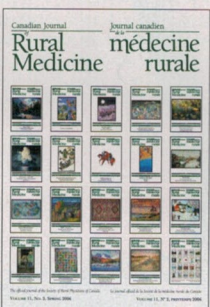
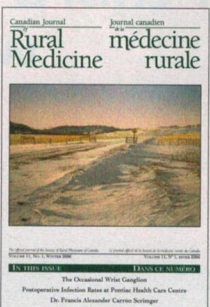
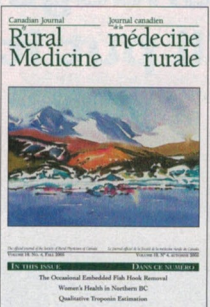
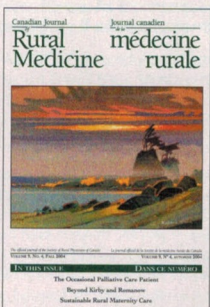
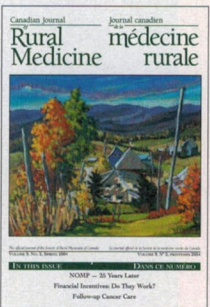
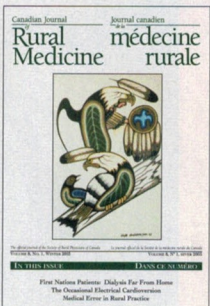


# of Rural Medicine

# de la médecine rurale







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The *Canadian Journal of Rural Medicine* (CJRM) is owned by the Society of Rural Physicians of Canada (SRPC). It appears in Winter, Spring, Summer and Fall. It is printed by Dolco Printing, Ottawa.

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cjrm@lino.com

CJRM is indexed in *Index Medicus* and *MEDLINE*.

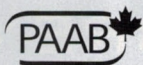
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Publications Mail Agreement no. 41190522; Return undeliverable Canadian copies and subscription address changes to: CMA Member Service Centre, CJRM, 1867 Alta Vista Dr., Ottawa ON K1G 3Y6; 888 855-2555, cmamsc@cma.ca. USPS #015-606. USPS periodical postage paid at Champlain, NY. Return other undeliverable copies to IMS of NY, 100 Walnut St., #1, PO Box 1518 Champlain NY 12919-1518.

ISSN 12037796

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Canadian Journal

of  
**Rural  
Medicine**

Journal canadien

de la  
**médecine  
rurale**

**VOL. 11, No. 2, SPRING / PRINTEMPS 2006**

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*This issue marks the 10th anniversary of CJRM. Our cover spans the past 5 years. Our first 5 years were featured on the cover of the Spring 2001 issue.*



**PUBLISHER / ÉDITEUR**  
CMA MEDIA INC. / AMC MÉDIA INC.

CJRM is published for the SRPC by CMA Media Inc., 1867 Alta Vista Dr., Ottawa ON K1G 3Y6. The SRPC, the Canadian Medical Association (CMA) and CMA Media Inc. assume no responsibility or liability for damages arising from any error or omission, or from the use of any information or advice contained in the journal, including articles, editorials, case reports, reviews, book reviews, letters and advertisements. All editorial matter in CJRM represents the opinions of the authors and not necessarily those of the SRPC, the CMA or CMA Media Inc.

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## Potpourri

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**W**riters occasionally experience writer's block. I have the opposite problem. Too many subjects and too little time. So I will tackle 4 issues, roughly in order of their increasing importance to me.

First, l'affaire Hoey. I have no idea if Dr. Hoey should or should not have continued on as Editor-in-Chief of the *Canadian Medical Association Journal*, much less be re-instated. There is almost no information upon which to make an informed judgment. If, as it has been reported,<sup>1</sup> the relationship between the Canadian Medical Association (CMA) and the editor of its journal has been difficult for some time, the partnership was perhaps not sustainable. That is between the parties concerned. What troubles me the most is the pre-publication goings-on between the Canadian Pharmacists Association, the CMA and the *CMAJ*. It seems less than appropriate to discuss articles prior to publication, and hardly surprising when this leads to pressure being exerted, who knows with what effect. All this detracts from the mission of a medical journal, which is to inform, to challenge dogma, to present the evidence, and to provide the basis for rational debate.

