Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 / été 2001

CJRM 2001; 6(3)

Cover: "Shadows of Agawa"

Dominik Modlinski, Atlin, BC.
Oil on canvas, 36" × 48"

Check out Dominik's Web site

Features • Articles

Kelowna, BC — 2002

Mark your calendars for next year's Rural and Remote Medicine Conference, April 25 to 28 in beautiful Kelowna, BC. This is your last chance, until 2112, to attend a conference in a palindromic year, so plan to attend!

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Rural health research gears up

John Wootton, MD
Shawville, Que.
Scientific editor, CJRM

CJRM 2001;6(3):175.

The last issue of CJRM (our fifth anniversary) has given us an opportunity to take a deep breath and look around at a changed landscape in rural medicine and rural health. As was expressed by your editor to the Senate Committee on Social Affairs, Science and Technology at a recent meeting on rural health issues, "the genie is out of the bottle" with respect to the public debate about access to services for rural Canadians, and with respect to the need to better understand the health status of rural and remote populations. What is also becoming widely known is that there is much which is not known. Many research questions have been formulated and consortia of rural health researchers have been created to address them. The Canadian Institutes of Health Research (CIHR) now exist, health research budgets overall have been increased significantly, and the Federal Health Minister has named a special advisor on rural health to CIHR's President. How and when these research questions will be pursued remains an issue, but it seems evident that the rural health research effort in this country is gearing up, and will face a challenge in diffusing the knowledge that it produces.

What will CJRM's role be in this new environment? Few journals devoted to rural health exist in the world. Best known are the Australian Journal of Rural Health and the American Journal of Rural Health. There are no other journals that I know of devoted to rural medicine. For the most part, research that is of significance to rural populations is diffused through a variety of general medical and health publications, which from time to time develop an appetite for rural issues. Rural researchers express frustration at not having a "purpose built" vehicle to disseminate their findings.

Already CJRM has more on its plate than it is able to publish in a consistently timely fashion. In the current format we can accomodate 2 to 3 original research papers per issue, or a maximum of 12 research papers/year. This will not satisfy the demand. However, in defence of the status quo is the fact that the journal has remained tightly focussed on its original mandate of serving the

practical (and political) needs of rural physicians and the SRPC (Society of Rural Physicians of Canada), and this it has done extremely successfully.

Financial issues are also involved, and any significant increase in size and/or frequency must be accompanied by a corresponding need for increases in staff and resources.

Now is the time for this debate to occur, both within the SRPC, and within the rural community at large. Should CJRM broaden its base to provide a vehicle for other health research, including the research of other rural health care disciplines (such as nurses)? Should it become a journal about health as well as health care? Should it seek other sources of revenue to support such a transformation? Should it become the vehicle for the publication of rural health research in Canada? Your comments are welcome. Please write to us at: Box 1086, Shawville QC J0X 2Y0; cjrm@fox.nstn.ca, fax 819 647-9972. A selection will be published in coming issues.

Correspondence to: Dr. John Wootton, Box 1086, Shawville QC J0X 2Y0

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

La recherche sur la santé en milieu rural prend de l'ampleur

John Wootton, MD
Shawville (Qué.)
Rédacteur scientifique, JCMR

CJRM 2001;6(3):176.

Le dernier numéro du JCMR (notre cinquième anniversaire) nous a permis de faire une pause et de jeter un coup d'œil sur l'évolution du contexte de la médecine et de la santé en milieu rural. Comme l'a dit votre rédacteur en chef au Comité sénatorial des affaires sociales, de la science et de la technologie au cours d'une réunion récente portant sur les enjeux de la santé rurale, «le génie est sorti de la bouteille» en ce qui a trait au débat public sur l'accès aux services pour les populations rurales du Canada et au besoin de mieux comprendre l'état de santé des populations rurales et éloignées. Ce que l'on commence aussi à admettre, c'est qu'il y a beaucoup de choses qu'on ne connaît pas. Beaucoup de questions de recherche ont été formulées et l'on a constitué des groupes de spécialistes de la recherche sur la santé rurale pour y répondre. Les Instituts de recherche en santé du Canada (IRSC) sont maintenant réalité, les budgets consacrés à la recherche sur la santé ont augmenté considérablement dans l'ensemble et le ministre fédéral de la Santé a nommé un conseiller spécial à la santé rurale auprès du président des IRSC. Il reste à déterminer comment et quand on donnera suite à ces questions de recherche, mais il semble évident que l'effort de recherche sur la santé rurale au Canada prend de l'ampleur et qu'il faudra relever le défi posé par la diffusion du savoir ainsi produit.

Quel sera le rôle du JCMR dans ce nouvel environnement? Les journaux consacrés à la santé rurale sont peu nombreux. Les plus connus sont l'Australian Journal of Rural Health et l'American Journal of Rural Health. Je ne connais pas d'autres journaux consacrés à la médecine rurale. La plupart des résultats de recherche importants pour les populations rurales sont diffusés par toutes sortes de publications générales sur la médecine et la santé qui abordent de temps à autre les questions rurales. Les chercheurs en médecine rurale se disent frustrés de ne pas disposer de moyen «spécialisé» de diffuser les résultats de leurs recherches.

Le JCMR a déjà plus de matière devant lui qu'il ne peut en publier régulièrement à temps. Le format actuel permet de publier deux ou trois communications sur des recherches originales par

numéro, pour un maximum de 12 rapports de recherche par année, ce qui ne répondra pas à la demande. À la défense du statu quo, il reste toutefois que le journal est demeuré très concentré sur son mandat original, qui est de répondre aux besoins pratiques (et politiques) des médecins ruraux et de la Société de la médecine rurale du Canada (SMRC). Il y a très bien réussi.

Il y a aussi les questions financières : il faut conjuguer toute augmentation importante du volume du Journal ou de sa fréquence de publication à une augmentation correspondante du personnel et des ressources.

C'est maintenant le moment de tenir ce débat, tant à la SMRC que dans la communauté rurale en général. Le JCMR devrait-il élargir son assise pour offrir un organe de diffusion d'autres résultats de recherche en santé, y compris la recherche dans d'autres disciplines des soins de santé en milieu rural (comme les soins infirmiers)? Devrait-il devenir un journal sur la santé et les soins de santé? Devrait-il chercher d'autres sources de revenus pour appuyer une telle évolution? Devrait-il devenir le moyen de publication des résultats de recherche sur la santé rurale au Canada? Vos commentaires sont les bienvenus. Veuillez nous les faire parvenir à : CP 1086, Shawville QC J0X 2Y0; cjrm@fox.nstn.ca; fax : 819 647-9972. Nous publierons une série de commentaires dans les numéros à venir.

Correspondance : Dr John Wootton, CP 1086, Shawville QC J0X 2Y0

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

President's message: On a rural medical school

Peter Hutten-Czapski, MD
Haileybury, Ont.

CJRM 2001;6(3):177.

An historic announcement was made May 17th, 2001. The first medical school in the world with "rural" in its name will be formed over the next few years in Northern Ontario. Starting in 2004, the school will eventually graduate 55 students per year. It will be centred in Sudbury, but teaching will be highly decentralized throughout Northern Ontario. Quite a feat for its promoters (who include the Ontario Region of the SRPC [Society of Rural Physicians of Canada]1), but it didn't come easily.

First of all, this is a bit of a slap in the face to existing Canadian medical schools. For all their good intentions they produce few rural doctors. They recruit, usually from the urban rich (with average neighbourhood income in excess of $80 0002), teach predominantly in the cities, and their graduates end up with skills that relate to urban practice. Statistics Canada figures show that 31% of Canadians live in predominantly rural regions,3 but less than 5% of the graduates of one of our largest medical schools (University of Toronto) practise in rural areas.4

Second, not everyone is convinced that this school will be either "northern" or "rural." The administrative centre will be in Sudbury, which is below the 49th parallel and has a population of 92 000. Some argue that the administration would be better shared with Thunder Bay — still south of the 49th and not rural, but smaller and more isolated. Then there is the position of some academics that the resources would have been better spent "ruralizing" existing medical schools. These are all valid considerations.

Second-guessing Ontario's Minister of Health aside, the proposed pedagogical structure is evidence-based, with admissions focussed on people of rural origin and with teaching decentralized to rural centres. Laurentian University in Sudbury already is rural-friendly and has 400 Aboriginal students — this will not be like a school in southern Ontario. Furthermore, the SRPC has 2 representatives on the interim governance structure.

It will be another 10 years before the first graduates will show us how successfully "rural" the school will be, but with the SRPC involved, we know that we will get results.

In the final analysis it probably matters less if this new medical school makes good policy than that it makes good politics. Northern Ontario, chronically short of both specialists and generalists, was crying out for an "in the North, by the North, for the North solution." If you were going to expand the number of medical students anyway, then why not build a rural school?

Correspondence to: phc@srpc.ca

References

1. Rural medical school. Rural News 2000;2(28). (accessed 2001 Jun 22).
2. Taggart K. Students, university at odds over tuition's effect on med school class. Med Post 2001;37(18):2C.
3. Statistics Canada. Population structure and change in predominantly rural regions [PDF format]. The Daily 2001;Jan 16:no 21-006 XIE.
4. McKendry R, for the Ontario Ministry of Health and Long-Term Care. Physicians for Ontario: Too many? Too few? For 2000 and beyond. Govt of Ontario; 1999 Dec. p. 52. (accessed 2001 Jun 22).

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Message du président : Une faculté de médecine rurale

Peter Hutten-Czapski, MD
Haileybury (Ont.)

CJRM 2001;6(3):178.

On a annoncé un événement historique le 17 mai 2001. La première faculté de médecine au monde dont l'appellation officielle contient le mot «rural» fera son apparition au cours des prochaines années dans le nord de l'Ontario. La faculté, qui ouvrira ses portes en 2004, produira un jour 55 diplômés par année. La faculté aura son centre à Sudbury, mais l'enseignement sera très décentralisé dans tout le nord de l'Ontario. C'est toute une réussite pour ses promoteurs (qui incluent la région de l'Ontario de la SRMC [Société de la médecine rurale du Canada]1), mais elle n'a pas été facile.

Tout d'abord, c'est un peu une gifle donnée aux facultés de médecine actuelles du Canada. En dépit de toutes leurs bonnes intentions, elles forment peu de médecins ruraux. Elles recrutent habituellement chez les riches des milieux urbains (quartiers dont le revenu moyen dépasse 80 000 $2), donnent leur formation surtout en ville et leurs diplômés acquièrent des compétences spécialisées qui ont trait à la pratique en milieu urbain. Les chiffres de Statistique Canada montrent que 31 % des Canadiens vivent dans des régions surtout rurales3, mais moins de 5 % des diplômés d'une de nos plus importantes facultés de médecine (Université de Toronto) pratiquent en milieu rural4.

Deuxièmement, tous ne sont pas convaincus que cette faculté sera «du Nord» ou «rurale». Son centre administratif sera installé à Sudbury, ville de 92 000 habitants située au-dessous du 49e parallèle. Certains soutiennent qu'il serait préférable d'en partager l'administration avec Thunder Bay — elle aussi située au sud du 49e parallèle, centre non rural mais plus petit et plus isolé. En outre, certains universitaires affirment qu'il aurait été préférable de consacrer les ressources à la «ruralisation» de facultés de médecine existantes. Ces arguments se défendent tous.

Sans contester le ministre de la Santé de la l'Ontario, la structure pédagogique proposée est factuelle, on cherchera à admettre surtout des étudiants d'origine rurale et l'enseignement sera

décentralisé dans des centres ruraux. L'Université Laurentienne de Sudbury est déjà à caractère rural et compte 400 étudiants autochtones — elle ne ressemblera pas à une école du sud de l'Ontario. La SMRC compte de plus deux représentants à la structure de régie provisoire.

Il faudra encore 10 ans avant que ses premiers diplômés témoignent de la réussite de la faculté dite «rurale», mais si la SMRC est impliquée, nous savons que nous obtiendrons des résultats.

En dernière analyse, il importe probablement moins que cette nouvelle faculté de médecine établisse de bonnes politiques et plus qu'elle fasse de la bonne politique. Le nord de l'Ontario, où règne une pénurie chronique de spécialistes et de généralistes, recherchait désespérément une «solution dans le Nord, par le Nord et pour le Nord». Si l'on a augmenté le nombre d'étudiants en médecine de toute façon, pourquoi alors ne pas construire une faculté de médecine rurale?

Correspondance : phc@srpc.ca

Références

1. Rural medical school. Rural News 2000;2(28). (consulté le 22 juin 2001).
2. Taggart K. Students, university at odds over tuition's effect on med school class. Med Post 2001;37(18): 2C.
3. Statistique Canada. Structure démographique et variation de la population dans les régions essentiellement rurales [format PDF]. Le Quotidien 16 janvier 2001 : no 21-006 XIF au catalogue.
4. McKendry R, pour le ministère de la Santé et des Soins de longue de durée de l'Ontario. Les médecins de l'Ontario : Trop ou pas assez? L'an 2000 et au-delà. Gouvernement de l'Ontario; décembre 1999, p. 56. (consulté le 22 juin 2001).

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Procedural skills practised by British Columbia family physicians

Nadene Henderson, MD, CCFP
Stefan Grzybowski, MD, MCLSc, CCFP
Carol Thommasen, BScN
Jonathan Berkowitz, PhD
Harvey Thommasen, MD, CCFP

CJRM 2001;6(3):179-85.

Contents

Objective: To document and analyze procedural skills practised by British Columbia family physicians/general practitioners (FPs/GPs).

Design: The tabulation of a 132-item procedural skills application form.

Setting: Thirty-nine communities in British Columbia.

Participants: A total of 314 physicians completed a detailed procedural skills application form as part of a voluntary provincial Royal College of Physicians and Surgeons of Canada credentialling process; of these, 154 physicians came from the 26 northern and isolation allowance (NIA) communities and 160 physicians from 31 non-NIA communities.

Main outcome measures: CCFP accreditation status of FPs/GPs and status as a Canadian- or foreign-trained medical graduate, skill level with respect to the 132 procedures, specialty course work completed, including Advanced Cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS), Pediatric Advanced Life Support (PALS) and Neonatal Advanced Life Support (NALS) certification.

Results: With respect to education, 224 (71.8%) of 312 respondents were Canadian-trained, and 88 (28.2%) of 312 were foreign-trained; 93 (29.8%) of 312 had their CCFP certification, and 219 (70.2%) did not. With respect to course work accreditation 28 (8.9%) of the 314 participants

had completed PALS, 64 (20.4%) NALS, 165 (52.5%) ATLS and 252 (80.2%) ACLS courses. CCFP physicians were significantly more likely ($p < 0.01$) than non-CCFP physicians to have completed these 4 courses. Canadian-trained physicians were significantly more likely ($p < 0.01$) to have completed NALS and ACLS courses than foreign-trained physicians. Thirty-five procedures were being performed by more than 93% of the respondents. A sharp drop was noted in the number of participants performing the remaining listed procedures. CCFP physicians were significantly more likely to deliver babies and perform laryngoscopy and intubation than non-CCFP physicians ($p < 0.01$). Foreign-trained physicians were significantly more likely to do cesarean sections, laparotomy for ectopic pregnancy, and marsupialization of Bartholin's cysts than Canadian-trained physicians ($p < 0.01$).

