

Winter 2001 / hiver 2001

CJRM 2001; 6(1)

Cover Painting: "Men of Iron Will"

Ted Stuckless. Oil painting. Sealing,
just before the Great Sealing Disaster
of 1914.

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President's message: Less is more

Peter Hutten-Czapski, MD
Haileybury, Ont.

CJRM 2001;6(1):7.

As the new president of the SRPC, I have inherited a vibrant organization that has benefited much from the dedication and industry of my predecessors. Look at what rural medicine has attained in under a decade.

- The SRPC is recognized nationally as the credible voice of rural medicine.
- The SRPC provides quality, rurally relevant CME.
- CJRM, Rural News and RuralMed link rural doctors and our issues.
- Membership is 1100 and rising.
- Call is now compensable in most jurisdictions.
- Decent rural training programs are now available for basic and advanced rural skills.
- Physicians are being offered more and more incentives to go rural.

And yet why is this not enough? Why aren't urban doctors competing for each and every one of our 1600 empty rural positions? For one thing, the overall number of doctors is not increasing above that of the population.^{1,2} Is this a problem? No, this is to our strategic advantage! Unlike most of the proletariat, where a trade union needs a large constituency, the political power of doctors is dependent on scarcity of numbers. In effect, less is more.

Political tension in BC stems from rural outrage at the relative size of incentives given specifically to the underserved city of Prince George. The turmoil threatens the very existence of the Northern Isolation Allowance.³ In Ontario the Scott sessional emergency department (ED) payment scheme that made the least busy ED the most desirable one (because it paid \$70/h) has been replaced by sessional payments for all EDs with the largest pay going, once again, to the large urban centres.⁴ The next decade will convulse the system further as prices for physician services will continue to ratchet back and forth, but always upwards.

This is where our groundwork in reforming medical education will have immense payback. The

only way governments will be able to satisfy the population's legitimate desire for access to medical care is to increase physician numbers.

There are already signs that the restrictive medical human resources policies are being dismantled. Even in 1999, while Barer and Stoddart⁵ were promoting the government line that supply was not really the issue, there was a problem of distribution. Quebec, then PEI (by buying a seat at Memorial U), Alberta and Ontario increased medical school numbers. The rest will follow. What is most gratifying is that we've laid the educational groundwork so that more of these new doctors will be going rural than ever before.

It will be a tough few years, but I am honoured to be the president in times that promise to be so exciting. The status quo of the rural medical landscape is finally and inevitably going to change.

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Message du président : Moins, c'est plus

Peter Hutten-Czapski, MD
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CJRM 2001;6(1):8.

En accédant à la présidence de la Société, j'hérite d'une organisation dynamique, qui a beaucoup grandi grâce au dévouement et aux efforts de mes prédécesseurs. Voici ce que la médecine rurale a accompli :

- La SMRC est reconnue à l'échelle nationale comme porte-parole crédible de la médecine rurale.
- La SMRC dispense de l'EMC de qualité, pertinente pour la médecine rurale.
- Le JCMR, Rural News et le lien RuralMed relient les médecins des régions rurales et nous permettent de rester au fait de nos intérêts communs.
- La SMRC compte 1100 membres et ses effectifs ne cessent d'augmenter.
- Les périodes de garde sont maintenant rémunérées dans la plupart des régions du pays.
- Des programmes de formation rurale de qualité, offrant des compétences de base et avancées, sont maintenant offerts.
- Les médecins sont de plus en plus encouragés à exercer en milieu rural.

Mais pourquoi n'est-ce pas suffisant? Pourquoi les médecins des villes ne s'arrachent-ils pas nos 1600 postes disponibles en milieu rural? Eh bien, c'est notamment parce qu'il manque aussi de médecins en ville^{1,2}. Est-ce là un problème? Non, cette situation tourne plutôt à notre avantage stratégique! Contrairement au reste du prolétariat, où les syndicats ont besoin d'un grand nombre de membres, le pouvoir politique des médecins est tributaire de la pénurie. Et c'est ainsi que moins, c'est plus.

Au moment où j'écris ces lignes, la C.-B. baigne dans une tension politique provoquée par le scandale de mesures d'incitation accordées spécifiquement à la ville sous-desservie de Prince George. L'agitation menace l'existence même de la prime d'éloignement nordique³. En Ontario, la formule Scott de rémunération à la séance pour les services d'urgence, qui avait rendu les urgences les moins occupées les plus intéressantes (parce qu'on pouvait y gagner 70 \$ de l'heure),

a été remplacée par des paiements à la séance pour tous les services d'urgence – la rémunération la plus élevée allant une fois de plus aux grands centres urbains⁴.

C'est là que nos efforts de réforme de l'éducation médicale produiront le plus de fruits. La seule façon pour les gouvernements de satisfaire une population qui souhaite avoir accès aux soins médicaux consistera à augmenter le nombre de médecins.

On voit déjà pointer des signes de démantèlement des politiques restrictives d'effectifs médicaux. Même en 1999, alors que Barer et Stoddart⁵ penchaient en faveur du gouvernement, qui prétendait que nous n'avions pas de problèmes d'offre en médecine, il existait des problèmes de répartition. Le Québec d'abord, puis l'Î.-P.-É. (en achetant des places à l'Université Memorial), l'Alberta et l'Ontario ont haussé le nombre de places en faculté de médecine. Les autres provinces suivront. Le plus gratifiant, c'est que nous avons posé les bases de la formation, de sorte qu'un plus grand nombre que jamais de ces nouveaux médecins opteront pour les régions rurales.

Nous vivons quelques années difficiles, mais je suis honoré d'assumer la présidence en une période qui promet d'être si passionnante. Enfin, le paysage de la médecine rurale devra se dégager du statu quo et, inévitablement, changer.

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Just a rural physician...?

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CJRM 2001;6(1):11.

It was with sadness that I read in my Alumni Review last year (I'm a Queen's University MD '76) that a revered medical school professor of mine, Dr. Ford Connell, had died at age 96. He was a true "legend-in-his-own-time" to 3 generations of students.

I vividly remember being in a "small group teaching session" with him and 4 or 5 classmates. Dr. Connell showed us how he could percuss out the borders of the heart and judge its size. One of the students in the group (not I), asked him: "Of what use is this? An x-ray gives you the same information."

I don't remember his exact words of course, but his reply went something like this: "I know this can be determined by x-ray, but me, I take pride in the fact that I can percuss out the size of the heart. Ask any physician you like. How many of them can percuss out a heart? I'm proud I can do it."

And so it should be for us. For too long, we have received little respect from our medical colleagues. Doubtless, prejudice against us as rural family physicians still exists, both within and without the medical community. Do your parents ever boast that their son or daughter is a rural family physician?

When faced with such prejudice ("Oh, you're just a rural family physician....") I answer that in a given morning I might have to treat a febrile child, administer a "clot-buster" to a patient having an acute MI, provide ongoing care for a diabetic, then fix a Colles' fracture, provide counselling for a young couple taking care of a demented and incontinent parent, and then do a fiberoptic laryngoscopy on a patient with a sore throat. I can do as good a job at all of these things as many, and a better job than some. And I'm proud I can do it. How many of "them" can do all of these

things?

We must all take pride in ourselves and what we can do, not apologize for what we cannot do. Now, we have our own Journal, our own Society and our own large and successful annual shindig. To gain respect and pride from others — both within and without the medical community — we must first take pride in ourselves. And our parents will boast about us too someday!

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Un simple médecin de campagne...?

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CJRM 2001;6(1):12.

C'est avec tristesse que j'ai lu dans ma revue des dans mon bulletin des anciens l'an dernier (je suis diplômé en médecine de l'Université Queen's, 1976) qu'un professeur de médecine que je vénérerais, le Dr Ford Connell, est mort à l'âge de 96 ans. Pour trois générations d'étudiants, il a été une véritable «légende de son époque».

Je me rappelle clairement avoir participé à un petit atelier de formation avec lui et quatre ou cinq autres étudiants. Le Dr Connell nous a montré comment il pouvait délimiter par percussion les bords du cœur et en évaluer la grosseur. Un des membres du groupe (ce n'était pas moi) lui a demandé : «À quoi ça sert? On peut le faire par radiographie.»

Bien entendu, je ne me rappelle pas sa réponse exacte, mais il a répliqué à peu près ceci : «Je le sais, mais je suis fier de pouvoir le faire par percussion. Demandez à n'importe quel médecin. Combien d'entre eux en sont capables? Je suis fier de pouvoir le faire.»

Il devrait en être ainsi pour nous. Il y a trop longtemps que nous sommes peu respectés par nos collègues médecins. Il persiste certainement un préjudice à notre endroit, en tant que médecins de famille ruraux, à la fois à l'intérieur et à l'extérieur de la communauté médicale. Vous arrive-t-il d'entendre vos parents se vanter que leur fils ou leur fille est médecin de famille en milieu rural?

Face à un tel préjudice («Ah, vous êtes un simple médecin de campagne...»), je réponds que je peux être appelé, n'importe quand, à traiter un enfant fiévreux, à administrer un anticoagulant à un patient qui a subi un infarctus aigu du myocarde, à administrer des soins continus à un patient diabétique, à réduire ensuite une fracture de Colles, à conseiller un jeune couple qui s'occupe d'un parent atteint de démence et d'incontinence et à examiner ensuite au moyen d'un laryngoscope à fibre optique un patient qui a mal à la gorge. Dans les tous ces cas, je fais de l'aussi bon travail

que certains. Je fais même mieux dans certains cas, et j'en suis fier. Combien de ces autres médecins peuvent faire tout ce que je viens de décrire? Nous devons tous être fiers de nous-mêmes et de ce que nous faisons. Et il ne faut pas nous excuser de ce que nous ne pouvons pas faire.

Nous avons maintenant notre propre revue, notre propre société et notre propre assemblée annuelle importante et couronnée de succès. Pour susciter le respect et la fierté chez des tiers — à l'intérieur et à l'extérieur de la communauté médicale — nous devons d'abord être fiers de nous-mêmes. Et nos parents finiront bien par se vanter de nous un jour!

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A model for remote communities using store and forward telemedicine to reduce health care costs

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CJRM 2001;6(1):15-20.

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Objective: The Labrador Telemedicine Project looked at the effectiveness of a personal, computer-based store and forward telemedicine system between the remote community of Black Tickle in northern Canada and a small regional hospital in Goose Bay, Labrador.

Method: The nurse in the community captured video pictures, audio and text on all 43 cases involving 43 initial telemedicine consultations and 40 follow-up telemedicine consultations that occurred between Apr. 1, 1998, and Mar. 31, 1999. This information was stored in an electronic case file and sent to the hospital in Goose Bay, where the physicians reviewed the cases. Transmission was via microwave with a band width equivalent to an ordinary copper wire.

Principal results: This technology allowed the physician to make more informed decisions regarding patient management and the need for costly transfer. The nurse in the remote community felt more confident in treating the patient and provided a higher quality of care. Of 32 patients who responded to a patient satisfaction questionnaire, 84.4% believed that their care was much better, 15.6% that it made no difference and none believed that it was not as good as before. Fifty-one percent thought they had faster access to the physician. More patients were treated in the community, resulting in a reduced number of patients being transferred by air from the remote nursing station to the regional hospital. The cost of the system was \$52 470. Assuming biennial replacement of the system equipment, the regional health authority will save \$20 877 per year in patient transportation and the patients will save \$8008 per year.

Conclusions: This pilot project demonstrates that a store and forward telemedicine application is clinically useful and is associated with a decrease in health care costs. The technology can be applied effectively in similar remote community settings.

Objectif : Dans le contexte du projet de télémédecine du Labrador, on a étudié l'efficacité d'un système de télémédecine personnel et informatisé de stockage et de transmission entre les communautés éloignées de Black Tickle, dans le Nord du Canada, et un petit hôpital régional situé à Goose Bay, au Labrador.

Méthode : L'infirmière de la communauté a stocké des enregistrements vidéos et sonores, ainsi que du texte, dans un dossier électronique qui a été envoyé à l'Hôpital de Goose Bay, où les médecins ont étudié les cas. La transmission s'est faite par micro-ondes au moyen d'une largeur de bande équivalant à celle d'un fil de cuivre ordinaire.

Principaux résultats : Cette technologie a permis aux médecins de prendre des décisions plus éclairées sur la prise en charge du patient et le besoin de transferts coûteux. L'infirmière de la communauté éloignée a senti qu'elle avait plus confiance dans le traitement du patient et a dispensé des soins de meilleure qualité. Sur les 32 patients qui ont répondu à un questionnaire au sujet de la satisfaction du client, 84,4 % pensaient avoir reçu des soins de bien meilleure qualité, 15,6 % croyaient que cela n'avait fait aucune différence et aucun n'était d'avis que les soins n'étaient pas aussi bons qu'auparavant. Cinquante et un pour cent des patients pensaient avoir accès plus rapidement au médecin. Plus de patients ont été traités dans la communauté, ce qui a réduit le nombre de patients transférés par avion des postes de soins infirmiers éloignés à l'hôpital régional. Le système a coûté 52 470 \$. Si l'on suppose que le matériel du système sera remplacé aux deux ans, l'administration régionale de la santé économisera 20 877 \$ par année en frais de transport de patients et les patients éviteront des dépenses de 8008 \$ par année.

Conclusions : Ce projet pilote démontre que l'application de stockage et de transmission de la télémédecine est utile sur le plan clinique et entraîne une diminution des coûts des soins de santé. La technologie peut être appliquée efficacement dans le contexte de communautés éloignées semblables.

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As in many parts of Canada, the population of Newfoundland and Labrador is scattered over a large area. This is particularly true of Labrador where the population of 30 000 is dispersed over an area the size of the United Kingdom. The provision of health services under such circumstances is challenging.

Access to a full range of health care services is more limited in sparsely populated rural communities than in densely populated urban settings. Rural health practitioners experience professional isolation. Telehealth addresses both patient access and professional isolation by enhancing the clinical, informational and educational support available in rural communities. This technology has the potential to deliver effective, efficient, appropriate health care for people in rural areas.^{1,2}

Modern technologies are often available only in urban centres and in developed countries. The development of telehealth, while challenging, creates opportunities for improving the health of rural communities.³ Advances in information technology and telehealth have made accessibility to health service more feasible in rural communities.^{4,5} Telehealth applications appear to be quite well accepted by patients and health providers.^{6,7} Although telehealth is now considered necessary,⁸ there is little evidence of its cost effectiveness.^{9–11}

The Labrador Telemedicine Project was designed to evaluate the effectiveness of a relatively inexpensive store and forward telemedicine system to link a remote Labrador nursing station in Black Tickle to a regional hospital in Goose Bay using analogue telephone lines. Its objectives were to determine if the use of the telemedicine system has any effect on

- the diagnosis and treatment of remote patients;
- patient transfer;
- nurses' confidence and education; and
- if the quality of the medical information transmitted over dial-up lines is acceptable;
- if the nurse, physician and patient are satisfied with the technology; and
- to conduct a cost analysis.

The rationale for this pilot project was two-fold.

1. Nurses in remote areas have indicated they want more assistance in making a diagnosis, selecting treatment and deciding whether or not patients need to be transferred.
2. With a limited road network, travel in Labrador is usually by plane. It is expensive, difficult and often weather dependent. When patients in Black Tickle require medical attention that cannot be provided by the local nurse, the only option is to travel to Goose Bay. This is time-consuming and expensive for the patient as well as for the health care payer.

This study assessed a telemedicine system that offers text, audio and image transmission but does not assess the relative merits of each component individually. The study does not take into account the dynamics of nurse–patient–physician relationships and their impact on the utilization of, and response to, the telemedicine system. The cost analysis is limited to the 1 year duration of the study. Longer term monitoring would be ideal.