Second, the impending destruction (or not) of Canadian medicare as we know it. Whether it is the Klein "Third Way" or the Quebec "Chaoulli Way," the only thing that seems clear is that "the times they are a changin'." Which is strange, since the last time I looked the same Canadians who have repeatedly put public health care at the top of the national agenda, have not all moved to Nebraska. I deeply suspect that the motivation to download some expenses to those with "discretionary income" has less to do with promoting choice, than it has to do with saving cheese. This is fiscal sleight-of-hand of the

highest order, and will benefit rural regions not a whit! The only way a purported "private" provider can command free market fees for his/her services is to provide them better (read faster). The simplest way to ensure an access differential is to restrain the public provider. You don't actually have to be faster, just faster than the other guy.

Third, you know you are a rural doc when you are away from home and you hear on the radio about a fatal MVA, a teenage fatality, and they name your little town. You feel it in your gut. Not only do you wonder if you know the family, the kid, but you know that for the item to make it to the regional news it must have been bad. You can visualize it as though you were there: the ambulances and police, the mobilization in the ED, the inevitable reactions to the worst of all possible news — indeed, you have been there, and will be again. The reaction is not, I expect, the same in the city, where news of an accident is much more anonymous. We pay a price for being part of the communities we serve, and it is both a strength and a burden.

Lastly, and on a happier note, this issue celebrates *CJRM's* 10th anniversary. Our cover is a montage of our second 5 years. Indeed our very existence is a collage of the efforts of innumerable rural physicians and others who have fanned into life and into the public record the realities of their work, the extent of their ambitions, and the breadth of their hope for their patients and for their communities. Much has been accomplished. To all, well done!

### REFERENCE

1. Suchman M, Redelmeier DA. Politics and independence — The collapse of the *Canadian Medical Association Journal* [online early release 2006 Mar 15]. *N Engl J Med* 2006;354(13). Available: www.NEJM.org 10.1056/NEJMp068056



## Pot-pourri

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**L**a crampe de l'écrivain frappe à l'occasion, mais j'ai le problème contraire : trop de sujets et trop peu de temps. J'aborderai donc quatre questions, à peu près dans leur ordre d'importance croissante pour moi.

Il y a d'abord l'affaire Hoey. Je ne sais vraiment pas si le Dr Hoey aurait dû ou non demeurer rédacteur en chef du *Journal de l'Association médicale canadienne* et encore moins s'il aurait fallu lui redonner son poste. Il n'y a à peu près aucun renseignement sur lequel s'appuyer pour poser un jugement éclairé. Si, comme on l'a dit<sup>1</sup>, les rapports entre l'Association médicale canadienne (AMC) et le rédacteur en chef étaient difficiles depuis un certain temps, le partenariat n'était peut-être pas viable. Cette question concerne les parties en cause. Ce qui me trouble le plus, ce sont les échanges survenus avant la publication entre l'Association des pharmaciens du Canada, l'AMC et le *JAMC*. Il semble moins qu'approprié de discuter d'articles avant leur publication et il ne faut pas s'étonner qu'on ait exercé en conséquence des pressions, qui sait avec quels résultats. Tout cela distrait de la mission d'un journal médical qui est d'informer, de contester les dogmes, de présenter des preuves et de fournir l'assise d'un débat rationnel.

