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Summer at Weagamow -
Moira Easton, Oak Brook MB

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Herding cats

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I've never been a joiner, but I've never felt happy about the fact either. I don't know to what extent rural physicians share this trait, but judging by the "enthusiasm" with which they turn up at medical staff meetings, I would hazard that it may be a defining characteristic. Some have even likened organizing rural doctors to "herding cats." Yet I joined the Society of Rural Physicians of Canada (SRPC), and here's why you should too.

The SRPC spontaneously combusted out of the real-life struggle of a few rural physicians to make a point. That the point had to do with rural emergency departments doesn't much matter now, although that battle is by no means won. What does matter is that they found that once out in the open they couldn't go back: there was a landscape full of scattered individuals with similar problems -- people who had not yet and perhaps would never combust but who raised a thumbs-up from the sidelines.

If you clear a piece of ground and turn it into a park, people will gather. If you don't, it reverts to a vacant lot, an abandoned idea. Initially, the SRPC didn't do much beyond giving itself a name, but this was enough of an identity that it became a rallying point for exchange of information and for action. Other players began to include the SRPC in their deliberations. The Canadian Medical Association, the College of Family Physicians of Canada and provincial governments asked for advice, and universities came calling. The SRPC played its role so well that many people assumed that all rural physicians were members! Unfortunately nothing could be farther from the truth. At a low ebb, not so long ago, paid members numbered fewer than 50.

So what gives? Can it be, as was debated at the society's last two general assemblies, that $200 is too much to ask of rural docs? Is it believable that reducing this to $50 would open the floodgates? Is it simply that, lacking money for publicity, the SRPC is not well enough known? Is it that the problems of rural medicine are (contrary to what the SRPC holds to be true) being adequately addressed already? Is the SRPC simply a figment of a few fertile rural imaginations

who believe that herding cats is sometimes possible?

Against the odds, the SRPC now has, by virtue of this peer-reviewed journal, a recurrent presence in the in-boxes of all rural physicians. To them it is saying, "Speak up! Vote with your cheque book! The SRPC is the only national voice dedicated to rural physicians, and you must choose it, or lose it." Provincial battles will continue, but the power of a united vision can only be realized by a deliberate choice.

The SRPC will continue to invent itself, but in the end it cannot be a voice in the wilderness. Will it become an abandoned idea or will the people visit this park, plant some trees and tend to the hedges? Its future is clearly in your hands.

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Rassembler des chats

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Je n'ai jamais été grégaire, mais je ne m'en suis jamais réjoui non plus. Je ne sais pas dans quelle mesure les médecins ruraux ont ce trait en commun, mais si l'on en juge par l'«enthousiasme» avec lequel ils se présentent à des réunions du personnel médical, j'oserais dire que c'est peut-être même un trait caractéristique chez eux. On a dit qu'organiser des médecins ruraux, c'est comme «rassembler des chats». J'ai toutefois adhéré à la Société de la médecine rurale du Canada (SMRC) et voici pourquoi vous devriez faire de même.

La SMRC est issue spontanément de la lutte réelle de quelques médecins ruraux qui cherchent à faire valoir un argument. Que cet argument portait sur les services d'urgence ruraux n'a plus beaucoup d'importance, même si cette lutte est loin d'être gagnée. L'important, c'est qu'ils ont constaté qu'après s'être manifestés, ils ne pouvaient plus reculer : une foule de personnes dispersées avaient des problèmes semblables -- des gens qui ne s'étaient pas encore impliqués et ne le feraient peut-être jamais, mais qui applaudissaient des coulisses.

Si l'on dégage un bout de terrain pour le transformer en parc, des gens vont s'y réunir. Sinon, le terrain redevient vacant, une idée oubliée. Au début, la SMRC n'a pas fait beaucoup plus que se donner un nom, mais cela a suffi pour qu'elle devienne un point de ralliement, d'échange d'information et d'intervention. D'autres intervenants ont commencé à inclure la SMRC dans leurs délibérations. L'Association médicale canadienne, le Collège des médecins de famille du Canada et des gouvernements provinciaux lui ont demandé conseil. Des universités ont communiqué avec elle. La SMRC a si bien joué son rôle que beaucoup de gens ont supposé que tous les médecins ruraux en étaient membres! Rien ne saurait malheureusement être plus loin de la vérité. Au cours d'une période creuse il n'y a pas si longtemps, la Société comptait moins de 50 membres en règle.

Qu'est-ce qui se passe? Comme il en a été question aux deux dernières assemblées générales de la Société, se peut-il que 200 $, ce soit trop demander aux médecins ruraux? Peut-on croire qu'en

ramenant la cotisation à 50 $ on ouvrirait les portes toutes grandes? Est-ce simplement parce qu'elle manque d'argent pour faire sa publicité que la SMRC n'est pas assez bien connue? Est-ce parce que les problèmes de la médecine rurale sont déjà réglés comme il se doit (contrairement à ce que soutient la SMRC)? La SMRC est-elle simplement le fruit de quelques imaginations rurales fertiles qui croient qu'il est parfois possible de rassembler des chats?

Malgré tout, grâce à cette revue critiquée par les pairs, la SMRC arrive régulièrement dans le courrier de tous les médecins ruraux pour leur dire : «Faites-vous entendre! Votez avec votre chéquier! La SMRC est le seul organe national voué aux médecins ruraux et il faut y adhérer ou la perdre.» Les luttes provinciales se poursuivront, mais seul un choix délibéré permet de réaliser le pouvoir d'une vision unifiée.

La SMRC continuera de s'inventer, mais en bout de ligne, elle ne peut prêcher dans le désert. Deviendra-t-elle un terrain vacant, ou viendra-t-on dans le parc y planter des arbres et tailler les haies? L'avenir de la Société est clairement entre vos mains.

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President's message: Forging links

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I am not an expert on organizations and their evolution nor am I inclined to astrology, but surely the Society of Rural Physicians of Canada (SRPC) is on a cusp. Growing out of voices of disaffection in rural Ontario, the SRPC is about to host its fifth national 4-day rural conference in cooperation with the University of Calgary. We now have a respected peer-reviewed journal that can serve as the voice of rural medicine, a Web site and rural Internet discussion group, which have drawn international attention, and a formal policy agenda. And yet....

Yet something is missing, and part of that has to do with working in isolation. The SRPC policy agenda states that we should work as closely as possible with existing organizations. With this is mind, I went to the Canadian Medical Association (CMA) annual meeting in August. On the long drive home, it became clear to me that rural medicine must be recognized as a discipline in its own right before the SRPC can accomplish much of substance. One way to get other groups to recognize the special nature of our work is to forge links with them. We are, therefore, in the process of obtaining status as an affiliate of the CMA. This will allow rural medicine and the SRPC to have a distinct voice within the CMA and its committees. It will also make it easier for us to help rural doctors set up separate and effective rural sections of their provincial medical associations. The College of Family Physicians of Canada (CFPC) is also interested in forging links with the SRPC and developing a better rural focus. We have made several suggestions for cooperation, and the prospects look good.

Both of these initiatives mean that the CMA and the CFPC now recognize that practitioners of rural medicine are something more than just a bunch of general practitioners who happen to work in rural areas. They have also recognized the SRPC as a legitimate voice for rural medicine. Both the CFPC and the CMA have agreed to participate at the Banff conference in a constructive dialogue on the fundamental question, Is rural medicine a discipline? And yet....

Yet we still do not have an organization that is well supported and structured to accomplish our twin goals of sustainable conditions for rural doctors and equitable health care for rural communities. Perhaps what we need is an organizational structure similar to that of the Society of Obstetricians and Gynaecologists of Canada (SOGC), which elicits enviable support and loyalty from its members. In addition to joining their provincial associations, obstetricians also join their society, which represents their specialized interests on many levels. At its annual general meeting in April 1997 in Banff, the SRPC will be presenting a constitution and by-laws patterned on those of the SOGC. We hope to elect a smoothly functioning executive and have members volunteer to sit on the various committees that will help us to realize our mandate. And yet....

Yet we still need members in order to continue. Without members we are just a paper tiger, and just about as effective. If you think that you are more than just a general practitioner working in the country, please read the other editorial in this issue (page 7) and support your society.

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Message du président : Nouer des liens

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Je ne suis pas spécialiste des organisations et de leur évolution. L'astrologie ne m'attire pas non plus, mais il est certain que la Société de la médecine rurale du Canada (SMRC) est à un tournant crucial. Issue du mécontentement qui grondait dans les régions rurales de l'Ontario, la SMRC tiendra sous peu son cinquième congrès rural national de quatre jours en collaboration avec l'Université de Calgary. Nous avons maintenant un journal respecté soumis à l'examen critique par les pairs qui peut servir de porte-parole de la médecine rurale, un site Web et un groupe de discussion rural sur Internet, qui ont attiré l'attention sur la scène internationale, sans oublier un programme stratégique officiel. Or...

Or, il manque quelque chose, en partie parce que nous travaillons dans l'isolement. Le programme stratégique de la SMRC prévoit que nous devrions collaborer le plus étroitement possible avec des organisations existantes. C'est pourquoi j'ai assisté à l'assemblée annuelle de l'Association médicale canadienne (AMC) en août. Sur le long chemin du retour, j'ai compris clairement qu'il faut reconnaître la médecine rurale comme une discipline en soi avant que la SMRC puisse réaliser quoi que ce soit d'important. Un moyen d'amener d'autres groupes à reconnaître la nature spéciale de notre travail, c'est de nouer des liens avec eux. Nous sommes donc en train d'obtenir le statut de société affiliée de l'AMC, ce qui donnera à la médecine rurale et à la SMRC une voix distincte à l'AMC et à ses comités. Grâce à ce statut, il nous sera plus facile d'aider les médecins ruraux à créer des sections rurales distinctes et efficaces de l'association médicale de leur province. Le Collège des médecins de famille du Canada (CMFC) est aussi intéressé à nouer des liens avec la SMRC et à créer une meilleure orientation rurale. Nous avons suggéré plusieurs moyens de collaborer et les perspectives semblent bonnes.

Ces deux initiatives signifient que l'AMC et le CMFC reconnaissent maintenant que les praticiens de la médecine rurale ne sont pas simplement un groupe d'omnipraticiens qui pratiquent en milieu rural. Ils ont aussi reconnu la SMRC comme le porte-parole légitime de la

médecine rurale. Le CMFC et l'AMC ont tous deux convenu de participer, au cours de la conférence de Banff, à un dialogue constructif sur la question fondamentale de savoir si la médecine rurale est une discipline. Or...