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Methods

Equipment

VisiTran-MD, a PC-based store and forward telemedicine system with a processing speed of 266 MHz and 128 megabytes of RAM, was chosen. This system was developed by MedVision, Inc., Minneapolis. MedVision, Inc., has since been acquired by Informed Care Solutions, a division of Informed.com, Charlottesville, Va. (Note: Informed Care Solutions support this platform but have ceased further development of it in favour of other software solutions.) VisiTran-MD was a medical case creation software package that facilitated the capture of video pictures, audio and text. Peripheral devices used were an Andries Tek general examination camera to capture images of all external parts of the body and internal parts such as the cervix and pharynx and an Andries Tek otoscope to view the external auditory canal and ear drums. (Both these devices are now the property of American Medical Development, Lowell, Mass., and have been renamed "Scalar general exam camera" and "AMD-300 w/Otoscope," respectively.)

Information was stored in an electronic case file, and the file was sent by a dedicated telephone line, equivalent to the copper wire, from the telemedicine system in Black Tickle to the telemedicine system in Goose Bay. There the case was reviewed by a physician. The link was with a 56 kbps modem with an average speed of less than 14 kbps.

Study population

The community of Black Tickle (population: 210) was chosen as a representative rural community in northern Canada where access is usually by air. Travel by snowmobile in winter and boat in summer is possible but is impractical for health delivery. The provincial government subsidizes most of the cost of air travel for medical reasons. Black Tickle is served by a resident primary care nurse and a visiting physician, who travels to the community once every 5 to 6 weeks for a week at a time. There are approximately 3000 patient visits to the clinic annually, with an average of 90 physician telephone consultations per year.

Study design

The study year was from Apr. 1, 1998, to Mar. 31, 1999. Before the study began Black Tickle's primary care nurse and the hospital physicians were trained in the use of the telemedicine equipment. During the study, the primary care nurse in the Black Tickle clinic used the telemedicine system for any cases that required physician consultation. Questionnaires were developed to assess how patients, primary care nurses and consulting physicians felt about using the telemedicine system. The patient and nurse questionnaires were administered immediately

after the telemedicine consultation. The 2 physicians involved in the study completed their questionnaires at the end of the study period. A prospective log was kept, with particulars relating to all cases sent on the telemedicine system and all cases sent out for consultation to the regional hospital. Costs for scheduled and emergency transportation of patients were determined using current costs for patients and for the regional health authority, the Health Labrador Corporation.

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Results

During the study period there were 83 cases, consisting of 43 initial consultations and 40 follow-up consultations, where the telemedicine system was used. The telephone was used only to alert the consulting physicians of urgent need for consultations. There were 95 telephone consultations in the previous year. There were 3 emergency medical evacuations and 85 scheduled out referrals during the study year compared with 14 emergency medical evacuations and 113 scheduled out referrals in the preceding year, a significant decrease (chi squared = 4.1375, $p < 0.05$). The number of scheduled and emergent medical evacuations during the year before the telemedicine was introduced was the same as the average for the previous 5 years, suggesting that it is a representative year to use for comparison. During the fiscal year of 1998/99, when telemedicine was introduced, the cost to the regional health authority for emergency and scheduled transportation of patients was reduced from \$88 208 to \$38 961, a reduction in cost of \$49 247 or 56%. Patients in the community saw a reduction of \$8008 or 25% of their annual expenditure for health care transportation, from \$32 318 in the year before telemedicine was introduced to \$24 310 per year with telemedicine ([Table 1](#)).

The capital cost of the system and the cost for 1 year of a dedicated analogue telephone line used in the referring community and the referral hospital was \$52 740 ([Table 2](#)). In 1 year, Health Labrador Corporation and patient savings in transportation alone have more than paid for the capital and operating cost. Assuming the system will have to be completely replaced in 2 years, the system will save Health Labrador Corporation \$20 877 per year (reduction of expenditures over 2 years [$\$49\,247 \times 2$] minus online charges [$\4000×2] minus equipment cost [$\$48\,740$] = \$41 754 divided by 2 years). The cost of the system is decreasing. Similar software and hardware can now be purchased at one-half of the initial cost. To date, the cost of peripheral devices has not changed.

Patient feedback

Patients in general liked the system. Forty-three patients were given questionnaires, and 32 (74%) responded. When asked to describe the advantages of telemedicine 22 respondents (or 69%) most commonly listed faster access to a physician. All of the respondents were comfortable with the

technology. Twenty-seven respondents (or 84%) thought their health care was better and 5 (or 16%) felt that it made no difference to their care. None thought that their care was not as good.

Follow-up of the 11 non-respondents revealed that they were unable to complete the questionnaire due to limited literacy skills. Informal discussion with these patients provided feedback comparable to that obtained from the respondents.

Primary care nurse's feedback

The solo primary care nurse's experience with the telemedicine system was very positive. In 91% (or 39) of the 43 cases the nurse felt strongly that the feedback allowed for better care of the patient. The nurse felt comfortable using the system in all cases and reported it was easy to use in 35 of the 43 cases or 81% of the time. In 49% or 21 cases, the nurse gained clinical knowledge from the interaction while using the system.

Physicians' feedback

The 2 doctors involved in the study felt that unlike a telephone consultation, the telemedicine system permits the transmission of visual images, thereby improving physician confidence in the severity of the condition and the diagnosis. The store and forward system allowed for cases to be stored and seen at a convenient time. Not only was less time required with telemedicine consultation, but the physicians also had the opportunity to provide a more considered response than was possible in a telephone consultation. The system encouraged a more concise and organized description and assessment in both audio and written format. There was less need to describe the condition with visual images. Urgent cases could still be addressed by phoning the physician to request that the case be viewed immediately.

Changes in pattern of distance consultation

The telemedicine system was used in 43 cases. Of those cases 13 (or 30%) relied on telemedicine to confirm a treatment plan, 12 (or 28%) used it to confirm a diagnosis, 8 (or 19%) to make a new diagnosis, 4 (or 9%) to develop a new treatment plan, 2 (or 5%) to follow up on wound healing, 1 (or 2%) to modify an existing treatment plan, 1 (or 2%) to arrange transfer and 2 (or 5%) for other reasons.

During the study period, distance consultation was used to confirm a diagnosis or to make a new diagnosis more than during the pre-telemedicine era. This change in the pattern of distance consultation is reflected in [Fig. 1](#). The nurse using the telemedicine system felt that in 56% (n = 24) of the 43 cases, it would have been impossible to obtain the information needed to manage the patients through a telephone consultation.

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Discussion

The telemedicine system used in this project comprises medium-cost computer hardware, high-end store and forward telemedicine software and 2 high-end peripheral devices. The use of an electronic stethoscope was investigated but not introduced because of cost. High-end peripheral devices were chosen to provide high-quality images.

A dedicated phone line was installed at each of the 2 sites for the study. This was done mainly for convenience so that the line would be free for transmission. It also helped to determine usage costs accurately. With low traffic volume a dedicated line is not a necessity. Each image takes only about 30 seconds to transmit over the analogue telephone line. Video and audio files are much larger and require a longer time for transmission. In our project, no cases took longer than 20 minutes to transmit. Users of the system learn to capture only relevant video clips and to be concise in voice recording. It is possible to program transmission to occur at certain times of low traffic volume, but this was not done in this project because there was a dedicated phone line. The dedicated phone line is being maintained following completion of the research project.

A store and forward technology was convenient for the referring nurse and the consulting physicians. There was no need for the nurse to wait while the usually busy physician was paged. It saved time for the physician as cases were ready in the folder for review with entry of the password and the clicking of a mouse. The reply was either entered on the key board, phoned or returned as an audio file. If cases needed to be reviewed immediately the physician was contacted by phone to go to the telemedicine system and the files were available for review by the time the physician entered the system. Where there is a high volume of cases, live video teleconsultation may be advantageous, provided the physician can view several cases in a single session. Live transmission is, however, costly, requires more band width and may not be cost-effective for low case loads associated with small communities. The use of live video in rural settings requires further study.

With an increasing number of cases and their follow up, it would be useful if the software could permit follow-up transmissions for an individual patient to be linked to the original electronic patient file. It would be easier to assess progress if multiple windows are available for comparing visual images of different consultations on the same patient.

The users (patients, referring nurse and consulting physicians) were satisfied with the system. No patients disliked using the system. Most of the patients were comfortable with the system and felt that it improved their health care. The referring nurse was more comfortable working as a solo nurse with the support afforded by the physician through the telemedicine system. The physicians found it easier to assess the cases and to provide advice to the nurse and through the nurse to the patients. Patients and nurses felt there was increased and more effective access to physician services. The low literacy level among patients and consequent high non-response rate (26%) to

the patient questionnaire highlights the importance of pre-testing the tool used to assess patient satisfaction.

In a period of 1 year, Health Labrador Corporation recovered 93% of the capital and operating costs of the telemedicine system through cost savings in patient transportation. Other potential savings in areas such as inpatient stays and emergency visits were not calculated.

The telemedicine system provided the referring nurse with case-based, continuing education. The professional development of the nurse and the professional relationship between the nurse and physician may have contributed to the decline in referral out of the community.

Although the nature of patient visits to the clinic during the study year was not compared with that of the previous year, the burden of illness in the community has not changed in the past 6 years. There was no decline in population, nor was there a change in nurse or physician staffing to explain the significant decline in transportation of patients out of the community during the study period. It is recognized that nurse–patient–physician relationships were not assessed and may have influenced this outcome.

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Conclusions

The store and forward telemedicine system is a practical way to conduct medical consultations to small, isolated communities with a low volume of health care service usage. It was associated with a significant reduction during the study period in the need to transport patients out of the community for physician services. In our setting in northern Canada, the system has resulted in a 56% reduction in government costs and a 25% reduction in patient costs for medical transportation. These results suggest this is a cost-effective model for this region and may be applicable for other rural communities with similar settings.

Competing interests: None declared.

Acknowledgement: This project was made possible through the support of the International Grenfell Association.

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This article has been peer reviewed.

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Physician numbers in rural British Columbia

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CJRM 2001;6(1):24-30.

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The objective of this study was to obtain an accurate count of the number of physicians living and working in rural British Columbia. Telephone surveys were conducted in June 1998, September 1998, February 1999 and October 1999. The number of physicians residing and working in those BC communities previously designated as isolated by the Ministry of Health and the BC Medical Association was tallied. Other parameters studied included the place of medical school graduation and the relative age of the physicians surveyed. Results showed an overall decline of 2% in physician numbers during the study period as well as a heavy dependence on physicians trained elsewhere in Canada (37%) and on foreign-trained physicians (46%). Only 20% of rural physicians had graduated within the last decade, and the estimated average age was in the mid-40s.

Cette étude visait à établir le nombre précis de médecins qui vivent et travaillent en milieu rural en Colombie-Britannique. On a procédé à des sondages téléphoniques en juin 1998, septembre 1998, février 1999 et octobre 1999. On a totalisé le nombre de médecins habitant et travaillant dans les localités de la Colombie-Britannique désignés auparavant comme isolées par le ministère de la Santé et l'Association médicale de la Colombie-Britannique. Les autres paramètres comprenaient notamment la faculté de médecine où les intéressés avaient obtenu leur diplôme et l'âge relatif des médecins en cause. Les résultats ont montré que le nombre total des médecins a diminué de 2 % pendant la période d'étude et que l'on dépendait énormément des médecins qui ont reçu leur formation ailleurs au Canada (37 %) et à l'étranger (46 %). Seulement 20 % des médecins ruraux avaient obtenu leur diplôme au cours de la décennie

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Introduction

There has been an increased focus on rural health issues in British Columbia. None of the issues are new. For years the province has been concerned about recruitment and retention of rural physicians and the associated provision of quality health care for rural citizens. What is new is the increased political action on a variety of levels by rural physicians, and an increased awareness of the issues among the rural population. This may be due to declining physician numbers nationally and increased publicity about health care issues in general. Another factor may be the implementation of regionalization of health care in the province, which has been widely advertised by the provincial government as a way of bringing health care spending decisions into the hands of those affected. Recent changes have certainly been associated with a feeling of impending crisis in many rural areas.

For many years British Columbia has had an enhanced pay scheme known as the Northern and Isolation Allowance, or NIA. Under this program northern and rural communities apply for funding and are assessed by a complicated formula, which includes factors such as the size of the community, the number of physicians and the distance from the nearest tertiary care facility. Points are awarded for each isolation factor, and doctors in communities that qualify receive a percentage above the regular fee schedule. The exact percentage is determined by the total point score. This program is jointly administered by the British Columbia Medical Association and the Ministry of Health (MOH), and calculations are done yearly. The group of communities that qualify are referred to as the NIA communities. NIA is an attempt to fairly address the issue: "What exactly is rural anyway?" Despite perceived flaws in the system, it does attempt to use an unbiased system to determine the degree of isolation.

In January 1998, a group of 22 northern physicians withdrew on-call services from their hospitals in 5 communities in an attempt to get the MOH to address the issue of remuneration for after-hours call service.¹ Such remuneration existed in a number of other provinces (e.g., Ontario, Nova Scotia), and it was felt that, although NIA attempted to address isolation factors, it did nothing to address the added responsibilities of those covering emergency departments in rural communities. With a 15% decline in the number of rural physicians over 4 years,² the recruitment issue was more challenging, and it became very difficult to compete with other provinces who were prepared to offer considerably more in the way of incentives. The job action spread to include 63 physicians in 20 communities.¹ Eventually the government hired Lucy Dobbin, a consultant, who developed a report with recommendations for solving the crisis.³ During the political fighting, it became obvious that no accurate count of physicians in rural BC

existed. The author developed a plan to look into this, the results of which are outlined here. The Dobbin recommendations were accepted June 13, 1998, and those physicians participating in job action returned to work. With legal wrangling, the first contracts were signed in September 1998. In this study physician numbers in the NIA communities were counted during the job action, immediately after the signing of the contracts and over the following year.

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Methods

The dispute could not be settled or realistic planning strategies developed without an accurate assessment of the trends. Therefore, a telephone survey was conducted of all physicians in the 70 BC communities that currently qualify for the NIA. All previous data were generated indirectly, either by analyzing billing data or from registration or licensing information. For the purposes of this paper, NIA physicians were defined as physicians living and working in NIA communities. Locums and visiting specialists were not included. No attempt was made to correct for those physicians who were less than full time.

Physicians' offices and community hospitals in all 70 NIA communities were contacted by phone in June 1998, September 1998, February 1999 and October 1999. The survey was carried out by me and one member of my office staff. A comprehensive database of all physicians living and working in NIA communities was generated using information obtained from physicians and office managers. Once an initial contact was established, 3 follow-up calls were made to the same individuals over the 18 months of the survey. In the larger communities this involved contacting every separate medical office as well as the hospitals. The initial list was revised with each contact. In addition to looking at the overall numbers, the place and date of graduation for each physician was noted. This information was obtained from the BC College of Physicians.⁴ It was sorted and then analyzed. Statistics concerning rural specialists were also generated.

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Results

Overall, the number of physicians in rural BC fell during the study period ([Table 1](#), [Fig. 1](#)). The lowest point was in February 1999, when the number fell from 346 to 330, a decrease of 4.7% over 8 months. Between February 1999 and October 1999 the number rose to 340. Therefore,

there was a net decrease of 1.7% over the 18 months. The numbers were broken down to see if different types of communities displayed different trends. Initially, the 70 NIA communities were divided into the categories described in the Dobbin Report: 1) 27 diagnostic and treatment centre (D&T) towns (1 to 3 physicians, a D&T, but no hospital); 2) 27 small-hospital towns (6 or fewer physicians and a hospital); 3) 10 medium-hospital towns (7 to 10 physicians and a hospital); and 4) 6 large-hospital towns (greater than 10 physicians and a hospital). As an additional category, numbers for all towns north of the 54th parallel (basically, all towns north of Prince George) were totalled.

