médecins ruraux sont de véritables généralistes qui possèdent un grand nombre de compétences améliorées dans de nombreuses techniques d'intervention. Nous aimons notre travail et nous sommes fiers d'être de vrais généralistes. Nous poursuivons notre lutte pour augmenter le nombre de médecins ruraux et acquérir un éventail élargi de compétences afin que les patients de nos communautés rurales aient le même accès aux services que les autres Canadiens tiennent pour acquis.

Nous avons beaucoup à apprendre de nos collègues australiens à qui la géographie et le clivage entre les milieux ruraux et urbains posent des défis semblables. Les médecins ruraux de l'Australie ont fait œuvre de pionnier en créant l'Australian College of Rural and Remote Medicine (ACRRM) que la loi a reconnu cette année comme organisme d'agrément de la médecine rurale. Au Canada, nous n'avons pas de système d'agrément de la médecine rurale. Le Dr Dennis Pashen, président de l'ACRRM, prendra la parole au cours de notre prochain Congrès sur la médecine en milieu rural et éloigné. Au cours du congrès, nous présenterons une tribune de discussion sur l'avenir de la médecine rurale au Canada. J'espère que vous y assisterez en grands nombres et que vous contribuerez par votre passion pour la médecine rurale. Je trouve toujours stimulants les congrès sur la médecine en milieu rural et éloigné, dont je ressors avec une grande fierté pour la profession que j'ai choisie et un sentiment d'appartenance à un groupe de médecins qui font de l'excellent travail en médecine rurale.

La SMRC continue de prendre de l'ampleur : l'effectif a augmenté de 25 %

au cours de l'année écoulée, ce qui porte notre total actuel à 2500 membres. Notre Congrès annuel sur la médecine en milieu rural et éloigné aura lieu à Halifax (N.-É.), du 17 au 19 avril 2008, et devrait attirer cette année plus de 400 participants, ce qui est énorme compte tenu du fait que nos membres sont dispersés dans toutes les régions du Canada, en milieu éloigné, rural et urbain. Nous remercions nos membres urbains dont le cœur et l'âme demeurent au Canada rural et qui continuent d'appuyer les soins de santé en milieu rural. La SMRC a toujours affirmé que si les Canadiens peuvent être fiers du système d'assurance-maladie du Canada, il faut évaluer cette réussite en fonction de la mesure dans laquelle le système de santé fonctionne bien en milieu rural et éloigné au Canada.

Le *JCMR* est le porte étendard de la SMRC. Le Dr John Wootton a apporté une contribution énorme à la santé rurale comme rédacteur scientifique fondateur. Au cours de son mandat à la rédaction, le journal a été accepté dans *Index Medicus*. Après plus d'une décennie de service au *JCMR* à titre de rédacteur scientifique, John sent le besoin de passer le flambeau, offrant ainsi une possibilité de renouvellement. Au cours des prochains mois, il supervisera la transition et la SMRC cherchera un nouveau rédacteur scientifique. Merci beaucoup, John, de votre contribution à notre journal. Nous devons aussi souligner la contribution soutenue de notre excellente directrice de la rédaction, Suzanne Kingsmill. La SMRC a mis sur pied un comité de recherche d'un successeur à John. Nous comptons bien maintenir la tradition d'édition médicale rurale de haute qualité établie par John et Suzanne.



ORIGINAL ARTICLE ARTICLE ORIGINALE

The Ages and Stages Questionnaires: feasibility of use as a screening tool for children in Canada

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*This article has been peer
reviewed.*

Objective: To determine the accuracy and feasibility of a monitoring tool completed by parents for screening at-risk and community infants and children for developmental problems.

Methods: We assessed 43 children following open-heart surgery and 68 community children (aged 4–36 mo) at prescribed intervals using the Ages and Stages Questionnaires (ASQ). Subjects were followed 3 years later (at age 5–6 yr) via telephone interview with their parents concerning developmental delay identified by physicians. Responses were confirmed by telephone interviews with family physicians. We then compared the results of the ASQ with the physician assessments.

Results: Nine at-risk and 9 community children were lost to follow-up. The ASQ identified 4 of the 25 at-risk children as having developmental delay, while 2 of the 6 children assessed by a neurologist were identified as having developmental delay. The ASQ identified 2 of the 59 community children as having developmental delay, 1 of whom was assessed by a neurologist as having developmental delay. The ASQ had sensitivities of 75% in the at-risk group and 100% in the community group, and specificities of 95% and 90%, respectively. The parents were unanimous in their willingness to complete the assessments.

Conclusion: The ASQ is feasible, inexpensive, easy to use, and was appreciated by the parents. It is a sufficiently sensitive and specific monitoring tool that its use in cardiac follow-up programs and in community programs for healthy children is warranted. Although this tool should not be used to replace clinical assessment, it can be used to rationalize access to specialist developmental assessment services.

Objectif : Déterminer l'exactitude et la faisabilité d'application d'un outil de surveillance complété par les parents pour le dépistage des problèmes de développement chez les nourrissons et les enfants à risque et en milieu communautaire.

Méthodes : Nous avons évalué 43 enfants à la suite d'une intervention chirurgicale à cœur ouvert et 68 enfants en milieu communautaire (âgés de 4 à 36 mois) à des intervalles prescrits en utilisant les questionnaires sur les âges et les stades (Ages and Stages Questionnaires – ASQ). Nous avons suivi les sujets trois ans plus tard (à 5–6 ans) en interviewant par téléphone leurs parents au sujet du retard de développement identifié par les médecins. Nous avons confirmé les réponses en interviewant les médecins de famille par téléphone. Nous avons ensuite comparé les résultats des ASQ aux évaluations des médecins.

Résultats : Neuf enfants à risque et 9 enfants en milieu communautaire ont été perdus au suivi. Les ASQ ont permis de déterminer que 4 des 25 enfants à risque et 2 des 6 enfants évalués par un neurologue avaient un retard du développement. Les ASQ ont établi que 2 des 59 enfants des milieux communautaires avaient un retard du développement, dont un a été évalué par un neurologue qui a conclu qu'il avait un retard du développement. Les ASQ avaient une sensibilité de 75 % dans le groupe des enfants à risque et de 100 % dans le groupe des enfants des milieux communautaires, et des spécificités de 95 % et 86 % respectivement. Les parents ont consenti à l'unanimité à remplir les évaluations.

Conclusion : Les ASQ sont applicables, peu coûteux, facile à utiliser et appréciés par les parents. C'est un outil de contrôle suffisamment sensible et spécifique pour que son utilisation dans le contexte de programmes de suivi cardiaque et de programmes communautaires à l'intention d'enfants en bonne santé soit justifié. Même si cet outil de ne devrait pas remplacer l'évaluation clinique, on peut l'utiliser pour rationaliser l'accès aux services d'évaluation du développement offerts par des spécialistes.

INTRODUCTION

Over the past 3 decades, the benefits of early intervention — therapy for young children identified as having or being at risk of developing a handicap, before it interferes with their growth and development — have been shown in randomized controlled trials.¹⁻⁴ It is the role of family physicians and pediatricians to promptly identify children who are developmentally delayed and refer them to the necessary resources for full assessment and an intervention program. The current guidelines for family physicians and pediatricians stress the need for identification of developmental delays and disabilities,¹ and steering of affected children to appropriately trained teams that can offer full assessment and early management.² Despite the need for regular and accurate developmental assessment, few pediatricians use formal developmental screening instruments in their offices, with most relying on informal surveillance through the history and physical examination.⁵

Today's physicians face unprecedented challenges of time constraints, budget cuts and inadequate resource allocation, which may impede their ability to provide effective developmental assessment. In addition, there is a lack of consensus on which instruments are the most reliable and cost-effective for screening the general pediatric population.⁶ As a result of these barriers, it has been estimated that only 50% of children with developmental disabilities are identified through assessments initiated by physicians.⁷ Developmental delay in many children, particularly mild or moderate delay, goes undetected by parents and professionals during the first few years of life and is finally identified when the deficits result in problems in school. Since it is believed that the greatest benefits for early intervention are achieved when it is initiated between the ages of 3 and 5 years,² the opportunities to ensure optimum motor, language and social development for these children are likely being missed.

The Ages and Stages Questionnaires (ASQ) constitute a screening system that was developed

by the University of Oregon's Center on Human Development.^{8,9} It is a developmental assessment tool kit for parents, who complete the questionnaires at prescribed intervals: 4, 8, 12, 16, 20, 24, 30 and 36 months of age. Each questionnaire consists of 30 clearly described and illustrated questions divided into 5 domains: gross motor, fine motor, language, social and adaptive. Parents are asked to report the occurrence of certain behaviours and skills by checking the appropriate box to indicate whether the child has the skill ("yes," "sometimes," or "not yet"). The questionnaires take about 10 minutes to complete and are then sent back to the administrative body to be scored and interpreted. The Centre on Human Development determined the validity (0.86 to 0.91) and reliability (interrater > 0.85, test-retest > 0.90) of the system.^{8,9} The tool was developed as an accurate, cost-effective method of monitoring children who are at risk for developmental delay to identify developing problems before they interfere with a child's growth.

Although the efficacy of this tool has been established, the feasibility of its use in an at-risk population has not. Further, the Canadian health care model, the centralized nature of Canadian secondary and tertiary health care, and Canada's vast geography lead to unique conditions. Particularly for parents in rural or remote areas, or those at high risk for developmental delay, concerns about development may go unaddressed. Children in rural and remote First Nations communities are at particular risk, as noted by the Kirby Commission in its report on the status of the health care system in Canada, which stated that

the health of Aboriginal Canadians is a national disgrace. There is a ... completely unacceptable large gap in health indicators between Aboriginal and non-Aboriginal Canadians.¹⁰

Therefore, we felt that a mailed (or even electronic) questionnaire system might lend itself to the practical realities of Canadian health care delivery.

Children with heart disease are at increased risk of lower than average intelligence quotients and poorer than average perceptual and gross motor

function owing to prolonged cyanosis and central nervous system damage during and immediately after cardiac surgery.¹¹ We examined the feasibility of having parents complete the ASQ to monitor the developmental status of their at-risk child. We also considered the utility of the ASQ in a community-based population.

METHODS

Our study was conducted at the British Columbia Children's Hospital (BCCCH) in Vancouver, British Columbia. The study was approved by the University of British Columbia Clinical Research Ethics Board.

Parents whose children were under the age of 4 months and who were diagnosed with congenital cardiac disease in the Cardiac Sciences Group at BCCCH were invited to participate. Parents of infants being seen in community public health centres in Upper Island, North Shore and Burnaby Health Districts were invited to participate as community control subjects. Informed consent was obtained.

We obtained information about the child and his or her family and entered it into a database developed for the ASQ. The results from each questionnaire were later added to each child's individual file.

The questionnaires were sent to the families' homes 1 week before the children's 4-, 8-, 12-, 16-, 20-, 24-, 30- and 36-month birthdays, with the request that they be returned within 2 weeks. If the questionnaires were not returned within the allotted time, parents were reminded via telephone up to 3 times. If the questionnaires still had not been received, notes were made in the children's files and the next age-level questionnaires were sent out at the scheduled time.

Analysis

The scoring system for the ASQ uses statistically determined cut-off points that were developed for both children with normal and children with elevated risk. The cut-off points are calculated as 2 standard deviations below the mean score in each of the 5 developmental domains. When a child's questionnaire was received, the score was determined for each of the 5 domains and then compared with the cut-off scores. A child's overall score was deemed to be in the abnormal range if he or she scored at or below the cutoff

- in 2 domains within the same questionnaire;

- in the same domain on 2 consecutive questionnaires.

If a child's overall score was in the abnormal range, the parents were telephoned to inform them that the screening tool had identified possible concerns with their child's development and permission was obtained to contact the child's primary care physician. Contact with the physician consisted of a brief summary of the child's test performance and a request for further developmental assessment. If a child scored within the normal range a letter was sent to the parents to inform them that their child was developing normally.

Parental feedback was obtained through a series of open-ended questions on individual questionnaires, in addition to a parent evaluation survey distributed after the second year of the study. The results from these evaluations were used to assist in the determination of the feasibility of this tool's use.

Three years after the end of the study, the families were contacted by telephone interview to determine their child's developmental status. The parents were asked if their child had ever been assessed by a developmental specialist and if either the specialist or the child's family doctor had ever raised concerns about the child's development. We compared these results with the results that were obtained via the ASQ. The sensitivity and specificity of the ASQ were calculated. The feasibility of using the ASQ was assessed by combining the feedback from the evaluation surveys and the total cost of administering the tool.

RESULTS

Parents of 43 children from the Cardiac Sciences Group and 68 children from the community (an upper-middle class area) were enrolled in the study. Of the cardiac group, 5 dropped out, 4 infants died, and 9 were lost to follow-up. Of the community group, 9 were lost to follow-up.