Conclusions: British Columbia's FPs/GPs are applying a wide range of procedural skills. There is, however, a large variation in the number and type of skills practised by these physicians.

Objectif : Décrire et analyser les techniques d'intervention des médecins de famille/omnipraticiens (MF/OP) de la Colombie-Britannique.

Conception : Tabulation des résultats d'un questionnaire de 132 questions sur l'application des techniques d'intervention.

Contexte : Trente-neuf communautés de la Colombie-Britannique.

Participants : Au total, 314 médecins ont répondu à un questionnaire détaillé sur l'application des techniques d'intervention dans le cadre d'un mécanisme provincial volontaire d'attribution de titres du Collège royal des médecins et chirurgiens du Canada. Sur ce total, 154 médecins provenaient des 26 communautés couvertes par la prime d'éloignement dans le Nord (PEN) et 160, de 31 autres communautés.

Principales mesures de résultats : Agrément des MF/OP et diplôme d'une faculté de médecine canadienne ou étrangère, niveau de la technique en ce qui a trait aux 132 interventions, cours spécialisés terminés, y compris certificat en soins avancés en réanimation cardiaque (SARC), en soins avancés en réanimation traumatologique (SART), soins avancés en réanimation pédiatrique (SARP) et soins avancés en réanimation néonatale (SARN).

Résultats : En ce qui a trait à la formation, 224 (71,8 %) des 312 répondants avaient reçu leur formation au Canada et 88 (28,2 %) l'avaient reçue à l'étranger; 93 (29,8 %) sur 312 avaient leur certificat CCMF et 219 (70,2 %) ne l'avaient pas. En ce qui a trait à l'agrément, 28 (8,9 %) des 314 participants avaient terminé leur cours SARP, 64 (20,4 %), leur cours SARN, 165 (52,5 %), leur cours SART et 252 (80,2 %), leur cours SARC. Les médecins titulaires d'un certificat du CCMF étaient beaucoup plus susceptibles ($p < 0,01$) que les autres d'avoir terminé ces quatre cours. Les médecins qui ont reçu leur formation au Canada étaient beaucoup plus susceptibles

($p < 0,01$) d'avoir terminé leur cours SARN et SARC que les médecins formés à l'étranger. Plus de 93 % des répondants pratiquaient 35 interventions. On a constaté une baisse marquée du nombre des participants qui pratiquaient les autres interventions figurant sur la liste. Les médecins titulaires d'un CCMF étaient beaucoup plus susceptibles d'effectuer des accouchements, des laryngoscopies et des intubations que leurs collègues qui ne détenaient pas de certificat ($p < 0,01$). Les médecins formés à l'étranger étaient beaucoup plus susceptibles que les médecins formés au Canada ($p < 0,01$) d'effectuer des césariennes, des laparotomies pour grossesse ectopique et la marsupialisation des kystes des glandes de Bartholin.

Conclusions : Les MF/OP de la Colombie-Britannique utilisent un vaste éventail de techniques d'intervention. Le nombre et le type des techniques pratiquées par ces médecins varient toutefois énormément.

Contents

Introduction

The issue of procedural skills training for family practice residents is receiving increasing attention.1–4 Studies reveal that many Canadian-trained family physicians/general practitioners (FPs/GPs) do not feel comfortable or do not feel competent to apply important procedural skills such as adult and pediatric resuscitation, simple fracture reduction, casting techniques, intravenous access, lumbar puncture and endotracheal intubation.5–8 It has been postulated that physician discomfort with certain procedural skills is one of the reasons why Canada's northern and rural communities are having difficulty attracting and retaining Canadian family practice graduates.9–11

A recent study on procedural skills practised in rural British Columbia revealed that significantly more graduates of foreign medical schools perform vasectomies, tubal ligations, cesarean sections and forceps/vacuum deliveries than graduates of Canadian medical schools.12 This supports the belief that one of the reasons why foreign-trained doctors don't seem to mind working in Canadian rural communities is because they are better trained with respect to procedural skills.

As far as we can ascertain there have been no published studies comparing procedural skills being practised by physicians trained in Canada versus foreign-trained physicians; no published studies comparing procedural skills being applied by physicians with College of Family Physicians of Canada certification (CCFP) and non-CCFP practitioners; and no studies summarizing which procedures are being applied by what proportion of physicians after completion of residency training programs.

In British Columbia some of this information does exist but it is in the form of administrative data collected by the College of Physicians and Surgeons of British Columbia. In 1993, the BC

College began a credentialling process for procedural skills. They were asked to do this because physicians, hospital boards and administrators were frustrated with the process of periodic evaluation of medical staff. Smaller communities in particular were finding it difficult to be objective and thorough in their evaluation of procedural skills competency. To respond to these concerns the BC College established an Advisory Panel on Credentials (APC). The APC's self-stated role is to offer assistance to hospitals and diagnostic and treatment centres (D&Ts) in credentialling physicians for procedural skills in each community's medical facility. The APC is made up of 5 practising physicians: a general practitioner from a semi-urban community as chairperson; 2 family physicians, 1 each from a rural and an urban centre; a general surgeon from an urban centre; and an internist from an urban centre. The committee's mandate is to review a physician's credentials and suitability for procedure privileges, both at the time of the initial hospital appointment and on a periodic basis. The credentialling process is carried out in a rotating community fashion, in alphabetical order, with an in-depth review of physicians' credentials being carried out every 3 to 5 years. The APC acts only in an advisory capacity to the medical staff and hospital board, as the ultimate responsibility for appointment and the approval of procedural skills rests with the hospital board. Thus, participation in the credentialling process by each physician and each community is said to be voluntary.

Part of the process is the completion of a detailed procedural skills application form by physicians who choose to participate. The BC College kindly allowed us to review the APC procedural skills application forms, with the proviso that, for reasons of confidentiality, we could not identify communities or physicians participating in the credentialling process. The objective of this paper is to summarize this APC administrative data so that we might better understand which procedural skills are being practised by FP/GPs and by whom: Canadian- versus foreign-trained, CCFP versus non-CCFP.

Contents
• Abstract • Introduction • Methods • Results • Discussion • References

Methods

The APC form requests information on medical school attended, date of graduation, year of LMCC (Licentiate of the Medical Council of Canada) licensure, specialty course work, course work accreditation and family practice certification (CCFP). Course work accreditation includes Advanced Cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS), Pediatric Advanced Life Support (PALS) and Neonatal Advanced Life Support (NALS). These courses have nationally or internationally recognized protocols.

The form also contains a list of 132 procedural skills (Table 1, Table 2, Table 3). Participants are asked to check off the skills they practise. Skills range from basic (e.g., phlebotomy, anesthetic infiltration and laceration repairs) to complex skills that normally require specialist training and

certification (e.g., hysterectomy or prostatectomy). This 132-item list was compiled by the APC committee using information obtained from the provincial colleges of physicians and surgeons of Alberta, Saskatchewan and Manitoba.

Community population estimates were obtained from BC's 1996 census data. Estimates the number of FP/GPs working in communities were obtained from the 1998–99 BC Medical Directory. The BC Medical Services Plan office in Victoria provided us with a list of northern and isolation allowance (NIA) communities, as well as an NIA rurality score and estimated FP/GP counts for each of these communities.13

Doctors living in NIA communities are given a fee over and above that provided to physicians working in less "needy" communities. The BC Medical Services Plan has developed a Rurality Index score, which it uses to determine whether a community is northern and/or isolated enough to qualify for the NIA, and just how much that community's NIA allowance should be.14 This scoring system is similar to that proposed by Leduc15 and takes into account such things as number of physicians in the community, number of specialists in the community, distance (km) from a major medical community, exceptional circumstances, doctor:patient ratio, distance from a major population centre, and population size of the community.

Demographic statistics and procedural skills were tabulated, and percentages of FP/GPs performing individual procedures and having specific course certification were calculated. The chi-squared test to determine statistically significant differences between CCFP and non-CCFP physicians and between Canadian-trained and foreign-trained physicians.16 Given the high probability of false-positive findings from multiple testing, $p < 0.01$ was used as the guideline for statistical significance.

Two of the 314 physicians did not report certification or education status, so comparisons of non-CCFP versus CCFP and Canadian- versus foreign-trained are based on a sample size of 312. However, all other parameters are based on 314 cases.

Contents
• Abstract • Introduction • Methods • Results • Discussion • References

---

Results

A total of 314 physicians from 39 communities completed the detailed APC application form. Twenty-six of these communities, representing 154 physicians, were NIA communities. Since there are a total of 57 NIA communities with a hospital or a D&T, the NIA community response rate was 46%. According to the 1998–99 BC Medical Directory the estimated number of physicians working in the 26 participating NIA communities was approximately 133. Since 154 physicians actually completed APC application forms, there appears to have been good

participation by physicians working in NIA communities. The greater-than-100% response likely reflects the fact that locums working in these communities also completed the APC. There was no significant difference between respective participating and non-participating NIA communities in mean (± SD) population size (6002 [5315] v. 7068 [7024]; mean (± SD) NIA score (77.9 [30.7] v. 82.8 [29.3]), or mean number of physicians working per community (5.1 [4.9] v. 6.6 [6.2]). Of the 26 NIA communities participating in the credentialling process, 8 have D&Ts and 18 have hospitals. In comparison, of the 31 NIA communities not participating in the credentialling process, 7 have D&Ts, and 24 have hospitals.

In terms of number of hospital beds in the participating NIA communities, there was an average of 24.7 beds per community (range from 0 to 89) (D&Ts have no acute inpatient beds). The 154 physicians in these NIA communities received their LMCC certification on average in 1983 (ranging from 1962 to 1995).

The remaining 160 participants came from 31 non-NIA communities, all of which had hospitals. As expected, these non-NIA communities tended to be larger (mean [and SD] population size 18 658 [20 816], ranging from 2800 to 85 000), have more physicians (12.3 [6.2]) and have hospitals with a greater number of hospital beds (average 36.9 beds per community, excluding 1 community that had 260 hospital beds). The estimated number of FP/GPs working in these 31 non-NIA communities is 264, which indicates that, compared to the NIA situation, not all physicians working in the participating non-NIA communities took part in the College's APC credentialling process.

On average, physicians from non-NIA communities received their LMCCs in 1977 (range from 1947 to 1994). With respect to education, 224 (71.8%) of 312 participants were Canadian-trained, and 88 (28.2%) were foreign-trained; 93 (29.8%) had their CCFP certification and 219 (70.2%) did not. With respect to course work accreditation, 28 (8.9%) of the 314 participants had completed PALS, 64 (20.4%) had completed NALS, 165 (52.7%) ATLS, and 252 (80.5%) ACLS courses. CCFP physicians were more likely ($p < 0.01$) than non-CCFP physicians to have completed these 4 courses. Canadian-trained physicians were more likely ($p < 0.01$) to have completed the NALS and ACLS courses than foreign-trained physicians.

One physician only did counselling and therefore did not check off any of the skills listed in Table 1. Thirty-five procedures were reported as being practised by more than 90% of the 314 respondents (Table 1). There was a sharp drop in the number of participants who practised the remaining listed skills (Tables 2 and 3). For example, 202 participants (64.3%) practised cephalic deliveries (including episiotomy and laceration repair), 134 (42.7%) performed laryngoscopy and intubation, 74 (23.6%) reduced acute nasal deformities, 40 (12.7%) performed tubal ligation, 19 (6.1%) performed therapeutic abortions, and 1 (0.3%) did flexor tendon repairs in the hand. Twenty-seven procedures were reported as not being performed by any of the 314 respondents.

According to our criterion that $p < 0.01$ is the level for statistical significance using chi-squared

tests of independence, 2 procedures are significantly different for non-CCFP and CCFP respondents (Table 4), and 3 procedures are significantly different for Canadian-trained and foreign-trained respondents (Table 5).

CCFP physicians were more likely to deliver babies and perform laryngoscopy and intubation than non-CCFP physicians ($p < 0.01$). Consistent with the finding that CCFP physicians are more likely to do obstetrics is the finding that CCFP physicians also tended to do more vacuum extraction/outlet forceps and medical inductions than non-CCFP physicians ($0.01 < p < 0.05$) (Table 4).

Foreign-trained physicians were more likely to do cesarean sections, laparotomy for ectopic pregnancy and marsupialization of Bartholin's cyst than Canadian-trained physicians ($p < 0.01$). Foreign-trained physicians tended to perform more appendectomies, hemorrhoidectomies, manage varicose vein problems and uncomplicated tibial, fibular and humeral fractures than Canadian-trained physicians ($0.01 < p < 0.05$) (Table 5).

Discussion

In Canada, physicians are increasingly being asked about their practical experience with respect to specific procedures: how many have they done, especially in the recent past, and what was the outcome? In some US centres proof of competency in a procedural skill is required before the privilege of performing the procedure in the hospital is even granted.17 Despite all this, evaluation of procedural skills competency is not yet part of the certification process by the College of Family Physicians of Canada.3 There is not even agreement among the various family practice training programs as to what constitutes "basic" surgical and procedural skills, let alone "special" skills. Our study shows that British Columbia FP/GPs are practising a wide range of procedural skills. There is, however, a large variation in the number and type of skills used by individual physicians.

Of special interest are the number of physicians who reported using basic obstetric skills and basic anesthesia skills. Approximately 64% of general practitioners in this study provide basic obstetrical care to patients, but only 17% provide general anesthetics in uncomplicated cases, and only 12% perform cesarean sections. Significantly more foreign-trained physicians perform cesarean sections than Canadian-trained physicians. These data have implications as to the provision of cesarean sections in rural communities.18,19 If rural Canadians want to have their babies delivered closer to home and have access to immediate cesarean section surgery, Canadian universities must to do a better job of training rural physicians to competently and comfortably practise the necessary surgical and anesthetic skills.

Foreign-trained physicians also appear to be more comfortable handling various types of fractures, and they more commonly perform finger and toe amputations, with an average of 10% to 15% more foreign-trained doctors providing these skills. This suggests that Canadian training programs could improve their training of family physicians in the area of simple orthopedic care. This issue has been noted in a previous study.8

In terms of other skills, the data strongly suggest that relatively more non-CCFPs and foreign-trained physicians perform procedures such as appendectomy, vasectomy, Bartholin's cyst marsupialization, hemorrhoidectomy and varicose vein sclerotherapy than CCFP and Canadian-trained physicians. Perhaps Canadian family practice programs should also offer more surgical skills training to their resident physicians.20

Relatively more CCFP physicians have done course work in ACLS, ATLS, NALS and PALS than non-CCFP physicians. This finding suggests that CCFP training emphasizes a more structured course work approach to training, as opposed to acquisition of procedural skills.

Unfortunately our records on gender and year of medical school graduation were incomplete and so we were unable to determine from our data whether there was a gender difference in the performance of procedural skills. We were also unable to determine whether younger or older physicians were less likely to perform procedural skills.

The medicolegal factor, which probably plays a role in determining whether a physician will do procedures, is another factor we did not study. Students are being told during their training to avoid certain procedures because of perceived high medicolegal risk associated with that procedure. Older physicians have been known to give up procedures after being involved in lawsuits or college investigations.

We hope that other researchers will design studies that take into account the age, gender and medicolegal factors so that their importance can be more fully understood.

Our study is not perfect. It is not a randomized, cross-sectional survey with a high return rate, but rather a summary of administrative data. This kind of data sometimes suffers from lack of generalizability, and can suffer from response bias.