The 27 D&T towns lost a total of 7.5% of their physicians during the study period (from 40 to 37 physicians, overall). In February 1999, when numbers were the worst, they were down 20% (32 physicians) compared with the number at the beginning of the job action. There has been a concerted effort made over the last 2 years by the MOH to recruit doctors to these communities, with some recent improvement.⁵ The 27 small-hospital towns were stable during the study period and displayed a net gain of 4.5% (going from 84 to 88 physicians). The 10 medium-hospital towns were also stable, with a decrease of 1.2% overall (from 86 to 85). The 6 large-hospital towns did not fare as well, with a net decrease of 4.4% (from 136 to 130 physicians); they hit their lowest point, 7.5%, in February 1999.

There are 19 NIA communities north of the 54th parallel, with a total of 171 physicians. From June 1988 to October 1999 they lost 163 physicians (4.7%). In February 1999 they had only 158 physicians, a loss of 7.6%. The north contains communities in all the categories mentioned in the Dobbin Report.³

Turnover

More interesting than overall physician numbers is the turnover in the NIA communities. The percent losses listed so far are based on relatively small numbers, and, despite the net decrease, one could argue that a difference of 6 fewer physicians is not really significant. However, it was decided to look at how many of the physicians present in October 1999 were the same ones as were present in June 1998 ([Fig. 2](#)). It was found that there was an average turnover of 23%; therefore, although many of those lost have been replaced, 79 out of the original 346 physicians are no longer present. When the numbers are broken down according to the previously designated categories, one finds that the D&T towns have a staggering turnover of 52%, having lost 21 of their original 40 physicians. The small-hospital towns gained in overall numbers, but still had a turnover of 18% (15 of the original 84 replaced). The medium-hospital towns had a 21% turnover (18 of original 84 left) and the large-hospital towns had an 18% turnover, losing 25 of the original 136. For the north there was a 22% turnover (37 of 171 physicians).

Specialists

Rural specialists were another area of concern. There were only 39 rural specialists living and working in an NIA community. Most of these were located in Terrace, with the rest found in Dawson Creek, Fernie, Fort St. John, Prince Rupert, Quesnel and Smithers. There were also a

few solo specialists scattered around the province. During the study period, 9 of the 39 specialists left and were replaced, for a turnover of 23%.

Foreign-trained physicians

Traditionally, rural BC has relied on foreign-trained physicians to fill the gaps in underserved areas. With this in mind, we noted the place of graduation (i.e., BC, elsewhere in Canada or outside Canada): 17% were UBC graduates, 37% graduated elsewhere in Canada, and 46% graduated in a foreign country. When specialists were studied, 10% graduated from UBC, 33% elsewhere in Canada and 57% outside Canada. These numbers do not take account of location of residency or any upgrade training within Canada.

Age

The other parameter of interest is the age of the physicians currently practising in the NIA areas. To generate this information, the year of graduation from medical school was noted and analyzed. This is an indirect measure of age, but does give an idea of the trends ([Fig. 3](#)). It was found that the single largest group (40%) graduated in the 1980s, which corresponds to an age of 36 to 45 years. The next largest group (26%) graduated in the 1970s (rough age range from 46–55 years). Eight percent of these physicians graduated in the 1960s (age range from 56–65 years). Physicians who graduated in the 1950s and are still in practice made up 4% of the total. The remaining 21% graduated in the 1990s. Just one-fifth of the NIA doctors are 35 years old or younger. It seems that the average age of physicians is rising. This could point to an impending manpower crisis, even without taking other factors into consideration.

For specialists, the figures are more worrisome: 32% are in the 36 to 45 years age range, 39% in the 46 to 55 years age range, 13% are between 56 and 65 years, 11% are 65+, and only 5% are under 36. These numbers are potentially skewed to give a younger-than-actual age, because they do not take account those of us who did not go straight to medical school from high school.

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Discussion

The numbers analysed for this study are small, and the overall decrease in physician numbers is also small. However, some trends are obvious, and the implications for future supply and stability of physicians in rural BC must be addressed.

One of the challenges of generating numbers for this study was the state of flux of physician supply in the NIA communities. The MOH uses billing data and looks at how many physicians are paid NIA premiums. This number is corrected to include only those physicians with full-time

billings, and the resultant figure is still higher than the number of physicians we tracked down by phone. This is likely owing to the fact that this method does not exclude long-term locums from the total.⁶ Each phone survey noted significant changes, and tracking of individual physicians was quite challenging. Only 3 physicians relocated to other NIA communities. The rest headed for the city, the US, or returned to their country of origin. The Medical Directory of the BC College of Physicians and Surgeons⁴ was used to obtain the place and date of graduation. Ten percent of the NIA physicians were so new to the province that they were not listed in the 1998–99 directory. Despite these challenges I believe an accurate and realistic snapshot of current physician supply in rural BC was obtained.

The net loss of physicians from NIA communities will become more problematic if it continues. The fact that an all-time low was reached and that there has been some recovery is encouraging. The big question is whether the improvement in the last 8 months of the study has anything to do with the Dobbin Report or is just due to more publicity and active recruiting on the part of needy communities. The program implemented by the MOH on the recommendations of the Dobbin Report offered quite different incentives, depending on the type of community. An on-call stipend for after-hours call availability was implemented for the small- and medium-hospital towns. The hourly rate of pay was \$30/h plus fee-for-service billings for the small-hospital towns and \$20/h plus fee-for-service billings for the medium-hospital towns.⁷ These communities were basically stable, and the small-hospital towns actually improved overall (the only group to do so during our study period). The communities that received the most financial benefit as a result of the Dobbin Report appear to be the most stable. A number of these communities have been able to attract consistent weekend locum relief since the availability of the on-call stipend. Despite this, they exhibit a turnover of 18% to 20%.

The D&T towns were offered a yearly "bonus" of \$30 000 to fund call and recruit locums.⁷ To qualify for this money, the individual physicians were required to sign a contract stipulating that they would be personally available to the community 24 hours a day, 365 days a year. There were a few doctors in 2-physician communities who signed, but the majority refused the contract and thus received no financial benefit from the Dobbin Report (BCMA Rural Negotiating Committee. Unpublished data, 1999). Our phone survey found that, at times during the past 18 months, 7 of these communities had been without physicians and many relied on rotating locums obtained through the provincial locum service. The MOH recently recruited a number of physicians to these smaller communities. Many of the new physicians are on alternative payment plans, involving salary and benefits. These vary by community and display varying amounts of creativity — for example, some share call with neighbouring towns, others only provide limited call (BCMA Rural Negotiating Committee. Unpublished data, 1999). It remains to be seen if these physicians stay once the term of their contracts expire, and whether creative funding is a possible solution for these smaller communities. Certainly, a turnover of 52% does not provide reasonable continuity of care for the rural citizens.

The large-hospital communities (more than 10 physicians) also received no specific financial

incentives as a result of the Dobbin Report with regard to on-call. The option of receiving a flat rate of \$20/h without fee-for-service would represent a significant decrease in income, therefore it cannot be truly seen as an incentive. The resentment engendered by being excluded from call pay, along with an actual decrease in the NIA premium paid to physicians in some larger communities in 1999, has resulted in significant dissatisfaction. The communities continue to lose ground with regard to overall numbers, and their recruiting appears to consist almost entirely of foreign physicians. The supply of international medical graduates is variable, and because stricter licensing and immigration regulations are being implemented, this could have a significant impact on these communities.

The turnover issue is worth considering. How much turnover is a good thing? Fifty percent, when looking at towns that only have 1 or 2 physicians, seems too high. The ideal of a family physician who knows you and your medical history is unattainable in such a situation. Overall, the net turnover is in the area of 20%. Is replacing one-fifth of the doctors in rural BC each year too much? When is a community medically stable? Why are there some communities that have had the same group of physicians for 10 to 20 years, while others have constant change? The issue of stability is a difficult one, and ideas on the contributing factors are largely speculation on my part. I think the first factor is adequate physician supply. If there are enough doctors in a town and each can work a reasonable amount, you are less likely to get burnout and fatigue, and subsequent attrition. The second factor is the structure of the medical community in each town. Those towns with a group of physicians that works together cooperatively have a much more stable track record. This does not necessarily mean a group practice; if there are several groups or solo physicians they still must work well together with regard to call and hospital issues. Other authors have suggested that the major factors are confidence in medical skills, adequate compensation and community commitment.⁸

Training issues are a significant concern, especially for rural specialists. Currently, almost half the NIA doctors were trained outside Canada, and 56% of the rural specialists were foreign trained. With the new licensing requirements of the Royal College of Physicians and Surgeons of Canada, it would be virtually impossible for these physicians to have obtained Royal College certification.⁹ This will provide a disincentive when recruiting foreign specialists. Depending on other countries for half of our rural doctors seems to be poor planning at the very least. The ethics of hiring physicians from disadvantaged countries was addressed at the World Rural Health Congress in Durban in 1997.¹⁰ It was resolved that governments who rely on these physicians to meet their medical manpower needs must recognize the effect this has and take appropriate action. The ongoing issues of how we train physicians for rural practice and whether or not it is purely a distribution problem or an actual shortage must be re-examined.

Age issues are a concern, but more for rural specialists than for rural physicians in general. With the implementation of longer residency programs, the data on physicians who graduated in the 1990s and will eventually end up in rural practice will not be available for another 3 years. It is clear that we must find a way to get more new graduates interested in rural practice. We are not

adequately staffed in rural BC at present.

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Conclusions

Tracking the physicians in the NIA communities in BC has shown some possible trends and some troubling statistics. The number of rural doctors in BC is holding almost steady, but there is a need to slow the turnover and to add stability. An overall increase in physician numbers, so that each community is adequately staffed, would help. The incentives offered in the Dobbin settlement seem to have added some stability to the small- and medium-hospital towns. A way to extend this stability to the D&T towns, rural specialists and the larger communities would help tremendously. Long-range planning should take into account our historical dependence on foreign-trained physicians and look at current training programs in BC.

Acknowledgement: I thank Linda Shusheski for her help in collecting data.

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Documentation of forceps/vacuum extraction deliveries

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CJRM 2001;6(1):34-7.

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Objective: To review current medicolegal requirements for documentation of forceps/vacuum extraction deliveries, assess the forms currently in use in hospitals for their concurrence with those requirements, and to devise a new, generic form for forceps/vacuum extraction deliveries that meet those requirements.

Method: A review of the literature and current text books was performed. Twenty-one hospitals in southwestern Ontario with active labour and delivery units were solicited for their labour and delivery summaries. Obstetrical forms were retrieved from 14 of these hospitals and compared to a master list of requirements. A new generic form was devised and presented.

Results: Less than 50% of medicolegal documentation is being met by current forms.

Conclusions: A new generic obstetrical form is required and has been presented to aid local perinatal committees in their work.

Objectif : Revoir les exigences médico-légales en vigueur qui ont trait à la documentation sur les accouchements par l'application de forceps ou de succion, évaluer les méthodes en usage dans les hôpitaux pour déterminer si elles sont conformes aux exigences en question et concevoir une nouvelle méthode générique d'accouchement par l'application de forceps ou de succion qui satisferait aux exigences en question.

Méthode : On a procédé à une recension des écrits et des manuels courants. On a demandé à

vingt-et-un hôpitaux du sud-ouest de l'Ontario dotés de services actifs de travail et d'accouchement de produire leurs sommaires de travail et d'accouchement. On a comparé les formules d'obstétrique de quatorze de ces hôpitaux à une liste maîtresse des exigences et conçu et présenté une nouvelle formule générique.

Résultats : Les formules courantes satisfont à moins de 50 % des exigences relatives à la documentation médico-légale.

Conclusions : Une nouvelle formule générique d'obstétrique s'impose et on l'a présentée pour aider les comités périnataux locaux dans leur travail.

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Introduction

The use of vacuum extractors or forceps is often necessary to expedite delivery. Their application requires an appropriate indication, physician training and careful documentation. There is an increased risk of neonatal and maternal morbidity and mortality with the subsequent possibility of legal or disciplinary action.¹ A physician's best defence against unjust claims is careful documentation. In Ontario, although there are standard forms for antenatal care, there are no such forms for intrapartum care and postpartum care.

As a result of a request from the perinatal committee of our local community hospital, we summarized the current medicolegal requirements for documentation of forceps and vacuum extractor deliveries. It was apparent that the form in use was incomplete. We therefore decided to review the forms from other hospitals and devise a new form. The result of this work is presented to aid other perinatal committees.

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Methods

We reviewed the literature using MEDLINE and Online Index Medicus, going back to 1985. Search terms were: forceps, vacuum extraction, assisted deliveries, documentation and guidelines. Only 3 papers were retrieved.^{2–4} Documentation requirements were developed using these 3 papers and the guidelines of the Society of Obstetricians and Gynaecologists of Canada

(SOGC)⁵ and the Canadian Medical Protective Association,⁶ and standard texts.^{7–10}

Twenty-one hospitals in southwestern Ontario (those within the telephone 519 area code) with active labour and delivery units were contacted and requested to send a copy of their labour and delivery summary. Each hospital summary was compared with the master list of requirements and the results were scored in percentages.

After combining the list of required documentation with the summaries retrieved, a generic labour and delivery summary was developed.

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Results

Of the 21 hospitals, 14 agreed to send their labour and delivery summaries. The hospitals were located in rural, urban and tertiary care centres. Reasons for not submitting summaries included the need for administration approval and the fear that the hospital could be placed at risk if the documentation was found to be inadequate. The 17 requirements that were identified as necessary to meet medicolegal requirements in Ontario are listed in [Table 1](#).

On average, 30.6% of the documentation requirements were met. The percentage of hospitals documenting the requirements is shown in [Table 2](#). No hospitals documented engagement, the amount of traction applied or the type of forceps used. There were no obvious differences among hospitals providing different levels of care.

A generic form has been developed, which will assist perinatal committees in developing forms for their hospitals ([Fig. 1](#)).

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-

Discussion

Less than 50% of documentation requirements were met. In particular, there was no documentation of engagement, forceps type or amount of traction. Only 1 hospital documented the presence of caput/moulding. Moulding is felt to be an indication of pelvic inadequacy,³ and

the courts take the view that lack of documentation indicates a lack of assessment, not that moulding was not apparent.

The SOGC explicitly states that "forceps should never be applied through a non-dilated cervix or with an unengaged presenting part."¹ An estimate of the degree of traction applied, through such suggested means as how long and through how many contractions, gives some indication of delivery technique. In the absence of such information, "a reviewer usually makes the worst assumption: that the damage was due to below-standard care."³

It was difficult for us always to ascertain the documentation of presentation, position, station and degree of dilatation. Most forms had an area for pelvic examination results where this information could be noted, but what information was required was not explicit. As such, if the forms were not clear in the information required, they were considered inadequate for medicolegal purposes. Most forms noted "breech" deliveries separately, implying that if this was not noted, then the presentation was vertex. Station was not always clearly noted but was implied by the labelling "mid/low/outlet" forceps. Hospitals with these labels were considered to have documented station.

It was not always clear where indications for a forceps/vacuum extraction delivery would be documented. Some forms had a "complications" or "comments" section where indication potentially would be documented. However, we felt this would be inadequate for medicolegal standards.

Since only 14 of a potential 21 hospital forms were reviewed, it is possible that a particularly thorough form was missed. As such, the percentages of documented requirements may be greater or less than we found.