Or, nous n'avons toujours pas d'organisation bien appuyée et structurée pour réaliser nos buts : des conditions viables pour les médecins ruraux et des soins de santé équitables pour les communautés rurales. Ce qu'il nous faut, c'est peut-être une structure organisationnelle semblable à celle de la Société des obstétriciens et gynécologues du Canada (SOGC), qui mobilise chez ses membres une loyauté et un appui enviables. Outre l'adhésion à l'association provinciale, les obstétriciens adhèrent aussi à leur société, qui représente leurs intérêts spécialisés à de nombreux niveaux. Au cours de son assemblée générale annuelle d'avril 1997 à Banff, la SMRC présentera une constitution et des statuts inspirés de ceux de la SOGC. Nous espérons élire un bureau qui fonctionnera sans problème et intéresser des membres bénévoles à siéger aux divers comités qui nous aideront à réaliser notre mandat. Or...

Or, il nous faut encore des membres pour continuer. Sans membres, nous sommes simplement un tigre de papier et nous serons à peu près aussi efficaces. Si vous pensez être plus que simplement un omnipraticien qui travaille en milieu rural, veuillez lire l'autre éditorial dans le présent numéro (page 8) et appuyer votre société.

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Outcome of thrombolysis in patients with acute myocardial infarction in rural Alberta

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[résumé]

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Abstract

Objective and method: To examine the use of thrombolytic agents in the treatment of acute myocardial infarction, the authors performed a chart review for 122 patients treated in 1992 in 36 of Alberta's 104 rural acute care hospitals with fewer than 100 beds. The outcome measures were death, complications of thrombolysis, transfer to referral centres and frequency of invasive procedures (angiography, angioplasty and bypass surgery). The standards of care were the percentage of patients with confirmed myocardial infarction, the time from presentation to thrombolysis and the use of ASA and ß-blockers.

Results: Eleven (9.0%) of the 122 patients died. Information about possible complications and investigations was unavailable for 1 of the patients. Of the remaining 121 patients, 62 (51.2%) had possible complications of thrombolysis, generally arrhythmias (in 32 [26.4%]), hypotension (in 28 [23.1%]) or minor bleeding (in 18 [14.9%]); 2 patients (1.7%) needed transfusion and 2

(1.7%) sustained cerebrovascular accidents. Of the total group of 122 patients, 72 (59.0%) were transferred to larger centres, one-third of these during the administration of thrombolytic agents. In 111 (91.0%) of the 122 patients myocardial infarction was confirmed. The average time from presentation to thrombolysis was 99.0 (range 19 to 410) minutes. Almost all of the patients received ASA (118 of 122 [96.7%]), and over half received ß-blockers (73 of 122 [59.8%]).

Conclusions: The physicians in these rural hospitals were using thrombolysis appropriately. The mortality and morbidity rates after thrombolysis were comparable to those in large urban studies, but there were delays in administering the thrombolytic agents.

Résumé

Objectif et méthode : Pour étudier l'utilisation d'agents thrombolytiques dans le traitement de l'infarctus aigu du myocarde, les auteurs ont effectué une étude rétrospective du dossier de 122 patients traités en 1992 dans 36 des 104 hôpitaux ruraux de soins actifs de l'Alberta comptant moins de 100 lits. Les mesures des résultats ont été les décès, les complications découlant de la thrombolyse, le transfert à des centres spécialisés et la fréquence des interventions effractives (angiographie, angioplastie et pontage chirurgical). Le pourcentage des patients victimes d'un infarctus du myocarde confirmé, la période écoulée entre la présentation et la thrombolyse et l'utilisation d'ASA et de bêta-bloquants ont constitué les soins normaux.

Résultats : Onze (9,0 %) des 122 patients sont morts. Les renseignements sur les complications possibles et les examens n'étaient pas disponibles dans le cas d'un des patients. Des 121 patients restants 62 (51,2 %) avaient des complications possibles découlant de la thrombolyse, en général des arythmies (32 [26,4 %]), de l'hypotension (28 [23,1 %]) ou un saignement mineur (18 [14,9 %]); 2 patients (1,7 %) ont eu besoin d'une transfusion et 2 autres (1,7 %) ont été victimes d'un accident cérébrovasculaire. Sur le groupe total de 122 patients, 72 (59,0 %) ont été transférés dans des centres plus importants, dont le tiers au cours de l'administration d'agents thrombolytiques. On a confirmé l'infarctus du myocarde chez 111 des 122 patients (91,0 %). La période moyenne écoulée entre la présentation et la thrombolyse s'est établie à 99.0 minutes (fourchette de 19 à 410 minutes). Presque tous les patients ont reçu de l'ASA (118/122 [96,7 %]) et plus de la moitié, des bêta-bloquants (73/122 [59,8 %]).

Conclusions : Les médecins de ces hôpitaux ruraux ont utilisé la thrombolyse comme il se doit. Les taux de mortalité et de morbidité après une thrombolyse étaient comparables à ceux qu'ont révélés d'importantes études en milieu urbain, mais il y a eu des retards dans l'administration des agents thrombolytiques.

Over the last 10 years the standard management of patients with acute myocardial infarction (MI) has changed considerably. Large, controlled trials have demonstrated that intravenous

thrombolysis reduces mortality from acute MI by about 18%.[1] Inevitably, such studies recruit patients from large or medium-sized hospitals equipped with coronary care units and specialist medical staff, and there is little information about the safety and efficacy of thrombolysis in rural hospitals staffed by family physicians. Only one Canadian study, in a large primary care hospital of 135 beds in Northern Ontario,[2] has examined this issue. Similarly, the use of adjunctive therapy consisting of ASA and ß-blocking agents, which also reduces mortality in acute MI,[3] has not been examined in rural areas.[4-6]

In the present study, a chart review, we examined the results of thrombolytic treatment in rural Alberta, where there are 104 acute care hospitals with fewer than 100 beds each, staffed almost exclusively by nonspecialist physicians. Over 80% of these hospitals provide thrombolytic treatment to patients with acute MI.[7] We wanted to determine whether thrombolysis is an appropriate treatment in a small hospital staffed by family physicians, each of whom can expect to see only one patient for thrombolysis in a year.8 In particular, we wanted to see if mortality and complication rates after thrombolysis were comparable to those in trials in other settings and if rural physicians were using thrombolysis and adjunctive agents effectively.

Methods

In 1993 we sent a questionnaire to senior physicians working in rural Alberta hospitals requesting information about the use of thrombolysis. Physicians from 104 hospitals were surveyed.[7] The questionnaire invited every hospital that provided thrombolytic therapy to participate in a chart review. Medical records staff at each hospital that agreed to participate identified the records of every patient who received thrombolytic therapy in 1992. They copied the complete chart for that admission and attached a copy of the discharge summary. If the patient had been transferred to another hospital, a copy of the discharge summary from the referral centre was also included. Confidentiality was maintained by removing identifying details about the patient and the treating physician. Each patient was assigned a code number by the local medical records staff, who entered this number on each copied document. The participating hospitals then forwarded the records to us for analysis. In addition, hospital staff completed a short questionnaire about the facility. Ethical approval for the study was granted by the Ethics Review Committee of the Faculty of Medicine, University of Alberta, Edmonton.

We extracted baseline information about the patients, such as age, sex, history of previous MI and site of current infarction. To determine standards of care we recorded time from presentation to thrombolysis, use of ASA and ß-blockers (as recorded in the charts of either the rural or referral hospital) and whether MI was confirmed. The time from presentation to thrombolysis was calculated only for patients who had clear indications for thrombolysis at presentation. For example, this elapsed time was not calculated for patients initially presenting with nondiagnostic electrocardiography results who subsequently fulfilled the criteria for thrombolysis.

A case was classified as confirmed MI if at least two of the following criteria were present: chest

pain, electrocardiographic changes consistent with acute MI or an increase in cardiac enzymes (specifically creatinine kinase). If only one of the criteria was present and the discharge diagnosis on the chart was probable or possible MI, the case was classified as probable/possible MI. Other events were classified as definitely not MI.

We also collected outcome data concerning deaths during hospital stay, complications of thrombolysis, transfers and length of stay. Adverse events, such as bleeding, cerebrovascular accident, arrhythmia, hypotension or allergic reactions, occurring within 2 hours of completion of the thrombolytic infusion were recorded as possible complications. However, for bleeding complications (including cerebrovascular accident) the time limit was extended to 24 hours. Bleeding that necessitated transfusion was defined as major bleeding; all other bleeding was classified as minor.

The data were analysed with Epi-Info 5 software[9] and SPSS, version 6.0. When applicable, the data were tested for statistical significance with Student's t-test or the chi2 test.

Results

Eighty-four of the 104 hospitals were providing thrombolytic treatment at the time of the survey, and 39 of these hospitals agreed to participate in the study. Of the 130 charts that we received, we excluded 7 because of missing and unobtainable data and 1 because there was no record of the patient receiving thrombolytic agents. Thus, 122 records from 36 hospitals remained for analysis (mean 3.4 patients per hospital, standard deviation [SD] 2.8). The mean number of acute care beds in these hospitals was 36.0 (SD 14.1). The mean distance from the nearest referral centre was 213.4 (SD 154.5) km, and the average number of medical staff was 5.9 (SD 3.6). None of these hospitals had internists on their regular medical staff.

Table 1 presents demographic information about the 122 patients who received thrombolysis. Most of the patients received streptokinase (84 of 122 [68.9%]), and the remainder received tissue plasminogen activator. MI was confirmed in 111 of the 122 patients (91.0%). In 4 of the 122 patients (3.3%) the diagnosis was possible or probable MI, and in 7 (5.7%) it was definitely not MI.

The mean time from presentation to the start of thrombolysis ("door-to-needle" time) in the 104 patients in whom there were clear indications for thrombolysis at presentation was 99.0 (SD 65.6, range 19 to 410) minutes. Thrombolysis was started within 1 hour of arrival at the hospital in only 27 (26.0%) of these patients; however, thrombolysis was started within 2 hours for 80 (76.9%).

ASA was given to almost all (118 [96.7%]) of the 122 patients at some point during their hospital stay. Adjunctive therapy with ß-blockers had been recorded in 73 (59.8%) of the 122 patients.

Table 2 summarizes the overall outcomes for patients who received thrombolytic agents. The final outcome was not known for 2 of the patients who were referred for angioplasty, and information about possible complications and investigations was missing for 1 patient. Ten of the 11 deaths were directly related to MI: 8 were due to cardiogenic shock, 1 occurred after attempted repair of the interventricular septum, and 1 patient suffered sudden cardiac death while awaiting surgery in the referral centre. The other death was due to a cerebrovascular accident. The mean time from thrombolysis to death was 1.4 (range 0 to 5) days, and 5 patients died on the day of thrombolysis. Four patients died in rural hospitals, 6 in referral centres and 1 en route to a referral centre.

Potentially avoidable circumstances were judged to be present in only 2 instances. Despite clear indications, thrombolysis was not started for 200 minutes in 1 of the patients. In another case third-degree heart block and cardiogenic shock developed, and assistance was requested promptly. Despite this request for assistance, a further 3 hours elapsed before a team from the nearest tertiary care centre arrived. Asystole developed a few minutes after the team's arrival. The time to travel between the two hospitals is about 1 hour by helicopter and 2 hours by ground ambulance.