Deuxièmement, le démantèlement imminent (ou non) de l'assurance-maladie telle que nous la connaissons au Canada. Que ce soit la «troisième voie» de Klein ou la «voie Chaoulli» du Québec, la seule chose qui semble claire, c'est que «les temps changent». Ce qui est étrange, c'est que depuis la dernière fois que je me suis penché sur cette question, les mêmes Canadiens qui ont à maintes reprises placé les soins de santé publics en tête de liste des priorités nationales n'ont pas tous déménagé au Nebraska. Je soupçonne en mon tréfonds que la volonté de délester certaines dépenses sur ceux qui ont un «revenu discrétionnaire» se rapporte moins à la promotion du choix qu'à la volonté d'économiser de l'argent. Il s'agit d'un tour de passe-passe budgétaire du plus haut niveau, qui ne

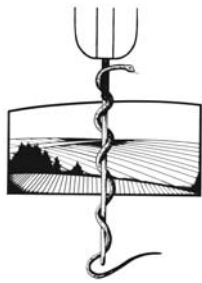
produira pas le moindre avantage pour les régions rurales! Le seul moyen pour un fournisseur dit «privé» d'obtenir des honoraires du marché libre pour ses services, c'est de les fournir mieux (comprendre plus rapidement). Le moyen le plus simple d'assurer une différence au niveau de l'accès consiste à menotter le fournisseur public. Il n'est pas nécessaire d'être plus rapide : il suffit de l'être plus que le voisin.

Troisièmement, vous savez que vous êtes médecin rural lorsque vous êtes loin de chez vous et que vous entendez parler à la radio d'un accident de la route qui a tué un adolescent d'une petite ville — la vôtre. Vous ne vous demandez pas seulement si vous connaissez la famille et la jeune victime : vous savez aussi que pour faire les nouvelles régionales, l'accident doit avoir été grave. Vous pouvez l'imaginer comme si vous y étiez : les ambulances et la police, la mobilisation à l'urgence, les réactions inévitables face à la pire nouvelle possible — vous avez déjà vécu un tel événement et vous en vivrez d'autres. La réaction n'est sans doute pas la même en ville, où la nouvelle d'un accident est beaucoup plus anonyme. Nous payons un certain prix pour faire partie des communautés que nous servons, ce qui est à la fois une force et une faiblesse.

Enfin, et sur une note plus heureuse, ce numéro célèbre le 10<sup>e</sup> anniversaire du *JCMR*. Notre couverture présente un montage de la deuxième partie de cette décennie. Notre existence même est en fait un collage des efforts d'innombrables médecins ruraux et d'autres personnes qui ont insufflé vie aux réalités de leur travail, à l'ampleur de leurs ambitions et à l'étendue de leur espoir à l'égard de leurs patients et de leur communauté et les ont versées dans les archives publiques. Les réalisations sont nombreuses. À tous et toutes, bravo!

### RÉFÉRENCE

1. Suchman M, Redelmeier DA. Politics and independence — The collapse of the *Canadian Medical Association Journal* [publication anticipée en ligne 15 mars 2006]. *N Engl J Med* 2006;354(13). Disponible : [www.NEJM.org/10.1056/NEJMp068056](http://www.NEJM.org/10.1056/NEJMp068056)



# President's message. The perpetual challenge

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**M**aclean's magazine produced a retrospective issue last fall that included a reprint of "The Future of Medicine" by Bengé Atlee, published in 1933. A hypothetical discussion between a new graduate physician and Aesculapis touched briefly on rural issues. The new doctor states: "As to rural medicine, I am a young, ambitious university graduate. I don't want to spend the rest of my days in the sticks, where I shall surely deteriorate professionally and intellectually."

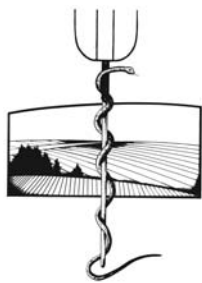
That article was published 73 years ago. Is the attitude the same today? A recent Canadian Institute for Health Information report suggested that only 9% of the physicians in Canada care for the 20% of the population that is rural. However, a closer look at the data reveals that 16% of the family doctors care for that same 20%, and this number is increasing. A number of rural programs are fully matched on the first round of the CaRMS (Canadian Resident Matching Service) match this year, also an improvement over recent years.