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Conclusions

It is often necessary to intervene with an assisted delivery for the benefit of the mother and child. However, such deliveries increase the chance of mother or infant morbidity or mortality. Whether such adverse outcomes are a result of pre-existing factors or a direct result of the intervention can become a contentious legal issue. A doctor's best defence is adequate documentation. A review of hospitals in southwestern Ontario revealed that documentation currently summarized on available forms is inadequate. Although we realize that more complete documentation is often recorded in the notes, in our opinion more thorough forms will improve documentation. We have presented a generic form, which covers the 17 requirements considered necessary for adequate

documentation, to aid perinatal committees when their labour forms are being revised.

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Débat public sur le système de la santé et des services sociaux au Québec présenté par le chapitre québécois de la Société de la médecine rurale du Canada

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CJRM 2001;6(1):39-40.

Le chapitre québécois de la Société de la médecine rurale du Canada voudrait sensibiliser le Ministère de la Santé et des services sociaux à la réalité rurale qui fait face à ceux et celles qui œuvrent dans le domaine de la santé dans les régions périphériques du Québec et cela pour mieux dégager des politiques cohérentes de santé pour l'avenir.

Dans les années à venir, nous ferons affaire à une plus grande demande de services médicaux et sociaux à mesure que la population vieillit. Présentement, nous avons des régions où il manque de médecins, d'infirmières et de services paramédicaux. Listes d'attente pour les chirurgies de toutes sortes, spécialement coronariennes et orthopédiques sont dangereusement ou péniblement longues et la situation promet d'empirer à moins que le gouvernement provincial s'occupe de conserver ces effectifs médicaux au Québec et qu'il en produise d'autres.

Pour nous en médecine rurale, la réalité est constante: cela veut dire offrir des services médicaux de base à la population sans la présence immédiate des spécialistes dans nos hôpitaux. Cela veut dire lorsque monsieur ou madame vient en milieu rural et qu'il devient gravement malade (et cela arrive à tous les jours) que le médecin puisse avoir la formation adéquate pour mettre une ligne veineuse centrale à ce patient selon le cas ou mettre un stimulateur cardiaque temporaire sinon il mourra ou bien, pour madame cela peu vouloir dire pratiquer une césarienne d'urgence et s'occuper du nouveau-né. Si le médecin n'a pas la formation requise pour le faire comme c'est souvent le cas présentement, comment pouvons nous parler de médecine de base et de médecine de qualité? Aussi comment le médecin d'un hôpital périphérique peut-il se faire coordonnateur du système lorsqu'il doit s'occuper de grands malades dans les salles d'urgence et les soins intensifs

de son hôpital?

La vision du champ de pratique d'un médecin en milieu rural est complètement différente de celle de l'omnipraticien du milieu urbain. Pour la cause de l'avenir du domaine de la santé au Québec rural, il nous faut les suivantes avec les dollars qui nous parviendront un jour d'Ottawa :

1. Identification précoce des candidats à la médecine rural et entente sur le nombre de postes, entre les différents intervenants.
2. Des stages de formation de médecine rurale avec des objectifs précis devraient être mis sur pied dans chacune des facultés médicales pour faire face aux exigences de la pratique rurale.
3. L'apport de radiologie spécialisée, d'ultrasons et de tomographie axiale dans les hôpitaux ruraux et l'accélération du processus de téléradiologie avec les centres urbains.
4. Une augmentation des soins infirmiers pour aider les omnipraticiens dans les urgences, les soins obstétricaux, les soins intensifs et aux soins généraux de nos hôpitaux.
5. L'intégration des sages-femmes aux soins obstétricaux des hôpitaux périphériques.
6. Un accès amélioré à la chirurgie générale, à l'anesthésiologie et aux soins de médecine interne dans les hôpitaux pour la population qu'ils desservent.
7. Un effort pour une formation adéquate au niveau gradué et sous gradué pour les omnipraticiens, chirurgiens et anesthésistes qui se dirigent en milieu rural et éloigné.
8. Simplification du système d'examens médicaux au Québec.
9. Permettre le libre déplacement des médecins à travers le Canada.
10. Développer davantage la formation rurale pour les médecins résidents en anesthésiologie et en chirurgie générale.
11. Encourager la formation des omnipraticiens ruraux pour pouvoir exécuter des techniques de base en chirurgie et en anesthésiologie.
12. Les priorités des régions semblent se perdre constamment dans l'immensité des priorités urbaines, i.e.: paiement des inhalothérapeutes à domicile dans les milieux urbains mais pas en région, transfert des traumatismes médullaires ne tiennent pas compte des régions rurales. Il est important de ne pas appauvrir davantage le milieu rural. Donc, une régie régionale gérant des budgets et des politiques rurales s'impose.
13. Une qualité de vie aux médecins et personnel infirmier en milieu rural pour encourager la venue et la rétention en milieu périphérique: cela veut dire avoir la quantité suffisante de médecins et de personnel infirmier bien formés qui puissent vivre, pas seulement travailler, se décourager et partir.

Enfin nous craignons que les nouveaux dollars de la santé aillent à construire des murs et des bureaux pour répondre à un nouveau chambardement du système de la santé plutôt que l'amélioration de celui que nous avons déjà. Le système de santé dans notre région, si ce n'était pas du manque de personnel et d'équipement fonctionne tout de même assez bien de par sa structure. Avec la fusion des établissements que nous avons accomplie sans trop de heurts, il est possible pour le patient de recevoir une grande partie des services qui assurent la continuité des

soins. Le patient peut en théorie de sa naissance à sa mort être traité par le même médecin de famille. Il peut recevoir une grande partie de ces services à l'hôpital de sa région. Il peut recevoir les services à domicile incluant les soins infirmiers, la physiothérapie et l'inhalothérapie. Il a accès à un service de santé mental. Il a accès à un ou une travailleur(se) social(e). Il a accès à des maisons d'hébergement ou des centres de soins de santé prolongés. La coordination entre le médecin et ses différents services pour le patient se fait en général très bien. Il manque des sous, il manque des effectifs en physiothérapie par exemple. Il manque de consultations et d'interventions spécialisées ponctuelles pour les cas sous aigus. Il nous manque une tomographie axiale. Toute région périphérique devrait avoir son scan, quant à nous. Il nous manque maintenant d'un oncologue, d'un hématologue, d'un cardiologue et d'un pneumologue en consultation. Les néphrologues qui nous desservent ne suffisent pas à la tâche.

Il faut conclure. Il faut donc s'assurer, faire en sorte que les services sont là, la structure n'est pas si mal. Il faut s'assurer de la rétention des effectifs — à penser aussi aux coûts des remplacement de ceux et celles qui partent. Il faut développer des mesures incitant les médecins omnipraticiens à pratiquer en institution et par une meilleure formation et par une diminution de la disparité des honoraires entre la pratique en institution et celles en bureau privé. Nous sommes en faveur d'une meilleure intégration aussi des services au milieu CH, CLSC et CHSLD.

Le financement du système de santé est un autre aspect que nous voudrions aborder. Nous sommes d'accord pour éviter un service à 2 vitesses. Nous sommes d'accord pour le maintien de la gratuité sauf pour les services cosmétiques. Nous sommes d'accord pour dire que le financement ne devrait pas couvrir les services hors du pays.

L'état devrait permettre des sources de revenus pour l'institution, par exemple :

14. La publicité moyennant une éthique et un contrôle central.
15. La location des locaux d'institutions permettant des activités professionnelles non couvertes par la RAMQ.
16. La location des locaux à des entreprises privées qui n'agissent pas à l'encontre des objectifs de santé.

La majorité des revenus devrait bénéficier l'institution en question, mais il devrait y avoir une loi encadrant ces activités à l'intérieur du système de santé.

Il n'y va pas non plus sans une majoration des primes de l'assurance-maladie auprès de la population vue que celle-ci va exiger plus de services dans les années à venir.

Finalement, un mot sur le système de capitation. Lorsqu'on parle aux médecins de capitation en général, ils n'en veulent pas parce que dans leur esprit cela veut dire être d'appels 24 heures sur 24, 7 jours par semaine pour les patients et les médecins sont comme toutes les autres personnes qui travaillent: ils veulent avoir leur temps libre aussi. Donc, si le gouvernement a des intentions de

capitation, je crois qu'il devra répondre à cette argumentation très justifiable des médecins. Aussi, dans un tel système on n'encourage pas à priori la prise en charge des cas lourds, les patients le plus malades, chroniquement.

Nous aimerions revenir sur les points à inscrire à la synthèse présentée il y a 7 jours passés en guise de conclusion. Cette synthèse résume notre pensée sur le système de santé actuel. L'état doit dégager les sommes nécessaires au bon fonctionnement du système de santé. Elle peut le faire car les citoyens le demandent. Elle aura plus de facilité à la faire en autant qu'il fera en sorte que l'économie fonctionnera bien et à ce titre, l'état a un rôle appréciable à jouer. D'autre part, l'état fédéral comme d'autres états se souci de s'assurer que le système de pension public aura les sommes nécessaires à son financement dans les années à venir. Ce qui est tout à fait correct. Il devrait en faire de même pour le financement du système de santé.

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Commitment from Calgary!

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CJRM 2001;6(1):41-2.

More than 300 rural doctors and other health care workers from 30 countries came to the 4th WONCA (World Organisation of Family Doctors) World Rural Health Conference in Calgary last August. The conference was an unusual collaborative effort between the University of Calgary, the Society of Rural Physicians of Canada (SRPC), the Alberta Rural Physician Action Plan, the College of Family Physicians of Canada (CFPC), the Canadian Medical Association, Memorial University, the University of Alberta, and the WONCA Working Party on Rural Practice.

The Canadian International Development Agency (CIDA) agreed to provide \$60 000 for 20 delegates from developing nations. This sponsorship enabled participation of many poorer nations that have been under-represented at previous WONCA rural conferences. This CIDA grant also acted as a catalyst for other groups — a further \$20 000 in voluntary donations was raised from individual rural physicians and their organizations.

A healthy media interest in the conference was helped by the attendance of Federal Health Minister Allan Rock, Provincial Health Minister Gary Mar, and the President of WONCA, Dr. Bob Higgins.

The main focus of the conference was to share practical solutions to the everyday problems of rural health. Maldistribution of resources, compared to needs, is a theme common to both poor and wealthy nations. It has become clear that an essential component of the conference series is to generate global policy recommendations on issues that are relevant to rural health. This process was very strong at the Calgary conference and produced a number of powerful statements.

Foremost among these was the Calgary Commitment,¹ which was best summarized by the following quote.

The Calgary Commitment to Women in Rural Practice will make visible the work of women. This is particularly important given the increasing presence of women in rural medicine, the challenges facing women in rural practice, some of which are unique to women and some of which are unique to rural practice and the inequities of commitment to, and resources for, these issues around the world.

Barb Doty from Alaska has taken on the task of being provisional chairperson. She urgently requests submissions (bdoty@alaska.net) from female doctors involved in rural practice. This topic will be a central theme at the WONCA World Conference in Durban in 2001.

Dr. Peter Hutten-Czapski led a collaborative group from the SRPC and the CFPC; this group presented the Canadian Coalface document. The document summarized many of the issues that are key to rural medicine in Canada today. Examples of such issues were maternity benefits, locum programs and practice-diversity payments. In particular, more action is needed on spousal and family support, retention measures such as long-service leave, rural rotations for specialty training programs, early and repeated exposure of students to rural life, rural focused education streams and even the possibility of a new rural/northern/aboriginal medical school. Other issues include support for rural focused CME, information technology and connectivity support for rural communities.

It was noted that all provinces now have rural recruitment plans and that there is a growing number of rural research centres. However, this could be better coordinated and directed with a structure within the newly created Canadian Institutes of Health Research. It should be reinforced by the establishment of Chairs of Rural Medicine and Health, and Offices of Rural Health in medical schools.

The WONCA Policy Document on Rural Practice was first ratified in Malaysia at the previous conference, in 1999.² Considerable effort was given to refining this and to including some of the key elements that arose from discussions at this conference. Some of the more noteworthy new recommendations to be included in this document were integrating cultural awareness into the undergraduate curricula; integrating rural training across undergraduate, postgraduate and CME; advanced skills training; providing a major portion of training within the rural context and specific measures to retain women in rural practice.

The Durban Declaration³ was initiated at the 2nd World Rural Health Conference in Durban in 1997 and ratified by the WONCA Executive at the 1998 WONCA World Conference, in Dublin. In continuation from the Durban Declaration it was further recommended that health services and governments that employ doctors from developing countries should be required to make a contribution to the support of rural doctors in their country of origin and that each country should be encouraged to meet their own needs for a medical workforce.

It was gratifying to note that Canada is at the forefront in driving these policies and shows

exemplary commitment to the majority of the recommendations. However, much work remains to be done. We anticipate that the momentum from this conference will push us onward to more effective research and educational practices for rural health.

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Stroke

CJRM 2001;6(1):42.

Thursday was mad, "where is my leg"?
Friday came and went in Canada's grayness,
The loss of light perpetuated the sadness.
Saturday I'm held immobile by thoughts,
Can I escape the rumours in my brain?
Will the flow of blood ever be the same?
Sunday brings respite, sensation returns
In my leg, my spirit lifts.
Monday the brain scan spins images
Over and over again, a certain fuzziness sets in.
Word retrieval is slow, complex ideas
Scatter back and forth, up and down.
Sleep, wake, sleep — where is that word?
Tuesday the dizziness disappears,
but visions vacillate,
Later, tincture of time allows me to think.
Thoughts sharpen on Wednesday.
A week, a wife and family help
in the war on unfocussed notions.
Seven days in my survival — Eternity.

— Sterling Haynes, MD
Westbank, BC

This poem was written shortly after Dr. Haynes suffered a stroke. He discovered that writing poetry helped him to recover lost words.

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Country cardiograms case 18: Question and Answer

Charles Helm, MD
Tumbler Ridge, BC

CJRM 2001;6(1):43-5.

A 53-year-old man has had numerous episodes of palpitations. His first episode occurred when he was a teenager. These episodes have varied in duration from seconds to hours and ECGs have demonstrated repeatedly a regular narrow-complex tachycardia. He has been told that he has paroxysmal supraventricular tachycardia. For treatment he has been instructed in vagal manoeuvres that usually, but not always, are effective in terminating the arrhythmia. He has refused to take daily prophylactic medication. Verapamil has always worked in the emergency department situation when necessary, and he has come to appreciate its effectiveness. Once, while on vacation, he was treated with adenosine, but he didn't like the way it made him feel and he apparently required verapamil in addition.

Because of the frequency of this presentation, previous ECGs have been scanned diligently for any evidence of pre-excitation, but there has been none.

He now presents with another episode of typical symptoms that have been present for over an hour and are unresponsive to vagal manoeuvres. On initial examination he has a rapid pulse, over 200 beats/min, and the cardiac monitor shows a tachycardia without obvious P waves. His other vital signs are completely normal. He asks to be given verapamil as soon as possible.

A 12-channel ECG ([Fig. 1](#)) does not reveal the expected narrow-complex rhythm but shows the following rhythm. What are the diagnostic possibilities, and how should treatment proceed?

There is a wide-complex tachycardia, rate 213 beats/min. Such results should always prompt consideration of ventricular tachycardia (VT), because it is a potentially serious rhythm and because inadvertently treating it with many of the medications (including verapamil) used to treat supraventricular tachycardias can have catastrophic results. By contrast, inadvertently treating a supraventricular tachycardia with the medications used to treat VT usually does no harm and may be beneficial.

Attention should first focus on the possibility of VT. Three clues may be sought to confirm this diagnosis: fusion beats, capture beats and dissociated P waves. None of these are present here, but it is still not possible to rule out VT since these phenomena can only be identified in 35% to 50% of cases of VT. Using QRS morphologic features to distinguish between ventricular and supraventricular origin can be attempted, but this leads to estimates of relative probability only and is inconclusive.