Children's development

At the end of the 36-month ASQ trial period, results had been consistently obtained from 25 children in the cardiac group and 59 children in the community group. Four of the children from the cardiac group had scores within the abnormal range, while 7 children scored within the abnormal range in the community group. After the follow-up telephone interview at the end of the third year, 25 children remained in the cardiac group and 59 children

remained in the community group. Of the parents who were contacted from the cardiac group, 4 reported that their child had been assessed by a specialist or family doctor as having a developmental delay, while 1 child from the community group had been identified in this manner. Of the 4 children in the cardiac group who were identified by the ASQ as having developmental delay, 3 were also assessed by a specialist as having developmental delay. One child with developmental delay was missed by the ASQ, and 1 child was picked up by the ASQ unnecessarily. Of the 7 community children who were identified by the ASQ as having developmental delay, 1 child was found by a specialist to be developmentally delayed and the parents of the remaining 6 children did not report them seeing specialists. No children were missed by the ASQ in the community group. The sensitivity of the ASQ was 75% in the cardiac group (95% confidence interval [CI] 0.22–0.99) and 100% in the community group (95% CI 0.05–1.00). The specificity of the ASQ was 95% in the cardiac group (95% CI 0.74–1.00) and 90% in the community group (95% CI 0.78 to 0.96).

Parents

The feedback obtained from the parents via individual questionnaires and following a parent evaluation survey was overall very positive. Of the 143 surveys that were distributed to parents, 85 were returned (33 from the cardiac group, 52 from the community group), for a total return rate of 59.4%. Both groups of parents indicated that the questionnaires were easy to fill out (100% of the cardiac group, 88% of the community group), that the questionnaires helped them to learn more about their child's growth and development (87% of the cardiac group, 72% of the community group) and that they would recommend the questionnaires to other parents (87% of the cardiac group, 76% of the community group).

Costs of screening

We analyzed the cost of performing the ASQ compared with the cost of having each child screened by a developmental specialist. The total cost of performing the ASQ was less than Can\$100.00 per child for mailing and return postage (8 questionnaires at \$2.50 per questionnaire, total \$20.00 per child); up to 3 reminder follow-up phone calls for about 20% of families; receipt, scoring and reporting abnormal

results back to parents; data entry; and filing (20 min per questionnaire at \$18.00/h or about \$60.00 per child). A very generous estimated total cost of following 100 children is about \$10 000.00 over 3 years.

Cost of seeing a developmental specialist

The prevalence of developmental delay among at-risk children has been estimated at 13%–16%.⁸ Using this as our rate of abnormal findings and based on a sample of 100 children, 16 would have developmental delays; 12 of those children would be identified by the ASQ; and 4 would be missed. If each of the 12 children were then referred to a specialist for further developmental testing at a cost of \$44.45 per 20-minute session,⁵ the total cost for identifying and testing those 12 children would be \$10 533.40 (ASQ \$10 000.00 plus follow-up of \$533.40). If, instead, those same 100 children were screened by a developmental specialist via 6 20-minute visits over 3 years, the cost of the assessments alone (if it were feasible to conduct assessments on all children) would be \$26 670.00. Additional costs (not calculated) would be incurred either by the parents or by the health care system for transportation of about 15% of the children and parents from rural areas and about 2% from remote locations¹² to a centre providing specialist assessment or for the specialist to travel to rural and remote locations.

The estimated monetary savings for screening 100 children with the ASQ is \$16 140. There would be a cost associated with missing 25% of the children with developmental delay, but this comparison is also based on the assumption that 100% of children could be assessed by health care professionals and that there is 100% sensitivity for identifying developmental delay through assessment by a health care professional and therefore no child with a developmental delay would be missed.

DISCUSSION

Our study found that parental completion of the ASQ was a feasible and cost-effective means of screening for developmental delay among at-risk children as well as community children in Canada. The cost of administration of the ASQ is low (about \$100.00 per child), but it would now be possible to lower the costs by using electronic distribution and follow-up, which would improve the level of cost-efficiency, although the impact on compliance

would need to be evaluated. In particular, it is likely worthwhile for at-risk patients in Canada who are currently not followed consistently because of problems with access or cost of follow-up to be monitored with the ASQ.

The prevalence of developmental delay among the children in the cardiac group (4 of 25, 16%) is consistent with other reports.¹³ The prevalence in the community group (1 of 59, 2%) is somewhat low compared with other reports.¹⁴ However, research has shown that lower socioeconomic status is associated with increased risk for developmental delay¹⁵ and thus in our sample population from an upper-middle class area, prevalence could be expected to be lower than reported by others.

In Canada, many at-risk children are followed comprehensively within existing programs. However, a significant number of children who are at risk of having developmental delay are not served adequately by the existing systems. The ASQ is simple enough for individual physicians to use to follow all infants. It could also be used routinely for groups of at-risk children such as those who have received specialized care or consultation (e.g., children who have had heart surgery or graduates of premature nurseries who do not meet the criteria for ongoing follow-up), or those with socioeconomic risk factors. However, it may be more rational for institutions or provincial health authorities to move toward coordinating the administration of this developmental monitoring tool. Moreover, if the present belief that early intervention for developmental delay is efficacious is borne out by evidence-based studies, then investment in a provincially administered identification program would be logical, as has been adopted by several states in the United States.

The comments from parents in our study indicated that they appreciated and learned from their involvement while using the ASQ to assess their children. The American Academy of Pediatrics supports the increased involvement of parents and indicates that

the explicit use of parental reports has the added advantage of parents being active participants in the evaluation of their children, and shows respect for their expertise.¹

Moreover, Parry² concludes that the maximum effectiveness of early intervention is achieved when parental skills (and knowledge) are increased, and parental involvement, in partnership with professionals, is seen as essential for sustained progress from early intervention. Increased

involvement of parents, and respect by the medical community for the observations of parents, likely also results in more rational use of health care services in the long term.

Evidence demonstrating important short- and long-term outcome is increasingly required as part of the provision of good health care. Currently, "outcome" data are often limited to survival or length of hospital stay. In particular, specialized clinics may follow the specific medical problem, but the long-term developmental effects of care, both positive and negative, are often not routinely addressed in follow-up. Use of the ASQ screening tool would enable clinicians to identify more at-risk children who would otherwise not be referred for comprehensive assessment by a fully trained team. Many larger communities with secondary level care have such teams, meaning that not all referrals need be to tertiary care. As the health care agenda moves to ensure quality health care, it is increasingly important for clinicians to avail themselves of tools that easily and economically provide relevant follow-up information.

Study limitations

There were some limitations to our study:

- The cost-benefit analysis was theoretical.
- The number of cases of developmental delay identified, either by the ASQ or by physicians, was small, so the CIs, particularly about the sensitivities, are wide.
- The community-based children were largely from the upper or middle economic class and children specifically from lower socioeconomic circumstances, the population most likely to benefit intellectually from early intervention,² were not included.

CONCLUSION

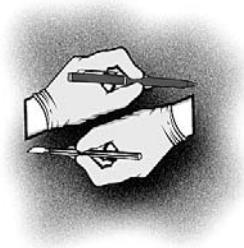
The ASQ may be feasible and economical as a screening tool. It could be used by specialty clinical programs to follow their at-risk populations, particularly those who are excluded from conventional follow-up by geography or limited resources. The ASQ could also be used by public health authorities to screen currently underserved populations.

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ORIGINAL ARTICLE ARTICLE ORIGINALE

The contribution of Memorial University's medical school to rural physician supply

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Introduction: This study identifies the characteristics and predictors of Memorial University of Newfoundland (MUN) medical graduates working in rural Canada and rural Newfoundland and Labrador (NL).

Methods: We linked data from class lists, the alumni and postgraduate databases with the Southam Medical database to determine 2004 practice locations for MUN graduates from 1973 to 1998 (26 yr, inclusive). Multiple logistic regression was used to identify predictors for each outcome.

Results: In 2004, 167 (12.6%) MUN graduates worked in rural Canada and 81 (6.1%) MUN graduates worked in rural NL. Those who were more likely to practise in rural Canada (when compared with graduates from urban backgrounds, those who had not done any residency training at MUN or specialists, respectively) were graduates from a rural background (odds ratio [OR] 1.95, 95% confidence interval [CI] 1.38–2.76), those who had done residency training at MUN (OR 1.56, 95% CI 1.06–2.29) and family physicians (FPs)–general practitioners (GPs) (OR 6.64, 95% CI 4.31–10.23). Those who were more likely to practise in rural NL (when compared with graduates from urban backgrounds, those who had not done any residency training at MUN, specialists or non-Newfoundlanders, respectively) were graduates from a rural background (OR 2.54, 95% CI 1.57–4.11), those who had done residency training at MUN (OR 4.12, 95% CI 1.94–8.76), FP–GPs (OR 6.39, 95% CI 3.39–12.05) and Newfoundlanders (OR 7.01, 95% CI 2.16–22.71).

Conclusion: The MUN medical school has made a substantial contribution to rural physician supply in both NL and Canada. Increasing the number of local rural students as well as providing incentives to graduates to complete postgraduate training in family medicine in the province may increase the number of locally trained rural physicians.

Introduction : Cette étude décrit les caractéristiques des diplômés en médecine de l'Université Memorial de Terre-Neuve (MUN) qui travaillent dans les régions rurales du Canada et de Terre-Neuve-et-Labrador (NL) et les facteurs qui prédisent qu'ils le feront.

Méthodes : Nous avons relié des données tirées des listes des classes, des bases de données sur les anciens et sur les études de troisième cycle à la Base de données médicales Southam pour déterminer 2004 lieux de pratique de diplômés de la MUN de 1973 à 1998 (26 années inclusivement). Nous avons utilisé une régression logistique multiple pour déterminer les prédicteurs de chaque résultat.

Résultats : En 2004, 167 (12,6 %) diplômés de la MUN travaillaient en milieu rural au Canada et 81 (6,1 %) travaillaient en milieu rural à NL. Ceux qui étaient plus susceptibles de pratiquer en milieu rural au Canada (comparativement aux diplômés de milieux urbains, à ceux qui n'avaient pas fait de résidence à la MUN, ou aux spécialistes respectivement) étaient les diplômés d'origine rurale (coefficient de probabilité [CP] 1,95, intervalle de confiance [IC] à 95 %, 1,38–2,76), ceux qui avaient fait une résidence à la MUN (CP 1,56, IC à 95 %, 1,06–2,29) et les médecins de famille (MF) – omnipraticiens (OP) (CP 6,64, IC à 95 %, 4,31–10,23). Ceux qui étaient plus susceptibles

de pratiquer en milieu rural à NL (comparativement aux diplômés provenant de milieux urbains, à ceux qui n'avaient pas fait de résidence à la MUN, aux spécialistes ou aux non-Terre-Neuviens respectivement) étaient les diplômés d'origine rurale (CP 2,54, IC à 95 %, 1,57–4,11), ceux qui avaient fait une résidence à la MUN (CP 4,12, IC à 95 %, 1,94–8,76), les OP-MF (CP 6,39, IC à 95 %, 3,39–12,05) et les Terre-Neuviens (CP 7,01, IC à 95 %, 2,16–22,71).

Conclusion : La Faculté de médecine de la MUN a apporté une contribution importante à l'offre des médecins ruraux tant à NL qu'au Canada. L'augmentation du nombre d'étudiants ruraux locaux et l'offre d'incitations aux diplômés pour qu'ils terminent leur formation postdoctorale en médecine familiale dans la province pourraient augmenter le nombre de médecins ruraux formés localement.

INTRODUCTION

Canada has traditionally relied on international medical graduates to address shortages in physician supply, particularly in rural and remote communities.^{1–3} In 2002/03, international medical graduates made up 23.5% of the physician workforce in Canada; the lowest proportion of international medical graduates were in Quebec, Prince Edward Island and New Brunswick, and the highest in Saskatchewan and Newfoundland and Labrador (NL), where international medical graduates made up 56% and 42%, respectively, of all fee-for-service physicians.^{4,5} Compared with other Canadian provinces, NL has a high proportion of provisionally licensed physicians.⁶ In 2003, international medical graduates made up about 29% of NL's provisionally licensed physicians and 27% of NL's fully licensed physicians.