Rural practice is the last bastion of true generalism. Not all of us do everything, but each community offers the opportunity to have a varied and challenging practice. As access to specialists becomes more problematic, being self sufficient is an advantage. Access is enhanced when the rural GP can do the exam and the biopsy, or the prenatal care and the delivery — without needing endless referrals for basic primary and secondary medical services. The reputation of rural practice is becoming stronger within the academic community, as the benefits of rural programs for

training medical students and residents are becoming evident and as distributed learning models become more prevalent.

Rural advocacy groups are a solid part of the medical landscape. The Society of Rural Physicians of Canada (SRPC), the Rural Doctors Association of Australia, and WONCA Rural are respected medical organizations. SRPC continues to participate in numerous meetings on the national level. Our challenge is finding members to represent us in all the arenas where our input is requested. It is particularly interesting to receive requests from outside Canada, as organizations in other countries struggle with the same issues.

Canada has a number of strengths with regard to rural medicine. Our geography has forced each province to develop innovative solutions to delivery of rural health care and incentives to recruit and retain rural health care professionals. We are a small enough country in terms of population that there is opportunity for us to coordinate some of these initiatives. We have some very successful programs that could serve as models to the rest of the world. I strongly believe Canada has the potential to become an international leader in rural health. However, we need the cooperation of government to accomplish this. We need to support the hospitals and professionals who are already doing such an excellent job. We need to do on a political level what we are doing educationally — influencing programs and continuing medical education to positively affect rural health care delivery. The SRPC must continue to grow and be a strong advocate in order to meet the challenge.



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## Message de la présidente. Un défi perpétuel

**L**e magazine *Maclean's* a publié l'automne dernier une rétrospective comportant une réimpression d'un article de Bengt Atlee paru en 1933, «The Future of Medicine». Au cours d'une discussion hypothétique, un médecin fraîchement diplômé et Esculape abordent brièvement les enjeux de la médecine rurale. Le nouveau médecin déclare : «Quant à la médecine rurale, je suis un jeune diplômé d'université ambitieux. Je ne veux pas passer le reste de ma vie dans un bled où je me détériorerai certainement sur les plans professionnel et intellectuel».

Cet article date de 73 ans. L'attitude est-elle la même aujourd'hui? Dans un récent rapport, l'Institut canadien d'information sur la santé indique que 9 % seulement des médecins du Canada s'occupent des 20 % de la population vivant en milieu rural. Une analyse plus approfondie des données révèle toutefois que 16 % des médecins de famille s'occupent de cette même tranche de 20 % de la population et que leur nombre augmente. De nombreux programmes ruraux ont affiché complet après le premier jumelage du SCJR (Service canadien de jumelage des résidents) cette année. Il s'agit là aussi d'une amélioration par rapport aux années précédentes.

La pratique rurale constitue le dernier bastion du généralisme véritable. Nous ne faisons pas tous de tout, mais chaque communauté offre une pratique variée et stimulante. L'autosuffisance offre un avantage à mesure que l'accès à un spécialiste devient plus problématique. Il y a amélioration de l'accès lorsque l'omnipraticien rural peut effectuer l'examen et procéder à la biopsie, ou se charger des soins prénataux et de l'accouchement — sans avoir besoin d'une foule de références à des services médicaux primaires et secondaires de base. La réputation de la pratique rurale se renforce dans les milieux universitaires à mesure que les avantages de pro-

grammes ruraux de formation d'étudiants et de résidents en médecine deviennent plus évidents et que les modèles d'apprentissage distribué se répandent.

Les groupes de représentation ruraux constituent un intervenant solide sur la scène médicale. La Société de la médecine rurale du Canada (SMRC), la Rural Doctors Association of Australia et la section rurale de la WONCA sont des associations médicales respectées. La SMRC continue de participer à de nombreuses réunions nationales. Notre défi consiste à trouver des membres qui nous représenteront sur toutes les tribunes où l'on sollicite notre contribution. Il est particulièrement intéressant de recevoir des demandes de l'étranger où des organisations sont aux prises avec les mêmes problèmes.