Two further possibilities include either pre-existing bundle branch block or aberrant conduction, along with a supraventricular origin to the arrhythmia. Either right bundle branch block may have developed since the previous normal ECG or there may be a rate-dependent aberrancy/bundle branch block accounting for the wide QRS complexes.

The final possibility is that this is a manifestation of an accessory pathway that bypasses the A-V node, with a re-entry circuit that passes through the A-V node.

It is simply impossible to proceed any further diagnostically from this tracing. However, the patient's history suggests that 1 of the latter 3 processes may be operating here.

Therapeutically, vagal manoeuvres may be attempted again but they are unlikely to be effective if this experienced patient has already tried them repeatedly. Because of the possibility of VT the use of verapamil is contraindicated. Short of instituting treatment for VT there is fortunately one option that is potentially both diagnostic and therapeutic: the use of adenosine. This short-acting agent induces about 6 seconds of A-V nodal blockade. Therefore potentially it can terminate any tachycardia that depends on impulses passing through the A-V node. By contrast, it has no effect on VT.

The patient is warned about the possible symptoms associated with the use of the drug such as chest pain and a sensation of impending doom. Adenosine, 6 mg, is then rapidly administered intravenously followed by a rapid bolus of normal saline. After a short period of asystole the following rhythm and ECG are recorded ([Fig. 2](#)). There is no change in vital signs.

Which of the above diagnostic possibilities can now be excluded? What immediate treatment is necessary and what long-term treatment is indicated?

Answer

This ECG shows a regular narrow-complex tachycardia also at a rate of 213 beats/min. (The morphology is identical to this patient's previously documented supraventricular tachycardias.) Three of the 4 possible diagnoses can now be excluded. VT can be excluded because of the response to adenosine. The narrow QRS complexes exclude a pre-existing bundle branch block.

If the rate of the new rhythm were slower than the rate of the earlier rhythm, rate-dependent aberrancy/bundle branch block could not be excluded. However, the identical rate allows exclusion of this possibility as well.

Only 1 possibility is left: the presence of a bypass tract and the re-entry circuit passing through the A-V node.

Treatment with verapamil is now feasible. Five mg is given slowly intravenously, with conversion within minutes to normal sinus rhythm. A normal ECG is then recorded.

Discussion

In any patient with recurrent supraventricular tachycardias the possibility of pre-excitation, with a bypass tract, should be considered. ECG evidence for this may be obvious or may be extremely elusive until an event such as the one described here is documented.

The supraventricular tachycardias are classified into 6 types. Most of these involve re-entry circuits with different locations. (The other 4 types, not discussed here, include automatic junctional tachycardia, ectopic atrial tachycardia of childhood, sinus re-entrant tachycardia and multifocal atrial tachycardia.) By far the most common (over 90%) is classified as "A-V nodal re-entrant tachycardia," in which the re-entry circuit lies within the A-V node. Unless bundle branch block or aberrant conduction is present, this will only cause a narrow-complex tachycardia.

In a patient with a bypass tract, as in this case, the term "A-V nodal reciprocating tachycardia" is used. A circuit is present, one arm passes through the A-V node, the other arm bypasses it. Impulses in such a circuit may travel in either direction. If they travel down through the A-V node and up through the bypass tract, a narrow-complex tachycardia ensues (Fig. 2). If they travel down the bypass tract and up through the A-V node, a wide-complex tachycardia occurs (Fig. 1). This case is somewhat unusual in that both directions of travel are shown in such quick succession. The QRS morphology in lead V1 in Fig. 1 suggests that this is a case of Type A Wolf–Parkinson–White syndrome.

Many cases of pre-excitation are detected incidentally on a routine ECG in the absence of any symptoms. These patients simply need to be informed about a diagnosis and its potential complications. At the other extreme are patients with pre-excitation and atrial fibrillation, a potentially life-threatening combination that requires urgent treatment. This patient's situation lies in between these 2 extremes. His recurrent symptoms are clearly a cause for significant distress.

This article has been peer reviewed.

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"Country cardiograms" is a regular feature of the Canadian Journal of Rural Medicine. In each issue we will present an electrocardiogram and discuss the case in a rural context. Please submit cases to Ms Suzanne Kingsmill, Canadian Journal of Rural Medicine, Box 1086, Shawville QC JOX 2Y0.

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The occasional short-leg cast

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CJRM 2001;6(1):48-50.

Fractures about the malleoli, unless open, are rarely emergencies. We often prefer to send the patient home to rest overnight, with the leg elevated, and to apply ice packs to reduce the swelling. A posterior slab can provide some degree of pain relief in the interim. A cast can be applied early the next morning. This commonly applied cast is suitable for injuries around the ankle or foot.

Step 1

Prepare for procedure (see Fig. 1).



Fig. 1

- 1-m length of 7.5-cm (for women) or 10-cm (for men) stockinette
- 2 rolls of 10-cm cast padding
- 3 rolls of 15-cm Gypsona plaster bandage
- 1 roll of 10-cm Gypsona plaster bandage
- 4 lengths of slab plaster
- A heel
- Pail of water (20° to 25°C), scissors and shears.

Step 2

Flex the heel to 90°, perpendicular to the anterior tibia, in neutral inversion–eversion. Most people find it easier to work at the heel end. Apply the stockinette. Make a small horizontal incision over the dorsal foot and then fold the distal end of the stockinette over it to avoid bunching over the dorsal foot (see Fig. 2).



Fig. 2

Step 3

Apply cast padding. Start at the ankle, then move down spirally toward the metatarsals, with each turn overlapping by 50% the previous turn. Apply several turns around the heel (see Fig. 3) because this is a potential pressure point, then move upward and toward the knee.



Fig. 3

Step 4

For added comfort make small "flanges" at the knee and toe ends by folding in half transversely a piece of torn-off cast padding, from the second roll, that is long enough to encircle the limb. Apply extra padding over the malleoli, Achilles tendon area and the heads of the metatarsals.

Step 5

Dip a roll of Gypsona plaster bandage into the tepid water for 3–5 seconds, until the bubbling has ceased. Remove from the water and squeeze the roll (gently) twice. For the first plaster roll, commence at the ankle (see Fig. 4), make 3 circumferential turns around the ankle and heel and

then proceed distally toward the toes. Apply the rest of the first roll to the foot, with each turn overlapping by 50% each previous turn of the plaster, then work your way up to below the knee.



Fig. 4

Step 6

Dip the second roll of plaster into the water. For the second plaster roll start at the ankle, then spiral upward toward the knee. You don't need a lot of cast pressure or strength here. Wet your hands as necessary and then mold, using the gentle pressure of both palms. Pay particular attention to proper molding around the malleoli (see Fig. 5).



Fig. 5

Step 7

First, fold the proximal and distal ends of the stockinette down over the second roll of plaster, then apply posterior, medial and lateral slabs (see Fig. 6). An important tip is to support the cast against your chest if the patient cannot maintain proper dorsiflexion. Otherwise, the cast might crack and malalignment of the fracture will occur (see Fig. 7).



Fig. 6



Fig. 7

Female physicians may find this uncomfortable. They might prefer to ask a family member to help support the leg, either by holding onto the distal end of the stockinette in such a way as to maintain 90° of flexion or by using the pressure of the family member's body.

Step 8

For the third plaster roll, start applying the plaster at the knee and then work distally (see Fig. 8). Wet and smooth the cast as necessary, especially around the toes, to avoid irritation.



Fig. 8

Step 9

With slab plaster, build up layers over the bottom of the cast to accept the heel. You have to be a bit artistic here and make sure this support layer for the heel is parallel to the ground. Build up one or more of the ends of these layers as necessary (see Fig. 9).



Fig. 9

Step 10

Apply the heel. Proper positioning is important and people often put the heel too laterally: The foot should be at 90° of dorsiflexion, neutral inversion–eversion and perpendicular to the anterior tibia (see Fig. 10).



Fig. 10

Step 11

To anchor the heel initially, we find it helpful to first stabilize it with a torn off strip of plaster perpendicular to the big toe. The centre of the heel should be perpendicular, in line with the anterior tibia. The heel can then be attached with a roll of 10-cm plaster (see Fig. 11).



Fig. 11

Step 12

Caution the patient not to weight-bear for 48 hours, otherwise it causes pressure on the arch.

Acknowledgement: We thank Dr. Michael Tanzer, Chief of the Department of Orthopedics at the Montreal General Hospital, for his kind help in preparing this article.

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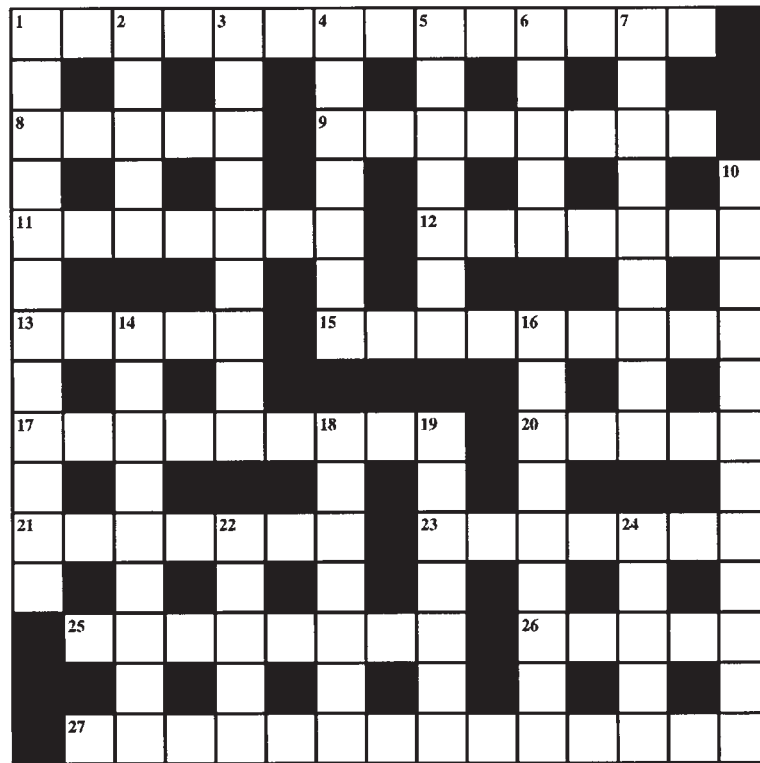
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Lee Teperman

Charteris, Que.

Answers to this puzzle,
Cryptic Crossword # 18,
are on [page 56](#).



Across

1. Real 'rad' un-metro sort of areas (5,3,6)
8. Very effervescent remedy made originally from poison (5)
9. Verse about sexually transmitted disease I get after the day (4,4)
11. Either way it's a decorator's hangover? (7)
12. Bodily fluid, also mat (7)
13. Letters written after a couple of shots in the dark (5)
15. Victim of violence bears one with a relaxed manner (9)
17. Bow, as a sign of respect, can be Asia's undoing (9)
20. Playwright comes home having caught mad cow disease (5)
21. Display to leave outside hospital and crib-side (7)
23. Type of pain in which I have a large investment (7)
25. Strategic plan for dealing with bitter traitor coming back on board ship (4,4)
26. Tree hugging Los Angeles style (5)
27. Fallacies growing out of non-scepticism (14)

Down

1. Tolloed road passengers always condemn (12)
2. Prelude to somewhat rude twisted sort of humour (3,2)
3. Standards to be taken lightly (9)
4. Kidney-shaped pincher (7)
5. Makes a stand that's over in seconds first (7)
6. We can't tell if she's coming or going (5)
7. Flamboyant display that cries out . . . (9)
10. . . . as another character combs the deck (7,5)
14. Pigs at the place for food (9)
16. Up-scale failure at finding a natural type of insulation (6,3)
18. Profit-motive anteing (3,4)
19. Seamen's group as a group (2,5)
22. An acid or oxide or island protected by the province (5)
24. Over a month from last application of fertilizer (5)

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For instructions on how to tackle a Cryptic Crossword see the June 1996 issue of *CJRM*, which can be accessed through SRPC's Web site (www.srpc.ca) or CMA's site (www.cma.ca/cjrm), or contact Lee Teperman, Box 893, Shawville QC J0X 2Y0; tel/fax 819 647-3971; bullhits@infonet.ca

Answers to Cryptic Crossword

1	R	U	2	R	A	3	L	A	4	N	D	5	R	E	6	M	O	7	T	E
	E		U		A				E		E		A		H					
8	V	E	N	O	M			9	P	O	S	T	D	I	E	M				
	E		U		P			H			I		A		A		10	P		
11	R	E	P	A	P	E	R			12	S	O	M	A	T	A	L			
	B				O			I			T				R		A			
13	E	S	14	S	E	S		15	C	A	S	U	16	A	L	I	T	Y		
	R		P		T								N		C		I			
17	A	B	A	I	S	A	18	N	C	19	E		20	I	B	S	E	N		
	T		G					E		N			M						G	
21	E	X	H	I	22	B	I	T		23	M	Y	A	L	24	G	I	C		
	D		E		O		G			A			L		U		A			
		25	S	T	A	R	W	A	R	S			26	F	L	A	I	R		
			T		I		I		S				A		N		D			
	27	M	I	S	C	O	N	C	E	P	T	I	O	N	S					

The clues to this puzzle, Cryptic Crossword #18, can be found on page 51.

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[\[Return to puzzle\]](#)

Letters • Correspondance

CJRM 2001;6(1):54-6.

Intrathecal narcotics

To the editor:

I read with interest the [article by Neil Leslie](#)¹ in the Fall issue of CJRM. Especially interesting are the comments under the "politics" heading, for politics seems to fly in the face of "evidence" (not to mention reasonableness).

A few years ago, Memorial University's CME Office hosted a provincial 2-day short course, "Anesthesia in Small Hospitals." GP anesthetists at the event presented statistics of several thousand anesthetics done in the cottage hospital system, with minimal morbidity and no mortality. The guest anesthetist at the conference, a professor of anesthesia at the university, dismissed the statistics outright as "insignificant" and advised that no anesthesia should be administered anywhere to anyone by any physician who wasn't a fully trained FRCP anesthetist. With attitudes so ingrained and long-standing as this, and those expressed in Dr. Leslie's article, one wonders if any true progress will be made in the provision of appropriate anesthesia services in rural Canada.

Paul Bonisteel, MD, CCFP, FCFP
New Harbour, Nfld.

Reference

1. Leslie NG. [Intrathecal narcotics for labour analgesia: the poor man's epidural](#). Can J Rural Med 2000;5(4):226-9.

To the editor:

Dr. Leslie's criticism¹ of the Manitoba guidelines prohibiting the use of ITN (intrathecal narcotics) by anyone, other than those with anesthesia privileges, is appropriate enough. Those of

us who do a lot of anesthesia sometimes fill in the long stretches by reading all of the horrific case reports in the literature: it leads to some rather fearful pronouncements about the use of anesthetic techniques and drugs outside our rarefied domain. That aside, reading Dr. Leslie's articles,^{1,2} as a GP anesthetist, left me with some concerns.

1. The doses of intrathecal fentanyl and morphine that Dr. Leslie suggests are perhaps too high. A recent study³ showed that the ED₉₅ value for fentanyl was 17.4 mcg and that doses of 25 mcg were associated with significantly more side effects, notably respiratory depression and pruritus. A dose of 15–20 mcg is perhaps more appropriate. Likewise, the recommended amount of intrathecal morphine seems to be getting smaller and smaller, the more it is studied. Most recently, it has been suggested that doses of 0.1 mg (100 mcg) are as effective as larger doses, but with far fewer side effects, at least in postsurgical pain control.⁴ Many physicians are now using 75–100 mcg of Epimorph when giving intrathecal morphine. It should perhaps also be emphasized just how small a dose this is. Even with the most dilute concentration of Epimorph (0.5 mg/mL), a tuberculin syringe is usually required for measuring.