Canadian and US studies have reported a substantial variation in the proportion of graduates of different medical schools who practise in rural communities.^{7,8} Only 4.2% of University of Toronto graduates practised in rural communities, compared with 22.1% of Université Laval graduates.⁷ Among Memorial University of Newfoundland (MUN) graduates, 17.2% practised in rural communities 2 years after completing postgraduate training. This figure rose to 39.4%, the highest in Canada, when only family physicians (FPs) were considered. More recent data from the Canadian Post-MD Education Registry shows that compared with the Canadian average of 13.4%, 41.2% of physicians who completed their FP training in NL were in rural practice.⁹ These findings are consistent with other studies that have found that FPs and general practitioners (GPs) are more likely than specialists to work in rural communities.⁸

NL's physician shortage, particularly in rural communities, has been well documented.^{10,11} The MUN

medical school was established in 1969, in part to alleviate the dependence on other Canadian and international medical schools to meet the need for physicians in NL. Ensuring that medical schools contribute to rural physician supply falls within their mandate to be socially accountable; that is, to "respond to the needs of the community" by directing "education, research and services activities towards addressing priority health concerns."¹²

Despite its reputation for producing rural physicians,⁷ it is not known how many MUN medical graduates currently practise in rural communities in NL and in Canada. This article is based on a larger study that examined MUN's contribution to the national, provincial and rural physician workforce. The article identifies the characteristics and predictors of MUN medical graduates working in rural Canada and rural NL. Predictors of MUN medical graduates working in Canada and NL are reported elsewhere.¹³

METHODS

Databases

We linked data from the MUN Faculty of Medicine class lists, alumni database and postgraduate database with the 2004 Southam Medical Database. Because the data were not available in electronic linkable format, we linked data using first, last and maiden names, sex, and year and school of graduation since this information was common to each data source. We linked all graduates and residents to the Southam Medical Database and the MUN alumni database to determine current practice locations and status. By using the alumni database in addition to the Southam Medical Database, we were able to increase the number of cases for whom we had complete follow-up data to 98%.

Sample frame

Our sample frame included all MUN graduates from the class of 1973 to the class of 1998 (26 yr). The first year that medical students graduated from MUN was 1973. We selected a cut-off of 1998 to allow sufficient time for graduates to complete their residency training.

Classification of rural and urban

We considered 2 outcomes: working in rural Canada in 2004 and working in rural NL in 2004. Based on work addresses, we classified physicians' work town as rural or urban, based on the 2001 census population.¹⁴ We based our classification on the community population. Rural communities had a population of less than 10 000, while urban communities had a population of 10 000 or more. Each location was coded as rural (1) or urban (0).

Predictors

We examined 8 predictor variables: sex, whether graduates had a rural background, whether graduates came from Canada, whether graduates were from NL, year of graduation, whether they did all or some of their residency at MUN, specialty and age at graduation. Based on their home town reported at the time of admission, we determined whether graduates were from Canada, from NL and from a rural community. Those whose home town had a population of less than 10 000 were considered to have a rural background. We divided year of graduation into 3 groups: the 1970s (1973–1979), 1980s (1980–1989) and 1990s (1990–1998). Specialty was based on the physicians' certified specialization as

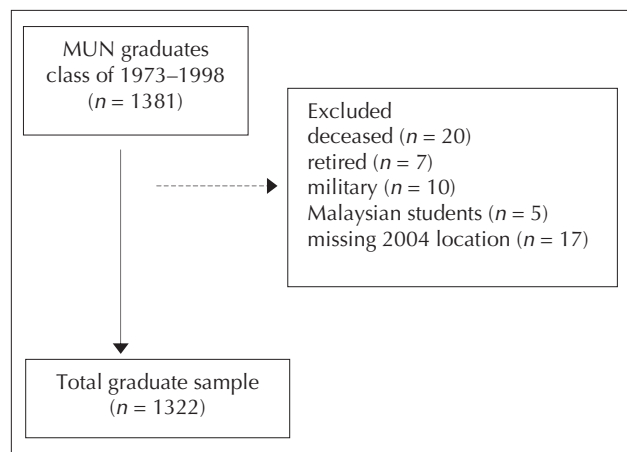


Fig. 1. Construction of the study sample. MUN = Memorial University of Newfoundland.

recorded in the Southam Medical Database or MUN alumni database. We categorized each physician as either an FP–GP or a specialist.

Analysis

Analyses were performed with SPSS 12.0 (SPSS Inc., Chicago, Illinois). For each objective, we used frequencies, and means and standard deviations (SDs) to describe the characteristics of the sample. Chi-squared tests and analysis of variance (ANOVA) were used to identify differences between each of the outcome and predictor variables. Multiple logistic regression was used to identify significant ($p < 0.05$) predictors for each dependent variable. Potential predictors for each regression model were selected on the basis of the bivariate analyses.

Table 1. Characteristics of Memorial University of Newfoundland medical school graduates, 1973–1998 (n = 1322)

Characteristic	No. (and %) of graduates*
Sex	
Male	771 (58.5)
Female	546 (41.5)
Have a rural background	
No	897 (69.1)
Yes	402 (30.9)
From Canada	
No	23 (1.7)
Yes	1298 (98.3)
From Newfoundland and Labrador	
No	335 (25.4)
Yes	986 (74.6)
Year of graduation	
1973–1979	310 (23.4)
1980–1989	525 (39.7)
1990–1998	487 (46.8)
Did some or all of residency at MUN	
No	494 (37.4)
Yes	828 (62.6)
Specialty	
Specialist	703 (53.2)
Family physician–general practitioner	619 (46.8)
Mean age (and SD) at graduation, yr	26.6 (3.3)
Practising in rural Canada in 2004	
No	1155 (87.4)
Yes	167 (12.6)
Practising in rural Newfoundland and Labrador in 2004	
No	1241 (93.9)
Yes	81 (6.1)

MUN = Memorial University of Newfoundland; SD = standard deviation.

*Unless otherwise indicated.

To test the robustness of our findings, we repeated the analyses using community census agglomeration population. The census agglomeration accounts for proximity of suburban communities to large urban centres, degree of integration and commuting patterns.^{15,16}

The Human Investigations Committee, Faculty of Medicine, MUN, approved this study.

RESULTS

From the 1381 physicians who graduated between 1973 and 1998, we excluded deceased, retired and military physicians as well as graduates who were sponsored by the Malaysian government and required to return to Malaysia after completing their training (Fig. 1). We also excluded an additional 17 graduates from the analysis because we were unable to determine where they were working in 2004, leaving a total of 1322 graduates. We had the 2004 practice location of 98% of otherwise eligible graduates.

The majority of MUN medical graduates in our

study were male, did not have a rural background, were from Canada and NL, and did at least some part of their postgraduate residency training at MUN (Table 1). The largest proportion of physicians who graduated from the MUN medical school during the 1980s were FP-GPs.

Table 2 summarizes the characteristics of MUN graduates who were working inside and outside a

Table 3. Predictors of Memorial University of Newfoundland graduates who work in rural communities in Canada

Variable	OR (95% CI)
Have a rural background	
No	1.00
Yes	1.95 (1.38–2.76)
Did some or all of residency at MUN	
No	1.00
Yes	1.56 (1.06–2.29)
Specialty	
Specialist	1.00
Family physician–general practitioner	6.64 (4.31–10.23)

OR = odds ratio; CI = confidence interval; MUN = Memorial University of Newfoundland.

Table 2. Characteristics of Memorial University of Newfoundland graduates working inside and outside Canadian rural communities

Characteristic	No. (and %) of graduates by practice location*		p value
	Outside rural Canada	Inside rural Canada	
Sex			0.84
Male	672 (58.4)	99 (59.3)	
Female	478 (41.6)	68 (40.7)	
Have a rural background			< 0.001
No	812 (71.7)	85 (51.2)	
Yes	321 (28.3)	81 (48.8)	
From Canada			0.07
No	23 (2.0)	0 (0.0)	
Yes	1131 (98.0)	167 (100.0)	
From Newfoundland and Labrador			0.66
No	295 (25.6)	40 (24.0)	
Yes	859 (74.4)	127 (76.0)	
Year of graduation			0.03
1973–1979	270 (23.4)	40 (24.0)	
1980–1989	472 (41.0)	52 (31.3)	
1990–1998	412 (35.7)	75 (44.9)	
Did some or all of residency at MUN			< 0.001
No	451 (39.0)	43 (25.7)	
Yes	704 (61.0)	124 (74.3)	
Specialty			< 0.001
Specialist	675 (58.4)	28 (16.8)	
Family physician–general practitioner	480 (41.6)	139 (83.2)	
Mean age (and SD) at graduation, yr	26.5 (3.4)	26.7 (3.3)	0.44

MUN = Memorial University of Newfoundland; SD = standard deviation.
*Unless otherwise indicated.

rural community in Canada. Compared with physicians working outside a rural community in Canada, a larger proportion of rural physicians had a rural background, graduated in the 1990s and did all or some of their residency training at MUN. A larger proportion of rural physicians were FP-GPs, compared with their counterparts working outside rural Canada. There were no differences between these physicians in terms of sex, whether they came from Canada or NL, or their age at graduation. Table 3 presents the predictors for the outcome working in rural Canada.

In 2004, 81 (6.2%) of MUN graduates were working in a rural community (population > 10 000) in NL. A larger proportion of rural NL physicians than physicians working elsewhere had a rural background, were from NL, had graduated in the 1990s, and did all or some of their residency training at MUN (Table 4). A larger proportion of rural physicians were FP-GPs, compared with their counterparts working elsewhere. There were no differences among these physicians in terms of sex,

whether they came from Canada (as a whole) or their age at graduation.

Of the 276 students with a rural background who did some or all of their residency training at

Table 5. Predictors of Memorial University of Newfoundland graduates who work in rural Newfoundland and Labrador

Variable	OR (95% CI)
Have a rural background	
No	1.00
Yes	2.54 (1.57–4.11)
From Newfoundland and Labrador	
No	1.00
Yes	7.01 (2.16–22.71)
Did some or all of residency at MUN	
No	1.00
Yes	4.12 (1.94–8.76)
Specialty	
Specialist	1.00
Family physician–general practitioner	6.39 (3.39–12.05)

OR = odds ratio; CI = confidence interval; MUN = Memorial University of Newfoundland.

Table 4. Characteristics of Memorial University of Newfoundland graduates who work inside and outside rural communities in Newfoundland and Labrador

Characteristic	No. (and %) of graduates by practice location*		p value
	Outside rural NL	Inside rural NL	
Sex			0.13
Male	717 (58.0)	54 (66.7)	
Female	519 (42.0)	27 (33.3)	
Have a rural background			< 0.001
No	864 (70.9)	33 (40.7)	
Yes	354 (29.1)	48 (59.3)	
From Canada			0.22
No	23 (1.9)	0 (0.0)	
Yes	1217 (98.1)	81 (100.0)	
From Newfoundland and Labrador			< 0.001
No	332 (26.8)	3 (3.7)	
Yes	908 (73.2)	78 (96.3)	
Year of graduation			< 0.001
1973–1979	284 (22.9)	26 (32.1)	
1980–1989	507 (40.9)	18 (22.2)	
1990–1998	450 (36.3)	37 (45.7)	
Did some or all of residency at MUN			< 0.001
No	486 (39.2)	8 (9.9)	
Yes	755 (60.8)	73 (90.1)	
Specialty			< 0.001
Specialist	691 (55.7)	12 (14.8)	
Family physician–general practitioner	550 (44.3)	69 (85.2)	
Mean age (and SD) at graduation, yr	26.6 (3.4)	26.4 (3.2)	0.65

NL = Newfoundland and Labrador; MUN = Memorial University of Newfoundland; SD = standard deviation.

*Unless otherwise indicated.

MUN, 43 (15.6%) were working in rural NL. Table 5 presents the predictors for the outcome of working in rural NL.

Our sensitivity analyses using community census agglomeration populations found similar results (data not shown but available on request).

DISCUSSION

In 2004, 167 (12.6%) MUN graduates worked in rural Canada, making up about 4.9% of the rural physicians in Canada.¹⁷ Eighty-one (6.1%) MUN graduates worked in NL, making up roughly 20.8% of the rural physicians in the province.¹⁷

Consistent with other studies, we found that FPs and graduates who had a rural background were more likely to work in rural communities.^{18–22} This supports initiatives that encourage rural students to pursue medical careers and policies that increase the number of rural students admitted to medical school to increase the number of rural physicians.^{23–25}

It is not surprising that FPs are more likely than specialists to work in rural areas given that the infrastructure and population required to support most specialties are not present in small communities and rural areas. Therefore, the very act of choosing neurosurgery eliminates many physicians from the possibility of locating in rural Canada. When we limited our analysis only to FPs and GPs, we found that graduates who had a rural background were more likely (odds ratio [OR] 2.52, 95% confidence interval [CI] 1.72–3.71) to work in rural Canada, while those with a rural background (OR 3.08, 95% CI 1.79–5.29), from NL (OR 5.90, 95% CI 1.80–19.36) and who did some or all of their residency at MUN (OR 4.61, 95% CI 1.93–11.01) were more likely than their counterparts to work in rural NL.