Adverse events occurring after thrombolysis are detailed in Table 3. The most frequent of these were arrhythmias (Table 4). Four patients experienced cardiac arrest within 2 hours after undergoing thrombolysis. An additional 7 patients had episodes of ventricular fibrillation before treatment with thrombolytic agents.

Other common complications were hypotensive episodes and minor bleeding. Hypotension was more common in patients who received streptokinase (23 [27.4%] of 84) than in patients who received tissue plasminogen activator (5 [13.5%] of 37), but this difference was not statistically significant (chi2 test, $p = 0.08$). One patient experienced a mild allergic rash after receiving streptokinase.

The thrombolytic infusion was not completed in 10 patients. Three died during thrombolysis, 4 experienced severe hypotension (all 4 of whom had been treated with streptokinase), and in 2 patients there were problems with leakage from the intravenous access site. The infusion was stopped in the 10th patient because of hematemesis.

Twenty-four (33.3%) of the 72 patients transferred to another centre were transported during the thrombolytic infusion, and a further 11 (15.3%) were moved within an hour of completion of the infusion. The mean length of stay from admission to discharge was 9.9 days.

Discussion

The results of this study suggest that these rural hospitals were using thrombolytic therapy for

acute MI effectively, despite the infrequency of use (less than 1 case per physician annually). The mortality rate of 9.0% is comparable to that after fibrinolysis (9.6%), as reported in a meta-analysis of large trials.1 The same meta-analysis reviewed complications and reported the frequency of stroke as 1.2% and of major noncerebral bleeding as 1.1%; we observed a rate of 1.7% for both events. At first glance, the use of thrombolytic agents in cases in which MI was not confirmed (11 [9%] of 122 cases) appears worrisome. However, this result accords with calculations presented in a Swedish study,10 in which the authors suggested that MI would be confirmed in 91% of patients presenting within 6 hours of initial chest pain if ST segment elevation was present on the electrocardiogram. This theoretical rate of use of thrombolysis was borne out by the trial of the European Myocardial Infarction Project Group involving prehospital therapy by mobile emergency physicians; in that study the rate of confirmed MI was 87.6%.[11]

The rate of ASA use in our study (97.6%) is comparable to the rates of 71%[5] and 95%[6] previously reported for Canada. The rate of use of ß-blockers (59.8%) is higher than published rates of 38% in a large US review[4] and 31% in a Canadian urban study,[5] although the latter 2 figures apply to all patients treated for acute MI, not just the subgroup treated with thrombolytic agents. However, in another study at a large Canadian hospital ß-blockers were used in almost 75% of patients with acute MI.[6] This suggests that some eligible patients in our study did not receive ß-blockers.

Our previous study[7] showed that some rural physicians were concerned that the complication rate for thrombolysis was too high for this treatment to be used in rural hospitals. Although more than half of the patients in the current study had possible complications of thrombolysis, many of these were of little clinical significance. Serious complications other than arrhythmias were uncommon, occurring in only 8 (6.6%) of 121 patients. Two patients needed transfusion, 2 suffered cerebrovascular accidents, and 4 had such profound hypotension that the thrombolytic regimen could not be completed. Although arrhythmias occurred frequently, it is likely that they were associated with the cardiac event rather than the thrombolysis. Pooled data from the large trials of thrombolytic agents suggest that the risk of ventricular fibrillation is reduced by thrombolysis.[12] It is interesting that the classic reperfusion arrhythmia, accelerated idioventricular rhythm, was only documented once in our study.

We were also interested in how quickly rural hospitals could mobilize to provide thrombolytic therapy. Several studies have examined this issue in urban hospitals, demonstrating that there can be a marked delay between presentation at the hospital and initiation of thrombolysis.[13-15] Although thrombolysis is beneficial even when given up to 12 hours after the onset of chest pain, maximal benefit accrues if treatment is started early.[1]

Recent guidelines recommend a target time of 30 minutes from presentation to initiation of thrombolysis.16 In this study the mean time to thrombolysis was 99 minutes, with only a quarter of patients starting the thrombolytic therapy within the first hour. The reasons for this delay in providing treatment are speculative but may include the need to call in the physician from home

or office, a requirement in some hospitals for consultation with a second physician and the necessity to obtain extra nursing staff to perform the infusion. Whatever the reasons, it is apparent that there is room for improvement in this area. Reports suggest that "door-to-needle" time can be shortened in urban hospitals by the use of check-lists of contraindications, abbreviated clinical assessments and initiation of treatment in the emergency department,[13-15] but it is not clear that these measures would be applicable in small rural facilities.

This study was limited because of its retrospective nature, a limitation that was compounded by the difficulties inherent in dealing with a large number of participating sites and not having access to the entire chart for patients transferred to referral centres. In large trials mortality rates are usually calculated up to day 35, but we were able to calculate mortality only up to the date of hospital discharge. We cannot be sure that the participating hospitals identified every case of thrombolysis, as medical record coding for this procedure is not mandatory. Some minor complications such as insignificant bruising may have escaped documentation. In addition, it is important to be aware that these results are not necessarily representative of practice in rural Alberta, since fewer than half of the hospitals using thrombolytic agents participated. However, data from our previous study[7] suggest that the characteristics of the study group of 36 hospitals are similar to those of all of the 84 rural hospitals providing thrombolysis at that time. That larger group of hospitals had a mean number of beds of 37.7, a mean number of medical staff of 5.5 and a mean distance from a referral centre of 172.9 km.

Despite these limitations our study has implications for current practice in rural hospitals. We need to ensure that eligible patients receive thrombolysis more promptly, and we need to encourage more widespread use of ß-blockers. Physicians also need to examine transfer policies with care. In this study most patients were transferred to larger centres, frequently during the thrombolytic infusion. However, there are risks associated with immediate transfer, given the high prevalence of hypotension during thrombolysis and the frequency of malignant arrhythmias in the first hours after acute MI. Accordingly, high-level resuscitation skills must be available during transfer. A number of trials have demonstrated the safety of prehospital thrombolysis administered by specially trained teams.[11,17] These reassuring results are not necessarily applicable to rural Canada, where it may sometimes be appropriate to delay transfer until after the thrombolytic infusion is complete. Conversely, delay in transferring high-risk patients, who may benefit from specialist care and access to revascularization, should be avoided.

Acknowledgements: We thank the staff at all participating hospitals, especially the health records technicians. Special thanks are due to Ms. Olga Szafran, the Alberta Primary Care Research Unit and the Alberta Family Practice Research Network for help with the study design.

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Country cardiograms case 3

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Can J Rural Med 1997; 2 (1): 19

Case presentation

An 83-year-old man presented to the emergency department of a rural hospital with chest pressure and diaphoresis. The initial electrocardiogram (ECG) (not shown) showed acute anterior myocardial infarction, displaying anterior ST elevation with reciprocal ST depression, normal QRS axis and narrow QRS width. The second ECG, see fig. 1, was obtained while the patient was receiving thrombolytic therapy at the rural hospital. It looks quite different from the initial ECG. What is your diagnosis, and how would you manage this patient in your rural setting?

See answer and discussion on page 50.

"Country cardiograms" is a regular feature of the Canadian Journal of Rural Medicine. In each issue we will present an electrocardiogram and discuss the case in a rural contxSubmit cases to Dr. Jim Thompson, Canadian Journal of Rural Medicine, Bag 5, Sundre AB T0M 1X0 (email jthompso@telusplanet.net).

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The occasional paracentesis

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Can J Rural Med 1997; 2 (1): 23-25

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Abstract

Paracentesis is the draining of large amounts of unwanted fluid from the abdominal cavity. The less common, but sometimes essential, peritoneal lavage is the instillation of liquid into the abdominal cavity, the retrieval of that liquid and its subsequent analysis to disclose free blood, intestinal contents or pus in the abdomen.

Rural physicians are sometimes called upon to drain an abdomen, usually for such conditions as ascites secondary to cirrhosis or metastatic liver disease. Although there are many methods to accomplish abdominal drainage, the use of a kit that can double for occasional peritoneal lavage carries distinct advantages, particularly for the maintenance of skills.

In cases of trauma, CT scanning of the abdomen has replaced peritoneal lavage as a diagnostic tool in many tertiary care centres, but rural hospitals do not have this luxury. Furthermore, many trauma centres still perform peritoneal lavage in cases of suspected intra-abdominal bleeding before requesting the CT scan because of the very real possibility that a patient with undiagnosed bleeding could go into shock in the CT room. If physicians in tertiary care centres worry about transport within the building, then those in rural hospitals should be very concerned about transport times and what might happen during a transfer.

Peritoneal lavage can be used in a variety of situations by rural doctors who are not going to "scoop and run" with their trauma patients, even if transport times are short. Peritoneal lavage takes so little time that it can even be performed before transport to give valuable information on potential problems that might occur during the transfer, such as shock.

Paracentesis can be done safely in any rural hospital. This article outlines the method that we use at our hospital, a method that can also be used for peritoneal lavage.

Materials

We use the Arrow peritoneal lavage kit*, which comes with all the necessary materials, including lidocaine, povidone-iodine and drapes.

*Available from Arrow Medical Products Ltd., 150 Brittannia Rd. E, Unit 20, Mississauga ON L4Z 1S6; tel. 800 387-7819 or 905 890-0173.

Procedure

The patient should be supine and free of large, tense, dilated loops of bowel (as in obstruction). For trauma patients who undergo peritoneal lavage, a Foley catheter and a nasogastric tube should be inserted. Neither paracentesis nor peritoneal lavage is recommended for pregnant patients.

In paracentesis, as illustrated in this article, the incision can be made lateral to the rectus muscles, so as to avoid the hypogastric artery. In peritoneal lavage the puncture point should be at the midline, midway between the umbilicus and the symphysis pubis. For both procedures, it is best to avoid areas around previous abdominal incisions, where bowel might be adherent to the abdominal wall.

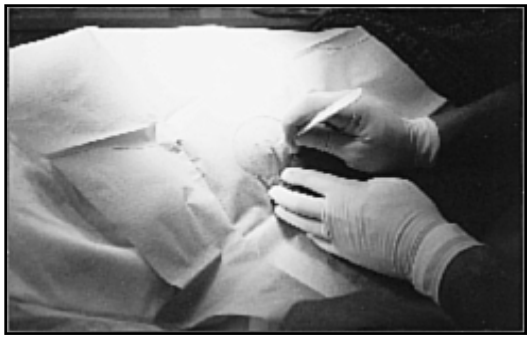
Step 1

Shave, prep and drape the patient using the materials in the kit.

Step 2

Infiltrate the area liberally with the lidocaine, using the materials in the kit.

Step 3



Using the scalpel, make a small incision through the skin and the subcutaneous tissue.

Step 4

Puncture the abdominal cavity (the peritoneum will give a distinct "pop"), with either the atraumatic needle or the catheter and needle provided. A syringe (not illustrated) can be used to perform aspiration (to ensure that the needle is in the peritoneal cavity).