2. Postdural puncture headache is relatively uncommon, but it is a stretch to call this type of headache "mild." Spinals for cesarean section "went out of fashion" in the 60s and 70s, chiefly because of this very debilitating side effect. It is the use of the new needles that has made them more commonplace again. Having the capacity to do epidural autologous blood patch for these headaches when they occur is a nice, though perhaps not absolutely necessary, option.

3. The future of intrapartum pain control may be less in epidurals and ITN than with patient-controlled analgesia (PCA). PCA fentanyl may offer equal safety and effectiveness to epidurals for the vast majority of patients. I recognize, however, that it is the prospect of avoiding the 2nd epidural that might motivate my enthusiasm for this modality. Nevertheless, we can hope to see more done to study this, especially in small-volume centres.

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1. Leslie NG. [Intrathecal narcotics for labour analgesia: the poor man's epidural](#). Can J Rural Med 2000;5(4):226-9.
2. Leslie NG. Intrathecal narcotic administration procedure. Can J Rural Med 2000;5(4):230-2.
3. Herman NL, Choi KC, Affleck PJ, Calicott R, Brackin R, Singhal A, et al. Analgesia, pruritus, and ventilation exhibit a dose–response relationship in parturients receiving intrathecal fentanyl during labor. Anesth Analg 1999;89:378-83.

4. Slappendel R, Weber EWG, Dirksen R, Gielen MJM, van Limbeek J. Optimization of the dose of intrathecal morphine in total hip surgery: a dose-finding study. *Anesth Analg* 1999;88:822-6.
-

Dr. Neil Leslie replies:

As referenced in my original article,¹ the use of intrathecal narcotics (ITN) for labour analgesia has been shown to be safe and efficacious when done by family doctors not trained in anesthesia. The potential complications of ITN administration are well documented and were not more likely to be found in studies involving doctors with no anesthesia training than in those involving doctors with anesthesia training. Pronouncements prohibiting the technique for non-anesthetists are not supported by the literature. "Horror case reports" pertaining to use of this technique by non-anesthetists did not appear in the literature when I researched this topic.

Anyone who uses this technique should be well versed in the management of its potential complications, but the literature supports my view that family doctors can safely perform this procedure without anesthetic training.

Dosing:

With regard to the dosing issue, I am grateful for Dr. Jackson's references.^{2,3} The trend for ITN dosage in labour analgesia and postoperative pain control has indeed been steadily downward.

Herman and colleagues' study,² cited by Dr. Jackson, establishes efficacy at an ED₉₅ for intrathecal fentanyl at 17.4 mcg. This was done by establishing a dose–response curve using doses of 5, 7.5, 10, 15, 20 and 25 mcg of fentanyl in 6 study groups. There was a dose-related increase in pruritus, and the end tidal carbon dioxide (ETCO₂) went up in a statistically significant way from baseline values. The increase in ETCO₂, while statistically significant, was small (i.e., approx. 4 mm Hg) and did not have clinical significance. The dose relation to pruritus and changes in ETCO₂ were not linear in the study. The increase of ETCO₂ from baseline was very similar at the 15-mcg dose to that at the 25-mcg dose, and the difference between these 2 doses was probably not statistically or clinically significant, although the differences in these 2 groups was not compared directly. Interestingly, the 20-mcg group had the highest incidence of pruritus and the largest change in ETCO₂. None of the patients in the study required treatment for respiratory depression, nor were any of them somnolent.

Palmer and coworkers,⁴ cited in my article, did a dose–response curve for intrathecal fentanyl as well, but they also looked at duration of action versus dose. They concluded that below 20–25 mcg the duration of action suffered significantly, but above 25 mcg there was an increase in side effects and that 25 mcg was the optimal dose to use in assuring efficacy and duration but in

limiting untoward side effects. Edwards and colleagues^{5,6} used ITN fentanyl at 25 mcg with 0.25 mg of morphine without clinically significant respiratory depression, but less may have been as effective. Future studies will undoubtedly add to our understanding.

It would be difficult to extrapolate values for intrathecal morphine used in postoperative pain control (hip surgery) to relief of labour pain because the former is somatic pain and relatively steady, whereas labour has a large visceral pain component and has a relapsing and remitting nature. Moreover, patients in the former group are mostly elderly, and those in the latter group are decidedly younger.

In the studies cited in my original article, morphine was most commonly used at 0.25 mg. I did not come across any articles on a dose–response curve for ITN morphine. Some centres routinely gave naloxone postpartum, or sometimes a half-hour after the ITN, to prevent respiratory depression. Others did not. In the studies limiting the morphine to 0.25 mg, clinically significant respiratory depression was not reported, with or without prophylactic naloxone. Other studies or anecdotes reporting respiratory depression invariably used significantly higher doses, from 1.0 to 5.0 mg of ITN morphine.

Postspinal headache:

Although spinal anesthesia for cesarean sections "went out of fashion" in the 60s and 70s because of postspinal headache, it is again the standard because, with the use of the new pencil-tip 26-gauge (or smaller) needles, there is now a low incidence of postspinal headache. Most studies report an incidence of approximately 1%. When postspinal headache does occur following puncture with these new needles, it is not as severe as that seen with inadvertent dural puncture with a large-gauge needle (as used in epidural analgesia).

Most of the studies cited in my article managed these headaches with conservative measures, supine position for 24 hours, hydration and analgesia. An autologous blood patch is another method of managing the headache, but in my experience, this has not been required for the very few postspinal headaches I've seen with this technique.

Patient-controlled analgesia:

PCA (patient-controlled analgesia) is another option for managing pain associated with labour. Whether it offers equal safety or efficacy could only be known if it was studied in direct contrast to ITN or epidural analgesia. PCA fentanyl may, in fact, have its benefit in the fact that the anesthetist doesn't have to get out of bed at 2 am. However, I would hope that we choose our analgesic options on the basis of what is safe and effective for the patient in labour.

Certainly, ITN has been shown to be as safe and effective as epidural analgesia and does not require MDs trained in anesthesia to perform it. If the family doc without anesthesia skills can do

this technique, then we can get good analgesia for women in labour and still see that the anesthetist gets a good night's sleep. ITN may also afford women effective labour analgesia in communities where there is not 24/7 anesthetic coverage.

Finally, Dr. Jackson suggests that we can hope for future studies of ITN use in small-volume centres. This is an excellent point. Further study would point out the advantages and pitfalls of ITN for these centres and would give a basis of evidence to help us defend or deny the technique. Studies done in Canadian rural practices are sadly lacking. A network of centres would give us the power in numbers to do a valid study on this technique. Perhaps we should advertise on the RuralMed network or at the SRPC meeting in Hockley Valley in April to see if we can get the necessary group set up.

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1. Leslie NG. [Intrathecal narcotics for labour analgesia: the poor man's epidural](#). Can J Rural Med 2000;5(4):226-9.
2. Herman NL, Choi KC, Affleck PJ, Calicott R, Brackin R, Singhal A, et al. Analgesia, pruritus, and ventilation exhibit a dose-response relationship in parturients receiving intrathecal fentanyl during labor. Anesth Analg 1999;89:378-83.
3. Slappendel R, Weber EWG, Dirksen R, Gielen MJM, van Limbeek J. Optimization of the dose of intrathecal morphine in total hip surgery: a dose-finding study. Anesth Analg 1999;88:822-6.
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New Canadian Internet resources

Barrie McCombs, MD, CCFP, CCFP(EM)

CJRM 2001;6(1):57-8.

"I got my education, out behind the barn, I ain't a-fooling, no-o-o sir-ee-ee. Passed each examination, out behind the barn, but it almost made a wreck out of me" — Little Jimmy Dickens (c. 1950)

This article reviews two new Canadian Internet resources: MD Consult, an addition to the CMA/OSLER Web site, and WebMD, an Internet service for members of the College of Family Physicians of Canada (CFPC) and the Royal College of Physicians and Surgeons of Canada (RCPSC). It also provides information on several related Web sites.

Canadian Medical Association home page

www.cma.ca

As well as their public Web site, the CMA provides several "members only" services, such as the new online textbooks from MD Consult (see the next item), the OSLER MEDLINE search engine, and financial and practice management information from MD Management (MDM). However, the availability of these resources is not well described on the CMA home page. To register, members can go to the CMA OSLER page or contact CMA's Member Service Centre at 800 457-4205; cmamsc@cma.ca

CMA — MD Consult

www.cma.ca/osler

The CMA recently added MD Consult to the OSLER Web site. This excellent resource provides full-text access to more than 35 online textbooks, selected full-text journals, patient information

sheets, clinical practice guidelines and medical news. MD Consult has been a valuable part of the Rural Alberta Virtual Library project for the past 2 years, so I can recommend it highly. Here are some hints.

Registration: When you first use MD Consult, you are asked to provide your name and address. This is used to customize the patient-information printouts. You can change this information at any time by clicking on the *Personal Folder* link on the MD Consult home page. The company guarantees they do not release this information to third parties.

Home page: When you first log on, click on *Take a Tour* link, then take a moment to read the excellent Help files. Return to the home page at any time by clicking the MD Consult logo at the top of any page. You can view a list of the Web site contents by clicking on the *Clinical Content* link.

Search page: The most efficient way to find information is to use the *Search Page* link in the upper menu of the home page. Enter search terms individually in each Subject box. The page allows you to select the Boolean Logic operators AND, OR, or EXCLUDE. The default is AND. This feature is described in more detail in the Help files. To browse the list of textbook titles, click on the *Reference Books* link on the home page. The textbooks cover most medical specialties, including family medicine. The indexing system is limited to the index available in the paper textbook. The full-text journals are limited to those published by the partners in MD Consult. As well as searching the full-text journals, the system also conducts a MEDLINE search. The *Journal Search* link on the home page provides more journal search options than the main Search Page.

Patient information: The patient education material is useful but may require customization to suit a Canadian practice. The system allows you to add your own notes to each page of information. These notes are saved for future use.

Clinical practice guidelines: The clinical practice guidelines section is adequate, but you will find a better selection of Canadian guidelines on the CMA Clinical Infobase page.

"Medical News": This feature provided mainly US content, so is of limited benefit to Canadian physicians.

Availability: The number of concurrent users is limited, so please log off as soon as you are finished.

MD Consult — home page

www.mdconsult.com

If you are not a CMA member or use MD Consult frequently, you can obtain an individual subscription to MD Consult for US\$200/yr. They provide a free 10-day trial subscription. Your CMA User Name and Password will NOT work on the MD Consult home page.

CMA — MEDLINE search

www.cma.ca/osler

The OSLER section of the CMA Web site also provides free access to the powerful Ovid MEDLINE search engine. The CMA library staff provide free searching assistance. The Ovid search engine is useful for complex MEDLINE searches, but for simple searches you will get faster results with either MD Consult or PubMed (see below).

CMA — CPG Infobase

www.cma.ca/cpgs/index.asp

The CMA Clinical Practice Guidelines (CPG) page has now added an internal search engine. There is a simple key word search box on the main page. If you click on the Basic or Advanced search buttons you can search by category or other criteria.

Adobe Acrobat Reader

www.adobe.com/products/acrobat/readstep2.html

To print many of the CMA guidelines, the Adobe Acrobat Reader program is required. You can download it free from the Adobe Web site. By the time you read this article, the CPG page may have added a direct link to the Adobe Web site.

MD Management — Practice Management

www.cma.ca/mdm/

The MDM section of the CMA Web site contains useful Practice Management *Self Learning Modules* including *Effective Practice Management*, *Manage Your Office Staff*, *Information Technology* and *Practice Valuation*. To access these full-text documents, use the *Members Only Services* link on the MDM home page. The "public" MDM Practice Management page contains a brief description of the modules, but fails to mention the existence of the Members Only version. The "Information Technology" document is badly out of date in its discussion on personal computers.

WebMD Canada

www.webmd.ca

This new Web site is available to members of the CFPC and the RCPSC. If you are a member of either College, you should have received a letter in October 2000 providing temporary registration information; if you did not, contact the appropriate College (see below). If you need technical support, call WebMD's customer support line at: 888 291-0767.

The WebMD *Medical Library* includes Scientific American Medicine (a textbook of internal medicine), Scientific American Surgery (a textbook of surgery), Disease Updates (capsule summaries on selected diseases), the full text of articles from Canadian Family Physician and a selection of patient handouts. The site provides a free, secure email service. This allows registered physicians to exchange confidential information. The email service can be used to send non-secure email to non-WebMD addresses.

CFPC contact: Gill Johnston; 800 387-6197 x223, gj@cfpc.ca or www.cfpc.ca

RCPSC contact: RCPSC Communications; 800 668-3740 x201, communications@rcpsc.edu or access their Web site at: rcpsc.medical.org

PubMed — MEDLINE search

www.ncbi.nlm.nih.gov/PubMed/

The US National Library of Medicine's PubMed Web site provides free, user-friendly access to MEDLINE literature searching. They recently added several new features, such as "Cubby", which allows you to save a search strategy for later use. The Web site provides excellent Help and FAQ (Frequently Asked Questions) files.

PubMed Tutorial

www.library.health.ufl.edu/pubmed/PubMed2/

If you would like to learn more about the new features of PubMed, visit the University of Florida Health Sciences Library PubMed Tutorial site.

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www.ruralnet.ab.ca/medinfo/

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Instructions for Authors

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Material in the following areas will be considered for publication.

- Original articles: research studies, case reports and literature reviews of rural medicine
- Commentary: editorials, regional reviews and opinion pieces
- Clinical articles: practical articles relevant to rural practice. Illustrations and photos are encouraged
- Off Call articles: a grab-bag of material of general interest to rural doctors (e.g., travel, musings on rural living, essays)
- Cover: artwork with a rural theme

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Submit 3 hard copies of the manuscript and a copy on computer disk to Editor, Canadian Journal of Rural Medicine, Box 1086, Shawville QC J0X 2Y0; 819 647-2972, fax 819 647-2845, cjrm@fox.nstn.ca. Include a covering letter indicating that the piece has not been published or submitted for publication elsewhere. Hard copies of the manuscript should be double-spaced, with a separate title page, an abstract of no more than 200 words, followed by the text, full references and tables (each table on a separate page).

"[Uniform requirements for manuscripts submitted to biomedical journals](http://www.cmaj.ca/misc/ifora.shtml)" (see www.cmaj.ca/misc/ifora.shtml).

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Please ensure that the references are not prepared using electronic EndNotes or Footnotes.

Accepted manuscripts

Authors will be required to submit the most recent version of the manuscript by email or on diskette. Please specify the software used.

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RuralMed

RuralMed is an Internet email discussion group dedicated to rural medicine. It was established by the [Society of Rural Physicians of Canada](#) in April 1995, with the cooperation of the McGill University Computing Centre. Although its focus is Canadian, its membership is international.

To participate in RuralMed you must be able to send and receive email. Subscription is by request to the listowner. Simply send a message to admin@srpc.ca.

Include your full name and email address. If you include a short biography it will be posted to the list as your introduction. You can also access both the RuralMed archives and a RuralMed subscription form through the [SRPC home page](#).

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Table 1. Cost and frequency of patient transportation in current Canadian dollars, 1997 to 1998*			
Transportation/cost	Pre-study year, 1997/98	Study period, 1998/99	Change
Emergency evacuations, no.	14	3	-11
Health Labrador Corp. expense, Can\$	50 918	10 911	-40 007
Scheduled medical evacuations, no.	113	85	-28
Health Labrador Corp. expense, Can\$	37 290	28 050	-9 240
Total Health Labrador Corp. expense, Can\$	88 208	38 961	-49 247
Patient expense, Can\$†	32 318	24 310	-8 008
Total cost, Can\$	120 526	63 271	-57 255
*All costs are in 1998/99 Canadian dollars.			
†Includes a \$40 nominal charge for air fare, ground transportation, accommodation and food; excludes loss of income and cost for travelling companion.			