Completing all or some portion of postgraduate training at MUN was also a strong predictor of rural practice. Providing incentives for graduates to complete their postgraduate training in their home province may increase provincial retention of graduates. Residency programs that emphasize rural training are associated with rural practice.^{7,18,19,24–28} The MUN residency program, particularly in family medicine, includes a strong rural component.²⁹ Other studies have noted that exposure to rural medicine is important, not only to build skills for rural practice, but also to expose residents to the realities of rural living.^{19,28,30} Chan and colleagues,³¹ in a recent Canadian study of rural FPs, noted that rural medical education is particularly influential for

medical trainees with urban backgrounds. Rourke and colleagues²² reported that undergraduate rural medical education and postgraduate rural training were independent predictors of rural practice for both rural and urban students. Like these 2 studies, we found that a large proportion of MUN graduates practising in rural communities came from urban backgrounds (51% of those in rural Canada and 40.7% of those in rural NL).

In addition to these 3 predictors, being from NL was a predictor of rural practice in NL. All but 3 of the MUN graduates working in rural NL had come from NL. These findings support policies in Canadian medical schools that give priority for admission to students from the province in which the school is located. For MUN, this suggests that the number of seats reserved for NL students should be at least maintained if not increased.

Whether sex influences choice of rural practice is unresolved in the literature. Although earlier and US studies have reported that women are less likely to practise in rural areas,^{8,26} more recent studies of Canadian physicians suggest no sex differences in the likelihood to practise in rural communities.^{7,20,32,33} We did not find a significant difference between sex and choice of rural practice (in either Canada or NL). Given the increasing number of women in medical school in Canada and who practise family medicine,³⁴ further research is needed to better understand the impact of the feminization of the medical workforce on rural physician supply.

Study limitations

The cross-sectional design allowed us to consider physician practice location in the year 2004 only. We do not know whether physicians remained in 1 location for their entire career or if they returned after an absence. As a result we did not include physicians who worked in rural communities in Canada or NL before 2004, thereby underestimating MUN's contribution to the national and provincial rural physician workforce, as many physicians will work in rural practice for some or many years before relocating to urban practice. It is difficult to estimate the contribution of MUN medical graduates to the rural workforce in person years without knowing what proportion of each class practised in rural areas and for how long. Our current research is examining these issues. For example, among FPs and GPs who were licensed in the province for the first time between 1997 and 2000, MUN graduates

remained in the province significantly longer (on average 39 mo) than other Canadian medical graduates or international medical graduates (both 22 mo).³⁵ However, the study sample was not limited to rural physicians.

CONCLUSION

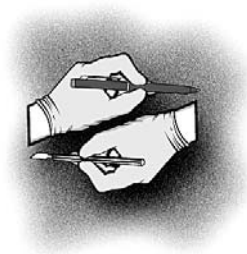
The MUN medical school has made a substantial contribution to the rural physician supply, particularly in NL and the rest of Canada. In the 26 graduated years between 1973 and 1998, the MUN medical school has trained 1981 physicians; in 2004, 12.6% were working in rural communities in Canada, 6.1% in NL. Of the 144 FPs from rural NL who had done some or all of their family residency training at MUN, 38 (26.4%) were working in rural NL. Increasing the number of local rural students as well as providing incentives to graduates to complete postgraduate training in family medicine in the province may increase the number of locally trained rural physicians.

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ORIGINAL ARTICLE ARTICLE ORIGINALE

Prevalence of psychiatric diagnoses among frequent users of rural emergency medical services

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Objective: This study aimed to determine whether there was an increased prevalence of psychiatric disorders among frequent users of rural emergency medical services.

Methods: In a matched comparison design, I compared frequent users of the emergency departments of 2 rural hospitals, both affiliated with an academic centre, with randomly selected users and with randomly selected users who had the same medical diagnoses. The main outcome measures were psychiatric diagnoses on a structured clinical interview, along with medical diagnoses and number of emergency department visits in the past year.

Results: Ninety-three percent of frequent users had at least 1 DSM-IV psychiatric diagnosis, differing from 50% of random users matched for presenting complaint. A random user group, not matched for presenting complaint, showed 28% prevalence of DSM-IV diagnoses. Frequent users were more often state insured (Medicaid) and less often insured privately. The most common diagnoses among frequent users were major depression, generalized anxiety disorder, adjustment disorder, somatoform pain disorder, substance abuse and dependence, and dysthymia. The treating emergency department physician mentioned a psychiatric diagnosis for only 9% of frequent users.

Conclusion: Frequent users have a disproportionately high prevalence of psychiatric disorders (under-documented by their physicians), which may affect their pattern of emergency department use. This suggests the need for better recognition, diversion, and management.

Objectif : Cette étude visait à déterminer s'il y avait une prévalence accrue de troubles psychiatriques chez les utilisateurs fréquents des services médicaux d'urgence en milieu rural.

Méthodes : Suivant un concept de comparaison par jumelage, j'ai comparé les utilisateurs fréquents des services d'urgence de deux hôpitaux ruraux, tous deux affiliés à un centre universitaire, à des utilisateurs choisis au hasard et à des utilisateurs choisis au hasard chez lesquels on avait posé les mêmes diagnostics médicaux. Les diagnostics psychiatriques fondés sur une entrevue clinique structurée, ainsi que les diagnostics médicaux et le nombre de visites à l'urgence au cours de l'année écoulée, ont constitué la principale mesure de résultats.

Résultats : Chez 93 % des utilisateurs fréquents, on avait posé au moins un diagnostic psychiatrique DSM-IV, par rapport à 50 % chez les utilisateurs choisis au hasard et jumelés en fonction du motif de consultation. Dans un groupe d'utilisateurs choisis au hasard et non jumelés en fonction du motif de consultation, la prévalence de diagnostics DSM-IV s'est établie à 28 %. Les utilisateurs fréquents avaient plus souvent une assurance publique (Medicaid) et moins souvent une assurance privée. Les diagnostics les plus courants chez les utilisateurs fréquents étaient les suivants : dépression majeure, trouble d'anxiété généralisée, trouble d'adaptation, trouble somatoforme douloureux, toxicomanie et dépendance, et dysthymie. Le médecin traitant au service d'urgence a signalé un diagnostic psychiatrique chez 9 % seulement des utilisateurs fréquents.

Conclusion : Les utilisateurs fréquents présentent une prévalence excessivement élevée de troubles psychiatriques (sous-documentés par leur médecin), ce qui peut avoir une incidence sur leur tendance à utiliser les services d'urgence. Cela indique qu'il faut mieux reconnaître ces patients, les distinguer des autres et les prendre en charge.

INTRODUCTION

Several studies have suggested that frequent users of primary care include more people with psychiatric disorders than do randomly selected populations. Barsky and colleagues¹ investigated the relationships among psychiatric disorders (i.e., depression and hypochondriasis), somatic symptoms, medical morbidity and the use of ambulatory medical services among 92 general medical outpatients. Medical use correlated with the number of somatic symptoms reported, depressive symptoms and the number of medical diagnoses. It was also related to hypochondriacal attitudes and depression. The number of medical diagnoses accounted for 30% of the variance in medical use. Somatic symptoms were the second most powerful predictor. The next best predictors were to have 2 hypochondriacal attitudes and the presence of a major psychiatric diagnosis in the medical record. These 5 predictors explained 56% of the variance. Depression, disease fear and bodily preoccupations were also important predictors of use. Somatic symptoms were viewed as a final common pathway through which emotional disturbance, psychiatric disorder and organ pathology all express themselves. Somatic symptoms are also what prompted patients to visit doctors.

In a previous study² of frequent users of a rural primary care clinic, I found many more psychiatric diagnoses among these patients than among random users. Psychiatric diagnoses appeared 3 times among their top 10 complaints, compared with none for random users. A variety of psychosocial factors, including marital conflict, problems with children, financial problems, ill relatives, substance abusing family members and family members having problems with the law, were associated with these patients' high use.

In these days of discussion about health care reform, it seems logical that we should know more about frequent users of health care services. Little, if any, data exist on frequent users of emergency departments, what drives their frequent use and how to best meet their needs. Therefore, this study was conducted to determine the prevalence of psychiatric disorders among the most frequent users of rural emergency services.

METHODS

Sampling

Lists of the most frequent users of 2 university-affiliated hospitals were generated from billing

records containing data about the number of times patients visited the emergency department. When signing their consent for treatment, patients were given the opportunity to consent to be called for participation in quality improvement projects and in future research projects. Subjects who gave this consent were called and asked to join in a research project designed to assess the needs of frequent users and to determine whether or not the emergency department was meeting those needs. Patients were asked if they would be willing to participate in a research project to help determine the characteristics of people who require frequent use of the emergency department and to generate information about how to better serve these people, and, potentially, how to reduce their number of emergency visits, thereby improving quality of care. If patients agreed to participate, they were met at their homes, at their physician's office (at the time of their next office visit) or at the researchers' offices, whichever was most convenient for them. At that time, informed consent to participate in this project was obtained. Any patient not wishing to give consent was not pursued further. The research was approved by the University Human Subjects Protection Committee.

Setting: New York

The project took place in rural Vermont and rural New York in the United States. The New York hospital was in a rural county in northeastern New York with a population of 79 894 people. The city in which it was located had a population of 18 816 in the 2000 census and was the county seat.³ The hospital was a 341-bed acute care hospital with a 54-bed skilled nursing facility. There were 156 physicians, of which about two-thirds provided primary care and the rest were specialists. The hospital had a psychiatric inpatient unit and psychiatrists were available on call to the emergency department. The surrounding counties using the hospital for services were more rural and of lower socioeconomic status as well as being less populated.⁴

Setting: Vermont

The Vermont hospital was the only hospital in the most populous county in the state, with 146 571 people in the 2000 census. The city where it is located had a population of 38 889 in the 2000 census.⁴ As a regional referral centre, the hospital provides advanced-level care to a population of 1 million people throughout the state of Vermont and the northeastern

New York. There were 469 faculty (747 total medical staff), with about 40% primary care and 60% specialists. There were 562 licensed beds (excluding the nursery). Psychiatry was well-represented, with a residency training program and a full complement of child, adolescent, adult and substance abuse services as well as both locked and unlocked psychiatric units. In both states, the counties in which the hospitals were located were surrounded by more rural, less populated and less affluent counties that looked to the hospital for services. In both communities, these hospitals were the only available hospitals of any size.

Frequent users

Frequent users were identified from a list matching patients with the number of emergency department visits. I began by attempting to recruit the most frequent user (more than 50 visits) and continued in descending order of use until 200 frequent users had been interviewed (down to 6 visits per year). When children under the age of 14 years were frequent users, their parents were interviewed and assessed for parental psychiatric disorders.

Interviews

First control group

Subjects were interviewed about their current medical problems, past medical history, social history, habit history and family medical history. The DSM-III-R checklist⁵ was administered, along with supplemental questions to diagnose personality and somatoform disorders. Patients' opinions about the emergency department and their satisfaction with the emergency department were solicited.

I conducted the majority of the interviews. I trained with Dr. John Helzer, a developer of the DSM-III-R checklist in its administration to 80 psychiatric inpatients at the University of Vermont-affiliated Medical Center Hospital. The results of my administration of the DSM-III-R agreed with Dr. Helzer's clinical diagnoses, with 93% concordance for the primary diagnosis and 81% concordance for secondary diagnoses. I trained medical students and 1 graduate research assistant to administer the DSM-III-R checklist on these same inpatients until 80% agreement overall was reached between us. Once agreement was reached, I administered the DSM-III-R checklist and interviewed 10% of the same patients as these assistants,

finding 91% overall agreement in diagnoses. Therefore, the administration of the DSM-III-R was judged reliable. The DSM-IV checklist was still under development at the time this study began and it had not yet been validated.

I was both a member of the psychiatry department at one of the hospitals and the emergency medicine department at the other, which facilitated inter-departmental cooperation and collaboration. When possible, the emergency physician was interviewed briefly about the patient. They were asked about their impression of the diagnosis, their impression of the appropriateness of the current emergency room visit and their thoughts about any psychiatric or psychosocial factors that might be influencing the presentation.

Two comparison groups were developed. The first (called random users) was developed by randomly selecting (using a random number generator) the time of day to visit the emergency department. Upon arrival at the emergency department at that time, the author randomly selected a room (again using a random number generator to select which room number to choose) for interview. The patient in the selected room was approached and told that he or she had been randomly selected for participation in a study to learn more about the emotional needs of emergency department users. The patients were offered no compensation for participation, except relief from boredom due to their potentially long wait in the emergency department. The acceptance rate for participation was 54%. If the selected patient was sufficiently well and was expected to remain for at least another hour in the emergency department, he or she was invited to participate in this research project. Informed consent was obtained before proceeding any further. If sufficient time remained in the visit, the patient was interviewed in the room at that time. If not, the patient was asked if he or she would be willing to be interviewed at home and told that an appointment would be made for a later interview. If the patient was critically ill, a family member was asked if it would be acceptable to call later when their relative was less distressed and had recovered enough to provide consent for participation. When subjects were called later, a meeting was arranged and informed consent was obtained before proceeding.