Despite these potential limitations, we feel that our data should be of interest to educators currently involved in procedural skills training of Canadian family medicine residents.

Our data involves a large number of physicians, it samples almost half of British Columbia's NIA communities, it provides information on many different types of procedural skill, and it provides some insight into the percentages of FP/GPs performing particular procedures today. Our data confirm the impression that foreign-trained physicians use more surgical-type skills than

Canadian-trained physicians and suggest there are differences between CCFP physicians and non-CCFP physicians. Such information can be used to develop programs that better ensure family practice residents will become more comfortable and more proficient in applying specific procedural skills.8,20

Competing interests: None declared.

Acknowledgements: We thank Carole-Anne Benson, Dr. Morris Van Andel and members of the Advisory Panel on Credentials for allowing us to review these procedural lists. We also thank the two reviewers who provided suggestions, which were subsequently incorporated into the final revised manuscript. This research project was supported by the Lloyd Collins Foundation and by the North American Primary Care Research Group.

Dr. Henderson is a family physician doing locums in rural British Columbia.
Dr. Grzybowski is the Director of Research, Department of Family Practice, University of British Columbia, Vancouver, BC.
Ms. Thommasen is a Research Assistant, Department of Community Health, University of Northern British Columbia, Prince George, BC.
Dr. Berkowitz is a Clinical Associate Professor and staff statistician with the Department of Family Practice, University of British Columbia.
Dr. Thommasen is Professor, Department of Community Health, University of Northern British Columbia, Prince George, BC.

This article has been peer reviewed.

Correspondence to: Dr. Harvey Thommasen, University of Northern British Columbia, 3333 University Way, Prince George BC V2N 4Z9; 250 960-6666, fax 250 960-5777, thommash@unbc.ca

---

References

1. Reid A. Editor's notes [editorial]. Can Fam Physician 1998;44:467. 2
2. Wetmore SJ, Agbayani R, Bass MJ. Procedures in ambulatory care. Which family physicians do what in southwestern Ontario? Can Fam Physician 1998;44:521-9.
3. van der Goes T, Grzybowski SC, Thommasen H. Procedural skills training. Canadian family practice residency programs. Can Fam Physician 1999;45:78-85.
4. Gelhorn D, Gutkin C, Iglesias S, Lemire F, MacLellan K, Newbery P, et al. Program notes from "Special Conference Day on Advanced Skills for Rural Family Physicians" sponsored by Society of Rural Physicians of Canada, and College of Family Physicians of Canada. Apr. 13, 1999.

5. O'Connor HM, Davidson JR. Emergency medicine skills. Are primary care physicians adequately prepared? Can Fam Physician 1992;38(1):89-93.
6. Kelly L. Surgical skills for family physicians. Do family physicians make the cut? Can Fam Physician 1998;44:469-70, 476-7.
7. Dixon-Warren N. Competency scores of common procedural skills as self-reported by graduating family medicine residents in Ontario. N Ont Med Progr News 1997;Dec 3.
8. De Freitas TL, Spooner GR, Szafran O. Admissions and transfers from a rural emergency department. Can Fam Physician 1998;44:789-95.
9. Adams J. Crisis in rural medicine. B C Med J 1998;40(5):105-6.
10. Rourke JT. Politics of rural health care: recruitment and retention of physicians. CMAJ 1993;148(8):1281-4.
11. BCMA Rural Physicians Committee. Attracting and retaining physicians in rural British Columbia. Vancouver: British Columbia Medical Association; 1998. p. 52. [Document available from the BCMA, Vancouver.]
12. Whiteside C, Mathias R. Training for rural practice. Are the graduates of a UBC program well prepared? Can Fam Physician 1996;42:1113-21.
13. British Columbia Medical Services Plan. Physician count and full-time equivalent count by regional health board. Victoria: BCMSP; 1997. p. 22.
14. Northern and Isolation Allowance (NIA) Program, effective Apr. 1, 1997. (accessed 2001 Jun 26).
15. Leduc E. Defining rurality: a General Practice Rurality Index for Canada. Can J Rural Med 1997;2(3):125-31.
16. Snedecor GW, Cochran WG. Statistical methods. 7th ed. Ames (IA): Iowa State University Press; 1980.
17. Harper MB. Procedural training in family practice residencies: current status and impact on resident recruitment. J Am Board Fam Pract 1995;8(3):189-94.
18. Hutten-Czapski PA. Decline of obstetrical services in northern Ontario. Can J Rural Med 1999;4(2):72-6.
19. Rourke JT. Trends in small hospital obstetric services in Ontario. Can Fam Physician 1998;44:2117-24.
20. Chiasson PM, Roy PD. Role of the general practitioner in the delivery of surgical and anesthesia services in rural western Canada. CMAJ 1995;153(10):1447-52.

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Is there a link between confidence in procedural skills and choice of practice location?

Stephen J. Wetmore, MSc, MD, MClSc, FCFP
Moira Stewart, PhD

CJRM 2001;6(3):189-94.

Contents

Objectives: To examine the level of confidence in procedural skills of family medicine residents in Ontario and to determine if this is associated with the choice of a more rural practice location.

Methods: In May and June 1997 a survey was mailed to 247 second-year residents in all family medicine training programs in Ontario. Questions included location of family medicine training, choice of ideal practice location, special training courses taken during residency, and confidence levels in various emergency and ambulatory-care procedures.

Results: Of the 247 residents, 157 (63.6%) responded, and 155 responses were analyzed. The respondents were similar to the total sampling frame with respect to gender and family medicine program. There was no independent association between confidence in a procedural skill and choice of practice location. However, logistic regression analysis showed that residents who received at least some rural training were more likely to choose a non-urban practice location than residents who did not receive rural training. Residents with some rural training were significantly more confident than residents without rural training in both ambulatory-care and emergency procedures. On the other hand, residents with some rural training had significantly lower overall confidence as a family physician than residents without rural training.

Conclusion: These findings would support a recommendation for increased rural training opportunities in family medicine residency to increase the number of residents who ultimately choose a rural practice location.

Objectifs : Examiner le niveau de confiance à l'égard des techniques d'intervention des résidents

en médecine familiale en Ontario et déterminer s'il y a un lien avec le choix d'un lieu de pratique plus rural.

Méthodes : En mai et juin 1997, on a envoyé un questionnaire à 247 résidents de deuxième année de tous les programmes de formation en médecine familiale de l'Ontario. Les questions portaient notamment sur le lieu de la formation en médecine familiale, le choix du lieu de pratique idéal, les cours de formation spéciale suivis pendant la résidence et les niveaux de confiance à l'égard de diverses interventions d'urgence et de soins ambulatoires.

Résultats : Sur les 247 résidents, 157 (63,6 %) ont répondu et l'on a analysé 155 réponses. Les répondants ressemblaient au cadre d'échantillonnage total en ce qui a trait au sexe et au programme de médecine familiale. Il n'y avait aucun lien indépendant entre la confiance à l'égard d'une technique d'intervention et le choix du lieu de pratique. Une analyse de régression logistique a toutefois montré que les résidents qui ont reçu au moins un peu de formation en médecine rurale étaient plus susceptibles de choisir un lieu de pratique non urbain que ceux qui n'en avaient pas reçu. Les résidents qui ont reçu un peu de formation en médecine rurale avaient beaucoup plus confiance que les autres dans leurs techniques d'interventions d'urgence et de soins ambulatoires. Par ailleurs, les résidents qui ont reçu un peu de formation en médecine rurale présentaient un niveau de confiance globale beaucoup moins élevé comme médecin de famille que ceux qui n'en avaient pas reçu.

Conclusion : Ces constatations appuieraient une recommandation visant à accroître les possibilités de formation en médecine rurale dans les programmes de résidence en médecine familiale afin d'augmenter le nombre de résidents qui finissent par choisir d'exercer en milieu rural.

Contents

Several factors appear to be important to graduating family physicians when choosing a practice location; these include having partners in practice, family and lifestyle issues, availability of recreational facilities and call schedules.1–7 Published studies have noted that graduating doctors have a tendency to practise in communities similar in size to their home communities.1,5,7 They are more likely to choose a rural practice location if they receive part or all of their training in a rural location.2–4,8,9

Most rural family physicians are required to perform more procedures than their urban counterparts.10–12 Family medicine residents and graduate physicians have expressed concerns about the quality of training in family medicine programs as being insufficient preparation for rural practice.11,13,14 Australian family practice graduates identified a lack of procedural skills as a reason for not entering rural practice.15

There are few Canadian studies of training in procedural skills. O'Connor and Davidson,16 in a survey of Queen's University graduates, found that at the time of graduation, family medicine residents felt confident in only 6 of 11 emergency medicine procedures. They also found that residents' feelings of competence in certain emergency medicine skills on graduation were associated with feelings of competence for those same skills when in practice. In a survey of family medicine residents at the University of Western Ontario, Speechley and colleagues17 showed that self-reported competence in technical skills was lower than that for any other skills measured at the time of graduation. A recent review of self-assessed competence in procedural skills of graduating family medicine residents in Ontario showed that a feeling of adequate competence in procedures was achieved for only 16 of 40 procedural skills.18 According to Whiteside and colleagues,19 family medicine residents in rural training programs in British Columbia felt under-prepared in several skill areas, including trauma care, fracture care and vacuum extraction. In contrast, only 13.2% of this group felt under-prepared in office surgical procedures.

Despite the important ranking assigned to procedural skills for rural family practice by both residents and practising physicians, few have studied the relationship between physicians' confidence in their technical skills and their choice of practice location. The main objective of this study was to determine whether family medicine graduates who have more confidence in their procedural skills would be more likely to choose non-urban practice locations.

Methods

Second-year family medicine residents in all Ontario programs were surveyed by mail during May and June 1997. A second questionnaire or reminder card was mailed to all residents who had not returned their questionnaire by the second week of June. Only one mailing was possible for the 12 residents of the program in Sudbury because of a delay in obtaining approval for the study.

The survey included questions on gender, family medicine program, location of family medicine training, any special training courses involving procedural skills, ideal choice of practice location (community size) in the next 1 to 5 years, overall confidence in ability as a family physician and overall confidence in technical procedures as a family physician. The overall confidence questions were added to help assess whether the confidence rating for any individual procedure or group of procedures was influenced by an individual's confidence either in technical skills in general or as a family doctor in general. The questionnaire also required residents to rate their confidence level with respect to the competent performance of each of 17 emergency or hospital-based procedures and 17 ambulatory or office-based procedures. These procedures are listed in

Table 1.

Practice location was defined by community size: urban (>50 000 population), semi-urban (10 000 to 50 000) and rural (<10 000). The location of family medicine training was designated as "rural" training if the respondent indicated that any part of his or her family medicine training took place in a rural practice setting. The confidence level rating scale, a 4-point scale ranging from very unconfident to very confident, was adapted from Tressolini.20 The procedures included in the survey had been identified as being suitable for performance by family doctors,10,21–26 and were part of Canadian training programs in family medicine.27

The questionnaire was screened by 4 practising rural physicians to verify the suitability of the procedures for rural practice. A pilot test was done with first-year family medicine residents using the ambulatory procedural component.

Mean confidence scores were calculated as the average item score for all procedures in that category. The t-test was used for comparison of mean confidence levels. For logistic regression analysis, practice location choice was re-coded to a dichotomous variable, namely, urban practice location (>50 000 population) or non-urban practice location (¾50 000). Regression analysis was done using a backward stepwise method in which all variables were forced into the equation and then removed one by one if they did not meet a statistical significance of $p < 0.05$.

This study received ethical approval from The University of Western Ontario Review Board for Health Sciences Research involving human subjects (review no. E5906).

Contents
• Abstract • Introduction • Methods • Results • Discussion • References

Results

The overall response rate was 63.6% (157/247 residents). One questionnaire had major gaps in information and 1 was spoiled, leaving 155 questionnaires for analysis. Six residents were undecided about their practice location choice and were excluded from any further analysis involving practice location choice.

There was no significant difference in the gender of nonrespondents compared to respondents, and the proportion of respondents from each family medicine program was not significantly different from the proportion of residents from each program in the overall sampling frame.

Fifty-eight percent of the respondents were female and 41.9% male; 32.9% had experienced some rural-based training during their residency.

Ninety-nine percent of the respondents had taken Advanced Cardiac Life Support (ACLS) training, whereas only 52% had taken Advanced Trauma Life Support (ATLS) and 50% had taken Neonatal Resuscitation (NRP). Only 10% had trained in Pediatric Advanced Life Support (PALS) and 12% had Advanced Life Support in Obstetrics (ALSO) training.

The proportion of respondents who had rural training was as follows: Hamilton 8%, Kingston 72.2%, London 23.3%, Ottawa 10.5%, Sudbury 88.9%, Thunder Bay 100% and Toronto 16.4%.

There was no significant difference between males and females for any of the practice location choices ($p = 0.86$). An urban location as the ideal choice was indicated by 35.1%, whereas 47.4% preferred a semi-urban location and 13.6% chose a rural location.

The mean confidence levels for all procedures according to practice location choice are shown in Table 2. There was a progressive increase in mean confidence score for both ambulatory and emergency procedural skills moving from urban to semi-urban to rural practice location choice. These differences were significant only for confidence levels in emergency procedures, which ranged from 2.59 (95% confidence interval [CI] 2.45–2.74) for the urban practice choice to 2.97 (95% CI 2.77–3.18) for rural. There was no significant difference in feelings of overall confidence as a family doctor ($p = 0.84$) or overall procedural confidence ($p = 0.06$) across all practice location choices.

There was a significant difference in the number of special training courses taken by residents in the different practice location choice groups. Those choosing urban practice locations took, on average, 2.00 (95% CI 1.73–2.27) courses, those choosing semi-urban locations took 2.31 (95% CI 2.06–2.55) courses, and those choosing rural practice locations took 2.75 (95% CI 2.21–3.29) courses ($p = 0.02$).

Table 3 shows the distribution of rural training among the residents and their choice of practice location. Significantly more residents who had some rural training chose rural practice locations (chi squared = 16, df = 2, $p < 0.001$). In those choosing urban practice, 16.7% had some rural training compared with 65% of those residents who chose a rural practice location. Overall, residents who had some rural training were 1.5 times more likely to have chosen a non-urban practice location as their ideal choice than residents with no rural training.

In the logistic regression analysis, confidence in ambulatory procedures, confidence in emergency procedures, overall confidence as a family doctor, overall confidence in technical procedures, gender, and number of special training courses taken were not significantly related to choice of urban or non-urban practice location. Rural training was the only variable that was significantly related to practice location choice ($p = 0.007$). The same results were obtained when the analysis was repeated with rural or non-rural location choice as the dependent variable.

The logistic regression results prompted us to look further at the differences between those residents who had some rural training and those who did not. There was no significant difference in the gender distribution of residents between those with and without rural training ($p = 0.37$).

Table 4 illustrates the differences in confidence scores and number of special training courses taken for those residents with and without rural training. Those residents with some rural training were significantly more confident than residents with no rural training in ambulatory procedures ($p = 0.01$), emergency procedures ($p < 0.01$) and overall technical skills ($p = 0.01$). With respect to overall confidence as a family doctor, however, those residents without rural training expressed significantly more overall confidence than their counterparts with some rural training ($p = 0.01$).

Residents having rural training took significantly more special training courses than the residents with no rural training. Family medicine residents with some rural training took, on average, 2.67 of the extra courses compared with 2.07 for residents without rural training ($p < 0.01$).