Step 5

Insert the spring wire guide through the needle or catheter. The blue plastic tube serves to straighten the "J" tip of the wire. The wire should advance freely into the abdominal cavity.

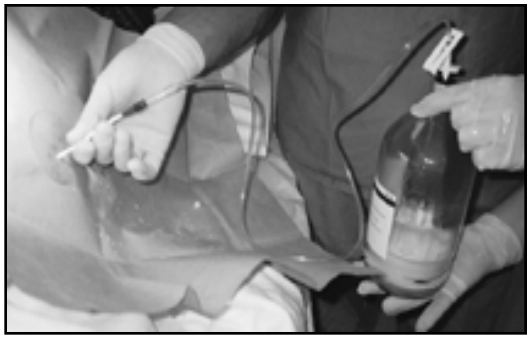
Step 6

Remove the needle or catheter over the wire, leaving the wire in place within the abdomen. Thread the 8 French catheter, which has multiple distal perforations, over the wire.

Step 7

With a twisting motion, insert the 8 French catheter into the abdominal cavity, holding back sufficient wire at the hub end of the catheter to maintain a firm grip on the wire.

Step 8



Insert the 8 French catheter so that all of the distal perforations are within the abdomen. Remove the wire and, for paracentesis, connect the catheter to a drainage system. Even a sterile basin will do. At the end of the procedure, simply remove the catheter and dress the wound.

Peritoneal lavage can be accomplished in the same manner, usually through a midline incision. For patients undergoing lavage, a Foley catheter and a nasogastric tube should be inserted. Instill 1 L of Ringer's lactate or normal saline into the cavity (unless the aspirate was grossly bloody, which in itself represents a positive tap). Then place the now-empty IV bag or bottle below the patient to facilitate drainage. The results of lavage are considered positive if it is impossible to read newsprint through the tubing for the returning fluid, if pus or intestinal contents are present, or if the erythrocyte count is greater than 100 000/mL.

Conclusions

This method is a simple, quick technique for draining fluid from the abdomen or for documenting internal abdominal bleeding. It should increase the comfort of certain ascitic patients, improve diagnosis in certain trauma patients and boost the confidence of certain rural doctors.

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Recruitment and retention: consensus of the conference participants, Banff 1996

Can J Rural Med 1997; 2 (1):28-31

The Society of Rural Physicians of Canada (SRPC) presented a 1-day conference at its annual meeting in Banff in April 1996. The goal was to examine the success and failure of various types of initiatives used to recruit and retain doctors in rural areas and to examine the available evidence supporting their use. Consensus was sought on the elements of a framework to create a successful program for recruiting and retaining doctors in rural and remote areas. Cochairs and conference organizers were Dr. Ken Babey and Dr. James Rourke. Conference participants included representatives from the CMA and its divisions, the College of Family Physicians of Canada, the Canadian Association of Internes and Residents, medical schools and municipalities, as well as guest speakers from the United States. The conference proceedings[1] are now available from the SRPC and are summarized here.

Dr. Keith MacLellan, president of the SRPC, introduced the conference and noted that the SRPC was formed in 1992 to address issues facing rural doctors in Canada. Through lobbying, communications, education strategies and support of rural physicians and communities in crisis, the efforts of the SRPC have already led to some action at the community, provincial and national levels. Dr. Ken Babey, SRPC secretary, noted that two of the goals of the SRPC relating to recruitment and retention are sustainable working conditions and equitable treatment for rural doctors and their communities, in terms of access to quality health care.

The keynote speaker was Mr. Graham Scott, author of the Scott report.[2] Scott was asked in 1994 to look at the issues facing small rural Ontario hospital emergency departments. This venture was commissioned by the Ontario Ministry of Health, the Ontario Hospital Association and the Ontario Medical Association, all of whom acknowledged that a problem existed but who couldn't agree on whose responsibility it was or how to tackle it. Most importantly, no one wanted to pay to solve it. Scott's mission soon grew to cover delivery of primary medical care in rural Ontario.

Although his target was Ontario, the problems Scott uncovered are generic and are faced by rural doctors across Canada and worldwide. His findings highlighted many deterrents to recruitment and retention: the sense of abandonment felt by many rural doctors who feel that their medical

associations, governments and hospitals are not supporting them on rural issues; the hemorrhaging of doctors from rural practice; the inadequacies of fee for service in the rural setting, especially as payment for on-call services in low-volume ERs; the shortage of rural surgeons and GP/FPs trained in anesthesia, emergency, obstetrics and psychiatry; the fact that the unique characteristics of rural medicine are not recognized; and the onerous on-call schedules, especially those of less than 1 in 5 in a 24-hour ER, which prevent stability of medical personnel in rural communities.

Scott noted that one reason rural medicine isn't attracting recruits is because graduates are not prepared for rural practice; rural practice is not encouraged or fully appreciated by academia. Scott also found that the additional pressures of rural medicine, the unrelenting demands and overwork faced by rural physicians, make it difficult to have a balanced lifestyle, which in turn results in burn-out and high turnover.

Obtaining CME is difficult because of lack of locum coverage and the distance to be travelled and because academic health sciences centres (AHSCs) have not understood the educational needs of rural doctors. Scott noted that Ontario's medical schools and AHSCs are not in tune with rural practice or with the urgent needs of practitioners of rural medicine. He found that although it was unintentional, these bodies contribute to the negative attitude toward rural medicine. Scott found that not enough family physicians have been trained adequately in their residency programs for practice in rural areas.

Scott recommended that rural physicians receive adequate compensation, including payment for CME and holiday support; that the professional limitations of rural practice be recognized through special CME programs; and that supplementary programs be available for training and retraining, along with ready support from specialists and AHSCs.

Reform of medical education as it pertains to rural medical training must acknowledge and serve rural medicine. The focus of the medical education system should be reoriented toward rural medicine issues, and rural medicine should be a required component of both undergraduate training and residency in family practice, as well as of certain key specialities.

A distinguished list of speakers followed Scott.* They presented overviews of selected programs that have been developed to support the needs of rural medicine. Their presentations illustrated the successes and failures of different incentives, rural medical training initiatives and CME programs that are in operation or are being developed.

Recommendations

After the formal presentations, conference participants† were divided into three groups to address (1) education, (2) practice sustainability and (3) ways in which to implement any consensus reached.

Education

The consensus was that education is the key to solving the problem of recruitment and retention of rural physicians. Appropriate education would involve ongoing training suitable for practice in rural areas, from undergraduate medical school and into practice, to meet the needs of rural areas and to meet the educational needs of rural doctors. The group had 10 key recommendations for medical schools.

1. An office of rural medicine should be established in every medical school that trains rural physicians. Its role would be to develop and coordinate medical training for rural doctors.
2. WONCA standards[3] should be followed in accrediting rural training.
3. Outreach programs aimed at high school students should be implemented to encourage and identify students interested in rural practice.
4. Exposure to rural medicine should occur early on in undergraduate medical school and should be mandatory.
5. Optional additional training in rural medicine should be available.
6. The rural background of candidates should be taken into consideration in the selection of students by medical schools.
7. Medical students who have committed themselves to rural practice should have access to bursaries.
8. Recruitment of rural doctors to the faculty -- for the teaching of rural medicine and to ensure the quality of rural preceptors -- should be improved.
9. Regional needs should be evaluated, and evidence-based approaches should be used to do so.
10. The profile of those rural doctors who train residents in rural medicine should be raised.

The group also made 7 recommendations for postgraduate training

1. A minimum of 2 months of rural training should be mandatory for all family medicine residents.
2. More rural training streams should be developed.
3. More positions for special skills training should be developed.
4. Physicians in specialty training programs should have greater exposure to rural medicine.
5. Continuing medical education should be driven by the needs of rural physicians.
6. More re-entry positions for specialty training should be created. A supplementary salary should be considered.
7. Continuing education throughout the career of every rural physician should be promoted and supported.

Sustainable practice

If physicians are to continue to practise in rural areas, their working conditions must be conducive to encouraging them to stay. The group had 9 recommendations for sustainable practice conditions.

1. Physicians and their communities must interact regularly to discuss the problems and needs of rural doctors. A third party moderator could be used to help facilitate the process.
2. Rural physicians should be offered an option as to how they are paid, which would recognize the years they have worked, the amount and type of on-call work they do and the scope of their practices.
3. There should be contingencies to compensate for any professional or personal disruption related to the practice of rural medicine.
4. Adequate CME should be accessible both individually (including locum support) and as a group, through telemedicine and electronic media.
5. Rural doctors should have "ready" access to specialists. To facilitate access, electronic consultations and other communications systems should be further developed for rural doctors. Mechanisms for remuneration for these services should be put in place.
6. Locum relief is needed for all rural communities.
7. A minimum of 5 physicians are needed to share call in communities that have emergency services. A minimum of 3 physicians are needed in other areas.
8. Families should be given opportunities to get away for a holiday. A minimum of 6 weeks per year is recommended, and there should be travel subsidies for rural doctors practising in remote areas.

Managing the implementation of any consensus

The group was unable to come up with any specific recommendations on how to manage and implement a rural health care strategy, but the group did identify several areas that need to be addressed if a rural health strategy is to come into being.

Any plan to solve the problem of recruitment and retention of rural doctors must be comprehensive, flexible and amenable to implementation according to each province and territory's focus. It must also outline the range of services that will be needed in all areas of rural medicine and address the quality of access to good health care by rural residents.

As Graham Scott said in his introductory remarks to the conference, the time for stopgap measures and fact finders is past. Action is required. The need for financial recognition, reasonable call schedules, quality education aimed at the needs of rural medicine and support for rural physicians in both their private and professionals lives must be met to solve the chronic problems of recruitment and retention of Canada's rural doctors.

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3. Policy on training for rural practice. World Organisation of Family Doctors (WONCA): 1995. Available from SRPC or online at http://www.cfpc.ca/carmen/woncapol.htm.

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*Speakers: Ken Babey, MD, secretary, SRPC; Ian Bowmer, MD, dean, Faculty of Medicine, Memorial University of Newfoundland; Dale Dewar, MD, director, Northern Health Service Saskatchewan; Fred French, MD, cochair, Rural Physicians Committee, Newfoundland and Labrador Medical Association, and vice-president, SRPC; Sandro Galea, MD, executive secretary, Canadian Association of Internes and Residents; Jack Geller, PhD, director, Office of Rural Health, University of North Dakota; Margaret Kruk, MD, executive member at large, Provincial Association of Interns and Residents of Ontario; Michael Laskowski, PhD, professor and director, Washington, Alaska, Montana and Idaho (WAMI) Medical Program, University of Idaho; George Macey, DDS, past president, Northwestern Ontario Associated Chambers of Commerce, and chair, Marathon Physicians Crisis Coalition; Keith MacLellan, MD, president, SRPC; Larry Ohlhauser, chair, Alberta Rural Action Plan Coordinating Committee, and registrar, College of Physicians and Surgeons of Alberta; David P. O'Neill, MD, organizing chair, Section of Rural Medicine, Alberta Medical Association; James Rourke, MD, CCFP(EM), founding chair, Section of Rural Practice, Ontario Medical Association; Graham W.S. Scott, QC, author, Report of the Fact Finder on the Issue of Small/Rural Hospital Emergency Department Physician Service, and partner, McMillan Binch; Wally Swentko, PhD, program director, Rural Physician Associate Program, University of Minnesota; Carl Whiteside, MD, director, Community Based Residency Training Program, University of British Columbia.