Second control group

The second control group (same presenting com-

plaint), was chosen by similar random selection of the time to begin recruiting patients from the emergency department. For this group, however, patients who had the same presenting complaints as the frequent user group were selected. A list of eligible presenting complaints was updated weekly. These patients were told that they had been selected for inclusion in a study on patients' use of the emergency department because they shared the same diagnosis with frequent users and because they happened to be at the emergency department when we randomly chose to conduct the study. They were told that we were interested in how emergency departments meet emotional needs and in what led to people's frequent use of emergency departments. Informed consent for participation was obtained. The interview was conducted similarly to the randomly selected group. The agreement rate for participants in this comparison group was 41%.

The study was conceived as largely descriptive. The Student's *t* test or chi-squared procedure was used to make comparisons between groups. Bonferroni corrections were made in the standard manner given the number of comparisons to be made.

RESULTS

A total of 440 people were called to obtain 200 frequent users. The response rate was 45%. The 200 frequent users had an average of 12 visits per year. The 200 random users had an average of 5 visits per year. The same complaint users had an average of 8 emergency department visits per year. These differences were significant at $p < 0.001$. The range for number of visits of frequent users was from 6 to 60. The number of visits of random users ranged from 1 to 58. The range for same presenting complaint users was from 1 to 40. There were minimal age differences among the groups (Table 1), but there was a significantly greater incidence of Medicaid funded patients among the frequent users. There were no differences in sex distribution.

The most common mental health diagnoses encountered among frequent users were major depression, followed by alcohol abuse and dependence, other substance abuse and dependence, adjustment disorder, general anxiety disorder, somatoform pain disorder, dysthymia, borderline personality disorder and somatization disorder (Table 2). Frequent users had an average

Table 1. Demographic comparisons between emergency department user groups

Patient characteristics	Group, % of patients			Statistical significance, <i>p</i> value	
	Frequent users	Random users	Same complaint users	Frequent v. random users	Frequent v. same complaint users
Age, yr					
< 10	10	18	10	NS	NS
10–19	8	8	8	< 0.05	< 0.05
20–29	16	16	20	NS	NS
30–39	18	23	14	NS	NS
40–49	14	9	14	NS	NS
50–59	7	6	9	< 0.05	NS
60–69	14	7	11	< 0.01	< 0.05
70–79	8	9	8	NS	< 0.05
80–89	5	2	6	NS	NS
Insurance					
Private	12	14	15	NS	NS
Medicaid*	58	37	47	< 0.001	< 0.05
Medicare†	9	12	12	NS	NS
None	11	15	12	NS	NS
HMO	7	6	8	NS	NS
Student Health	0	2	1	NS	NS
Workers' Compensation	3	14	5	< 0.01	NS
Sex					
Male	41	58	48	< 0.01	NS
Female	59	42	52		

NS = not statistically significant; HMO = health maintenance organization.

*Medicaid is state-provided (with federal supplementation) insurance for low-income people who are receiving social assistance.

†Medicare is government-sponsored insurance for older people and those with disabilities.

of 2.45 diagnoses, compared with 0.6 among random users and 1.32 among same complaint users.

Frequent users were more often diagnosed with upper respiratory infection, backache, upper gastrointestinal disorders, migraine headache, acute lumbosacral strain, viral syndromes, other headaches, alcohol intoxication, diabetes related problems, anxiety, abdominal pain, otitis media and inner ear disorders (Table 3 and Table 4). Random users had more acute injuries and infections.

Some general clinical impressions emerged from our interviews. The frequent users seemed to be a source of puzzlement and frustration to the emergency physicians (Table 5). It was sometimes hard to assign their complaints to a standard diagnosis. Many of these patients were known on sight to the emergency physicians, who bemoaned their appearance in the emergency department. These doctors did not seem to know how to help many of these patients and felt that their complaints were inappropriate for management in the emergency department.

From our discussions and interviews, it appeared that the emergency physicians tended to avoid the patients known to be chronically mentally ill. The emergency nurses would call the Crisis Team (a mobile group of mental health clinicians who came from the Community Mental Health Center to known psychiatric clients wherever they were in crisis) immediately on their arrival and their physical assessment was usually cursory. The frequent users described in this study were largely not identified by the emergency physicians as mentally ill (only 9% received a psychiatric diagnosis, and psychosocial factors were suspected to be influencing the presentation in only 30% of patients).

In accordance with previously signed consents authorizing chart review and with approval of the Human Subjects Protection Committee, a chart audit was conducted for those patients who declined interview but allowed chart audit. Bias was found in our study in that chronic users of the mental health system fell into this group. These patients primarily presented to the emergency department with psychiatric

Table 2. Comparison of psychiatric diagnoses present among users of emergency medical services

Diagnosis	Group, no. of diagnoses			Statistical significance	
	Frequent users	Random users	Same complaint users	Frequent v. random users	Frequent v. same complaint users
Major depression	88	39	56	27.70; $p < 0.001$	11.11; $p < 0.01$
Alcohol abuse or dependence (current or past)	61	32	35	11.78; $p < 0.01$	9.27; $p < 0.01$
Generalized anxiety disorder	39	24	30	4.24; $p < 0.05$	1.42; NS
Adjustment reactions	34	7	11	19.8	13.2
Other substance abuse or dependence (current or past)	33	6	20	20.7	3.07
Somatoform pain disorder	33	16	22	6.70	2.55
Dysthymia	30	11	21	9.87	3.08
Personality disorder, cluster B	24	14	16	4.73	1.77
Somatization disorder	22	12	16	7.00	3.22
Personality disorder, cluster C	19	14	6	0.83	7.21
Panic disorder	15	11	14	0.66	0.04
Simple phobias	15	0	7	15.6	3.08
Dementia and developmental disorders	15	8	12	2.30	0.36
Social phobias	11	0	3	11.3	4.74
Psychotoform disorders	10	0	2	10.3	5.50
Posttraumatic stress disorder	9	4	5	1.99	1.18
Acute stress reaction	9	3	8	2.23	0.06
Impulse control	8	4	9	1.37	0.06
Eating disorders	6	4	6	0.41	0.0
Acute grief reaction	4	3	5	0.15	0.11
Dissociative disorders	4	0	4	4.04	0.0
Bipolar disorder	3	4	0	0.15	3.02
Conversion or hypochondriasis	3	0	0	3.02	3.02
Total diagnoses	495	216	308		

NS = not statistically significant.

symptoms and the local mental health centre's Crisis Team was often called to interview and manage these patients. Among those patients who were frequent users and declined interview, 24% were frequent users of the mental health system and 50% had a

known psychiatric diagnosis. Of those frequent users who accepted participation, only 2% were known to the Crisis Team and only 9% had a psychiatric diagnosis. Thus our sample of patients interviewed under-represents people with chronic mental illness.

Table 3. Most frequently encountered diagnoses among emergency department users

Diagnosis	ICD-9 code	Group, no. of diagnoses			χ^2 analyses	
		Frequent users	Random users	Same complaint users	Frequent v. random users	Frequent v. same complaint users
Other diagnoses*	NA	58	44	28	2.58	13.33
URI or viral syndrome*	NA	34	16	23	11.77	2.48
Gastritis, PUD, hernia, esophagitis or GERD‡	784.0	45	30	39	3.69	0.54
Abdominal pain-producing disorders*	382.9	39	23	24	4.89	4.24
Headache or migraine*†	477.9	26	12	21	5.70	10.60
Back and neck related diagnoses‡	309.9	22	8	25	7.06	0.22
Soft tissue injuries*	309.28	22	48	15	11.71	1.46
Ear problems†	300.4	20	12	8	2.17	5.53
Neurologic diagnoses	465.9	19	20	11	0.03	2.31
Headache, other‡	NA	18	6	9	6.38	3.22
Alcohol intoxication‡	NA	18	8	9	4.11	3.22
Bronchitis	401.9	18	15	15	0.30	0.30
Diabetes and related complications	250.8	18	12	14	1.30	1.36
Anxiety†	490	17	3	4	10.32	8.49
Viral gastroenteritis†	300.0	15	11	9	6.99	1.58
Asthma exacerbation	NA	15	12	14	0.36	0.04
Skin disorders and infections	NA	14	21	16	1.53	0.14
COPD exacerbation	789.0	13	12	7	0.04	1.89
Depression/suicidal ideation	311	13	12	18	0.04	0.87
Chest wall pain‡	492.8	11	3	5	4.74	2.34
Pharyngitis	462	10	8	10	0.23	0.00
Drug reactions/ingestions	NA	9	12	5	0.45	4.29
Epistaxis	NA	8	7	4	0.07	1.37
Congestive heart failure	NA	8	7	3	0.07	2.34
Hypertension	NA	7	12	9	1.38	0.26
Dementia or delirium	NA	6	8	4	0.30	0.41
Urinary tract infection or pyelonephritis†	599	6	23	8	10.74	0.30
Liver disease	NA	6	8	5	0.30	0.09
Pelvic inflammatory disease	250	4	1	5	1.82	0.11
Sinusitis	NA	4	3	3	0.15	0.15
Prostate problems	NA	4	2	2	0.68	0.68
Fractures†	V20.2	3	12	2	5.61	0.20
Head injury	NA	3	1	2	0.51	0.15
Angina or myocardial infarction	429.2	3	4	4	0.15	0.15
Eye problems†	NA	3	16	7	9.34	1.64
Pregnancy related*	V22.1	2	20	2	15.58	0.00
CVAs or TIAs	NA	2	0	3	3.02	0.20
Total	NA	553	472	392		

ICD-9 = International Classification of Diseases, 9th Revision²²; NA = not applicable; URI = upper respiratory infection; PUD = peptic ulcer disease; GERD = gastroesophageal reflux disease; COPD = chronic obstructive pulmonary disease; CVA = cerebral vascular accident; TIA = transient ischemic attack.

Note: The higher χ^2 value is the one of significance. Frequent users presented more often with complaints of back pain, shortness of breath, abdominal pain, dizziness, headache, numbness and "sugar problems" (see Table 4). Random users presented more often with acute injuries and infections.

* $p < 0.005$.

† $p < 0.01$.

‡ $p < 0.05$.

DISCUSSION

Psychiatric diagnoses were much more prevalent among the emergency department frequent users. This study did not set out to determine whether psychiatric disorders caused greater emergency department use. It is important, however, to note that most of the frequent users did not present with psychiatric complaints. The great majority were not known to the psychiatric department as chronic users of the mental health system. They were not

identified as psychiatric patients and were not being followed by psychiatrists, for the most part. The high prevalence of psychiatric disorders, largely undiagnosed by the emergency physicians but apparent on diagnostic interviewing, calls attention to a psychiatrically underserved population and to the potential interaction of psychiatric disorders to make physical problems seem more severe to those afflicted.

No previous studies of frequent users of rural emergency services could be found. Urban studies exist, however, and present a picture that is different from the results that this study would suggest. For example, Sun and colleagues⁶ concluded that frequent emergency department visits in Boston, Massachusetts, were associated with socioeconomic distress, chronic illness and high use of other health resources, but mental health concerns and psychiatric issues were not assessed. In San Francisco, California, Mandelburg and coauthors⁷ found that frequent users constituted 3.9% of emergency department patients but accounted for 20.5% of emergency department visits. The relative risk (RR) of frequent use was high among patients who were homeless (RR 4.5), black (RR 1.8) and Medi-Cal sponsored (RR 2.1). Frequent users were more likely to be seen for alcohol withdrawal (RR 4.4), alcohol dependence (RR 3.4) and alcohol intoxication (RR 2.4). Frequent users were also more likely to visit for exacerbations of chronic conditions, including sickle cell anemia (RR 8.0), renal failure (RR 3.6) and chronic obstructive pulmonary disease (RR 3.3). They were less likely to visit for all forms of trauma (RR 0.43). Survival analysis showed that only 38% of frequent users for 1 year remained frequent users the next year. However, 56% of frequent users for 2 consecutive years remained frequent users in the third year. Again, psychiatric and psychosocial factors were not assessed. Thus rural frequent users may be substantially different from urban frequent users.