Contents
• Abstract • Introduction • Methods • Results • Discussion • References

Discussion

This cross-sectional study attempted to demonstrate an association between confidence in procedural skills and choice of practice location. Such a study design cannot show cause and effect; it can only establish whether a relationship among variables exists.

When procedure confidence variables and other variables related to procedural skills were examined in a logistic regression model to determine their relative importance as factors associated with practice location choice, only rural training was significantly associated with practice location choice. Those residents with some rural training in their family medicine program were more likely to choose a non-urban practice location. This finding is consistent with many studies supporting the finding that rural training in residency is associated with choice of rural practice location.2–4,8,9

Procedural skill confidence by itself, as an individual variable, was not significantly associated with practice location choice. This is a surprising finding since much is made of the difference in technical skills necessary for rural practice as opposed to urban practice.

In this study, any relationship of confidence in procedural skills to choice of practice location was overshadowed by the rural training variable because rural training has many more components than just procedural skills training that may influence practice location choice. Such features as rural environment, lifestyle and practice style are all part of the rural practice

experience and may play important roles in the decision to choose rural practice. Further study of the differences between urban and rural training might elaborate on these features.

Confidence in procedural skills is a component of medical training that is enhanced by rural training. This is clearly shown by the fact that family medicine residents with some rural training were significantly more confident in both emergency and ambulatory procedures than their counterparts with no rural training. This confirms the 1997 findings of Dixon-Warren.18

The differences in the procedure confidence variables between those with and without rural training cannot be accounted for only by differences in general confidence as a family doctor. In fact, with respect to overall confidence as a family doctor, those residents without rural training were more confident than those with rural training. This was an unexpected finding that merits more study. It may be that there are factors supplying additional general confidence to residents with only urban training. The actual confidence difference, although statistically significant, is small.

In this study, gender was not significantly associated with either rural training or choice of a rural practice location; this should soothe fears expressed by some that female graduates would be less likely to choose rural practice.28

Rurally-trained residents were more likely to take special training courses than residents with no rural training. It is not clear whether these courses were more available to residents in rural training or were selectively chosen because of interest. Levitt and colleagues29 have shown that completion of the ALSO program in family medicine residency resulted in increased confidence in obstetric skills. However, in this analysis, special training courses, per se, were not significantly associated with practice location choice.

The strength of this study includes the establishment of a reliable and valid instrument to survey procedural skills training and confidence levels. Although other studies have used an overall technical confidence variable, this study is the first to use an average item score for confidence, which should be more reflective of actual confidence in procedural skills. The study was conducted near the end of the second year of family medicine training, when confidence is at its peak and training location decisions are being made. This is the ideal time to assess the relation between the two. The respondents were not significantly different from the whole sampling frame, which should lend support to generalizing the findings for all family medicine residents in Ontario.

Limitations

There are several limitations to this study. It is based on self-reported data, which may not reflect actual practice location after graduation. There are many factors that influence practice location choice and these may have influenced the residents' answers to the practice location question,

despite the attempt to remove the influence of factors such as family wishes by asking the residents to indicate their ideal choice. The distribution of practice location choices in this study is similar to those of other self-report studies,8,30,31 including the 1998 Janus report31 on Canadian family practice. This adds strength to the findings reported in this study.

The rural training variable used in this study was not well defined. Neither the duration of the rural training nor the timing of the training within the 2-year family medicine residency was described in any detail. We do not believe that this detracts from the strength of the findings because we accepted any report of rural training as a positive response. If anything, this easily attained definition should have diluted any positive influence of rural training on practice location choice rather than magnified it.

It is not clear whether rural training increases confidence in procedural skills or whether residents who are more interested in procedures are attracted to rural training sites. It is not clear whether the choice of a rural practice location occurs before the choice of a residency training site, during residency training or near the end of training. It is possible that residents who select rural training may be more likely to select rural practice later. In a 1981 US study, Glenn and Hofmeister32 suggested that rural training might not act as a strong change agent for practice location but, rather, reinforce pre-existing positive feelings about rural practice. More research is needed to clarify the contribution of rural training to the choice of practice location.

Finally, this study only looked at procedural skills variables. It is well established that many factors influence the choice of rural practice, and this study is only a narrow view of that larger question.

In view of these findings we recommend that family medicine training programs increase the number of rural training opportunities to promote the choice of non-urban practice locations by graduates.

Competing interests: None declared.

Acknowledgements: We acknowledge the University of Western Ontario Department of Family Medicine Research Trust Fund for financially supporting the study; Frederick H. Philipp for data analysis; rural Ontario physicians James and Leslie Rourke of Goderich, Peter Wells of Collingwood, and Len Kelly of Sioux Lookout for their helpful review of the questionnaire; and Drs. John Jordan and James Goertzen for comments on the manuscript. We also acknowledge the cooperation and assistance of the program directors of the family medicine training programs in Ontario.

Dr. Wetmore is an Associate Professor in the Department of Family Medicine, University of Western Ontario, London, Ont. He practises at the Victoria Family Medical Centre in London,

Ont.
Dr. Stewart is Professor of Family Medicine and
Director of the Centre for Studies in Family Medicine at the University of Western Ontario.

This article has been peer reviewed.

Correspondence to: Dr. S.J. Wetmore, 60 Chesley Ave., London ON N5Z 2C1

References

1. Fryer GE, Stine C, Vojir C, Miller M. Predictors and profiles of rural versus urban family practice. Fam Med 1997;29(2):115-8.
2. Costa AJ, Schrop SL, McCord G, Gillanders WR. To stay or not to stay: factors influencing family practice residents' choice of initial practice location. Fam Med 1996; 28(3):214-9.
3. Gray JD, Steeves LC, Blackburn JW. The Dalhousie University experience of training residents in many small communitites. Acad Med 1994;69(10):847-51.
4. Anderson EA, Bergeron D, Crouse BJ. Recruitment of family physicians in rural practice. Minnesota Med 1994;77(7):29-32.
5. Brazeau NK, Potts MJ, Hickner JM. The Upper Peninsula Program: a successful model for increasing primary care physicians in rural areas. Fam Med 1990;22(5):350-5.
6. Rabinowitz HK. Evaluation of a selective medical school admissions policy to increase the number of family physicians in rural and underserviced areas. N Engl J Med 1988;319(8):480-6.
7. Rosenthal TC, Rosenthal GL, Lucas CA. Factors in the physician practice location puzzle: a survey of New York State residency-trained family physicians. J Am Board Fam Pract 1992;5(3):265-73.
8. Lebel D, Hogg W. Effect of location on family medicine residents' training. Can Fam Physician 1993;39:1066-9.
9. Longenecker DP. Practice objectives and goals: a survey of family practice residents. J Fam Pract 1975;2(5):347-51.
10. Al-Turk M, Susman J. Perceived core procedural skills for Nebraska family physicians. Fam Pract Res J 1992;12:297-303.
11. Hamilton J. Organization for rural MDs focuses "on problems that separate us from our urban counterparts." CMAJ 1995;153(2):197-200.
12. Britt H, Miles DA, Bridges-Webb C, Neary S, Charles J, Traynor V. A comparison of country and metropolitan general practice. Med J Aust 1993;159 (Suppl):S9-64.
13. Curtin K. In: Section of Teachers of Family Medicine Newsletter. 1996;4(2):5. Available from: CFPC — Section of Teachers Newsletter, 2630 Skymark Ave., Mississauga ON L4W 5A4; sot@cfpc.ca
14. Perkin R. Rural practice [progress notes].Can Fam Physician 1994;40:632.

15. Watts RW. The GP proceduralist. Aust Fam Physician 1993;22(8):1475-8.
16. O'Connor HM, Davidson JR. Emergency medicine skills: Are family physicians adequately prepared? Can Fam Physician 1992;38:1789-93.
17. Speechley M, Dickie GL, Weston WW, Orr V. Changes in residents' self-assessed competences during a two-year family practice program. Acad Med 1993;68(2):163-5.
18. Dixon-Warren N. Competency scores of common procedural skills as self reported by graduating family medicine residents in Ontario. Trillium Primary Care Research Forum, 1997 May 24; Hamilton, Ont.
19. Whiteside C, Pope A, Mathias R. Identifying the need for curriculum change: when a rural training program needs reform. Can Fam Physician 1997;43:1390-94.
20. Tresolini CP. Medical student's development of self-efficacy in conducting patient education for health promotion: an analysis of learning experiences. Diss Abstr Int 1992;53(1-B):186.
21. Spike NA, Veitch PC. General practice procedural skills. Aust Fam Physician 1991;20(9):1312-6.
22. Heikes LG, Gjerde CL. Office procedural skills in family medicine. J Med Educ 1985;60:444-55.
23. DeWitt DE. Skills training in primary care residency: problems and solutions from the family practice perspective. Postgrad Med 1987;81(2):155-62.
24. Spike N, Veitch C. Procedural skills for general practice: the results of a Queensland survey. Aust Fam Physician 1990;19:1545-52.
25. Leventhal WD, Goodman BW. A curriculum in practical clinical skills for family medicine residents. J Fam Pract 1981;13:889-91.
26. Norris TE, Felmar E, Tolleson G. Which procedures should be taught in family medicine residency programs? Fam Med 1997;29(2):99-104.
27. College of Family Physicians of Canada. Residency programme accreditation and certification. Mississauga (ON): The College; 1995.
28. West PA, Norris TE, Gore EJ, Baldwin LM, Hart LG. The geographical and temporal patterns of residency-trained family physicians: University of Washington family practice residency network. J Am Board Fam Pract 1996;9(2):100-8.
29. Levitt C, Khanlou N, Kaczorowski J, Feldman P, Guibert R, Goulet F, et al. Attitudes toward obstetrics training. Residents surveyed at McGill University and University of Montreal. Can Fam Physician 1997;43:239-46.
30. Sanmartin CA, Snidal L. Profile of Canadian physicians: results of the 1990 Physician Resource Questionnaire. CMAJ 1993;149(7):977-84.
31. Kermode-Scott B. The Janus Project: goldmine of information [commentary]. Can Fam Physician 1998;44:1581-4.
32. Glenn JK, Hofmeister RW. Rural training settings and practice location decision. J Fam Pract 1981;13(3):377-82.

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Cardiac troponin I use for diagnosing acute myocardial infarction in a small rural emergency department

Graham Worrall, MB BS, MSc, FCFP
Gregory Sherman, MD CM, CCFP
John C. Knight, BSc (Hons)

CJRM 2001;6(3):195-8.

Contents

Objective: To audit the use of cardiac troponin I (cTnI) testing in a small rural emergency department (ED) in Newfoundland.

Methods: Data on administration and results of cTnI tests were collected during the ED visit. Other data relating to demographic factors, and other test results and the discharge outcome were collected by chart review.

Results: In the study period, 197 (2.1%) of 9238 ED registrations were for chest pain, and 10 of them had a discharge diagnosis of acute myocardial infarction (AMI). Cardiac troponin I testing was ordered for 50 patients, of whom 5 had an AMI, and the test was found to be positive in 2 of these. Troponin I tests were negative in all 45 patients who did not have an AMI diagnosis. Of the 50 cTnI tests, 42 were ordered within 4 hours to 7 days of symptom onset and 37 were ordered within the 6-hour to 7-day range.

Conclusions: In this low-prevalence setting, the cTnI test worked well if used within the appropriate time frame. The test proved useful in ruling out AMI but did not appear to provide significant additional information to that obtained from the electrocardiogram and clinical examination in confirming the diagnosis of AMI.

Objectif : Vérifier l'utilisation de la troponine I cardiaque (TnIc) dans un petit service d'urgence rural de Terre-Neuve.

Méthodes : On a recueilli des données sur l'administration et les résultats des tests à la TnIc pendant la visite effectuée au service d'urgence. Les autres données sur les aspects démographiques et d'autres résultats de tests, ainsi que sur le résultat du congé, proviennent d'une étude des dossiers.

Résultats : Au cours de la période d'étude, 197 (2,1 %) des 9238 patients inscrits à l'urgence se sont plaints de douleur à la poitrine et, au moment du congé, on avait diagnostiqué un infarctus aigu du myocarde (IAM) chez 10 d'entre eux. Le test à la troponine I cardiaque a été prescrit pour 50 patients, dont cinq avaient subi un IAM. Le test a donné des résultats positifs dans deux de ces cas. Les tests à la troponine I ont donné un résultat négatif chez les 45 patients chez lesquels on n'a pas diagnostiqué d'IAM. Sur les 50 tests à la TnIc, 42 ont été prescrits dans les quatre heures à sept jours suivant l'apparition des symptômes et 37, dans les six heures à sept jours.

Conclusions : Dans ce contexte de faible prévalence, le test à la TnIc a donné de bons résultats lorsqu'on l'a utilisé dans le délai approprié. Il s'est révélé utile pour exclure l'IAM, mais il n'a pas semblé produire plus de renseignements supplémentaires que ceux que fournissent l'électrocardiogramme et l'examen clinique pour confirmer le diagnostic d'IAM.

Contents

Introduction

Ruling out acute coronary syndromes is often a challenge for emergency department (ED) physicians. Diagnostic strategies are based on clinical symptoms, electrocardiographic changes and serial creatine kinase/creatine kinase-MB measures. The current "gold standard" for the diagnosis of acute myocardial infarction (AMI), namely the electrocardiogram (ECG), is not without its problems, as 50% of all patients complaining of chest pains suggestive of AMI have a nondiagnostic ECG.1 Furthermore, only 15% of patients presenting with chest pains actually have an AMI.2 The cardiac enzyme tests that are currently used become reliably accurate in 1 to 6 hours after an AMI3 but are not cardiac specific, and in many small rural sites, like ours, the laboratory does not do these tests. An accurate point-of-care test that quickly detects myocardial damage would be most useful in such a setting.

Troponins are proteins found in cardiac and skeletal muscle. Cardiac troponin I (cTnI) is a sensitive biochemical marker of high cardiac specificity because of its unique expression in myocardial tissue. It is released 4 to 6 hours after myocardial damage; readings return to normal after 6 to 7 days.4 The sensitivity of the rapid cTnI test for myocardial damage has been reported to be 96% or greater, with specificities of 83% or greater when the test is given 6 to 12 hours after onset of symptoms.5–8

Although the use of rapid cTnI testing in the ED has been widely reported, the studies were either large controlled trials or studies of patients in large urban EDs.

The purpose of this study was to audit the use of the cTnI test in a small rural ED:

- to assess if the test was useful in either ruling out or ruling in AMI compared to ECG, clinical examination and medical history; and
- to assess if the test was being used appropriately, based on the time from onset of symptoms.

Methods

Setting

The study was carried out in a small community health centre in rural Newfoundland. In addition to 5 permanent physicians, family practice residents and short-term locums work in the ED.

Subjects

Fifty consecutive patients presented to the ED during 1999 who underwent cTnI testing. Use of the test was always at the discretion of the attending physician.

The test

The Spectral Diagnostics Cardiac STATusTM (Spectral Diagnostics, Toronto) test was used. This test uses whole blood, plasma or serum and consists of a colour-labelled antibody and a different biotenylated capture antibody forming a sandwich complex with cTnI adhering to streptavidin in a signal zone. Enrichment of colour-labelled antibodies binding to cTnI (discriminator 0.10 ng/mL) results in a colour line within 15 minutes. This is a qualitative test, which is either positive or negative.