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†Participants: In addition to the speakers, the following people were participants at the conference: Geoffrey S. Battersby, MD, Rural Physicians Committee, British Columbia Medical Association; Judith Dowler, manager, Health Human Resources Unit, Health Services Directorate, Health Canada; Brenda Gilboe, Alberta Medical Association; Verlin Gwin, director, Health Policy Analysis, Alberta Medical Association; Lisa Harris, director, CME Program, Rural and Isolated Physicians, Ontario Medical Association; Norm Hatlevik, director, Population Health Board Development; Hal Irvine, MD, rural physician; Merv Johnson, MD, chair, Committee on Rural Practice, Saskatchewan Medical Association; Chuck MacNeil, MD, Medical Association of the Northwest Territories; Eileen Mahood, director, Northern Programs and Planning, Underserviced Area Program, Ontario Ministry of Health; Frank Peters, recruiter and coordinator, Medical Society of Nova Scotia; Raymond Pong, PhD, Northern Health Human Resources Research Unit, Laurentian University; Heather Stewart, Ontario Hospital Association; Dan Reid, MD, advisor on physician affairs, Nova Scotia Department of Health; Bruce T. Squires, MBA, executive director, Newfoundland and Labrador Medical Association; Michael Thoburn, MD, executive director, Professional Services, Ontario Medical Association; David

Topps, MD, rural physician; Eric Wasylenko, MD, Physician Resource Planning Group, Alberta Medical Association; Mamoru Watanabe, MD, chair, Committee on Physician Resources, Canadian Medical Association; Judy Watts, executive director, Baffin Regional Hospital, Government of Northwest Territories; Jeff Young, Department of Health of Newfoundland and Labrador.

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Survival tactics

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Can J Rural Med 1997; 2 (1): 33

How do we survive the "call" of rural medicine -- the long hours for less pay, the onerous on-calls, the lack of back-up, the challenge of getting a good education for our kids, the increased costs of household goods and the lack of privacy in a town where everyone knows everything? The difficulties are very real, attested to by the many doctors who fail at rural practice and flee to the city. This is a survival check-list, not of what we can negotiate with our hospitals or communities but of what we must work out within ourselves. These tactics have been honed during my 22 years of surviving, and often enjoying, rural medicine.

- Set priorities and stick to them. Mine are family, friends, practice, community and hospital (call) in that order. If your child is crying and "they" want you to see a patient who has had a backache for 3 weeks, your child has priority. If your friend's life is falling apart and "they" want you to inject an IVP, your friend gets your full attention. If you and your husband need to clear the air and "they" want you to go to yet another hospital meeting, you stay home and talk.

- Get lost! Take a day off each week and be unavailable. Develop outdoor activities that get you away from your practice and out of sight. My favourites are fishing, hiking, mountain biking, cross-country skiing, gardening and wood chopping. If you are really at your wit's end, hide! Unplug the phone, lock the doors and take a hot bath. Or go fishing.

- Escape completely. "Plan one vacation as you are returning from the other" were wise words from my father, who was a country doc for 30 years. Take your holidays and get away. There is no such thing as a holiday at home in rural medicine. I'm still waiting to see if there can be retirement.

- Act deaf when you go grocery shopping. Be vague and distracted if anyone is rude enough to interrupt you. When they ask about anyone, you know nothing! Eventually they will appreciate the fact that you don't talk about people.

- Family values. Encourage your family to like outdoor activities. They might like a rural area if they learn to rock climb, ski, canoe or mountain bike. Teach them to be independent, to shop, cook and do their own laundry. You haven't time to do it. Everyone must like to travel. Animals, trees, skies should be favourite topics of conversation. Encourage the love of quiet and solitude and the study of nature. Crowds are to be abhorred.

- The PHONE ! When you are not on call, you don't have to answer the phone if you are in the bath, having sex, nursing your baby or consoling your friend. If you are on call all the time, don't always answer it; "they" will find you if they need you. Thankfully, cellular phones don't work very well in the mountains or deep in the bush. You are not married to the phone, and you will not take it to the grave, although it may drive you there.

- ENJOY! Enjoy the deer in your backyard nibbling your tulips, the bears helping themselves to your apple tree, the snow glistening on the peaks when you are up at dawn delivering a baby, and friends to walk and talk with, who will even listen to you B&C (bitch and complain). Enjoy quiet moments alone in the garden with the blue jays or hiking a country road. Enjoy the pace of a small town and its lack of pretension. Enjoy the space and freedom and the 5 minutes it takes to get to work. Enjoy the salmon, the huckleberries and other goodwill delivered right to your door.

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The Great Canadian Rockies

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Can J Rural Med 1997; 2 (1): 33-35

Where the hell am I?" yelled the panicked, disembodied voice coming out at me through the thick fog just as I edged my skis downhill into the great white void. I swear the devil must have prodded me when I yelled back, "In Sunshine!"

Something swooshed slowly by somewhere in the swirl of fog to my left. I thought I caught a muffled "Smartaaass!" before hearing a dull thud and an unearthly groan as whoever it was smashed into one of the monster-sized moguls draped all over the aptly named "Bye Bye Bowl" at Sunshine Village, Banff National Park.

We'd arrived in drizzle in the town of Banff the day before for the rural doctors' conference and were checking out the local slopes to see what they were like, except I couldn't see a thing and only gravity told me which way was down. Then, in one of those sudden and miraculous weather changes that can occur in the Rockies the fog took on an eerie yellowish tinge, and several minutes later the sun exploded through it like a searchlight, vaporizing the fog to reveal the great Canadian Rockies -- along with a half dozen skiers, including my two young sons, littered like flotsam and jetsam on the mounds of moguls below me. From skiing blindly by the measured inch suddenly we were skiing with abandon by the unmeasured mile on sunny, wide open bowls that began above the tree line and descended into the fog-shrouded valley with access to three mountains that make up the Sunshine trio of Lookout Mountain (some great bumps), Goat's Eye (new and no novice trails here: Free Fall has an 83% pitch -- talk about elbowing a mountain!) and Mt. Standish (great bumps and trees).

Sunshine is only 20 minutes from the town of Banff and is the only ski-in, ski-out resort in the park. Cars are left behind at the parking lot and skiers take the gondola up past the take-off point for Goat's Eye and up to Sunshine Village and the 85-room Sunshine Inn. The best skiing is in late February and early March when powder reigns, but spring skiing in the Rockies can be terrific (the rare fog notwithstanding) and lasts well into May.

Sunshine Village is one of three excellent ski resorts close to the town of Banff. Lake Louise is a 1-hour shuttle ride west from Banff and is the largest ski area in Canada, with 4000 acres of magnificent bowls, double black diamond mogul fields, glades and gentle groomed slopes.

If you're heading to Lake Louise be sure to check out the impressive Chateau Lake Louise and Lake Louise itself.

Norquay, 5 minutes from Banff, is mostly below the tree line and has some of the most famous mogul runs in the area. You can buy interchangeable lift tickets for all three resorts, but Norquay also sells 2-hour tickets, so if you're staying in Banff you can catch a few runs in the morning and tour Banff and environs in the afternoon.

There's more to Banff than alpine skiing, even in the off-season months of spring and fall. Banff has a permanent population of 7500 which swells to many times that during the high summer season. The town is chock-full of every kind of store, restaurant and hotel you could want. There's even a Roger's chocolate store here, one of the very few outside of the famous Victoria store where it all started. They create chocolates to make you drool. Take a drive up to the Banff Springs Hotel, the 108-year-old imposing castle, and on the way back check out the Upper Hot Springs and soak in the pool and spa. Alternatively go to where it all began at the Cave and Basin Historic Site where you can see the naturally occurring springs in the cave. It was the discovery of these springs by three Canadian Pacific rail workers that eventually led to the creation of Canada's first national park to protect the springs from overexploitation. Visit the Banff Park Museum in downtown Banff, and for arts and entertainment check out the Banff Centre for the Arts and the Whyte Museum of the Canadian Rockies. If you want to travel farther afield there are many attractions within driving distance of Banff, including the hoodoos, impressive spires carved by the wind and the rain that can be found high above the Bow River Valley, and don't forget the Sulphur Mountain gondola for a great view of the Banff area.

Every year more than 5 million people visit Banff National Park, now part of the largest national park system in the world. In fact the area around Banff is loaded with national parks from Jasper, Yoho and Banff to Kootenay, Revelstoke and Glacier in British Columbia, offering endless outdoor opportunities in the winter, not just for alpine skiing but for cross-country and ski touring as well. Although cross-country skiing is pretty well washed out at the lower levels by early April, its near relative, ski touring, is still going strong high up in the mountains.

It's big business in the Rockies, and trips can range from expensive ski-in or helicopter-in luxury resorts to rustic mountain huts, where you bring your own food, bedding and flashlights, to guided winter touring from point A to point B. Booking well ahead is advisable, as these resorts, huts and tours can be very popular.

We had never ski toured before so, after the conference, we chose the latter option, took our two

sons and two expert guides, who happened to be close family members from Calgary, crossed the Great Divide and stopped at dusk at Roger's Pass in Glacier Mountain National Park. In the little layby parking lot with the Rockies towering overhead we strapped the unfamiliar skins onto our rented mountaineering skis (much more substantial than the light cross-country skis we were used to back east), hoisted our packs loaded with food and bedding and by the light of our headlamps skied in through the gloaming and the towering evergreens to a cabin operated by the Alpine Club of Canada 1 km from the Trans-Canada Highway. By the time we reached the hut it was dark, and our two sons tumbled blindly into the cabin and scared the wits out of two Germans tourists (who spoke no English) who were quietly reading by candlelight in the kitchen and with whom we were to share the cabin. Our plan was to use the hut as a base and ski the Selkirk mountain range by day, the best highway-accessible ski touring in North America. Even so it had taken us all afternoon to get there from Banff!

It was avalanche season, and our trusty guides made sure all six of us were outfitted with transceivers, avalanche probes, shovels and emergency supplies, and they drilled us in what to do if an avalanche should hit. They stressed that we would not be able to ski if they felt the danger was high.

For 3 days we zigzagged up the spines of mountains hugging the tree line, sometimes climbing slopes of 40° marvelling at how well the skins worked, and how empty the Rockies are, with no ski lifts, no crowds, no line-ups, just open vistas and untracked snow everywhere. It was too late for the famous Rocky Mountain powder: we skied in mashed potato conditions which, strange as it seems, turned out to be ideal for learning how to telemark: we never got out of control but we sure got drenched. Each day, after 6 to 8 hours of climbing up, skiing down and climbing again we headed back exhausted, except for the kids, who wanted to play soccer!