Le Canada a de nombreux points forts en matière de médecine rurale. Notre géographie a forcé chaque province à mettre au point des solutions novatrices pour dispenser des soins de santé en milieu rural et à offrir des incitations pour y recruter et garder des professionnels de la santé. Notre pays est assez peu peuplé que nous avons la possibilité de coordonner certaines de ces initiatives. Nous avons des programmes très fructueux qui pourraient servir d'exemples au reste du monde. Je suis convaincu que le Canada peut devenir un chef de file international en santé rurale. Nous avons toutefois besoin de la coopération du gouvernement pour y parvenir. Nous avons besoin de l'appui des hôpitaux et des professionnels qui font déjà du si bon travail. Nous devons faire sur le plan politique ce que nous faisons dans le domaine de l'éducation — influencer les programmes et l'EMC de façon à avoir un effet positif sur la prestation des soins de santé en milieu rural. La SMRC doit continuer de grandir et d'être une solide représentante afin de relever le défi.



## ORIGINAL ARTICLE ARTICLE ORIGINAL

# Feasibility of same day discharge after mini-laparotomy cholecystectomy – a simulation study in a rural teaching hospital

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**Objective:** Open cholecystectomy is still widely practised, more so in the developing countries, due to the high cost of laparoscopic cholecystectomy. However, the long traditional postoperative stay (7–8 days) prevents rapid turnover and adds to the waiting list. The aim of this study was to evaluate whether mini-laparotomy cholecystectomy (MLC) can be done as a day surgery or extended day surgery in a rural setting

**Methods:** A nonrandomized, uncontrolled study was done prospectively at the North Bengal Medical College and Hospital. The subjects underwent mini-laparotomy cholecystectomy under general or epidural anesthesia. Postoperatively they were encouraged to be ambulant early and to accept oral fluids. In the evening they were assessed, by preset criteria, for fitness for discharge. None were actually discharged but were observed overnight and reassessed the next morning, by the same criteria, for any adverse effects that could have occurred had they actually been discharged on the same day. They were discharged after removal of stitches. Any complications of the surgery were also noted.

**Results:** Thirty-two patients (26 females, 6 males) formed the study group. General anesthesia was given in 19 cases and epidural in 13. Using the scoring system, 25 (78.1%) patients were considered fit for discharge on the evening of surgery. The most prominent reasons for non discharge were vomiting and pain. Re-evaluation on the following morning showed that 30 (93.75%) patients were in a position to be discharged. None showed any complication that would have required readmission. There were no significant complications pertaining to the procedure itself.

**Conclusion:** Mini-laparotomy cholecystectomy as day surgery or extended day surgery is feasible and a safe, well tolerated procedure in a wide range of age groups. It may be a good alternative to laparoscopic cholecystectomy in developing countries, where resources are limited and waiting lists are long.

**Objectif :** La cholécystectomie ouverte est toujours très pratiquée, surtout dans les pays en développement, en raison du coût élevé de l'intervention par laparoscopie. La longueur habituelle du séjour après l'intervention (7 à 8 jours) empêche toutefois un roulement rapide et allonge les listes d'attente. Cette étude visait à déterminer s'il est possible de procéder à une cholécystectomie par minilaparotomie (CML) en chirurgie de jour ou en chirurgie de jour prolongée, en milieu rural.

**Méthodes :** On a procédé à une étude non contrôlée, non randomisée et prospective à l'Hôpital et Collège médical du Nord du Bengal. Les sujets ont subi une cholécystectomie par minilaparotomie sous anesthésie générale ou péridurale. Après l'intervention, on les a encouragés à marcher rapidement et à absorber des liquides. Le soir même, on les a évalués en fonction de critères pré-établis pour déterminer s'ils étaient aptes à recevoir leur congé, mais aucun patient n'a en fait reçu son congé. On les a gardés sous observation au cours de la nuit et on les a réévalués le lendemain matin, en



fonction des mêmes critères, pour déterminer s'ils auraient eu des effets indésirables s'ils avaient effectivement obtenu leur congé le jour même. Ils ont reçu leur congé après le retrait des points de suture. On a aussi noté toute complication découlant de l'intervention chirurgicale.