Other data

The date, time of the cTnI test and test result were recorded during the emergency visit. Other data, including sex, age, history of myocardial infarction, symptoms, ischemic changes noted on the ECG, result of clinical examination, arrival time, time of symptom onset and final diagnosis, were collected later using a chart audit. The total number of ED registrations during the study period, the total number of patients presenting to the ED with chest pain and the total number of myocardial infarctions were determined from the medical database.

Results

During the study period 197 (2%) of 9238 people presenting to the ED had a complaint of chest pain. Ten (5%) of the 197 had a discharge diagnosis of AMI. Five AMIs were diagnosed without the use of the cTnI test because the physician felt able to make a clear diagnosis without the aid of the test; these patients were not part of the cTnl sample.

The cTnI test was ordered for 50 (29 males) of the 197 people. Their average age was 63.3 years, and 58% had a history of heart disease. Twenty-nine had a primary complaint of chest pain. Of 5 patients who were diagnosed with myocardial infarction (Fig. 1), 3 had chest pain as a primary complaint; the others had chest pain, but complained primarily of "shortness of breath" and "flu." The final diagnosis for the 50 patients is shown in Table 1.

Of the 5 patients having a diagnosis of AMI in the cTnI-tested group, the ECG showed obvious ischemic changes in 4 patients. Cardiac troponin I was positive in only 2 of these 5 patients (Fig. 1). In the fifth patient, whose diagnosis was initially unclear, the cTnI test was negative. Thus, for the 5 AMI cases in the cTnI-tested group sensitivity was 40% (Table 2a and Table 3) and the positive predictive value was 100% (i.e., there were no false-positives among tested patients).

In the 45 cTnI-tested patients who did not have a diagnosis of AMI, the cTnI was negative (specificity 100%). The negative predictive value of the test was 93.8% (Tables 2a and 3). In one instance where the ECG was questionable the negative test supported the ruling out of an AMI.

If 4 hours to 7 days from onset of symptoms is used as an appropriate time frame for test use, the cTnI test was used appropriately with respect to time in 42 of 50 cases. On the basis of this time frame, sensitivity is now 50% and specificity and positive predictive value remain at 100%, while negative predictive value increases to 95% (Table 2b and Table 3).

In the 5 patients with a diagnosis of AMI the cTnI test was done at 1.5 hours in 1 patient (and was negative), between 4 to 6 hours in 2 patients (negative in both instances) and after 6 hours in 2 patients (both positive).

If a 6-hour to 7-day time frame is used, the total number of appropriate cTnI tests becomes 37. Sensitivity, specificity, and positive and negative prediction values are now all at 100% (Table 2c and Table 3).

Discussion

The proportion of patients with chest pain in this sample who were subsequently found to have an AMI (5%) was lower than the proportion typically seen in larger hospitals.2 Five of these 10 underwent cTnI testing. Only 2 out of the 50 cTnI tests that were ordered were positive, but as AMI can occur without classic chest pain the frequency of use in this study is arguably appropriate.

There appeared to be a fairly high rate of inappropriate use related to the timing of the cTnI test, as 8 tests (16%) were carried out in less than 4 hours, and 13 tests (26%) in less than 6 hours after the onset of symptoms. Proper training about the time restrictions of the test is important if the test is to be used appropriately.

Even with our small sample, a difference was seen in the effectiveness of the test as the time from the onset of symptoms increased. When blood was drawn within 4 hours of symptom onset test sensitivity was low (50%). If a 6-hour cutoff was used sensitivity doubled to 100%; the longer time resulted in the elimination of false-negative tests. Specificity remained constant at 100% at all cutoff times. This is comparable to the results of other studies.5–9

A negative cTnI test did help rule out AMI in 1 patient when the ECG appeared to indicate AMI and in the 45 patients who were discharged with other diagnoses.

Limitations of the study

The study was largely a retrospective chart audit and carries with it all of the limitations and problems of such a study. There were no set criteria for interpretation of the ECG by physicians, for ordering of cTnI tests or for criteria to determine a discharge diagnois of AMI. These were left to the discretion of the attending physician. As the study was a snapshot of activity over 1 year in a low prevalence setting, numbers are small and the validity of statistical analysis may be limited.

Recommendations for clinical practice

The physicians involved in the study believed the test was of use in making the decision about which patients it was safe to discharge home and which to detain in the ED. Overall, however, cTnI, as used by the doctors in this clinic, did not provide additional diagnostic information over and above clinical examination and the ECG. It was not useful in ruling in AMI because the test was never positive when clinical examination or the ECG did not show evidence of myocardial infarction. We recommend that if cTnI is to be used in the ED, physicians must be trained in appropriate use of the test. Physicians should, as far as possible, determine precisely the time of onset of chest pain or other indicative symptoms and wait at least 6 hours before drawing blood

from the patient to perform the test. Physicians should be aware that early testing adversely affects the performance of the test.

Competing interests: None declared.

G. Worrall, Director, Centre For Rural Health Studies Associate Professor of Family Medicine, Memorial University of Newfoundland Whitbourne, Nfld.
G. Sherman, Assistant Professor of Family Medicine, Memorial University of Newfoundland Whitbourne, Nfld.
J. Knight, Research Statistician Centre for Rural Health Studies, Memorial University of Newfoundland Whitbourne, Nfld.

This article has been peer reviewed.

Correspondence to: Dr. Graham Worrall, Centre for Rural Health Studies, Division of Family Practice, Memorial University of Newfoundland, Whitbourne NF A0B 3K0; 709 759-2300, fax 709 759-2387

References

1. Dadkhah S, Fisch C, Foschi A, Schaefer M, Zonia C, Aguilera H. Can rapid bedside assays accurately evaluate chest pain? Cardiovasc Res Bull 1997;3(1):79-81.
2. Meinertz T, Hamm CW. Rapid testing for cardiac troponins with acute chest pain in the emergency room. Eur Heart J 1997;19:973-4.
3. Ryan D. A lab primer. RN 2000;60(1):27-30.
4. D'Costa M, Fleming E, Patterson MC. Cardiac troponin I for the diagnosis of acute myocardial infarction in the emergency room. Clin Chem 1997;Nov:550-5.
5. Kost GJ, Kirk JD, Osmond K. A strategy for the use of cardiac injury markers (troponin I and T, creatine, kinase-MB mass and isoforms, and myoglobin) in the diagnosis of acute myocardial infarction. Arch Pathol Lab Med 1998;122:245-51.
6. Hetland O, Dickstein K. Cardiac troponins I and T in patients with suspended acute coronary syndrome: a comparative study in a routine setting. Clin Chem 1998;44:1430-6.
7. Hamm CW, Goldman BU, Heeschen C, Kreymann G, Berger J, Meinerts T. Emergency room triage of patients with acute chest pain by means of rapid testing for troponin T or troponin I. N Engl J Med 1997;337:1648-53.
8. Falahati A, Sharkey SW, Christenson D, McCoy M, Miller EA, Murakami MA, et al. Implementation of serum cardiac troponin I as marker for detection of acute myocardial infarction. Am Heart J 1999;137:332-7.
9. Ebell MH, Flewelling D, Flynn CA. A systematic review of troponin T and I for diagnosing acute myocardial infarction. J Fam Pract 2000;49(6):550-6.

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

The occasional V–Y flap

Stuart Johnston, MB, ChB, MSc (Eng), CCFP
Vanderhoof, BC

CJRM 2001;6(3):199-200.

For those of us practising in the rural areas of Canada, it is fairly common to see patients with hand injuries in the emergency department. Many physicians are reluctant to deal with these injuries because they understand the huge importance of preserving hand function and are concerned that they may not provide optimal treatment for that patient. The following paper describes a useful procedure for treatment of fingertip-loss injuries, which can reasonably be done by rural physicians.

Which injuries lend themselves to V–Y flap repair?

Transverse amputations of the distal phalanx (Fig. 1A)

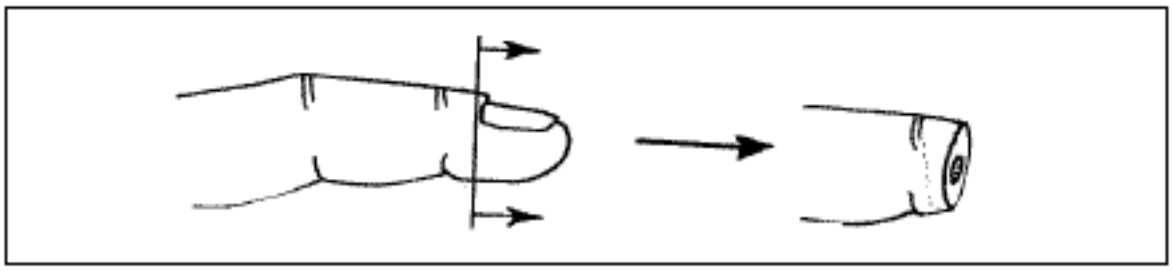

Fig. 1A

Oblique amputations that have preserved the palmar skin (Fig. 1B)

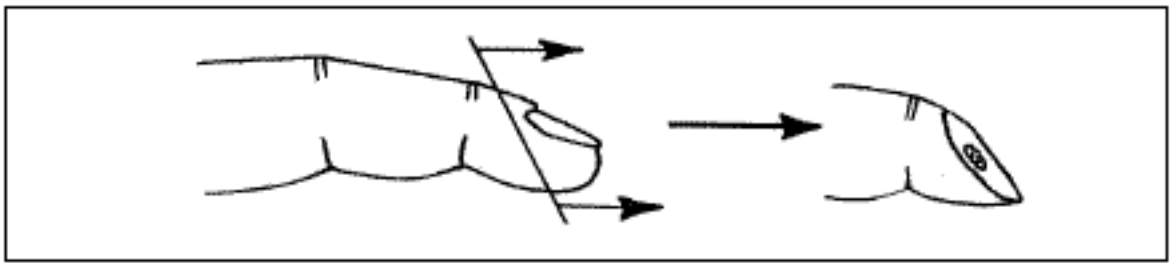

Fig. 1B

Technique

Step 1
Digital block, tourniquet (with a penrose drain or glove finger); wash and clean carefully with generous volumes of normal saline.

Step 2
With the palmar surface up, mark the 'V' extending from the flexion crease to the edges of the amputated stump (Fig. 2).

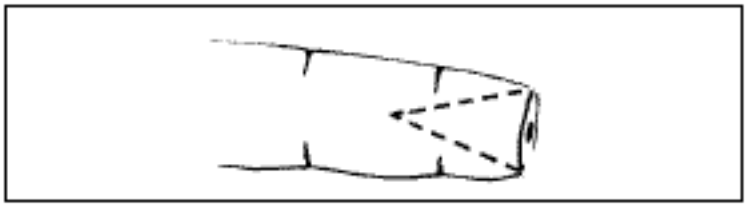

Fig. 2

Step 3
Cut down vertically 3–4 mm into the 'V' to free the triangle of tissue (skin). This will allow it to advance distally and up over the bone tip (Fig. 3).

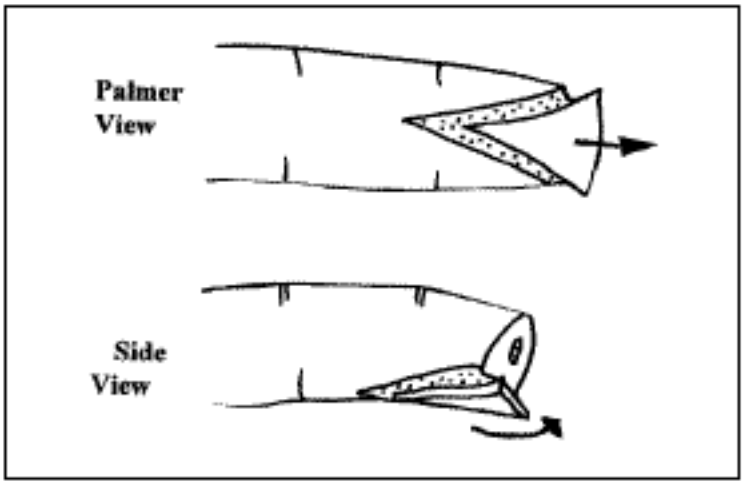

Fig. 3

Step 4
Start suturing by anchoring the flap at its leading edge and pulling it forward into its new position (Fig. 4).

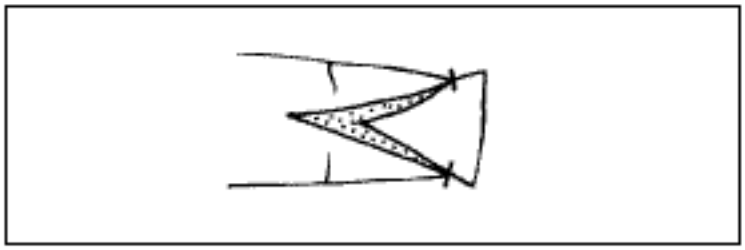

Fig. 4

Step 5
Suture the sides of the flap to the adjoining palmar tissue (Fig. 5A); then close the base of the 'Y' (Fig. 5B). (Hence, the "V–Y flap.")

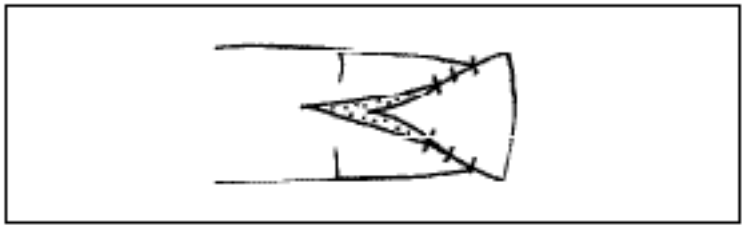

Fig. 5A

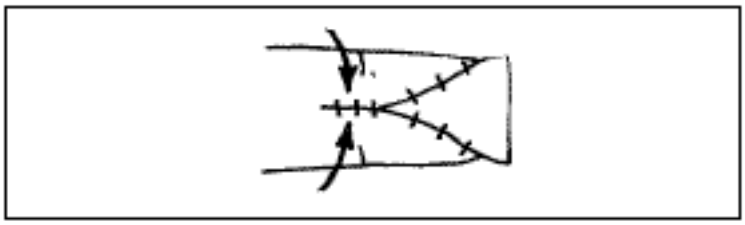

Fig. 5B

Points

1. You may find you can only advance the flap 4–6 mm, but this is often all that is needed to get skin closure over the bone tip.
2. If the bone sticks out too far to allow closure, trim it back a little using rongeurs until the flap covers it satisfactorily.
3. It isn't necessary to bring the flap up to the nail level; as long as the bone is covered the rest will granulate and epithelialise on its own.
4. When suturing the flap in place use a 4-0 nylon suture, leaving the threads approximately 1 cm long so that the sutures do not become buried and difficult to find.
5. A gentle Sofratulle or equivalent dressing with minimal pressure works well. Adding ibuprofen 400 mg t.i.d. is helpful if the blood supply appears tenuous.

6. I usually cover the repair with Keflex, 250 mg t.i.d., p.o. for 7 to 10 days to minimize the possibility of losing the flap to infection.
7. After leaving the initial dressing in place for 3 to 4 days, daily or every second day dressing changes are adequate. Remove sutures at day 10.
8. Follow up your patient on a regular basis to minimize complications in the initial stages of recovery.