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Table 2. Cost of the telemedicine system	
Component	Can\$
2 pentium computers	6 200
2 monitors	2 000
1 Zip drive and 1 box of disks	640
2 stands	300
1 Intellimouse	100
1 Visitran software	13 200
1 general examination camera	9 000
1 otoscope	16 900
1 fluorescent daylight	400
1 year of dedicated ordinary telephone line and charges	4 000
Total cost	52 740

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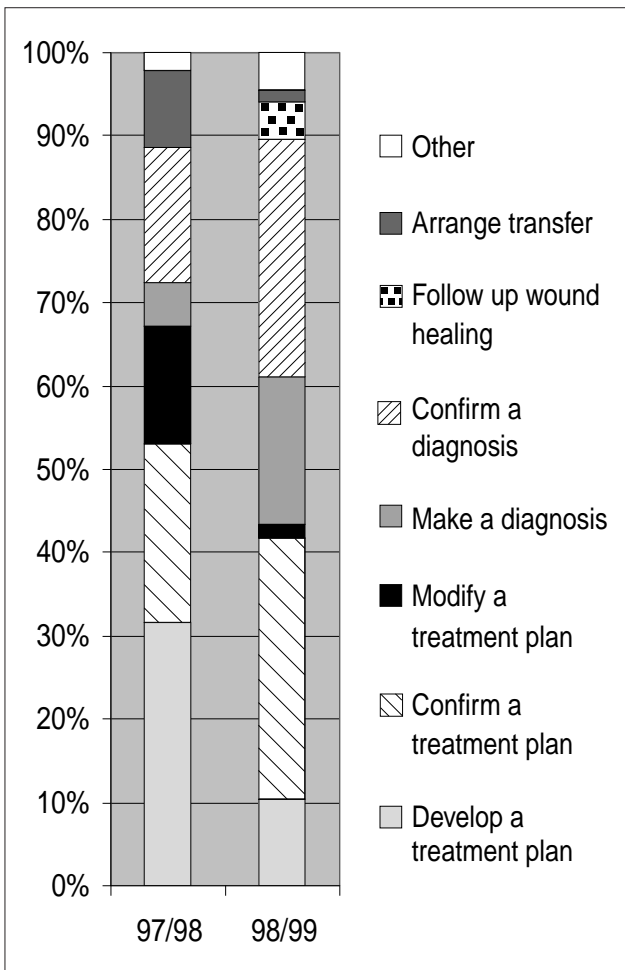


Fig. 1. Distance consultation pattern before and during the telemedicine era.

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Community	June 1998	Sept. 1998	Feb. 1999	Oct. 1999	Lost	Gained	Net
Alert Bay	1	1	1	1	0	0	0
Ashcroft	3	3	4	3	2	2	0
Barriere	3	2	2	2	2	1	-1
Bella Coola	5	5	3	3	2	0	-2
Burns Lake	5	4	4	5	1	1	0
Chetwynd	2	2	2	3	0	1	1
Christina Lake/Grand Forks	6	6	6	4	2	0	-2
Clearwater	5	5	5	4	1	0	-1
Cortes Island	1	1	1	1	1	1	0
Creston	13	12	13	12	6	5	-1
Dawson Creek	23	20	23	23	4	4	0
Denman Island	1	1	1	1	0	0	0
Elkford	2	1	1	2	2	2	0
Fernie	9	9	11	11	1	3	2
Fort Nelson	3	3	3	3	0	0	0
Fort St. James	4	4	5	3	3	2	-1
Fort St. John	18	18	20	19	1	2	1
Fraser Lake	2	0	0	3	2	3	1
Galiano Island	1	1	1	0	2	1	-1
Golden	9	9	9	7	2	0	-2
Gold River	1	1	1	1	0	0	0
Greenwood/Midway/Rock Cr	1	1	2	2	0	1	1
Hazelton	6	6	6	7	0	1	1
Hornby Island	1	1	0	0	1	0	-1
Houston	3	3	4	3	1	1	0
Hudsons Hope	1	1	0	1	1	1	0
Invermere	6	6	6	6	0	0	0
Kaslo	1	1	1	1	0	0	0
Keremeos	2	2	3	3	0	1	1
Kitimat	9	9	7	7	3	1	-2
Kitwanga	1	1	1	1	0	0	0
Kootenay Bay/Riondel	1	1	1	1	0	0	0
Lilloet	6	7	7	7	1	2	1
Logan Lake	2	2	2	1	1	0	-1
Lytton	2	2	2	2	0	0	0
McBride	1	1	1	2	0	1	1
Mackenzie	4	4	4	5	1	2	1
Masset	3	3	3	3	0	0	0
Mayne Island	1	1	0	1	1	1	0
Merritt	6	6	6	6	2	2	0
Nakusp	3	3	3	3	0	0	0
New Aiyansh	2	2	3	3	0	1	1
New Denver	2	2	2	2	0	0	0
100 Mile House	13	11	10	13	3	3	0
Pemberton	3	3	3	3	0	0	0
Pender Island	2	2	1	2	1	1	0
Port Alice	1	1	1	1	0	0	0
Port Hardy	5	5	5	5	0	0	0
Port McNeill	4	4	5	5	0	1	1
Prince Rupert	25	23	17	17	12	4	-8
Princeton	5	5	5	6	0	1	1
Queen Charlottes	3	3	3	3	2	2	0
Quesnel	18	18	18	22	1	5	4
Revelstoke	7	7	7	7	0	0	0

Table 1 continued							
Community	June 1998	Sept. 1998	Feb. 1999	Oct. 1999	Lost	Gained	Net
Salmo	1	1	2	1	1	1	0
Saturna Island	1	1	0	1	1	1	0
Sayward	1	1	1	1	0	0	0
Smithers	18	18	17	15	3	0	-3
Sointula	1	1	0	0	1	0	-1
Sparwood	3	3	4	4	0	1	1
Stewart	1	1	1	2	0	1	1
Tahsis	1	0	0	0	1	0	-1
Terrace	34	32	31	34	4	4	0
Tofino	3	3	3	2	1	0	-1
Tumbler Ridge	3	3	2	2	2	1	-1
Ucluelet	2	2	2	2	0	0	0
Valemount	0	0	0	1	0	1	1
Vanderhoof	8	8	8	8	0	0	0
Waglisla	1	1	3	4	0	3	3
Winlaw	1	1	1	1	0	0	0
Total	346	331	330	340	79	73	-6

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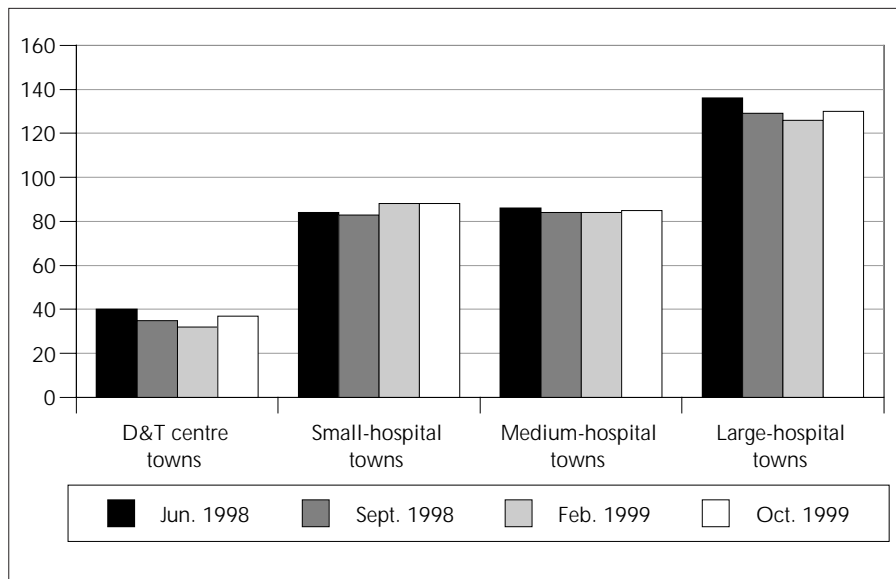


Fig. 1. Change in the number of NIA physicians, June 1998 to Oct. 1999

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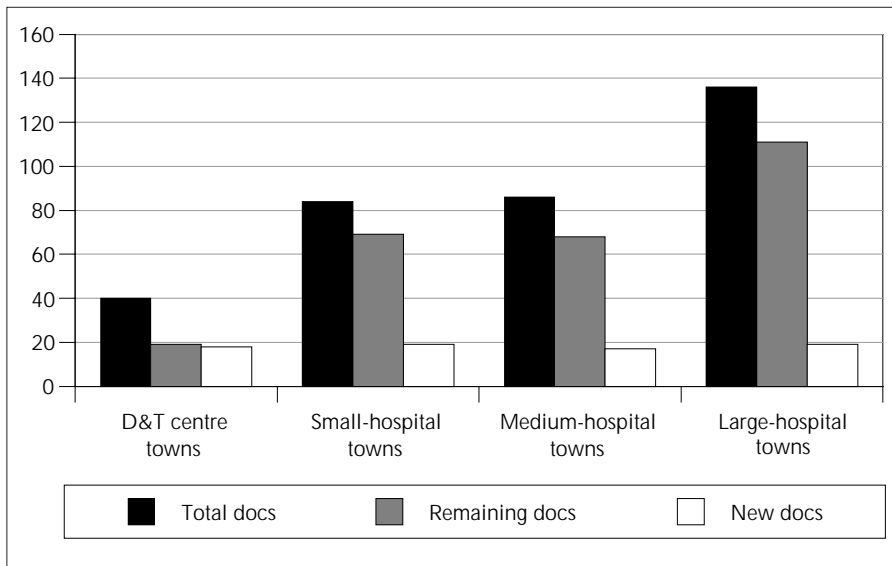


Fig. 2. Proportion of new physicians in NIA communities, 1998-1999

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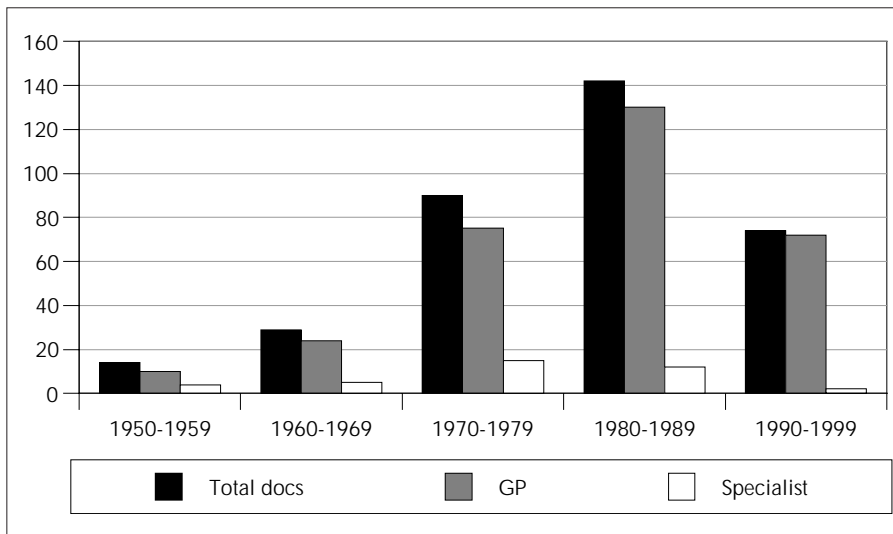


Fig. 3. NIA physicians, by year of graduation

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Table 1. Seventeen requirements identified as necessary to meet medicolegal requirements in Ontario

- Fetal distress — evidence of fetal hypoxia or asphyxia requiring prompt delivery^{2,5,7-10}
- Maternal distress — failure to deliver vaginally after appropriate second-stage management without fetal distress^{2,5,7-10}
- Maternal illness — eclampsia, heart disease, pulmonary disease^{2,8-10}
- Premature placental separation — late second stage^{2,8,10}
- Presentation/malpresentation^{2,4,9,10}
- Pelvic outlet type^{3,5,9,10}
- Station — low, mid, outlet⁴⁻⁹
- Engagement^{2,3,5,9,10}
- Cervical dilatation^{2,3,5,7-10}
- Membranes ruptured^{2,8-10}
- Head position — occiput anterior optimum²⁻¹⁰
- Presence of caput/moulding^{6,7}
- Anesthesia^{2,3,5,7,9,10}
- Empty bladder^{2,8-10}
- Forceps type^{6,9}
- Manoeuvres executed — rotation, flexion, extension^{2,4-6}
- Traction required — number, duration, relation to contractions^{2,4,6}

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Table 2. Requirements met by the 14 hospitals participating in the review															
Requirement	Hospital														%
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Fetal distress		x			x	x	x		x						36
Maternal distress			x												7
Maternal illness	x	x				x	x		x			x	x		50
Placental separation		x	x					x							21
Presentation/ malpresentation		x	x		x	x	x	x			x	x	x		64
Pelvic outlet type														x	7
Station	x				x	x	x	x		x	x	x	x		79
Engagement															0
Cervical dilatation	x	x	x	x	x	x			x		x				57
Membranes ruptured	x		x	x	x		x		x	x	x			x	64
Position								x	x	x	x			x	36
Caput/moulding							x								7
Anesthesia	x	x	x	x			x	x	x	x	x	x	x	x	86
Bladder empty				x		x					x				21
Forceps type															0
Manoeuvres		x	x	x	x	x			x						43
Traction required															0

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ST. ANYWHERE GENERAL HOSPITAL
FORCEPS/VACUUM EXTRACTOR DELIVERY

Patient Name: _____

Date: _____

INDICATIONS: fetal distress Y/N if yes, describe _____
maternal distress Y/N if yes, describe _____
Maternal illness Y/N if yes, describe _____
Premature placental separation late second stage Y/N
Persistent OP/ malpresentation Y/N
Other (describe) _____

Engagement Y/N

Cervical Dilatation Y/N

Presentation: _____

Station - low, mid, outlet

Head position _____

Caput Y/N

Moulding Y/N

Anesthesia Time _____

Type _____

Bladder Catheterization Y/N

Type of Forceps _____

Maneuvers: Rotation Y/N from _____ to _____

Traction: Required through _____ contractions for _____ minutes

NOTES:

Signature: _____ Date: _____

Fig. 1. Generic forceps/vacuum extraction form

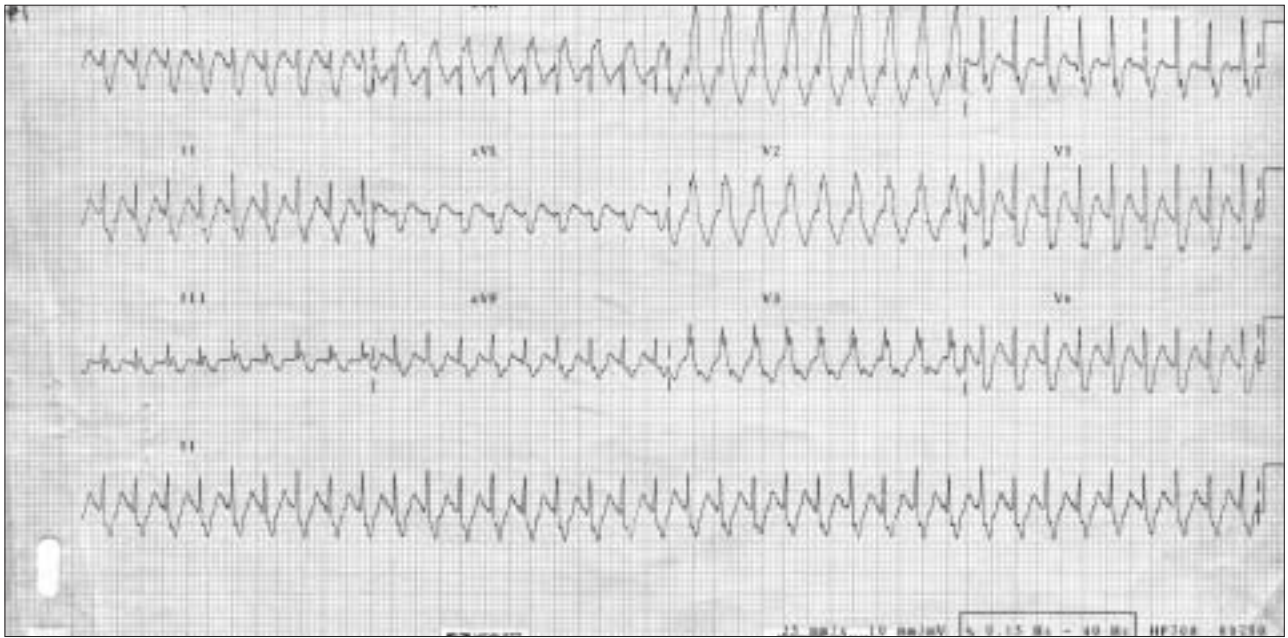


Fig. 1. Patient's initial electrocardiogram.