Katon and colleagues⁸ concluded that 25%–75% of visits to primary care physicians were primarily owing to psychosocial stress manifested by somatic complaints. About 70% of patients with primary or secondary diagnoses of emotional disorders gave a somatic complaint as the reason for their visits to physicians. Similar to our study, Katon and coauthors found the most common complaints were constitutional symptoms, headache, dizziness, and abdominal or extremity pain. Our clinical impression from the 600 interviews was that somatization of affect played an important role in the high use of

Table 4. Presenting complaints among randomly selected users, compared with frequent users of the emergency department

Presenting complaint	Group, no. of complaints		χ^2 analysis
	Random users	Frequent users	
Back pain*	19	48	15.08
Injuries, r/o fracture†	48	29	5.81
Shortness of breath‡	13	29	6.81
Abdominal pain‡	14	26	4.00
Cold	22	24	0.10
Cough	21	24	0.23
Sick to stomach	15	24	2.30
Lightheadedness	16	23	1.39
Dizziness†	7	21	7.53
Chest pain	16	19	0.28
Headache*	12	32	10.21
Sinus infection or nasal discharge	11	15	0.66
Sore throat	10	15	1.07
Numbness	7	14	2.46
Vomiting	12	14	0.16
Passed out, fainted or woozy	12	13	0.21
Weakness	14	13	0.04
Problems with urination	7	12	1.38
Vaginal discharge or bleeding	14	12	0.16
Diarrhea	10	11	0.05
Fever	11	11	0.00
Nervous or anxious	6	11	1.54
Rapid heart rate	5	9	1.18
Sugar problem‡	1	9	6.56
Neck pain	9	6	0.62
Rash	9	6	0.62
Seizure	6	6	0.00
Ear pain	8	3	2.34
Eye irritation	6	3	1.02
Stroke	3	3	0.00
Thoughts of suicide	0	1	1.00
MVC	1	0	1.00
Total	330	457	

r/o = rule out; MVC = motor vehicle crash.

* $p < 0.005$.

† $p < 0.01$.

‡ $p < 0.05$.

the emergency department by this population. We tended to observe alexithymia. A general lack of psychological sophistication coupled with many social stressors was common.

Somatization may underlie frequent visits to primary care physicians and is most frequently associated with depression, anxiety and somatoform disorders in primary care populations. Depression is not recognized or treated in roughly 18%–50% of affected primary care patients.^{9,10} Depression is the most common mental disorder in the general population, after substance abuse and anxiety,¹¹ and is one of the most common disorders underlying somatization in primary care.^{12–18} Depressed patients may selectively focus on the somatic manifestations of their disease and ignore or not experience affective or mood disturbance.¹⁹ These patients often present to primary care physicians with the classic depressive somatic complaints or nonspecific cardiopulmonary and gastrointestinal complaints or localized pain lacking the symptoms of depressed affect. Patients with this “masked depression” may lack the ability to label and report emotions (“alexithymia,” or the inability to reveal feelings using usual words or language).

From the results of this study, it would appear that helping patients address their life situations, their misery and suffering, and to communicate with providers and with each other about their difficulties rather than merely providing short-term symptom relief could be desirable. Teaching patients to ask for and receive support and help from each other might reduce their reliance on medical care and the cost of their care. These interventions could take the form of group therapies, behaviour therapy or social skills training and they could be organized around rural emergency departments or rural family practices. It was my impression that it would be easier to provide

such services in rural environments than large urban environments since people did appear to know and care about each other, even when they found each other frustrating (as in doctors’ and nurses’ responses to many frequent visitors).

Spillane and colleagues²⁰ tried to use individualized care plans and case management to decrease emergency department use by frequent users without success. Patients with greater than 10 emergency department visits to a university hospital in 1993 were identified. Patients were matched for age, sex and number of visits and then randomized into 2 groups. The control group received standard emergency care. The treatment group was managed by a multidisciplinary team and treated in the ED according to individualized care plans. Emergency department use was tracked at the university hospital and at the other 5 community hospitals in the city. No change in emergency department use resulted. On the other hand, a multi-disciplinary team in Vancouver, British Columbia, was able to reduce the frequency of emergency department visits of 24 frequent users by almost one-third over 1 year.²¹

Conventional psychiatric services may not be able to respond to the needs of this population. In both our study’s hospitals, psychiatric consultation and services were widely available, yet not used by this population. Patients may steer clear of psychiatry for fear of stigmatization. Psychiatrists may wish to avoid this population as much as emergency physicians do. While greater awareness of the potential for psychiatric diagnoses among frequent users of emergency services is important, conventional mental health workers may not be able to address this problem. More creative solutions may be needed.

From the results of this study, we can say that there is a population in rural areas that is consum-

Table 5. Results of physician interviews with patients

Physician assessment	Group, % of patients*		
	Frequent users	Random users	Same complaint users
No. of patients interviewed	115	89	91
Visit was inappropriate for ED	70	29	30
Physician suspected psychiatric or psychosocial factors	30	11	20
Physician uncertain about diagnosis	46	19	22
Physician puzzled, frustrated or both	78	23	57
Physician recognized patient	68	18	47

ED = emergency department.
*Unless otherwise indicated.

ing large volumes of medical care and that also has multiple psychiatric diagnoses. Such a group presents an opportunity for innovation. Conventional psychiatric consultation services in these areas are not addressing these needs. Most are not even identified as psychiatric patients (and would probably object to such labelling if it was offered). Perhaps it is possible to be psychologically sophisticated and to engage patients in psychological work in the course of primary care without ever labelling it as such. Perhaps patients can learn to better optimize their medical care choices if they feel adequately heard. Clearly further work needs to be done and multi-disciplinary teams or other interventions may be useful along with the incorporation of listening and counselling by family physicians into the medical encounter in a seamless way that does not use the word "psychiatric." The issues are as important in rural centres as they are in urban areas.

Competing interests: None declared.

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THE PRACTITIONER

LE PRATICIEN

The occasional intrauterine contraceptive device insertion

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The intrauterine contraceptive device (IUCD) is an effective but underused method of contraception in Canada. In the 1950s, 10% of women who were of reproductive age and using contraception used an IUCD.¹ However, IUCD use quickly fell after the defects of the poorly designed Dalkon Shield (Dalkon Corp., A.H. Robins) were widely publicized in the 1970s.² Its multifilament string was associated with an increased rate of pelvic infections that resulted in product litigation and had an impact on the further use of all IUCDs in North America.³ Recent data shows that the rate of pelvic inflammatory disease (PID) approaches the general population 3 weeks after insertion, showing that previous IUCD infection rates were overestimates.⁴ Simultaneously, newer IUCDs such as the Mirena have been shown to be about as effective as a tubal ligation.⁵

IUCD OPTIONS (CANADA)

Figure 1 shows the various IUCD options available in Canada.

1. MIRENA

Manufacturer: Leiras Oy

Distributor: Berlex
Insertion diameter: 4.8 mm
Pregnancy rate: 0.1/100 woman years
Cost: \$360

2. FLEXI-T 300

Manufacturer: Prosan
Distributor: Trimed Supply Network
Insertion diameter: 3 mm
Pregnancy rate: 0.6/100 woman years
Cost: \$67

3. NOVA-T 200

Manufacturer: Leiras Oy
Distributor: Berlex
Insertion diameter: 3.7 mm
Pregnancy rate: 2/100 woman years
Cost: \$80

INDICATIONS

IUCDs can be used for birth control along with the treatment of noncontraceptive clinical conditions. Although all IUCDs are effective in the prevention of pregnancy, the Mirena and Flexi-T 300 have the lowest failure rates. Many family physicians offer the IUCD as an option to nulliparous patients since the smaller Flexi-T 300 or the use of cervical blocks have made insertion easier. All copper IUCDs are highly effective emergency contraceptives if inserted

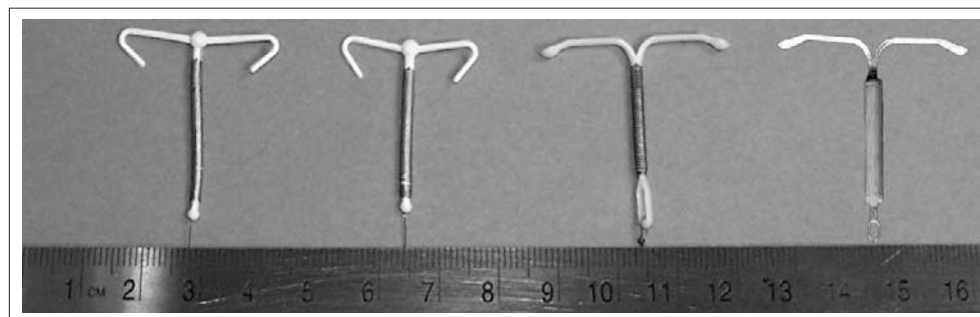


Fig. 1. Various intrauterine contraceptive devices available in Canada. From left to right: the Flexi-T+, the Flexi-T 300, the Nova-T 200 and the Mirena.

within 7 days of unprotected intercourse.⁶

Mirena is an effective pharmacological treatment for menorrhagia because it reduces menstrual blood loss⁷ and increases hemoglobin concentration.⁸

CONTRAINDICATIONS

Absolute contraindications for IUCD insertion include pregnancy, active sexually transmitted disease including PID within the previous 3 months, along with sepsis following childbirth or abortion. Owing to the progestational component, Mirena is contraindicated if patients have a current deep venous thrombosis, active liver disease or hormone responsive tumours of the breasts or ovaries.

RISKS

The increased rate of PID with IUCD insertion is related to having a sexually transmitted disease at the time of insertion. Thus the rate of PID is 9.7/1000 woman years in the first 20 days of IUCD insertion; it then drops to 1.6/1000 woman years, which is similar to the general population.⁴

Although perforation infrequently occurs (0.1%) with IUCD insertion, there is a greater chance of perforation within 8 weeks of childbirth. Thus waiting 10 to 12 weeks after childbirth is prudent.

GENERAL CONSIDERATIONS

IUCD insertion, hysterosalpingography and endometrial biopsy are cross-related procedures with similar steps and potential risks. Thus, if you are experienced in one of these procedures, it is relatively simple to occasionally complete one of the others. All IUCDs are packaged with helpful instructions. Even experienced practitioners should briefly review the insertion instructions before each insertion since there are critical differences in the insertion of each manufacturer's product.

EQUIPMENT LIST

- Vaginal speculum
- Sterile gloves
- Single tooth tenaculum
- Uterine sound
- Sponge forceps
- Long scissors
- Antiseptic solution
- Cotton balls or 2 × 2 gauze
- Cervical dilators (optional)

BEFORE INSERTION

Review with the patient the anticipated procedure and obtain verbal consent after discussing risks and benefits. An early pregnancy should be ruled out on the basis of history or with a pregnancy test if there is any uncertainty. Ensure that other contraindications are not present.

Consider asking the patient to take Misoprostel (400 µg 6–12 hours before insertion) to facilitate cervical dilation, if required.⁹ Insertion pain may also be decreased with the use of a nonsteroidal anti-inflammatory drug several hours before insertion.

INSERTING THE IUCD

The patient is draped and positioned for an initial pelvic exam to assess the size and position of the uterus. After changing into sterile gloves, a speculum is inserted. The upper vagina and cervix are cleaned with antiseptic. The cervix is inspected for signs of cervicitis or other abnormalities. As an option, topical Xylocaine gel can be applied to the cervix, allowing 3 minutes for it to take effect, as this has been shown to reduce insertion pain.¹⁰

The anterior lip of the cervix is then grasped with a single tooth tenaculum. Apply the tenaculum slowly and only to the first click to minimize discomfort. Gentle traction is then applied to the tenaculum, which stabilizes the uterus, straightens the uterine axis and helps ensure proper IUCD placement at the uterine fundus.

A uterine sound is gently passed through the cervix and into the uterine fundus. The Mirena, the Flexi-T+ and Nova-T 200 IUCDs are designed for a uterine cavity between 6.5 cm and 9 cm. The Flexi-T 300 is smaller and can be used in uterine cavities 5 cm and up. Once the uterus has been sounded successfully, remove the IUCD from its sterile packaging. If you are unsuccessful with sounding, the risk of perforation is likely increased. If you choose to proceed, use the smallest Hager dilator to cannulate the cervical os and gently dilate it further.

The actual insertion of the IUCD varies with the type chosen. Insertion techniques for the 2 models newly available in Canada are described.

FLEXI-T 300 AND FLEXI-T+

The Flexi-T applicator is a plastic insertion tube of 3-mm diameter containing the string and base of the IUCD, and a blue flange for indicating the uterine

depth. Using a sterile technique, the flange is slid along the insertion tube to position it to correspond with the sounded depth of the uterine cavity thus releasing the thread.

With gentle traction on the tenaculum, pass the applicator to the level of the fundus, as indicated by the position of the flange (Fig. 2). Gently pull on the thread to check if the arms are held by the lateral walls of the uterus. Then reseat the IUCD by passing the applicator back to the fundus (Fig. 3). Remove the applicator with a twisting motion (Fig. 4) and cut the threads about 2 cm to 3 cm from the cervix.

MIRENA

The Mirena applicator consists of a plastic insertion tube of 4.8-mm diameter containing the string and base of the IUCD, a flange for indicating the uterine depth and a handle. The upper portion of the

applicator's handle has a green slider and the lower end has a cleft.