Complications that may occur

- Infection: Cover with antibiotics.
- Avascular flap: Don't cut too deeply when mobilizing the 'V'. Use ibuprofen.
- Neuroma formation: If the digital nerves are evident, pull them down, cut and cauterize the ends and allow them to fall back.
- Buried sutures: Leave threads long, to avoid this.
- Pain: Elevate the affected hand for the first 2 days. Use adequate analgesia.
- Fingertip tenderness following healing: Use occupational therapy or physiotherapy to assist with desensitization exercises. (This will take months.)
- Abnormal nail growth: Ablation of the nail matrix may be necessary at a later date.

Correspondence to: Dr. Stuart Johnston, Omineca Clinic, RR 2, Hospital Road, Vanderhoof BC V0J 3A0; docsvhf@uniserve.com

---

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Country cardiograms case 20

Hugh Hindle, MD
Hinton, Alta.

CJRM 2001;6(3):201.

Case presentation

A 54-year-old satellite dish installer was between jobs when he felt 3 short, but severe, pains across his chest. He was pain free on arrival at his local emergency department. The doctor on call thought that the patient's atypical chest pain was unlikely to be a cardiac problem but ordered an ECG for reassurance (Fig. 1). Much to her alarm, the automated report indicated a possible inferoposterior infarction. After telephone consults, faxes and a 2-hour transfer, the patient arrived at the local referral centre for review.

What is your diagnosis?

For the Answer see page 214.

"Country cardiograms" is a regular feature of CJRM. We present an electrocardiogram and discuss the case in a rural context. Please submit cases to Suzanne Kingsmill, CJRM, Box 1086, Shawville QC JOX 2Y0.

This article has been peer reviewed.

Correspondence to: Dr. Hugh Hindle, 102 Allen Cove, Hinton AB T7V 1K1

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

A primer on rural medical politics

Keith MacLellan, MD
Shawville, Que.

CJRM 2001;6(3):205-6.

Dr. MacLellan is a rural family physician from Shawville, Que., and a past president of the Society of Rural Physicians of Canada. He is probably one of the most knowledgeable people in the field of rural medical politics in Canada today. He has been persuaded to share his insights in a series of articles that will run in the next few issues of this Journal. Collectively, they should constitute a completely original, in-depth description of the workings of contemporary rural medical affairs.

Many concepts in rural health care have features that go against the grain of some basic tenets of modern medicine. Consider, for example, how inimical the idea of broadly skilled general practitioners is to the current implacable tide of medical sub-specialization. The true medical generalist might be defined as a practitioner not only with broad primary skills but one who is able to carry out any number of defined tasks within the specialty fields. These generalists, who provide thrombolysis, trauma care, anesthesia, appendectomies, cesarean sections, and other "secondary" skills, sustain rural health care as we know it.

But efforts to support these practitioners are whimsical when our entire medical system, politically, administratively, legally and intellectually has accepted and encourages, as do all densely populated nations, the worth of sub-specialization in the "primary/secondary/tertiary care" analysis. The rigid division of responsibilities in this model of urban health care does not translate well to rural Canada and is often an impediment to rural populations accessing proper care. It represents a major reason why rural women are having an increasingly difficult time being able to deliver their babies in their own communities, since obstetrics is treated as "secondary" care, particularly if practised without specialist backup.

An associated fallout of the emphasis on specialization and the abandonment of our historical commitment to the education of medical generalists is the "dumbing down" of primary care, which, by definition, is everything not done by specialists. Acceptance of the intrinsic worth of

specialization in this increasingly complicated medical world means that the role of generalists is reduced to "gatekeepers" who can be trained to sort, triage, and coordinate care provided by specialists — a valuable function in a densely populated urban population. The depressing debate over primary care reform centres around the question of how physicians and nurses divide up the tasks of triage, coordination and communication.

So, if a rural organization like the Society of Rural Physicians of Canada (SRPC) were to come along and say, for example — "Canada is a vast country, different from most because of a significant population too geographically distant from secondary and tertiary care to fall within the confines of good medicine and patient convenience that would allow patients to move through the neat levels of care so useful in urban areas" — we would be given a polite audience.

If we then went on to say — "We have documented with the best available evidence that rural women are having an increasingly difficult time delivering babies in their own communities, in part because specialized obstetrical skills including cesarean section capabilities and anesthesia are no longer within the 'primary care' domain" — there would be a general wagging of heads.

If we then followed with — "The provision of specialized skills by generalists in rural areas not only supports all of rural health care but has always existed 'under the carpet' as a mix of international medical graduates with some combination of aberrant licensing and indenture, and supplemented by Canadian graduates with informal, unaccredited training. Furthermore, this system, cobbled together over decades from necessity, can be described and documented as cost-efficient and within the confines of good medicine and patient convenience. This rural health care system of generalists functions on all 3 levels of care (1o/2o/3o) in a flexible and cost-effective manner, with excellent outcomes. But it looks to be dying, and rural populations soon will receive only public health and triage in their communities, with withdrawal of specialized skills by generalists, leading inevitably to the collapse of all other significant care." — there would be more head wagging and a scattering of applause.

But then we would say — "We have come up with a curriculum and a plan, agreed upon by specialist societies and accrediting bodies, that, with the best evidence, will shore up the ability of rural women to have their babies safely in their own communities. We want you, the Canadian political/medical structure, to help implement this plan nationally, but we warn you that it involves generalists being openly supported to function at all 3 levels of care. We challenge you to mobilize the resources of Canada's medical/political system to recognize and support the GP/obstetrician, both for the good of rural populations and also, perhaps, for the revitalization of the entire 'primary care' movement. More such plans in anesthesia, surgery, endoscopy, critical care, psychiatry, etc. are to follow" — and general consternation would ensue. Naturally, the medical system is unable to accommodate changes of benefit to rural populations if those changes threaten the fundamental assumptions of the system.

What follows is a highly personal account of the major "players" in Canadian medical politics

who are essential for implementing, for example, the SRPC's policies on rural obstetrics — or any other health policy for rural populations involving broadly skilled generalists — accompanied by reasons why they can't easily accommodate rural health care needs. We will see that the problems are chiefly structural, with a large measure of good old Canadian jurisdictional tensions thrown in.

Two very important premises before beginning: 1) transport and regionalization, while needed, are not the total solution and if implemented wholesale will be deleterious to rural population health; and 2) significant change in rural health care and training must come from the national front.

The first premise is thorny, since transport is often seen as the easy option consistent with the specialization trends of our medical system. There is reasonable evidence, however, that women transported out of rural communities to deliver in a regional centre have worse outcomes than if they were delivered locally by competent staff with proper selection. This is compounded by the inevitabilities of Canadian weather and geography, the myth of a safe, cost-effective, 24-hour, all-weather transport system and the degradation of the local hospital's all around capabilities once it loses obstetrics.

The second premise is more political. A national training program for GP/obstetricians, with training that is both accredited and certified, with portable licensure, with maintenance of competence programs that are fully funded, and with professional support through national medical organizations, is beyond the capabilities of the provincial ministries of health.

But how to implement such a program? This will form the basis of a series of articles on the players in our health care system. At all times we will use rural obstetrics as a lens to focus the issue, but remember that there are many more equivalent health care disciplines that can be used. Remember too that this view comes from a busy rural doctor with no formal training in politics or health administration. It distils what was learned on the fly during 3 years of parttime interaction with our system as the president of the SRPC.

Correspondence to: Dr. Keith MacLellan, PO Box 609, Shawville QC J0X 2Y0

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Rural wannabes

Mary Johnston, MD
Revelstoke, BC

CJRM 2001;6(3):207.

Rural docs know the difference between manure and bullshit. Manure is that sweet smelling end-product of farm animals that if applied properly will help your garden grow. Bullshit is that odiferous by-product of bragging that only makes the ridiculousness of the producer grow. In rural medicine here in Canada, three kinds of bullshit are being peddled. This situation is making it difficult for real rural docs to be heard.

1. Non-rural rural bullshit

This kind of bullshit comes from those truly non-rural types, who hang around in their jeans and try to look and sound rural — but their only association with "rural" is having been somewhere near the suburbs. This scenario does, however, show that rural is now HOT — not like in the 80s, when it was NOT. The only problem is that these rural wannabes want to do all the talking for us real rural docs.

Just because we may be of fewer words and hold fewer meetings does not mean we are unable to articulate and represent ourselves.

2. Weekend wannabes

These too are city slickers who hang around in mod jeans, but they actually do spend their weekends and time off in rural Canada. They therefore feel they are the "real" rural guys. They collect cowboy stuff, and occasionally go on a trail ride, or fish or hunt or snowmobile or mountain tour. Many even have a cabin or a home in the country. But they don't want to work here or associate with the locals in any meaningful way. No, they prefer to hang out with other rural wannabes; where they definitely feel more comfortable.

3. Rural sympathizers

These folk experienced rural life for a short spell, but soon fled back to the city. They took a few rural sympathies with them. Rural sympathizers like to speak for us real rural docs. They believe that their brief but terrifying rural experiences somehow outweigh what we have experienced during the many years we have worked here (and loved it).

There is a huge difference between sympathy and empathy.

So how do we make ourselves heard amongst the cacophony of rural bullshit? Rural folk don't go to the country, they are part of the country. They don't experience rural life, they live it. And, most of all, when they talk about rural life you can hear the freedom and independence and pride in their few but meaningful words.

Just listen.

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Spotlight on Google

Barrie McCombs, MD, CCFP, CCFP(EM)

CJRM 2001;6(3):211-2.

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

This article presents a tutorial about how to plan a search and find information using the Google search engine. It also includes a list of other Internet search engines, directories and related resources.

Plan the search

Before you log on, plan your search. Ask yourself: "If I were writing an article on this topic, what words would I use?" A well-focused question can be stated in 1 or 2 sentences. If the question is complex, break it into several simple questions. Underline the important words or phrases in each sentence. These key words will be the building blocks for your search strategy.

Sample searches in this article are based on the question "What is the risk of a diabetic woman developing eclampsia during pregnancy?" Keywords: eclampsia, pregnancy and diabetes.

Learn about Google

Google Web site: www.google.com. Before you search, click on •All About Google• link. In the "Search tips" section of that page, you will find 3 pages: Basics of Search, How to Interpret Results, and Refining Your Search. Print them for later reference.

Basic search

Return to the main Google page. Click inside the Search box at the top of the page and enter the single search term "eclampsia." Then, to begin the search, press the Enter key or click on the Google "Search" button.

Search results

Google will display a list of Internet pages containing the key word "eclampsia." It provides a link to each page and a short quote, showing how the search term appears in context. For a more detailed description of the Results page, read the How to Interpret Results page (see above). Make a note of how many pages are matched by this search and each of those in the following examples.

Find in page

Click on the link to one of the pages in the Results list. Netscape and Internet Explorer browser programs provide a "find in page" function in their Edit menu. This is useful when scanning a long document. It allows you to search the current page for each occurrence of a particular word. The key word can be different from the key word in your original search. Test this feature by looking for the word "pregnancy" in the page you have just displayed.

Boolean logic

More elaborate searches can be constructed by creating Boolean search strategies that combine terms using the connectors AND, OR and NOT. To learn more about these operators, visit the Boolean tutorial listed below.

Combining terms using AND

If you enter two or more search terms, Google will automatically combine them into a Boolean AND search that matches only pages where all the search terms are present. Enter the 3 key words from the sample question in the search box. The total number of pages matched will be less than in the first search for "eclampsia" alone.

Combining terms using OR

A Boolean OR search matches pages where at least 1 of the selected terms is present. In Google, the word OR must be capitalized. Some Web pages relevant to our question use the term "eclampsia," others use the terms "preeclampsia," "pre-eclampsia" or "toxemia." A search strategy that would match all these terms is "eclampsia OR preeclampsia OR pre-eclampsia OR toxemia." Another relevant search phrase is "diabetes OR diabetic."

Combining terms using NOT

A Boolean NOT search matches pages that mention 1 term but excludes any of those pages that mention the NOT term. To find pages that mention "eclampsia" but exclude pages that mention "diabetes," the Boolean phrase is "eclampsia NOT diabetes." In Google, NOT is represented by a minus sign, so enter the phrase "eclampsia–diabetes." Note: the minus sign immediately precedes the exclusion word, with no intervening space.

Phrase searching and stop words

To search for an exact phrase, such as "gestational diabetes," enclose it in quotation marks. Another common phrase relative to our question is "diabetes in pregnancy." Do a quoted-phrase search for these 3 words. Google will give you a message that "in" is a common "stop word" and has been ignored. To force the program to search for the exact phrase including the stop word, enter a plus sign immediately before the word "in" ("diabetes +in pregnancy").

Too much or too little information

When you find too much information, narrow your strategy by adding more search terms or making your search terms more specific. If you find too little information, use fewer search terms or more general terms.

Internet directories

Directories are an alternative to search engines. They are a good place to search for information on a broad topic, such as "diabetes." Directories are organized like the yellow pages in a phone book. Links are indexed under a series of headings and subheadings. To find information, select a major heading, then follow the subheadings that relate to the desired topic. Most directories include an internal search engine that allows you to search the directory for a specific concept.

Google

www.google.com

Visit "Health" section; many useful medical links.

AltaVista

www.altavista.com

Provides both simple and advanced search interfaces. Very useful for complex Boolean searches.

AltaVista Canada

www.altavista.ca

Searches only Canadian Web sites.

Northern Light

www.northernlight.com

Provides both simple and advanced search interfaces. Help files are limited, but adequate.

All the Web

www.alltheweb.com

Another fast search engine. Similar to Google.

Freeality

www.freeality.com

Direct links to several different search engines. Also links to "Health & Medical" directories.

Metacrawler

www.metacrawler.com

A "metasearch" engine that combines searches from several other search engines.

Search Engine Watch

www.searchenginewatch.com

Detailed info on all major Internet search engines.

Boolean Tutorials

http://florin.syr.edu/webarch/searchpro/boolean_tutorial.html

Further information about creating Boolean search strategies. Sponsored by Syracuse University.

Medical Matrix

www.medmatrix.org

Excellent directory. Created and peer-reviewed by physicians. Free use; registration required.

Yahoo

www.yahoo.com

Has an extensive "Health" subdirectory.

Yahoo Canada

http://ca.yahoo.com

A directory limited to Canadian Web sites.

University of Calgary Medical Information Service

www.ruralnet.ab.ca/medinfo/internet/google.htm

Contains an online version of the Google tutorial.

B. McCombs, Director, University of Calgary Medical Information Service, Calgary, Alta.

Correspondence to: Dr. Barrie McCombs, Director, University of Calgary Medical Information Service, 3330 Hospital Dr. NW, Calgary AB T2N 3Z0; bmccombs@ucalgary.ca; www.ruralnet.ab.ca/medinfo/

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Northern/rural medical schools in Canada

CJRM 2001;6(3):213-4.

Gossip, rumour, whisper. It was hard to tell through last winter and spring about the status of the proposed northern/rural medical school in Ontario, but with the May 17th announcement by Minister of Health and Long-Term Care Tony Clement the first steps toward the province's first new medical school in 30 years, with sites in Sudbury and Thunder Bay, were taken. Here then is CJRM's dip into the rural medical literature on this issue.

Can a 3-day preceptorship change first-year medical students' opinions about living and working in small towns? Lynch DC, Willis SE. Fam Med 2000;32(7):495-9.