On our last day we met a group of 12 high up in the mountains out on an avalanche course. They had slept that night in a huge snow cave carved out of the mountain side and were using it as a base. As we talked about avalanches the air seemed to dance and take on a life of its own, and a low throbbing sound grew to a dull roar as someone pointed excitedly across the valley. We watched as a cornice on top of the mountain released and began to plunge down the sheer rock face high above us, its frightening power silencing us as the snow crashed down into the valley, gaining momentum and smothering the smooth, untrammelled areas with a rough, thick, gluey mass of destruction. I fingered my transceiver and wondered about the survival chances of anyone caught in something like that.

After supper that evening as the six of us lay comatose around the fire our quiet German twosome suddenly came to life. It began very softly at first with a deep, rich baritone. The strains of "Norwegian Wood" slowly grew louder and louder until the rich sound filled the entire cabin. The six of us, as if on cue, sat up to listen as the first voice was joined by a clear resonant tenor, the likes of which you'd pay big bucks to hear. Our two German friends turned out to be professional musicians on holiday! In sucession they sang the first verse of just about every hit

we knew from the '60s and '70s, the foreign English words on their lips sounding as natural as if they were singing in their native tongue. Although they never did sing the "Blue Canadian Rockies" (they'd never heard of Valdy), their impromptu concert was a great ending, to a great week, in the great Canadian Rockies.

Ski touring:

- Check with the Alpine Club of Canada. They operate a bunch of huts in the national parks around Banff and have a selection of tours. Box 2040, Canmore AB T1W 2T8. Tel.: 403 678-3200. Web site: www.culturenet.ca/acc/
- If you want more luxury try Skoki Lodge for a hike in of 11 km to a rustic, luxury lodge. Box 5, Lake Louise AB T0L 1E0. Tel.: 403 522-3555. Both can be found on the Web. Just search for Skoki or ACC and it'll get you there or key in www.discovercanada.com/cgi-bin/display.cgi?whichitem=155".

Alpine skiing

- Sunshine Ski resort. Box 1510, Banff AB T0L 0C0. Tel.: 403 762-6500. Vertical drop: 1070 m
- Lake Louise. 505, 1550-8th St. SW, Calgary AB T2R 1K1. Tel.: 1-800-258-snow. Vertical drop: 1645 m
- Banff Mount Norquay. Box 219, Ste. 7000, Banff AB. Tel: 403 762-4421. Vertical drop: 497 m

Accommodation

- Banff/Lake Louise Tourism Bureau, Box 1298, Banff AB T0L 0C0. Central reservation number 1-800-661-1676 will give you information on accommodation, recreation, restaurants, shopping and ski resorts.
- Banff National Park, Box 900, Banff AB T0L 0C0. Tel.: 403 762-1550. Banff National Park Home Page will get you all the information you might want or point you to new and exciting links. Search for Banff National Park or key in www.worldweb.com/VertexCustomers/p/ParksCanada-Banff/index.htm.
- Banff Visitor Centre, 223 Banff Ave., Banff AB. Tel.: 403 762-4256. Everything you want to know about what to see and do.

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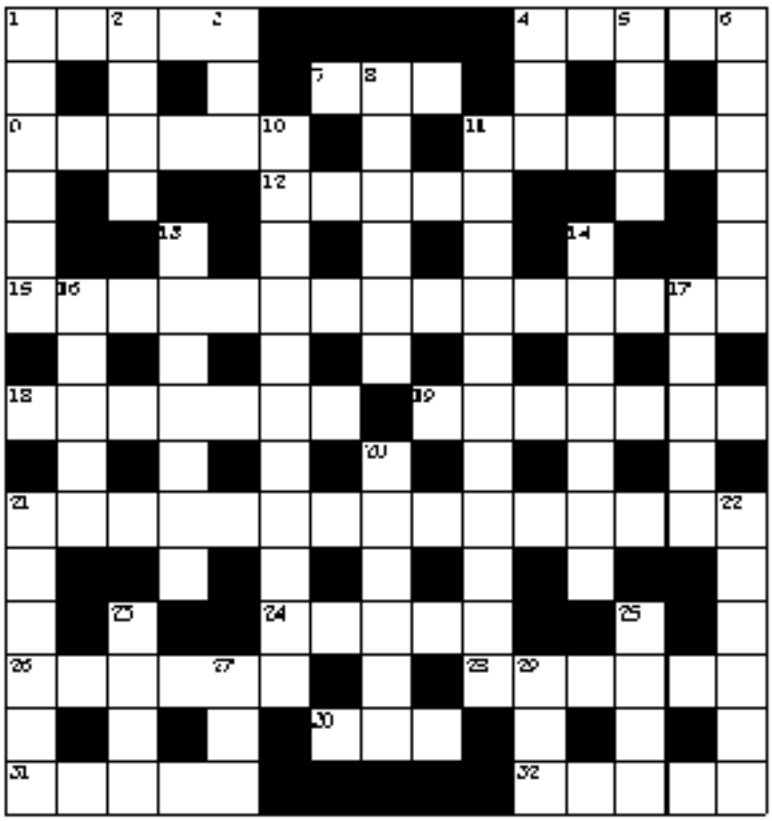
Cryptic Crossword

Lee Teperman
Charteris, Que.



Across	Down
1 Moment, they say, that's worth a mint (5)	1 Drawing something to give a shot in the arm? (6)
4 This, we hear, cures the creeps (5)	2 Oral history of the second person (4)
7 Hole-maker for whole ears (3)	3 & 27. Close listener to make closer (6)
9 Coiled spring head injuries (6)	4 & 29. Joint user of joint dish (6)
11 Only bit of hope held out in plain view (6)	5 One's place or times (4)

12 Constructive member of a tribe amazingly graced (1-4)	6 Chesty sort of cutter (6)
15 Household goods that bring grief and run true to form (6,9)	8 Foul we combined with misery (6)
18 Convictions for break-and-entry, perjury and false admission (7)	10 Symptom, if one cannot get pregnant (11)
19 Advice given about universal health care workers roots (7)	11 Darkness at the break of noon is Muse's (11)
21 Wise old doctor and naïve Dr. Casey (8,2,5)	13 Heart attack described by a doctor and a large officer (7)
24 Just say "no" to these cuts (5)	14 Sexually transmitted disease cases half unnerved the totally dumbfounded (7)
26 Charm of a beast and bone (6)	16 Medical examiner and topical remedy (5)
28 Bodily fluid to place in the gross total (6)	17 More mature epitaph engraved on hospital facility (5)
30 Medical icon playing piano (3)	20 Side upset about court orders (6)
31 Another place to speak of others (5)	21 Shocked state the windbag hastily conceals (6)
32 Finished school, as told (5)	22 Medicine man who might article under a quack (6)
	23 Inconspicuous absence of obstetrician's panacea (4)
	25 Number on immediate demand (4)
	27 See 3 down
	29 See 4 down

Answers to the cryptic crossword appear on page 41.

For instructions on how to tackle a cryptic crossword, please see the first issue of CJRM (1996;1:34-5) or correspond with Lee Teperman, RR 5, Shawville QC J0X 2Y0; email bullhits@infonet.ca

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More kudos for the first issue of CJRM

Can J Rural Med 1997; 2 (1): 40

I was most excited to see the first issue of your new journal. I have just begun a residency in family medicine, with the goal of a rural family practice. Having grown up in a rural community and after spending several electives in rural communities I have come to believe that rural medicine is in many ways a different specialty altogether from urban family medicine. How nice at last to have a journal that acknowledges the different joys and challenges of a rural practice.

I was even more excited to discover that it contained a cryptic crossword (a new passion of mine)!

Katherine Miller, MD
Queen's Family Medicine Program
Family Medicine Centre
Kingston, Ont.

Thanks for the first copy of CJRM. This journal is an excellent idea, and I wish you every success.
If I have a suggestion, it would be to look critically at what the federal and provincial governments are doing to water down and even "privatize" many aspects of our formerly excellent medicare system. You should keep a close eye on the after-effects of the changes that have crippled the National Health Service in Britain since the days of Mrs. Thatcher. The impacts of those after-effects on many "reforms" there and elsewhere in the world are simply part of the trend to destroy what has proven useful and efficient and return us to the Middle Ages or perhaps the jungle.

All the same, good luck with your very worthwhile project.

D.B. Stewart, MD, FRCSC,
FRCOG

I would like to congratulate you on this interesting new venture. However, I really have to draw your attention to one of the most idiotic of the new words that have come into medicine in the past 20 years. In this age when we are not allowed to have "patients" but are required to have "clients" or "consumers," we also have this absolutely ludicrous term "ambulatory."

A few years ago, as a residency program director, I pointed out in my submission to the Royal College of Physicians and Surgeons of Canada that in the "ambulatory care centre" in the major teaching hospital of Dalhousie, many patients were wheeled in on stretchers or arrived in wheelchairs. In the psychiatric units the in-patients constantly ambulate. Now that surgeons have realized that their patients have the habit of dying of pulmonary edema, even postoperative in-patients are frequently encouraged to ambulate. What was wrong with the term "out-patient?"

The article in your inaugural journal on ambulatory epidural analgesia conjures up a fantastic picture -- Dr. Stuart Iglesias chasing rural women in labour around the woods and fields with his large epidural needle in hand! In past times, an obstetric hospital was often known as a "lying-in hospital." From my observations, most women in labour prefer to lie when things actually get going, although they often ambulate during the first stage of labour.

Perhaps I could enlist the support of the Society of Rural Physicians of Canada as I launch the World Association for the Abolition of the Idiotic Euphemism "ambulatory."

W.O. McCormick, MB, FRCPC
Medical Education Coordinator
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Please send us your comments and opinions. Letters to the editor should be addressed to: Canadian Journal of Rural Medicine, Box 1086, Shawville QC J0X 2Y0; email cjrm@fox.nstn.ca; fax 819 647-2845

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Literature / Litterature scientifique

Can J Rural Med 1997; 2 (1): 44

People living in rural areas are exposed to numerous risks that are particular to their geography and their occupations, and many recent articles examine these risks.

Machine-related occupational injuries in farm residents. Layde PM, Nordstrom DL, Stueland D, Brand L, Olson KA. Ann Epidemiol 1995;5(6):419-26.

Layde and coauthors examined the factors associated with farm injuries occurring in Wisconsin (from May 1990 through April 1992) that involved machinery or a farm implement and that resulted in medical or chiropractic care.

They found that workers at large farms and dairy farms and nonresident farmhands were at greater risk of injury than workers at farms that had registered cows and those where cows were fed in the barn throughout the year. Furthermore, they found that "Farm safety practices did not appreciably influence the risk of machine-related farm injury."

Lung (agricultural/rural). do Pico GA. Otolaryngol Head Neck Surg 1996;114(2):212-6.