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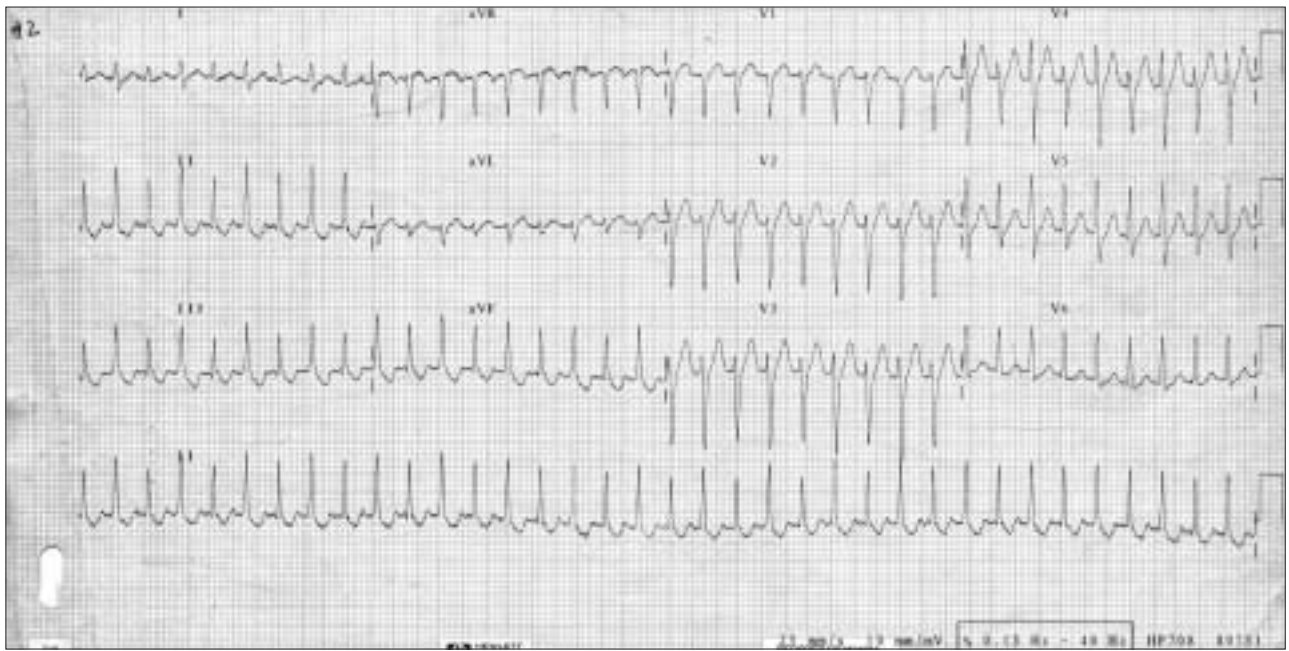


Fig. 2. Patient's second electrocardiogram

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Intrathecal narcotics for labour analgesia:
the poor man's epidural

Neil G. Leslie, MD, CCFP, FCFP

CJRM 2000;5(4):226-9.

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What do you do when all of your non-pharmacological pain-relieving techniques have been tried but have failed to give your labouring patient an acceptable level of pain control? If you are in a large urban maternity centre you call for the epidural service. If you are in a rural community hospital (and even in many larger centres) your patient will not likely have access to 24/7 epidural analgesia services. Other pharmacological interventions at your disposal, such as intravenous narcotics or inhaled nitrous, are much less effective than epidural analgesia, have short duration and may have unwanted maternal or fetal sedation as potential side effects.¹

Intrathecal narcotic (ITN) administration rivals epidural analgesia^{2,3} in providing labour analgesia, but is faster in onset,³ safer, less technically demanding and can potentially be provided by non-anesthetists.^{1,4} ITN is well received by those women who choose to have it and has a high degree of patient satisfaction following its use.^{2,5-7}

ITN does have limitations and cannot and will not replace epidural analgesia/anesthesia. But it is a technique that has its own merits and limitations and I believe it has a significant potential for improving pain control in rural maternity services that have no full-time epidural services.

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How does it work?

Intrathecal narcotics provide a selective blockade of pain transmission without significant sympathetic or motor blockade. The patient gets significant, even profound, pain relief without sedation, hypotension or paralysed legs. The technique is simpler than continuous epidural techniques, has a more rapid onset and requires less maintenance and monitoring than an epidural.

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Physiology

Pain in the first stage of labour is a visceral pain resulting from the contraction of the uterus and dilation of the cervix. Input to the CNS is via slowly conducting unmyelinated "C" afferent nerve fibres entering the spinal cord at the T10–12 and L1 spinal segments. These impulses are modulated at the dorsal horn level in the spinal cord. Narcotics in the spinal fluid actively block this transmission by binding to the opioid receptors in the substantia gelatinosa in the dorsal grey matter of the cord.

Pain in the second stage of labour is associated with perineal stretching. This results in pain stimuli, which travel up the pudendal nerve, entering the spinal cord at the S2-4 segments via quick-conducting myelinated "A" fibers, and which are not modulated at the spinal cord level. Intrathecal narcotics do not relieve this somatic pain significantly. Additional pain management for the second stage may be required. Pudendal block is quite complementary to this technique if additional analgesia is required in the second stage.

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What are the risks?

Adverse effects can be grouped into the effects of the medication and the possible complications of the route of administration.

Medication-related risks

Medications for the intrathecal space must be preservative-free preparations. Preservatives used in medication preparations may cause neurological damage if injected into the spinal fluid. Sublimaze® (fentanyl) or Epimorph® (morphine) are specifically preservative-free.

The side effects of ITN are the same side effects we see with narcotics used parenterally. These side effects are pruritis, nausea, sedation and respiratory depression. An additional side effect specific to ITN, urinary retention, is a fairly common occurrence. Fetal respiratory depression has not been noted, probably due to the very small doses of narcotic required in this technique.

Quality and duration of labour does not seem to be affected.^{1,8,9} There have been a few anecdotal reports of uterine hyperactivity following intrathecal fentanyl,¹⁰ but no adverse outcomes have been reported. Larger studies have not found this to be a problem.

Narcotic side effects are generally due to central nervous system (CNS) stimulation by the narcotic in the cerebrospinal fluid (CSF). They are more common with the water-soluble narcotic morphine than the highly lipid-soluble narcotics such as fentanyl and sufentanil, which are more rapidly "fixed" in the lipid-rich tissues of the spinal cord and are less likely to spread cephalad. Side effects with morphine are more prolonged and may occur much later, up to 12 hours, than the more lipid-soluble narcotics. Side effects are also dose related.^{7,11}

Studies showing the dose response relation for intrathecal fentanyl and morphine have been done.⁷ These have shown that the analgesic effect seems to maximize at about 25 µg for fentanyl and at about 0.25 mg for morphine. Above these levels analgesic effect is not significantly increased. Duration of action does increase with higher doses but unfortunately so does the incidence of adverse effects; therefore, the doses mentioned seem to be the best compromise between efficacy and duration versus adverse effects.

Side effects seem to be more common if the pain level is lower; this is generally also true for parenteral narcotics.² For example, there has been a higher reported incidence of nausea and vomiting post-partum in women who have had ITN. The mechanism is unclear. Medication side effects are generally well tolerated and can be managed easily when they need to be.

Pruritis is common, with a frequency of 40%–70% across all studies. The pruritis is generally mild, and most patients are comfortable with it, especially in view of the profound analgesia the technique affords them. In those women in whom the pruritis is uncomfortable, treatment with antihistamines may, or may not, be effective due to the central CNS cause. Treatment of side effects with narcotic agonist/antagonists is very effective and does not alter the analgesic effect once it is established; this is because the analgesic effect is from the binding of the narcotic to the cord tissues and the antagonist does not seem to displace the narcotic once it is bound in the cord tissues.

Occasionally, significant nausea may occur and is more likely to occur post partum.² Intrapartum nausea is common in women who have not had any ITN, so it is difficult to know whether to ascribe the nausea to the medication or to the labour. Postpartum nausea is more likely a medication effect and it is quite amenable to treatment with metaclopramide or with naloxone

or naltrexone.

Watch out for urinary retention, which is also common (up to 20%).⁷ The intrathecal narcotic seems to interfere with relaxation of the sphincter muscle of the bladder. Urinary retention can be managed by catheterization if necessary.

Respiratory depression is a rare but potentially serious occurrence following ITN. This is due to the effect of the narcotic on the respiratory centre of the brain if the narcotic spreads cephalad. This is more likely to occur early (1 hour) with lipid-soluble narcotics such as fentanyl, which are absorbed rapidly into CNS tissues, but it can be quite delayed (up to 12 hours) with water-soluble narcotics such as morphine. Most of the respiratory depression reported in the literature occurred with higher doses of morphine (1 mg to 5 mg) and more recent studies limiting the dose of morphine to 0.25 mg have had large series without respiratory depression occurring.^{1,6,8,12}

Respiratory depression may or may not be accompanied by any change in other CNS functions, so it may appear to cause abrupt respiratory difficulty. If respiratory depression occurs it tends to be progressive and generally can be anticipated by regularly checking the patient's respiratory rate; rates of less than 10 breaths/min should be treated promptly. Pulse oximetry may be helpful but should not be used as the sole method of monitoring. Careful attention to the respiratory rate by the attending nurse is required.

Respiratory depression may be potentiated by additional administration of oral or parenteral narcotics. These should be avoided in the postpartum period for up to 24 hours after administering morphine and for 12 hours after administering fentanyl. Fortunately, postpartum pain is generally managed well with non-narcotic analgesics in this patient population, presumably due to a residual effect of the original intrathecal dose.

Should it occur, respiratory depression is managed using naloxone. Naloxone (Narcan®) should be kept at the bedside so that it is immediately available. One must recognize that the ITN effect may outlast the short duration of naloxone and that repeat dosing or continuous infusion or the additional use of a longer duration antagonist like naltrexone may be required. Some sites routinely give naltrexone, 12.5–25 mg by mouth, postpartum, to prevent respiratory depression.⁶ My experience is that if you stay within the dosing suggested, this does not seem warranted because the risk is very low with these doses. Your facility's ability to adequately monitor the patient postpartum may guide you here.

Supplies for ventilatory support should be readily available in the unlikely event that intubation is required.³ Sedation may also occur but is uncommon at the doses recommended here. Management is the same as for respiratory depression.

Hypotension has been reported anecdotally and has generally been seen with larger doses or when combined with other anesthetic drugs. It has been rare with pure narcotic techniques where

the dosing has been limited. It is more likely when the patient is already dehydrated. Hypotension should be managed by placing the patient in the left lateral supine position and by administering an intravenous fluid bolus. Intravenous ephedrine may also be used as a peripheral vasoconstrictor. Having intravenous access with a large bore (18ga, or better yet, 16 ga) intravenous catheter prior to administering the intrathecal narcotic will allow for prompt management should hypotension occur. This intravenous catheter could be saline locked to allow greater freedom of motion when the ITN is established and it is clear that there is no need for a continuous infusion.

Technique-related complications

Post-dural puncture cephalgia (a.k.a. spinal headache) is much less common with new, small-gauge (25 gauge or smaller) pencil-point needles (Whitacre, Sprotte). Spinal headache has a reported incidence of 1%–8% with these needles.

The spinal headache is typically frontal and generally postural-related. It disappears when the patient is supine and comes on when the patient sits or stands. This type of headache generally is mild and self-limited. Post-spinal cephalgia is best treated by good hydration, mild analgesics as required, and keeping the patient in a supine position for 24 hours if it does occur. A very small percentage of patients, less than 1%, may require autologous blood patch to alleviate this symptom.⁶

Infection is a potentially serious complication in the subdural space but is very rare when this technique is used. Care in using aseptic technique is indicated.

Contraindications to ITNs are the same as for any spinal medication: coagulopathy, infection at needle insertion site (some would also say sepsis regardless of site), hypovolemic shock and lack of patient consent.

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Other limitations

The technique of ITN is limited in duration.³ Fentanyl (25 µg) lasts 1–3 hours, and morphine (0.2–0.25 mg) may last 4–7 hours.^{7,13} Intrathecal morphine alone has a slow onset (40–60 min) so it is best used in combination with fentanyl, which has a rapid onset (3–5 min).

Leighton² reported using a combination of fentanyl (25 µg) with morphine (0.25 mg) and getting onset of profound analgesia within 5 minutes and lasting up to 8 hours. This technique is generally limited to a single use per labour. Repeated doses may be much less effective in their

analgesic effect and will have a very limited duration of action.^{6,8} Given these limitations it would seem best suited to use during the active phase of labour, where the duration of labour is not expected to be longer than the duration of the ITN.

ITN may also have some use as an analgesic technique for women with an obstructed labour who are requiring transfer to a centre that has cesarean section capability.

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Politics

A recent provincial guideline in Manitoba requires that only physicians with anesthesia privileges be allowed to perform ITN techniques. It cites side effects and complications as being unacceptable for management by non anesthesia-trained physicians.¹⁴

This position is in direct contradiction to studies, done in sites utilizing non-anesthetists, that have shown good effect and outcomes.^{1,4,12} These sites have seen ITN as a way to provide patients with superior analgesia when they do not have the resources of 24/7 anesthesia services. The studies support intrathecal narcotic administration as a technique suitable for non-anesthetists, provided they are familiar with the technique and its complications and know how to treat complications, should they arise.

The management of hypotension is within the skill set of most rural physicians, and the management of respiratory depression is familiar to those of us who work in the emergency department.

Additionally, a clear-cut educational protocol for the monitoring requirements and interventions for nursing colleges should be in place so that complications will be recognized in a timely fashion and treated promptly should they occur.

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Summary

Intrathecal narcotic administration is an effective analgesia option to consider for women in

labour. ITN will have particular appeal for facilities that do not have readily available 24/7 epidural services.

ITN is a technique that could be done by rural physicians who are not trained in anesthesia, provided they are familiar with the technique of lumbar puncture and that they are well informed on the management of potential complications of the dural-puncture procedure and the side effects of the medications.

Implementing ITN in a facility would require that the facility also provide staffing levels to ensure that monitoring of the patient, intra- and postpartum, is adequate to recognize complications in a timely fashion should they arise.

Competing interests: None declared.

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This article has been peer reviewed.

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