Three days do not a curriculum make, but at least now we know. Researchers in North Carolina studied the effects of a 3-day preceptorship on 1st-year medical students' attitudes about working and living in small towns. This brief exposure (perhaps predictably) "did not appear to influence students' opinions about or interest in living in and working in small towns or rural areas."

A revolution in rural and remote Australia: bringing health education to the bush. Lawson KA, Chew M, Van Der Weyden M. Med J Aust 2000;173:618-24. Available: www.mja.com.au/public/issues/173_11_041200/lawson/lawson.html (accessed 2001 Mar 17).

If 3 days is one end of the spectrum, surely the Australian initiatives outlined in the abovementioned paper represent the other. Based on the premise that bringing academic health units to rural areas may help solve some of the problems of rural health, the Australian federal government has embarked, since 1996, on a "grand experiment" to re-orient the academic emphasis of training for rural practice, and have funded a number of specific initiatives. Among these are UDRHs (University Departments of Rural Health), rural clinical schools (taking students for half of their 6-year course), and a new rural medical school (James Cook University Medical School in Townsville). These initiatives build on the earlier establishment, in 1992, of rural academic centres such as the Monash University Centre for Rural Health at Traralgon. While it might be considered "tooting their own horn," the authors feel that this approach is a "unique initiative in the Western world and shows tremendous vision."

Establishing a new university department of rural health: the first 2 years of the South Australian Centre for Rural and Remote Health. Wilkinson D, Blue I, Simond B, Fuller J, Smith D. Aust J Rural Health 1999;7(4):223-8.

This paper goes into greater detail on the early achievements of this particular UDRH, which included "increased rural clinical placements by 1000 student-weeks, partnership with the Dental School resulting in training opportunities and falling public waiting lists, and multidisciplinary teaching practices in four rural sites." The authors felt that this analysis demonstrated the potential "to have real impact on health worker education, service delivery, and public health status in rural and remote areas."

Illinois RMED: a comprehensive program to improve the supply of rural family physicians. Stearns JA, Glasser M, London RA. Fam Med 2000;32(1):17-21.

The USA has similar problems to Australia and Canada with respect to its rural health human resource. In the case of Illinois, "75 of its 84 rural counties are primary care physician shortage areas." The RMED Program (Rural Medical Education), while falling short of a full rural medical school, is a "comprehensive, multifaceted program that combines recruitment, admissions, curriculum, support, and evaluation components and is longitudinal across all 4 years of the medical school experience." Experience so far is positive. After 6 years, 39 physicians have graduated from this stream; 69% are in family practice. Other research has shown that family physicians are more likely to choose rural practice than their specialist colleagues.

Learning primary care in medical school: Does specialty or geographic location of the teaching site make a difference? Irigoyen MM, et al. Am J Med 1999;106(5):561-4.

A commonly posed question about rural training sites concerns their suitability, as measured by learner satisfaction as well as performance. In this study the authors addressed this question in 294 3rd-year medical students who were randomly assigned to multiple teaching sites for a mandatory 5-week primary care clerkship. They found that students at rural sites "rated the experience more highly and saw on average 15 more patients per rotation." Higher student satisfaction did not, however, correspond to better student performance. The authors therefore felt that as long as sites "meet the screening criteria for inclusion in a teaching program," these findings support the continued development of such primary care experiences.

A program to increase the number of family physicians in rural and underserved areas: impact after 22 years. Rabinowitz HK, Diamond JJ, Markham FM, Hazelwood CE. JAMA 1999;281(3):255-60.

Some initiatives are brand new, others have been running for years, if not decades. In this paper the authors report on 22 years of PSAP (Physician Shortage Area Program) of Jefferson Medical College in Philadelphia. A total of 206 PSAP graduates from 1978–1991 were studied. They

found that "PSAP graduates account for 21% of family physicians practicing in rural Pennsylvania who graduated from one of the state's 7 medical schools, even though they represent only 1% of graduates from these schools." They also found high rates of retention among the graduates over 5–10 years (87%), and conclude that "policy makers and medical schools can have a substantial impact on the shortage of physicians in rural areas."

Reference

1. McKendry R, for the Ontario Ministry of Health and Long-Term Care. Physicians for Ontario: Too many? Too few? For 2000 and beyond. Toronto: Govt of Ontario; 1999. (accessed 2001 Mar 16).

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Portable licensure: On the distant horizon?

Suzanne Kingsmill, BA, BSc, MSc
Shawville, Que.

CJRM 2001;6(3):215-6.

A panel of experts, convened by the SRPC, discussed the question of portability of licensure within Canada at the SRPC's 2001 Rural and Remote Area Conference in Hockley Valley in late April.

SRPC President Dr. Peter Hutten-Czapski echoed the frustration felt by countless rural docs with the existing rules and red tape put up by all provinces. Living in Ontario, he says he has trouble recruiting from anywhere else. "We need good locums who can cover our skills. To make a viable living as a locum we need licensure in a number of provinces. We want to recruit from across the country, both locum and full time, to make rural practice more sustainable."

Enter the Agreement on Internal Trade (AIT). According to Mr. Brendan Walsh, Human Resources Development Canada, the AIT is an agreement the government signed in 1994 to remove or decrease interprovincial barriers to goods, services and people. "Chapter 7 of the agreement," he says, "deals with labour mobility and its purpose is to enable a worker licensed in one jurisdiction to have access to other jurisdictions and have their qualifications recognized." Chapter 7 of the agreement sets out 3 main objectives: no residency requirements; licensing practices that are not prejudicial to those coming from other jurisdictions, and recognition of qualifications. It is this last requirement, says Walsh, that requires the regulatory bodies to meet and compare standards and answer the question: Is a physician a physician all across the country? "If standards are shown to be the same," he says, "then portability is assured, but if standards differ across the country then there could be some requirements made."

As is the case in Ontario, Dr. Rocco Gervace, College of Physicians and Surgeons of Ontario, says that Ontario's criteria are somewhat more stringent than other provinces, but he says they are in keeping with the AIT. "We recognize the shortage of doctors and we are looking at ways to facilitate registration." He noted that his Council will soon be announcing a mechanism by which they will facilitate registration across jurisdictions. However, a common registration process

nationally has not yet been addressed.

Some form of national licence could be difficult to achieve. As Dr. Gary Johnson, Federation of Medical Licensing Authorities of Canada, says: "There is no such thing as a national license that would allow portability, because health care is a provincial jurisdiction. There is no such thing as a portable licence, but there are portable qualifications." Some of those qualifications include the 2-year CCFP residency. Johnson says there is an agreement that grandfathers those doctors who, prior to 1994, took rotating internships and therefore do not meet the 2-year residency criteria.

Unfortunately, according to Dr. Keith MacLellan of the SRPC, who commented from the audience, there are 56 000 doctors in Canada, and 19 000 are not registered with the CFPC or the Royal College of Physicians and Surgeons of Canada. "How many of them aren't grandfathered?" he asks. "How many of them have not kept up their dues?" He argues that the status quo in Ontario is transported elsewhere and even if you are grandfathered you may or may not be accepted. In response, Dr. Johnson said: "This is the standard we will accept, but to meet local requirements we can waive them, and this is a reasonable way to deal with the shortage [of rural doctors]." He went on to say that "the intent of the CCFP requirement is to show you have postgraduate training in family medicine."

Dr. Hugh Scully, past president of the CMA, said he supports "the principle of eligibility for portability across the country," but said he "has issues of values and skills — Are they the same across the country?"

The CFPC supports portable rural locum licenses, according to Dr. Peter Newbery, past president of the CFPC, but he sees 2 problems with portability: 1) "Although there are different standards from province to province, there is one standard LMCC. Some provincial licensing authorities have made the CCFP a licensing element. Why not return to the LMCC?" and 2) the bad apples. "Licensing authorities are concerned about bad apples and portable licensure." He suggests setting up a national database of those wanting locum portability to solve this problem. "It's not about training," he says, "or what program you've come from, or mobility. It's not about AIT. It's about the delivery of service in rural communities."

And it's also about the frustration that ensues when that service is thwarted. Dr. Conleth O'Maonaigh, who, as Dr. MacLellan, spoke from the audience, summed it all up by noting that doctors in the 12 European countries can go anywhere, yet "a doctor who works in Goose Bay is not qualified to work on Baffin Island, but the guy who graduated from downtown Toronto is?"

S. Kingsmill, Managing Editor, CJRM

Correspondence to: admin@srpc.ca

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Allan Rock visits rural Canada

CJRM 2001;6(3):216.

Rural Canada got a visit from the Federal Minister of Health, Allan Rock, in early May. Rock travelled to Shawville, Que., pop. 1500, to announce federal funding for 3 rural health projects.

The first project, inspired by Dr. Keith MacLellan of Shawville, is the CME/locum project which is, as far as is known, unique in the world. Funding is now available for a pilot project to have rural doctors travel to other rural communities, give Rural Critical Care courses and then stay on and do locums for 1–4 weeks. "It will apply Canada-wide" says Rock. "We'll see what lessons are learned and whether they can be applied elsewhere." (See the enclosed brochure for more details.)

The second project is a rural teleradiology network pilot study to link rural areas, and the third project is the creation and distribution of the Hepatitis C CD-ROM, which was sent out to all rural doctors with the Spring issue of CJRM. Says Rock, "These are practical ways that we can try to bring life to, and make true, the Canada Health Act, to make health care accessible to all Canadians."

While in Shawville, Rock also said goodbye to his first Executive Director of Rural Health, Dr. John Wootton, who is stepping down from the Office of Rural Health, after 21/2 years at the helm, to resume his practice in Shawville and his editorship of CJRM. "He has provided enormous leadership," says Rock, "in creating, starting and taking shape this Office of Rural Health, and we want to express great appreciation from our government and our Prime Minister for everything he has done."

Wootton is acting as a consultant to the Office of Rural Health until his replacement is found.

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Instructions for Authors

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

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

Manuscript submission

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" (see www.cmaj.ca/misc/ifora.shtml).

Written permissions

Written permission must be provided for the reproduction of previously published material, for illustrations that identify human subjects, and from any person mentioned in the

Acknowledgements or cited as the source of a Personal Communication.

Illustrations and electronic figures

Illustrations must be good quality unmounted glossy prints no larger than 8 × 10 in (20.3 × 25.4 cm). If figures are submitted electronically they should meet the specifications outlined in the following documents:

Digital Art Submission for Editorial Articles [PDF]
Postscript to PDF (Adobe Acrobat Distiller) [PDF]
Digital camera specifications[PDF format]

References

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.

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

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.

Table 1. Skills practised by > 90% of 314 physicians

Procedural skill*	No. (and %) of physicians practising skill
Anesthesia, local block	313 (99.7)
Anesthesia, local infiltration	313 (99.7)
Cutaneous biopsy*	313 (99.7)
Cutaneous foreign body	313 (99.7)
Simple laceration repair	313 (99.7)
First- and second-degree burns*	313 (99.7)
Cutaneous excision	313 (99.7)
Eyes, ENT foreign body removal	313 (99.7)
Epistaxis control	313 (99.7)
Removal of corneal foreign body	313 (99.7)
Undisplaced fractures*	313 (99.7)
Application of cast	313 (99.7)
Finger and toe dislocation	313 (99.7)
Surgical assistance*	313 (99.7)
Venous line insertion	312 (99.4)
Cutaneous incision and drainage*	312 (99.4)
Nail avulsion and matrix exclusion	312 (99.4)
Aspiration/injection of joint/bursa/tendon	312 (99.4)
Thoracentesis	312 (99.4)
Measurement of arterial blood gases	311 (99.0)
Condylomata excision or cautery	311 (99.0)
Chest tube insertion	311 (99.0)
Incision and drainage of external hemorrhoids	310 (98.7)
Excision of tags/condylomata of vulva	310 (98.7)
Incision and drainage abscess of vulva	310 (98.7)
Excision of anal papilla/anal skin tags	309 (98.4)
Aspiration of breast cyst	306 (97.5)
Anoscopy	306 (97.5)
Proctoscopy	306 (97.5)
Incision and drainage of perineal abscess	306 (97.5)
Phlebotomy	305 (97.1)
Needle biopsy of breast	298 (94.9)
Dilatation of urethra	294 (93.6)
Sigmoidoscopy	293 (93.3)
Punch biopsy of cervix	293 (93.3)

**Cutaneous biopsy:* biopsies of skin, subcutaneous tissues and mucous membranes; *first- and second-degree burns:* management of such burns covering less than 10% of the body; *undisplaced fractures:* care of fractures not requiring reduction and not better treated with internal fixation (this includes fractures of clavicle, humerus, radius [single], ulna [single], carpals, metacarpals, phalanges and nose); *surgical assistance:* sterile technique, skin preparation and draping, instrument handling and closure techniques; *cutaneous incision and drainage:* abscesses, hematomas, carbuncles, furuncles, paronychia and pilonidal abscesses.

[Return to text]

Table 2. Skills practised by 10% to 90% of 314 physicians

Procedural skill	No. (and %) of physicians practising skill
Cephalic deliveries	202 (64.3)
Fracture care: distal radius/ulna	190 (60.5)
Lumbar puncture	187 (59.6)
Vacuum extraction/outlet forceps	181 (57.6)
Fracture care: tibia and fibula (undisplaced)	176 (56.1)
Fracture care: humerus	168 (53.5)
Medical induction of labour	166 (52.9)
Repair of third-degree tear	140 (44.6)
Laryngosopy and intubation	134 (42.7)
D&C for retained products of conception	131 (41.7)
Diagnostic D&C +/– cervical biopsy	128 (40.8)
Venous cutdown	123 (39.2)
Circumcision of newborn	122 (38.9)
Diagnostic D&C +/– polypectomy	121 (38.5)
Extensor tendon repair	104 (33.1)
Regional block (e.g., Biers)	77 (24.5)
Reduction of acute nasal deformity	74 (23.6)
Suprapubic stab catheterization	64 (20.4)
Breast abscess drainage	58 (18.5)
Excision of ganglion	55 (17.5)
Amputation of toes and fingers*	55 (17.5)
Vasectomy	55 (17.5)
Child and adult anesthesia*	54 (17.2)
Urethral dilatation (urology)	53 (16.9)
Flexible sigmoidoscopy	52 (16.6)
Chalazion removal	52 (16.6)
Bone marrow aspiration	50 (15.9)
Marsupialization of Bartholin's cyst	48 (15.3)
Forceps delivery	48 (15.3)
Quinsy incision and drainage	47 (15.0)
Circumcision of child or adult	44 (14.0)
Tubal ligation	40 (12.7)
Split-thickness skin graft	39 (12.4)
Cesarean section	36 (11.5)
Breast open biopsy/excision*	32 (10.2)

**Amputation of toes and fingers:* includes both elective and traumatic amputations; *child and adult anesthesia:* administration of anesthesia to any patient except children under age 2 and more complicated "Class III" adults; *breast open biopsy/excision:* refers only to open and excisional biopsies and does not include definitive cancer surgery.