Hazards other than farm machinery exist in the rural environment. Prominent among them are the chemicals to which a farmer may be exposed in the course of farm operations. In this paper do Pico reviews the many sources of environmental exposure that may lead to pulmonary disease.

Illnesses may take the form of occupational asthma, bronchitis or, less commonly, toxic hemorrhagic pulmonary edema (silo-filler's disease). Many agents, including "organic dusts, allergens, chemicals, toxic gases, and infectious agents," are implicated. The author calls for increased education of workers and better compliance with safety regulations.

Lung cancer, smoking, and environment: a cohort study of the Danish population. Engholm G, Palmgren F, Lynge E. BMJ 1996;312(7041):1259-63.

Asthma, airways responsiveness and air pollution in two contrasting districts of northern

England. Devereux G, Ayatollahi T, Ward R, Bromly C, Bourke SJ, Stenton SC, Hendrick DJ. Thorax 1996;51(2):169-74.

To add insult to injury, two recent studies throw doubt on the assumption that rural risks are offset by the benefits of a cleaner environment in rural areas, at least in so far as the occurrence of lung cancer and asthma are concerned.

Engholm and associates report in BMJ that the significant difference in the incidence of lung cancer between Copenhagen and rural areas in Denmark can be almost entirely explained by differences in smoking habits, which, they say, "explained about 60% of the excess lung cancer risk in Copenhagen for men and 90% for women." After controlling for smoking, they also found that workers had double the risk for lung cancer that teachers or academics did and that geographic region had only a small independent effect.

In a related study in the United Kingdom, Devereux and colleagues found there was little difference in prevalence of asthma and airway responsiveness between rural West Cumbria and urban, polluted Newcastle, despite the apparent environmental differences. Air pollution due to exhaust fumes from motor vehicles was the most obvious of these differences and was 2 to 10 times greater in the urban centre than in the rural area. The authors suggest that their findings shed some doubt on the role of pollution as a possible agent in the recent increase in prevalance of asthma. They add that "It is possible, however, that an air pollution effect in Newcastle has been balanced by asthmagenic effects of other agents in West Cumbria."

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Low-volume ERs and a national triage system

Can J Rural Med 1997; 2 (1): 45-47

Night call has always been a problem for fee-for-service rural doctors working in low-volume emergency departments. Despite spending the whole night on call, they are paid only for the patients they see. This was the very problem that launched the SRPC back in 1992, when doctors in Mount Forest, Ont., took a stand on the issue. The problem is still very much in evidence and has been one of the threads on RuralMed these last few months, particularly in relation to call-back procedures. For example, in Alberta, according to one "RuralMedder," locum tenens who are billeted at the hospital and therefore take call from there cannot bill for a call-back and so receive the same fee as a doctor in emergency would get. The same contributor also mused as to how one should deal with doctors whose own rural hospitals have lost their emergency departments and who must now take call in another town. These physicians must stay overnight but get paid the same fee as any doctor in the ER.

Suggestions included initiating increased call-back fees after a certain amount of time has elapsed between calls, regardless of whether the doctor is in the hospital or not. An hourly fee in low-volume ERs is another way to go. This was the suggestion of the Scott report,1 which recommended that rural doctors in low-volume ERs be paid a set fee ($70/hour). Quebec physicians working in low-volume ERs have the option between 8 p.m. and 8 a.m. of accepting either fee-for-service or an hourly rate plus a proportion of billings. To qualify for the hourly rate they must be physically present in the hospital for the shift. Set fees for ERs in Ontario have created unforeseen problems. Low-volume ERs are now more attractive than medium- and high-volume ones. As one RuralMedder wrote, there is a "need to balance payment for both inconvenience and volume."

Triage: According to one RuralMedder, a group of specialists working in urban areas in the United Kingdom, Australia and Canada is proposing a common national triage scoring system for several countries. He posted the urban-based triage proposal to the list and contrasted it with a rural proposal that is currently evolving in Canada.

Urban

1. Resusitation needed: immediate treatment
2. Emergency situation: treatment within 10 minutes
3. Urgent situation: treatment within 30 minutes
4. Semi-urgent situation: treatment within 1 hour
5. Non-urgent situation: treatment within 2 hours

Rural

1. Critical situation: immediate treatment
2. Emergency situation: treatment within 1 hour
3. Urgent situation: treatment within 1 to 2 hours
4. Semi-urgent situation: treatment within 3 to 12 hours
5. Non-urgent situation: treatment in 12 hours or more

Among the questions raised in discussion was whether the urban-based specialists have the authority to establish triage standards for rural ERs staffed by GPs. The suggestion was made that rural doctors should be consulted on any triage system that is adopted. The short times for the urban proposal contrasted strongly with the more realistic times of the rural proposal. As one doctor said, the speed with which a patient receives attention does not always correlate with the level of care or outcome. More research is needed before either proposal is adopted.

One doctor working at a hospital with triage in place felt that "a formal triage system is a lousy attempt to make up for the common sense that has developed de novo in most rural ERs." Another doctor questioned the need for a national system at all. He says his system works well and is certainly uncomplicated:

1. They need me NOW!
2. They need me some time.
3. They don't need me.

Another doctor pointed out the merits of a triage system, which include consistent assessment of patients and spin-offs in terms of hospital use. When his hospital was threatened with closure, staff physicians were able to show that they deal with 50% of their most severe injuries without having to transfer, and they were able to estimate how many lives would be lost if the hospital closed. The formal system also made it easier to identify under- and over-triage by doctors and nurses and to provide educational programs to medical personnel to remedy these situations.

Reference

1. Scott GWS: Report of the fact finder on the issue of small/rural hospital emergency department physician service. Toronto: Ontario Ministry of Health, Ontario Hospital Association, Ontario Medical Association, 1995.

Subscription to RuralMed is by request to the listowner.
Send an email message to Dr. John Wootton at: jwootton@fox.nstn.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 at: http://www.gretmar.com/srp/home.html

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CALL FOR PAPERS

Can J Rural Med 1997; 2 (1):22

Canadian Journal of Rural Medicine (CJRM) is a quarterly peer-reviewed journal available in print form and on the Internet. It is produced by rural physicians on behalf of the entire rural community and is intended to complement existing primary care journals. It seeks to promote research into rural health issues, support and inform rural practitioners, provide a forum for debate and discussion of rural medicine 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 and regional reviews

- Clinical articles: practical articles related to rural practice. Illustrations/photos welcome and encouraged
- Off-Call articles: a grab-bag of material of general interest to rural doctors such as travel, musings on rural living, essays, etc.
- Cover: artwork with a rural theme

Guidelines for contributors

Submit three copies of the manuscript accompanied by a covering letter indicating that the piece is not being considered elsewhere and has not been published. Also include written permission to reproduce previously published material or illustrations that identify human subjects and include written permission from anyone acknowledged in the paper. Manuscripts should be typed doubled-spaced with a separate title page, an abstract of no more than 200 words followed by the text, full references and tables. Illustrations must be good-quality unmounted glossy prints no larger than 8 3 10 inches (20.3 3 25.4 cm).

All manuscripts must be submitted on disk (3.5" HD/DD) in either IBM compatible or Macintosh format. Include a formatted version and a text version of the article and specify the software used. CJRM cannot accept papers that are not on disk.

The CJRM follows the guidelines set forth in "Uniform requirements for manuscripts submitted to biomedical journals" (Can Med Assoc J 1995;152(9):1459-65).

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Gadget review

Gordon Brock, MD, CCFP Temiscaming, Que.

Can J Rural Med 1997; 2 (1): 48

Medisac MD medical treatment bag. $349.99 plus tax (airway kit $309.75, bandage and splint kit $121.25, IV kit $29.70). Available from Medisac, 3555 Don Mills Rd., Ste. 6-1704, North York ON M2H 3N3; tel. 888 633-4722; fax 416 502-9301, email wizacre@passport.ca

The Canadian-made Medisac medical treatment bags were designed by an orthopedic surgeon, Dr. Robert Brock (no relation), and are described by the distributor as moving "well beyond the simple emergency kit or doctor's black bag." Medisac sells four different treatment bags, in three sizes. The medium-sized model, the Medisac MD, which is designed for use outside the office, was received for evaluation. The two larger models, the Medisac Sport and the Medisac Plus, are designed "for team and event coverage" and as "a complete doctor's office in a bag" respectively. The smallest bag, the Medisac Dx, is intended for diagnostic equipment.

My first impressions are that the Medisac MD is well designed, durable and attractive. It is soft sided, made of bright red sturdy nylon and measures 46 * 38 * 17 cm (18 * 15 * 7 in). The stiffeners in the sides appear to be made of material that could be used, in a pinch, as splints. The Medisac MD has a carrying handle and shoulder strap and comes with a 5-year warranty on materials and workmanship.

The interior of the upper lid is outfitted with carrying pouches for such items as examining gloves and diagnostic equipment. The bag comes with 9 colour-coded, zippered nylon pouches (including one designed to hold injectables) in 5 different sizes. These can be custom filled by the physician, or prepackaged kits in 6 different formats can be ordered: wound, eye, examination, airway, IV, and bandage and splint. The latter 3 kits were included for evaluation. Each comes neatly packaged in a clear plastic resealable bag, and their convenience makes them attractive. However, they are rather expensive, and physicians may wish to make up similar kits themselves, especially if their hospitals will provide the relevant supplies at cost.

In summary, I found the Medisac bag to be a well-conceived item. At $349.99 the bag is pricey,

although both the cost and the bag could be shared among 2 or 3 physicians in a group. The bag would certainly be more than adequate for the rural physician who regularly must provide care to patients outside the office or hospital setting.

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Outcome of thrombolysis in patients with acute myocardial infarction in rural Alberta

Table 1. Characteristics of 122 patients treated with thrombolytic agents in 1992 at 36 rural Alberta hospitals with fewer than 100 beds

Characteristic	No. (and %) of patients	
Age > 75 years*	14	(11.5)
Female	32	(26.2)
With inferior infarction	69	(56.6)
With anterior infarction	41	(33.6)
With unspecified or multiple infarction	12	(9.8)
Previous infarction	23	(18.9)

*Patients ranged in age from 31 to 84 (mean 62.0) years.

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Outcome of thrombolysis in patients with acute myocardial infarction in rural Alberta

Table 2. Outcome and further investigations after thrombolysis

Outcome*	No. (and %) of patients	
Death	11/122	(9.0)
Possible complication†	62/121	(51.2)
Incomplete infusion of thrombolytic agent	10/122	(8.2)
Transfer to specialist centre	72/122	(59.0)
Angiography†	34/121	(28.1)
Angioplasty†	10/121	(8.2)
Bypass surgery†	7/121	(5.8)

*Final outcome after angioplasty was not known for 2 patients.
†Information on possible complications and investigations was not known for 1 patient.