Using sterile technique, retract the IUCD into the insertion tube by pulling the threads firmly until the IUCD slides into the tube. Clear the threads in the handle's cleft. The flange is then slid along the insertion tube to position it to correspond to the sounded uterine depth. Ensure that the green slider is fully forward.

With gentle traction on the tenaculum, pass the applicator to 1 to 2 cm less than the distance marked by the flange (Fig. 5). Hold the applicator steady, move the slider back toward the handle until it reaches an indicator mark and releases the IUCD arms (Fig. 6). Allow 5 seconds for the IUCD arms that you have just released to sweep down into position.

Advance the applicator to the level of the fundus, as indicated by the position of the flange (Fig. 7). Then release the threads by pulling the slider to the

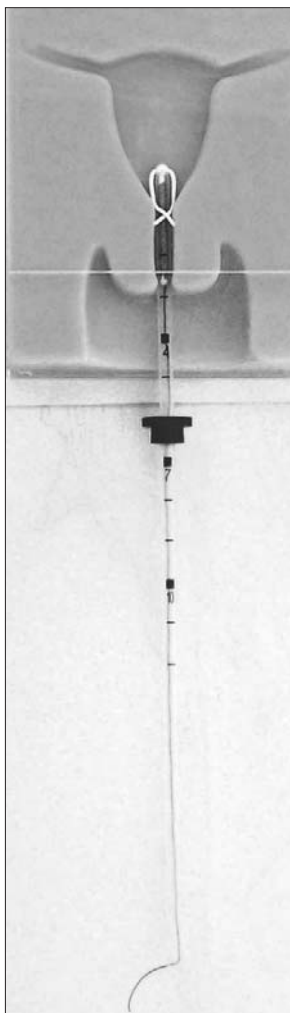


Fig. 2. The insertion of the Flexi-T.

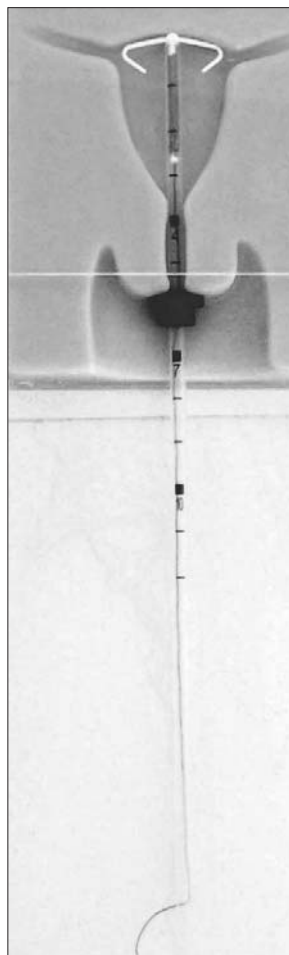


Fig. 3. The Flexi-T intrauterine contraceptive device is "pushed in" and inserted to sounded depth by passing the applicator back to the fundus.

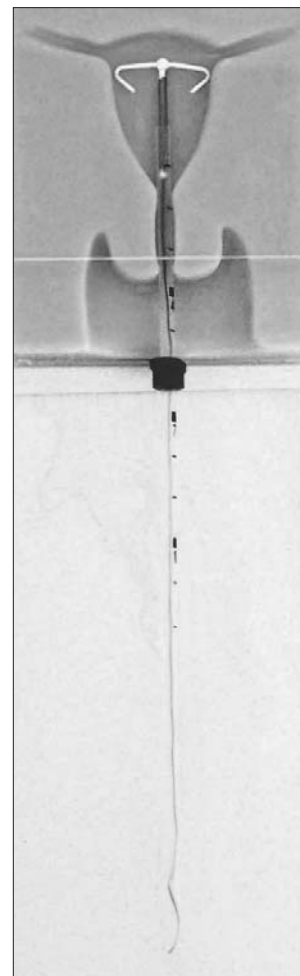


Fig. 4. The tube is removed with a twisting motion.

position closest to you; an audible “click” signals release of the threads. Remove the applicator and cut the threads about 2 cm to 3 cm from the cervix.

AFTER INSERTION

Following insertion, the strings are cut, the tenaculum is removed slowly and the cervix is examined before the speculum is removed. Ask the patient to

lie for several minutes before sitting and dangling her legs. If she is not feeling lightheaded, she can then stand and dress herself. If a vasal vagal reaction occurs, place the patient in a lying position.

The patient may experience spotting and cramps for a few days for which she can take a nonsteroidal anti-inflammatory drug. Women should be advised to seek medical help at any time if they develop symptoms of pelvic infection, persistent menstrual

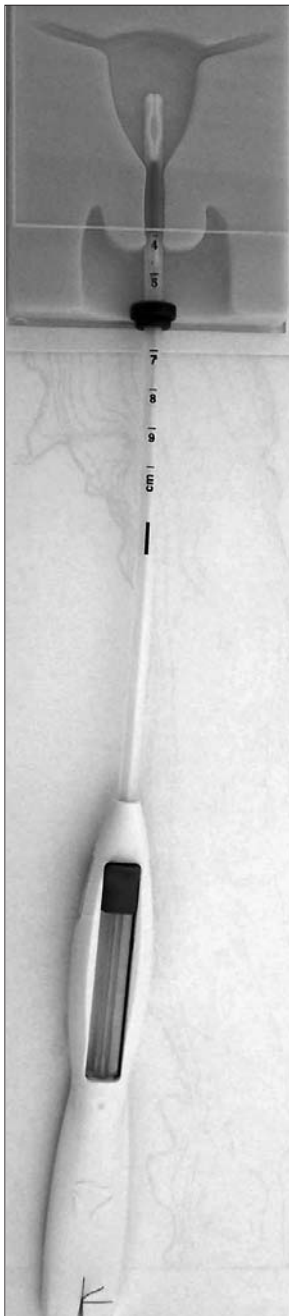


Fig. 5. Using the Mirena with slider forward and threads cleated, this figure shows the insertion of the intrauterine contraceptive device to within 2 cm of sounded depth.

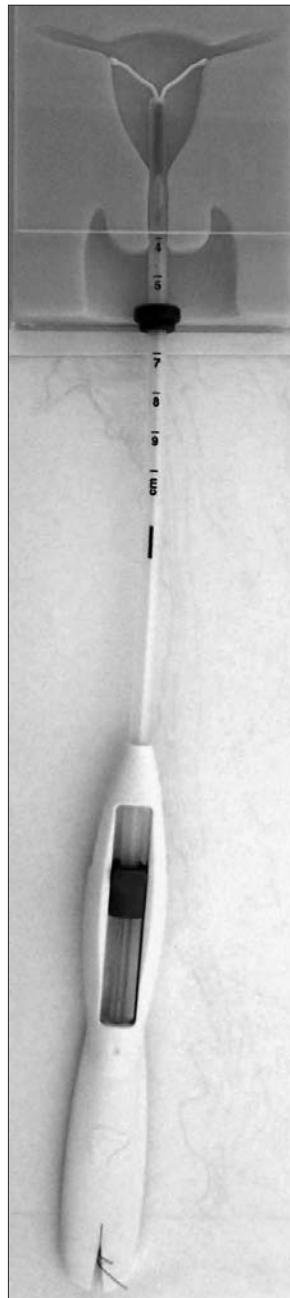


Fig. 6. The arms are released by pulling the slider back to the mark.

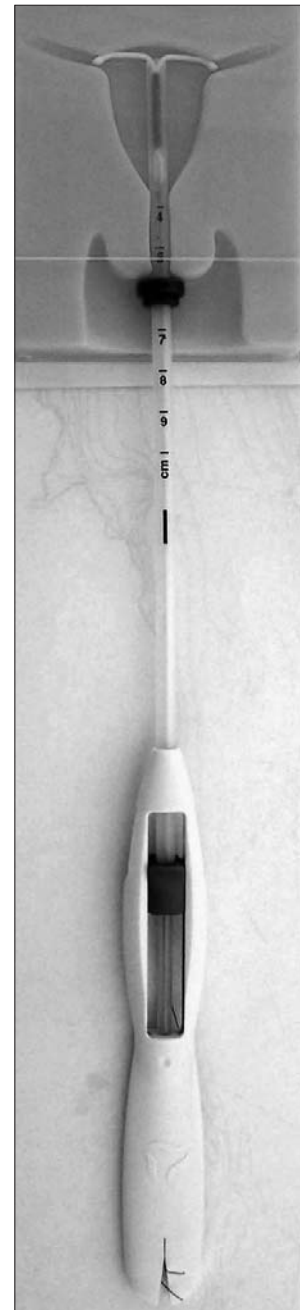


Fig. 7. Advance the applicator to the level of the fundus, as indicated by the position of the flange.

abnormalities, a missed period or nonpalpable threads. Excessive or persistent pain or bleeding may signal infection or perforation. If there is a question as to placement of the IUCD, perform a radiograph or ultrasound to confirm intrauterine location. A follow-up visit should be advised after the first menses, or 3 to 6 weeks, after IUCD insertion to ensure proper placement.

For the Mirena 3–4 months of frequent light bleeding can be expected followed by oligo menorrhagia.

A written instruction with the date and type of IUCD inserted should be given to the patient. IUCDs should not routinely be replaced before their maximum effective lifespan. Early replacement increases the risk of infection, expulsion and perforation. In Canada the Nova-T 200 is rated for 2.5 years, the Flexi-T 300 for 3 years and the Mirena for 5 years.

CONCLUSION

While the IUCD is not for everyone, it is an effective option for many women, with newer models offering wider application. Family doctors are in an ideal position to make this option available to their patients.

INSTRUCTIONS FOR AUTHORS

The *Canadian Journal of Rural Medicine (CJRM)* is a quarterly peer-reviewed journal available in print form and on the Internet. *CJRM* seeks to promote research into rural health issues, promote the health of rural (including native) communities, support and inform rural practitioners, provide a forum for debate and discussion of rural medicine, provide practical clinical information to rural practitioners and influence rural health policy by publishing articles that inform decision-makers.

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Focusing on oral health for the Canadian rural population

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reviewed.

Oral diseases are highly prevalent, but because they are seldom life-threatening, physicians often underestimate their importance. However, oral health is part of overall health and has a significant impact on both the physical and psychological state of the patient. General disease states can manifest themselves in the oral cavity and oral diseases can precipitate or maintain general disease states.

ASSOCIATIONS

Many reports have shown significant associations between periodontal disease and cardiovascular disease, diabetes mellitus, low-birth-weight infants and pulmonary disease.¹⁻¹⁰ As an example, studies have shown that pregnant women with periodontal disease have a 3- to 7-times greater chance of giving birth to a preterm or low-weight baby than do others with no periodontal disease.¹¹

TOOTH LOSS AND DIET

Tooth loss has an impact on nutrition, general health and quality of life.^{2,12-17} There is ample evidence that people who wear dentures, no matter what their socioeconomic level, have significantly poorer nutrition than those who have teeth.^{14,18-20} Furthermore, several cross-sectional and longitudinal studies have demonstrated that the diets of those who are edentulous are low in fibre and high in saturated fat.^{15,16,21-24} The reduced consumption of high-fibre foods could be considered a prime cause of cardiovascular disease, gastrointestinal disorders and cancers.²⁵⁻²⁷ Moreover, excessive intake of processed high-fat

and high-carbohydrate foods contributes to obesity and obesity-related diseases.^{2,17,28,29}

SOCIAL EFFECTS

Oral health affects people psychologically and socially. Oral health behaviour and oral health status influence quality of life.^{30,31} Oral disease can lead to social problems such as avoidance of laughing and meeting people or missing work or school.³² Oral and other chronic diseases have common risk factors, such as smoking.¹²

COLLABORATION

Although it seems that oral and general health are interconnected in many ways, there has been little collaboration between the 2 fields in the past because the impact of oral health on general health was underestimated. It has also been suggested that the differences in private and public reimbursement for oral and general health care have contributed to the separation between the groups. It is important that multidisciplinary physicians, especially those working in rural areas, be familiar with oral disease, particularly because of the lack of dental care providers in remote areas. For example, oral cancer screening can be performed by a general practitioner as part of a routine check up and patients in intensive care units can benefit from the provision of adequate oral care.^{33,34}

ENVIRONMENT

General and oral health are influenced by the environment in terms of socio-political support and economic

resources.^{35,36} Rural health care is differentiated from urban health care by socioeconomic deprivation, deficient substructures, reduced public services, unequal distribution of health services, high prevalence of chronic disease and distance barriers.³⁷⁻³⁹ A more isolated community faces greater difficulties in ensuring the availability of high-quality health services. Moon and colleagues⁴⁰ found that children living in rural communities have a less favourable oral health status, which affects their performance at school. According to the National Rural Health Association, rural Americans are twice as likely to lose their teeth compared with urban residents.¹¹

GEOGRAPHY

Rural communities are a large part of Canada's territories. They represent 30% of the population and 95% of the land mass.⁴¹ The rural environment, geography and demography have an impact on the needs of rural Canadians. A recent study in rural northern Alberta communities showed that these communities had poor oral health-related quality of life in conjunction with a high rate of treatment needed for oral health problems.⁴² Disparities are complex and relate not only to providers' knowledge gaps, but also to lack of research, as well as attitudinal- and system-level issues.⁴³

RURAL ORAL HEALTH PROGRAMS

Although there are some rural oral health programs in the United States, Australia and a few developing countries, few rural oral health programs have been integrated in Canada.⁴⁴⁻⁴⁶ As an example, the Alberta government, in collaboration with the University of Alberta's Faculty of Dentistry, has provided a dental service in 3 rural community hospitals. According to this program, the close association of dental students with rural physicians provides invaluable experience as well as encouragement to establish dental practices in such needy areas.⁴⁴

PROMOTING ORAL HEALTH

To promote oral health, the Office of the Chief Dental Officer of Canada was created in October 2004. The office focuses on integrating oral health with general health and assists in collecting epidemiologic data for program planning on the federal, provincial and community levels. The office is involved in several projects, for example, the Oral Health and the Canadian Health Measures Survey, which aims

to determine relationships between oral health and risk factors such as environmental and socioeconomic factors. This project will also measure the association of oral health with major health diseases, such as diabetes. The Office of the Chief Dental Officer, in collaboration with the Dental Director of each province and the Senior Dental Consultant for the First Nations and Inuit Health Branch of Health Canada, aims to improve the effectiveness of public dental health programs.