[Return to text]

Table 3. Skills practised by <10% of 314 physicians	
Procedural skill	No. (and %) of physicians practising skill
Appendectomy	29 (9.2)
Penile dorsal slit procedure	27 (8.6)
Hemorrhoidal banding	26 (8.3)
Biopsy lymph node (axilla, groin)	22 (7.0)
Laparotomy for ectopic pregnancy	22 (7.0)
Ischiorectal abscess management	19 (6.1)
Rectal polyp removal	19 (6.1)
Therapeutic abortion	19 (6.1)
Anal fissure management	18 (5.7)
Pilonidal cyst marsupialization	17 (5.4)
Removal of carbuncle	16 (5.1)
Ovarian cyst removal	15 (4.8)
Hemorrhoidectomy	13 (4.1)
Hernia repair (inguinal, epigastric)*	13 (4.1)
Cone biopsy	12 (3.8)
Varicose vein sclerotherapy	10 (3.2)
Removal of exostoses	9 (2.9)
Hammer toe correction	7 (2.2)
Hydrocele drainage and repair	7 (2.2)
Cystotomy	4 (1.3)
Hysterectomy	4 (1.3)
Myringotomy	2 (0.6)
Pancreaticobiliary surgery	2 (0.6)
Open reduction of fractures/dislocations	2 (0.6)
Miscellaneous surgery on contents of scrotum	2 (0.6)
Gastroscopy	2 (0.6)
Gastrointestinal surgery	1 (0.3)
Anterior and posterior bladder repair	1 (0.3)
Flexor tendon repair in hand	1 (0.3)
Urethrotomy	1 (0.3)
Esophagoscopy	1 (0.3)
Colonoscopy	1 (0.3)
Miscellaneous endoscopic procedures	1 (0.3)

**Hernia repair:* repair of nonrecurrent inguinal and epigastric hernias.

[Return to text]

Table 4. Non-CCFP and CCFP certification and procedural skills proficiency

Procedure	No. (and %) Non-CCFP physicians	CCFP physicians	*p*
Cephalic deliveries	130 (59.4)	70 (75.3)	< 0.01
Laryngoscopy and intubation	82 (37.4)	51 (54.8)	< 0.01
Vacuum extraction/outlet forceps	116 (53.0)	64 (68.8)	0.01 < *p* < 0.05
Medical induction of labour	106 (48.4)	59 (63.4)	0.01 < *p* < 0.05
Circumcision of newborn	95 (43.4)	26 (28.0)	0.01 < *p* < 0.05
Suprapubic stab catheterization	52 (23.7)	12 (12.9)	0.01 < *p* < 0.05
Amputation of toes and fingers	46 (21.0)	9 (9.7)	0.01 < *p* < 0.05
Vasectomy	45 (20.5)	10 (10.8)	0.01 < *p* < 0.05
Chalazion removal	42 (19.2)	9 (9.7)	0.01 < *p* < 0.05
Appendectomy	26 (11.9)	3 (3.2)	0.01 < *p* < 0.05
Penile dorsal slit procedure	23 (10.5)	3 (3.2)	0.01 < *p* < 0.05

[Return to text]

Table 5. Comparison of the procedural skills proficiency of Canadian-trained and foreign-trained physicians

Procedure	No. (and %) of physicians		
	Canadian-trained	Foreign-trained	*p*
Marsupialization of Bartholin's cyst	26 (11.6)	21 (23.9)	< 0.01
Cesarean section	18 (8.0)	18 (20.5)	< 0.01
Laparotomy for ectopic pregnancy	8 (3.6)	13 (14.8)	< 0.01
Fracture care: tibia and fibula (undisplaced)	117 (52.2)	58 (65.9)	$0.01 < p < 0.05$
Fracture care: humerus	111 (49.6)	56 (63.6)	$0.01 < p < 0.05$
Appendectomy	15 (6.7)	13 (14.8)	$0.01 < p < 0.05$
Hemorrhoidectomy	5 (2.2)	7 (8.0)	$0.01 < p < 0.05$
Varicose vein sclerotherapy	4 (1.8)	6 (6.8)	$0.01 < p < 0.05$

[Return to text]

Table 1. Procedures included in procedural skills questionnaire	
Ambulatory or office-based	Emergency or hospital-based
Skin biopsy (shave, punch, excision)	Cardiac defibrillation
Abscess incision and drainage	Endotracheal intubation
Cyst/lipoma excision	Emergency cricothyroidotomy
Cryosurgery/electrosurgery for skin lesions	Chest tube insertion
Ingrown toenail excision	Needle thoracostomy
Anterior nasal packing	Laceration repair
Rigid sigmoidoscopy	Large bore intravenous tube insertion
Flexible sigmoidoscopy	Intraosseous infusion
Insertion of intrauterine device	Lumbar puncture (adult)
Diaphragm fitting	Routine vertex delivery
Endometrial biopsy	Vacuum extraction
Papanicolaou smear	Low forceps delivery
Breast mass aspiration	3rd-degree perineal tear repair
Joint aspiration or injection	Colles' fracture reduction
Neonatal circumcision	Forearm cast application
Ear wax removal	Below-knee cast application
Vasectomy	Corneal foreign body removal

[Return to text]

Table 2. Differences in confidence scores according to ideal practice location choice*

Confidence factor	Practice location, mean confidence level (95% CI)			ANOVA
	Urban *n* = 51†	Semi-urban *n* = 73†	Rural *n* = 21†	*df* = 2
Ambulatory procedures‡	2.87 (2.76–2.98)	2.91 (2.82–3.00)	3.09 (2.93–3.25)	*p* = 0.09
Emergency procedures†	2.59 (2.45–2.74)	2.72 (2.62–2.82)	2.97 (2.77–3.18)	*p* = 0.01
Overall confidence as a family physician	3.27 (3.07–3.47)	3.21 (3.08–3.33)	3.23 (3.04–3.42)	*p* = 0.84
Overall confidence in ability to do procedures	2.81 (2.59–3.03)	3.00 (2.85–3.15)	3.23 (2.92–3.53)	*p* = 0.06

* Scoring is on a 4-point scale, from 1 (very unconfident) to 4 (very confident).
† *n* may vary by 1 or 2 in cells depending on missing information.
‡ Scores are average item scores for all procedures in each category.
CI = confidence interval, urban = >50 000 pop., semi-urban = 10 000–50 000 pop., rural = <10 000 pop.

[Return to text]

Table 3. Distribution of rural-based training among residents with different practice location choices

Training	Practice location, *n* (%)*			Total, *n* (%)
	Urban	Semi-urban	Rural	
Rural	9 (16.7)	25 (34.7)	13 (65.0)	47 (32.2)
Non rural	45 (83.3)	47 (65.3)	7 (35.0)	99 (67.8)
Total	54	72	20	146†

* Urban = >50 000 pop., semi-urban = 10 000–50 000 pop., rural = <10 000 pop.
† Total differs from *n* = 155 because of undecided residents (6), missing information on practice location choice (1), or rural-based training (2).

[Return to text]

Table 4. Procedure confidence scores and special training courses for those with and without rural-based training during the family medicine residence*

Factor (95% CI)	Rural-based training: Yes (n = 51)†	Rural-based training: No (n = 102)†	ANOVA (df = 1)
Ambulatory procedures confidence‡	3.01 (2.91–3.12)	2.87 (2.79–2.94)	p = 0.01
Emergency procedures confidence‡	2.94 (2.82–3.05)	2.60 (2.50–2.69)	p < 0.01
Overall confidence as a family physician	3.08 (2.90–3.25)	3.33 (3.22–3.45)	p = 0.01
Overall confidence in ability to do procedures	3.18 (2.97–3.38)	2.87 (2.74–3.00)	p = 0.01
No. of special training courses§	2.67 (2.34–2.99)	2.07 (1.89–2.25)	p < 0.01

* Scoring is on a 4-point scale, from 1 (very unconfident) to 4 (very confident).
† *n* may vary by 1 or 2 in cells depending on missing information.
‡ Scores are average item scores for all procedures in each category.
§ Special training courses refers to those courses listed in text (maximum = 5).

[Return to text]

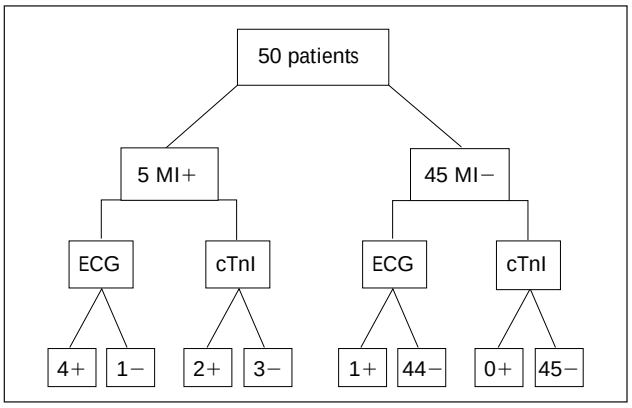

Fig. 1. Results in a sample of 50 patients who underwent the cardiac troponin I (cTnI) diagnostic enzyme test and electrocardiography (ECG) for acute myocardial infarction (AMI). + = positive, – = negative.

[Return to text]

Table 1. Final diagnosis in 50 patients who presented with chest pain and underwent cardiac troponin I testing

Diagnosis	No. (%)
Chest pain	9 (18)
Angina	7 (14)
Myocardial infarction	**5 (10)**
Musculoskeletal pain	5 (10)
Anxiety	4 (8)
Chronic obstructive pulmonary disease	3 (6)
Epigastric pain	2 (4)
Urinary tract infection	2 (4)
Biliary colic	2 (4)
Viral infection	1 (2)
Sinusitis	1 (2)
Congestive cardiac failure	1 (2)
Pleurisy	1 (2)
Fainting	1 (2)
Osteoarthritis	1 (2)
Bowel obstruction	1 (2)
Supraventricular tachycardia	1 (2)
Gastroesophageal reflux disease	1 (2)
Gastrointestinal bleeding	1 (2)
Dyspepsia	1 (2)

[Return to text]

Table 2. Results of cardiac troponin I (cTnI) screening for acute myocardial infarction (AMI)

cTnI tests	cTnI result	Diagnosis of AMI		
		Positive	Negative	Total
A. All tests	Positive	2	0	2
	Negative	3	45	48
	Total	5	45	50
B. Tests done 4 h–7 d after onset of symptoms	Positive	2	0	2
	Negative	2	38	40
	Total	4	38	42
C. Tests done 6 h–7 d after onset of symptoms	Positive	2	0	2
	Negative	0	35	35
	Total	2	35	37

[Return to text]

Table 3. Measures of cardiac troponin I (cTnI) effectiveness

Case	Sensitivity (%)	Specificity (%)	Positive prediction value (%)	Negative prediction value (%)
Total cTnI tests (*n* = 50)	40	100	100	93.8
cTnI tests done 4 hours to 7 days after onset of symptoms (*n* = 42)	50	100	100	95
cTnI tests done 6 hours to 7 days after onset of symptoms (*n* = 37)	100	100	100	100

[Return to text]

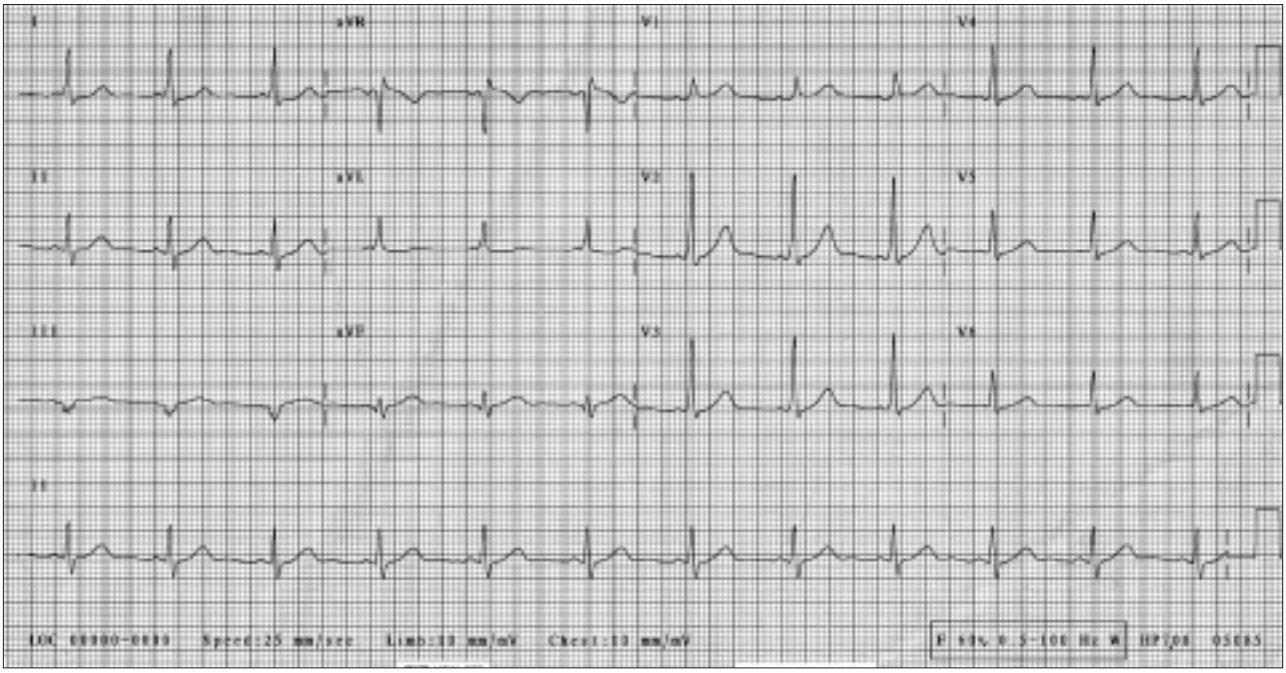

Fig. 1. Electrocardiogram taken in emergency department

[Return to text]

Canadian Journal of Rural Medicine | Journal canadien de la médecine rurale

Summer 2001 Table of Contents • Été 2001 Table des matières

Country cardiograms case 20: Answer

CJRM 2001;6(3):214.

The Q waves in leads III and aVF, together with a tall R wave in V2 led to the concern about a possible inferior/posterior infarction. However, close inspection shows that the PR interval in the septal leads is shortened, at around 100 ms, and there is a delta wave slurring the upstroke of the R wave in the septal and high lateral leads, making the diagnosis of Wolff-Parkinson–White (WPW) syndrome.

This syndrome results from the presence of an accessory conducting pathway between the atria and ventricles. This pathway may be prematurely excited, allowing the electrical impulse to bypass the atrioventricular node producing a short PR interval and a widened, slurred QRS complex. WPW syndrome is probably best known for the association with atrial tachycardia, but it frequently causes confusion by mimicking ECG features of myocardial infarction. Type A pattern of WPW, seen in this patient, occurs when the accessory conducting pathway is sited in the lateral or posterior left ventricular wall. The ECG resembles right bundle branch block with tall septal R waves and pseudoinferior/pseudoposterior infarction patterns. If the accessory pathway is in the anteroseptal region, a type B pattern results, with the ECG resembling left bundle branch block and an anteroseptal pseudoinfarction pattern.1

The key features for the physician to resolve the puzzle are the short PR interval and the delta wave (not always seen in all leads) producing a widened QRS complex.

Staff at the university hospital quickly recognized the recording as showing WPW syndrome. After an uncomfortable night in the emergency department the patient returned home. We gave him a laminated copy of his ECG to carry in his wallet for future reference.

For the Question, see page 201.

Competing interests: None declared.

Reference

1. Gibler W, Aufderheide T. Emergency cardiac care. St Louis: Mosby; 1994. p. 198-200.