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Outcome of thrombolysis in patients with acute myocardial infarction in rural Alberta

Table 3. Adverse events after thrombolysis for 121 of the patients

Complication	No. (and %) of patients*	
Overall	62	(51.2)
Arrhythmias (all)	32	(26.4)
Cerebrovascular accident†	2	(1.7)
Major bleeding episode necessitating transfusion (noncerebral)	2	(1.7)
Minor bleeding episode	18	(14.9)
Hypotension (systolic pressure < 90 mm Hg)	28	(23.1)
Allergic reaction	1	(0.8)

Note: Information about complications was not available for 1 patient.

*Total is greater than 62 because some patients had more than 1 adverse event.

†Not known whether these events were hemorrhagic.

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Outcome of thrombolysis in patients with acute myocardial infarction in rural Alberta

Table 4. Arrhythmias noted during thrombolysis and during the subsequent 2 hours for 121 of the patients

Type of arrhythmia	No. (and %) of patients	
All types*	32	(26.4)
Asystole	2	(1.7)
Ventricular fibrillation	2	(1.7)
Ventricular tachycardia†	6	(5.0)
Heart block		
2nd degree or greater	8	(6.6)
1st degree	2	(1.7)
Sinus bradycardia	12	(9.9)
Atrial arrhythmia	1	(0.8)
Accelerated idioventricular rhythm	1	(0.8)
Frequent premature ventricular contractions	6	(5.0)
Other and unspecified	3	(2.5)

Note: Information about complications was not available for 1 patient.

*Total is greater than 32 because some patients had several types of arrhythmia.

†Ventricular tachycardia was defined as a minimum of 3 consecutive beats of ventricular origin at a rate greater than 100 beats/minute.

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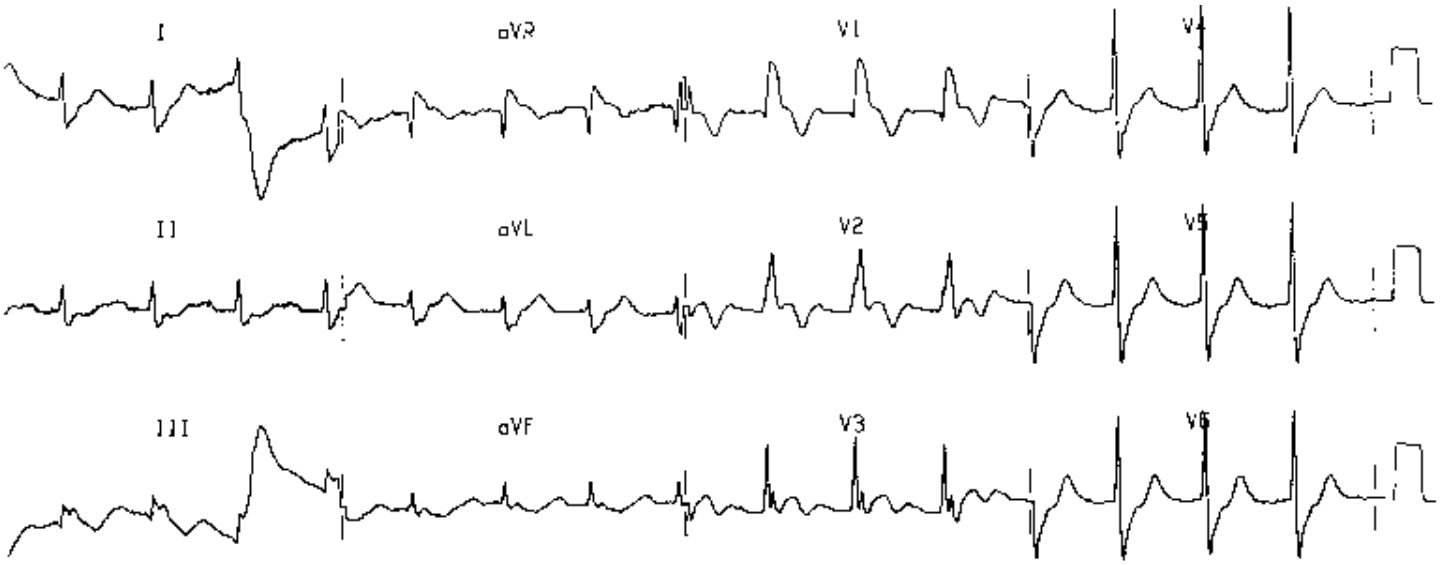
Country cardiograms case 3



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Country cardiograms case 3: Acute onset of bifascicular block

Can J Rural Med 1997; 2 (1): 50-51

Findings

In the most recent electrocardiogram (ECG), shown on page 19, the QRS complex had widened to greater than 120 ms, and right axis deviation of 160° had developed. Although P waves were difficult to see in this tracing, it was thought that the patient was in normal sinus rhythm. An alternative interpretation for the wide QRS complex rhythm in this ECG might have been accelerated idioventricular rhythm, a benign abnormal rhythm that often occurs during thrombolysis. Old ECGs for this patient clearly showed pre-existing first-degree atrioventricular heart block and small P waves, which made it easier for the attending rural physician to identify the P waves in this ECG.

The ECG findings are compatible with new right bundle branch block (RBBB) and new left posterior fascicle block (LPFB). In spite of the conduction abnormalities, ST elevation was visible in V1 through V3, and reciprocal ST depression was visible in the inferior leads, compatible with a large, acute anterior myocardial infarction (MI).

Figure 1 is a schematic view of the ventricular conduction system and heart chambers. The infarction caused a block in the right bundle branch, which delayed right ventricular depolarization and hence widened the QRS complex and caused the characteristic pattern changes of RBBB. As shown in the diagram, the left bundle innervates the left ventricle from the septum, branching into a posterior fascicle (which runs into the base and posterior of the heart, away from the reader in Fig. 1) and an anterior fascicle (which in Fig. 1 comes out of the page toward the reader). As in the patient described here, a block in the posterior fascicle therefore delays depolarization into the base and posterior left ventricle, shifting the limb lead QRS axis toward the right but not lengthening the QRS complex as does RBBB.

ST changes of ischemia and infarction often are masked in left bundle branch block, but usually are visible in RBBB, as in this patient's ECG (Fig. 2).[1]

Discussion

The appearance of conduction defects during acute MI is worrisome. There is an increased risk that malignant rhythm abnormalities, such as high-grade heart block or ventricular arrhythmia, will suddenly develop. The appearance of a new block in two parts of the conduction system, added to pre-existing first-degree atrioventricular heart block, as in this patient, increases the risk even more. The combination of RBBB and LPFB in particular occurs in only 0.8% of cases of acute MI and is associated with a poor prognosis.[2] Research in urban settings suggests that 27% of patients in whom new RBBB develops during acute MI also experience complete heart block, and 55% of these die from cardiogenic shock or ventricular arrhythmias.[1]

Rural hospitals differ in their capacity to deal with the complications of acute MI.[3,4] Rural physicians should consider transferring a patient at high risk of rhythm disturbance, unless the hospital is capable of immediate pacing and defibrillation. If the patient is transported, an external transcutaneous pacemaker should be attached. The capture rate with transcutaneous pacing approaches 100% in complete heart block, although it is lower than transvenous pacing in bradysystolic arrest.[5] Transvenous pacemaker insertion may not be available in many rural hospitals and is especially difficult in a patient who has just been treated with a thrombolytic agent.[5]

The patient in this case was transported by ground ambulance to a referral hospital with an external pacemaker attached; the patient was attended by the rural physician during the transfer. During transport, congestive heart failure developed, which the physician controlled in the ambulance with intravenous furosemide. During subsequent hospitalization the patient suffered reversible ventricular tachycardia and significant congestive heart failure. He was transferred back to the rural hospital for further treatment after his condition had been stabilized in the referral centre.

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Cryptic crossword solution

Across	Down
1 Thyme	1 Towing
4 Heels	2 Your
7 Awl	3 & 27. Endear
9 Wounds	4 & 29. Hippie
11 Openly	5 Eons
12 I-beam	6 Scythe
15 Garden furniture Beliefs	8 Woeful
18 Turnips	10 Significant
19 Advanced in years	11 Ominousness
21 Nicks	13 Admiral
24 Amulet	14 Stunned
28 Sputum	16 Amend
30 Asp	17 Riper
31 Their	20 Edicts
32 Eaten	21 Aghast
	22 Shaman
	23 Cure
	25 Stat
	27 See 3 down
	29 See 4 down

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Country cardiograms case 3: Acute onset of bifascicular block

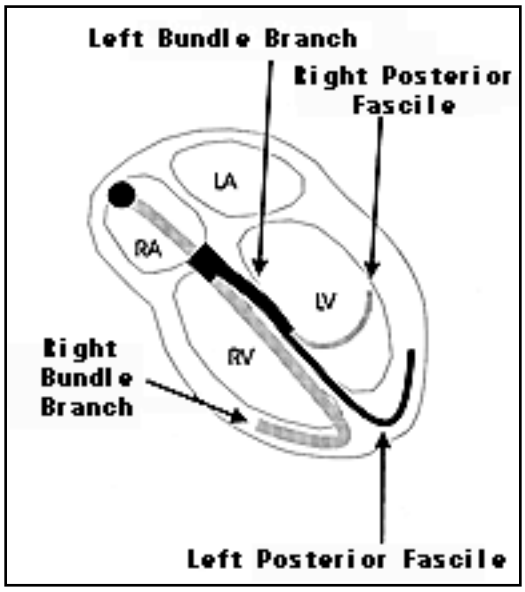

Fig. 1. Schematic frontal view of the ventricular conduction system of the heart. RA = right atrium, RV = right ventricle, LA = left atrium, LV = left ventricle.

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Country cardiograms case 3: Acute onset of bifascicular block

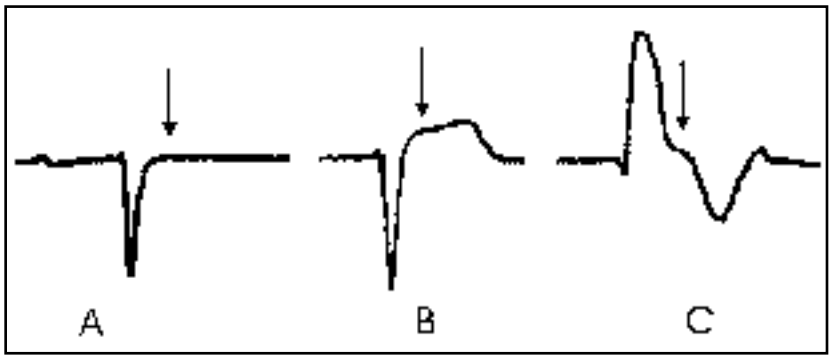

Fig. 2. Lead V1 ST segment changes. A = baseline tracing a year before the current presentation, B = initial tracing during acute MI at the current presentation, C = tracing during acute MI after development of bundle branch block. Arrows = ST elevation.In the next issue: Epigastric pain and 15-lead electrocardiography.

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