COLLABORATIVE SOLUTIONS

It is evident that oral health disparities cannot be resolved without collaborative efforts between the public health sector and academic public health resources.

To accomplish wide dental-medical collaborations, the transfer of knowledge is essential. Faculties of dentistry could become involved not only in educating and training future dentists to care for the rural population, but also in providing oral health education for non-dental professionals and family practitioners. Educational changes are needed in dental and medical training to better address oral health disparities.⁴⁵ During their educational years, students need interprofessional experiences to develop collaborations across professions and within communities. Furthermore, researchers in both oral and general health could also collaborate to assess the common oral and general health needs in rural communities. Community-based oral health research requires dedicated researchers as well as the collaboration of members of the rural community. The little information already gathered in this field demonstrates that the most difficult part of establishing rural dental projects is the recruitment of professional staff.^{38,47} Therefore, rural research should be developed as participatory action research. In this way, rural problems are not only better understood and resolved, but participants of the research also benefit through opportunities within the research structure that are thoughtfully created for them.

We encourage rural health care professionals to assist in the development of strategies for the improvement of oral rural health.

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OUT BEHIND THE BARN DANS LE FEU DE L'ACTION

Microsoft Outlook

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Microsoft Outlook manages email messages, "Contacts" (address book), "Calendar" events and "Tasks" (things to do). It is available for both Windows and Macintosh computers. This article is an overview of the main features of Outlook and how they could be useful in your personal or professional life.

MICROSOFT OFFICE

Outlook is part of the Microsoft Office software package. The latest version is Outlook 2007, which was released at the same time as Microsoft's new Windows Vista operating system. Outlook Express is a related program, which is included with Windows, but is limited to managing email and contacts.

EMAIL

The email function integrates standard email functions with the "Contacts," "Calendar" and "Tasks" functions. You can reuse a message by saving a copy in the "Drafts" folder before you send it. You can also manage messages on specific topics or from specific senders by creating rules that automatically move these messages to a specific folder. This is a good way to manage unwanted "spam" messages that get past the spam detection filters of your Internet service provider.

EMAIL FOLDERS

To find stored messages quickly, it is possible to create topic-specific folders and subfolders to store related messages together. An incoming message

can be easily moved to one of these folders by clicking and dragging. To avoid exceeding the total message capacity of Outlook, one should periodically delete out-of-date messages from these folders.

CONTACTS

To create a new contact from an incoming email message, just right-click on the sender's address or drag the message to the "Contacts" icon. If desired, contacts can be organized into folders and subfolders. If you frequently send messages to the same group of people (e.g., all your relatives), you can create a "Distribution List" containing the addresses of everyone in the group. When using distribution lists, it is courteous to place the recipients' addresses in the "Blind Carbon Copy" (BCC) field of the email message. That avoids creating a message that begins with a long list of email addresses.

CALENDAR

Outlook can display your important events and appointments by day, week or month. You can use the "month" display to print a monthly paper calendar. A calendar event can be sent by email so that the recipient can add the event to his or her own Outlook Calendar. Events can be set to recur at daily, weekly, monthly or yearly intervals. The yearly recurrence feature is a good way to remember birthdays, anniversaries or other personal events that sometimes get overlooked in our busy professional lives. You can use the Outlook "Find" feature to deter-

mine when a scheduled event will occur. An option in the Outlook "Tools" menu allows you to enter all the usual holidays celebrated in Canada or other countries.

TASKS

Entries for your to-do list can be created by typing, by cutting and pasting them, or by dragging them from email messages or the "Calendar." Tasks can be assigned a start date, a due date and a reminder date, and they can be assigned a high, medium or low priority. If desired, related tasks can be grouped in folders.

NOTES

"Notes" are like paper sticky notes and are handy for recording questions, ideas or reminders. You can leave notes open on the screen while you work. This is especially convenient for storing information that you want to use in more than one location.

PDA SYNCHRONIZATION

If you use a personal digital assistant (PDA; hand-held computer), you can synchronize email, "Contacts," "Calendar" and "Tasks" information between the PDA and Outlook on your desktop computer. For Windows Mobile (Pocket PC) PDAs, use the ActiveSync program (Microsoft Corp., Redmond, Washington). Palm OS PDAs use the similar HotSync program (Palm Inc., Sunnyvale, California). If you use a Macintosh computer, Palm PDAs are shipped with synchronization software, while Windows Mobile devices require the purchase of additional software.

FURTHER INFORMATION

The Microsoft website (<http://office.microsoft.com/en-us/outlook>) offers many more suggestions for using Outlook. Be sure to select the suggestions for your particular version of the program.

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DIRECTIVES AUX AUTEURS

Le *Journal canadien de la médecine rurale (JCMR)* est un trimestriel critiqué par les pairs disponible sur papier et sur Internet. Le *JCMR* vise à promouvoir la recherche sur les questions de santé rurale, à promouvoir la santé des communautés rurales (y compris les communautés autochtones), à appuyer et informer les praticiens en milieu rural, à offrir une tribune de débat et de discussion sur la médecine rurale, ainsi qu'à fournir de l'information clinique pratique aux praticiens en milieu rural et à agir sur la politique de santé rurale en publiant des articles qui éclairent les décideurs.

On étudiera la possibilité de publier des documents sur ces questions.

Articles originaux : études de recherche, rapports de cas et analyses critiques d'écrits en médecine rurale. **Commentaires :** éditoriaux, analyses régionales, articles d'opinion. **Articles cliniques :** articles pratiques portant sur la pratique en milieu rural. On encourage la présentation d'illustrations et de photos. **Détente :** pot-pourri de documents d'intérêt général pour les médecins ruraux (p. ex., voyages, réflexions sur la vie rurale, dissertations). **Couverture :** Œuvre d'art à thème rural.

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RESIDENTS' PAGE PAGE DES RÉSIDENTS

Rural medicine and rural training: addressing high-technology care

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The dichotomy was palpable from the moment we first set foot into the medical recruitment fairs. With booths covered in pictures of happy families, loons, lakes and snow-capped mountains, the rural programs seemed to be selling rural medical lifestyles. The message was that rural medicine would be challenging and rugged, but rural programs did not seem to be focused on selling the medicine itself. On the other extreme, with booths decorated with pictures of shiny space-age hospital facilities, serious white-coated doctors and electrocardiograms, the urban programs emphasized cutting-edge medicine and training. Learning in an environment with rapid access to modern technology and information was the core of the urban sales pitch.

Is expensive high-tech medicine really better health care? Is rural medicine and training selling itself short?

Quick to abandon faith in basic care and latch onto the most modern of everything, it seems as though an obsession with medical technology is increasingly evident in health care management systems, the public and medical media, and the most popular and lucrative medical research. There's a lot of hype about a new MRI, but we don't seem to pay much attention to a new hearing loss program, smoking cessation initiative or public transit system. We watch as local services are restricted in rural settings, with lukewarm reassurances that centralized care, telemedicine, and transport systems will provide for all. Medical research continues to develop management plans for common health problems that require highly

specialized and expensive centralized care. Perhaps we sell our rural training programs on the rural lifestyle, not the rural medicine, because the message that urban is better is implicit in every diagnostic algorithm necessitating a CT or angiogram. The evidence just seems to be piling up in favour of closing any hospital without an interventional radiologist on staff.

Or is it? A 2006 study published in *JAMA* looked at data from over 4.7 million US Medicare enrollees between 2000 and 2003, and found that days spent in hospital and use of intensive care facilities were reduced while continuity of care was increased in settings where care was directed by family physicians.¹ A second study challenged whether improved outcomes offered by new technologies and pharmaceuticals justified their burgeoning cost. Studies run from 1986 to 1996 had previously shown that developments in post-myocardial infarction (MI) management had more than justified the associated costs. The findings were sound, but when a new research team extended the study through to 2002, it made some divergent conclusions. From 1996 to 2002, the benefits from new technologies had reached a plateau and no longer justified growing costs. Furthermore, those regions where the greatest financial investments were made in technology and new drugs had not been the same communities as those that had realized the greatest improvements in survival. "Factors yielding the greatest benefits to health were not the factors that drove up costs, and vice versa."²

Rural physicians, of course, already

knew this intuitively. Generalists, and especially primary care generalists, have always played an important role as an “appropriate filter for high-technology care, [to] ensure that it is appropriately applied.”⁵ This is true in both urban and rural settings. According to Eric Cassell, an internist and medical philosopher, “the mandate for the existence of a profession of medicine in society is its obligation to relieve the suffering caused by human sickness.”⁴ Health care planning and individual clinical decisions need to be understood and justified through this mandate. Many patients readily identify the relief of suffering among their own health care priorities, even when their physicians or the medical system attempting to treat them is failing to do so. Many patients also have a developed capacity to make decisions about their care without deviating from their focus on relieving suffering. Good doctors, it would follow, are those who give patients the ability to make decisions that are well aligned with their own values, or who can be trusted to make decisions in a way that is consistent with patient values and context.

New medical technologies must be able to answer to the priority of relieving suffering as well. Accessing high-technology medical tests and interventions is extremely challenging for many Canadians in rural communities. As a result, the suffering associated with accessing a test is often magnified for rural Canadians. Rural physicians have to engage in a careful analysis of the potential risks and benefits of travelling for a test and understand that assessment in the context of an entire family or community. What if physicians everywhere stopped to ask a simple question before ordering new tests or drugs: Would I still order this test if my patient had to buy an airplane ticket to get it?

What rural medicine adds to the clinical picture is a community-specific, generalist perspective on caring for any given patient. Rural medicine is, by definition, *local*. Physicians and policy-makers must all learn to balance alluring and expensive new technologies with emerging evidence that these technologies do not always improve clinical outcomes and may intensify suffering. Perhaps the best way to achieve balance is to frame our clinical decision-making through local, neighbourly criteria that can

be shared more intimately with our patients and communities. The general public seems to know and want this already, while health care managers and practitioners are still trying to understand and appreciate it. As medical systems across Canada question how to address the burgeoning costs and diminishing clinical returns of high-technology medicine, perhaps many of the answers are inherent in the mentality of rural medical practice. Are Canadians, be they city slickers or country folk, ultimately looking for a rural doc?

All this makes learning in a rural environment rather cutting edge. The opportunity to enjoy the great outdoors and enjoy rural life is one of the great rewards of rural practice. But rural health care, be it specialized or in family practice, is also a unique opportunity to learn effective, compassionate health care with outcomes second to none. Rural medicine is not second-rate medicine, and ruralists are not defending a romantic outdated vision of the fearless frontier doc. Practice in rural settings is not about begrudgingly adapting to less-than-ideal clinical settings. It is about offering Canadian communities what they really want: local care that respects local needs and priorities. In the continued battle to entice students into rural medicine, recruiters should be unabashed in letting students know the privileged education they will be receiving. Recruiters and educators must let them know that they will learn to provide a form of health care that respects the needs and wishes of their communities — a form of health care supported by emerging evidence that newer and more expensive technology does not necessarily mean better medicine. Rural medicine isn't just about the lifestyle. It is about good medicine.

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