**Résultats :** Le groupe d'étude était constitué de 32 patients (26 femmes, 6 hommes). On a administré une anesthésie générale dans 19 cas et une péridurale dans 13 cas. Selon le système d'évaluation, on a jugé que 25 (78,1 %) des patients auraient pu obtenir leur congé le soir même de l'intervention chirurgicale. Les vomissements et la douleur ont constitué les principales raisons pour lesquelles les patients sont demeurés hospitalisés. La réévaluation le lendemain matin a montré que 30 (93,75 %) des patients pouvaient quitter l'hôpital. Aucun n'a eu de complication qui aurait exigé une réhospitalisation. L'intervention elle-même n'a pas entraîné de complications importantes.

**Conclusion :** La cholécystectomie par minilaparotomie comme chirurgie de jour ou chirurgie de jour prolongée est faisable et sans danger, bien tolérée dans un vaste éventail de groupes d'âge. Elle peut offrir une bonne solution de rechange à la cholécystectomie par laparoscopie dans les pays en développement aux ressources limitées où les listes d'attente sont longues.

## INTRODUCTION

In the past decade day surgery and laparoscopic cholecystectomy (LC) have almost replaced open cholecystectomy in advanced centres. However a majority of hospitals in developing countries, including those at the district and subdivision level, continue to perform open cholecystectomy routinely. The costs of LC, patients' economic conditions and lack of access to modern equipment are the driving factors. More gall bladders are taken out by the open route than by laparoscopy in developing countries.

With experience, a general surgeon can gradually reduce the size of the incision (mini-laparotomy) in open cholecystectomies. At the same time, the concept of early ambulation after surgery has been advanced to the first postoperative day. It has been suggested that morbidity begins in the operating room, not at home.<sup>1</sup> Early discharge after operation does not appear to increase the complication rate, perhaps because clinicians tend to be overly careful with a patient scheduled for early discharge.<sup>2</sup> It also reduces the risk of nosocomial infections. These considerations led us to believe that with meticulous care, improved technique and hospital support, patients can undergo mini-laparotomy cholecystectomy (MLC) in a day surgery or extended day surgery (held overnight) procedure. The present study was conducted to evaluate the feasibility of MLC as a day surgery procedure in a rural teaching hospital setting and to study the factors leading to prolonged hospital stay and the morbidity directly attributable to the procedure.

## METHODS

### *Medical setting*

A prospective, uncontrolled study was done at the Department of Surgery, North Bengal Medical College and Hospital, a rural teaching hospital in Darjeeling district, India. In India, the village is the lowest unit of society, made up of a few hundred houses/families and basic amenities. Many villages together have a local self government called The Panchayat, whose headquarters are connected to a primary health centre (PHC). This is the lowest strata in terms of medical facilities and contains few beds, 1 or 2 doctors, nurses, a pharmacist and social workers. The PHC is involved in treating minor medical and surgical diseases, mainly on an outpatient basis, and minor emergencies, labour and delivery. They also do health promotion and prevention activities (e.g., vaccination, family planning measures). Many Panchayats will form a block, which has a headquarter and a block health centre. This is a bigger version of the PHC and has more responsibility. It does some categories of surgery and treats more medical illnesses. The next tier is the subdivision, with its subdivision hospital. It is usually a 50–100-bed secondary care hospital, depending on the population, and does most of the routine surgeries and treats major medical and obstetric illnesses. Many subdivisions form a district. The district has a district town with a district court and a district hospital. This is typically a 100–200-bed secondary care centre with few modern facilities and it is bigger than the subdivision.



This is the highest level of the health service in the district. Many districts will form a state (e.g., West Bengal is a state of India). The referral service of the district is to the medical college hospital, which is the tertiary centre and the highest level of health management, medical education and health policy development of the state. Typically, a few districts come under a medical college, which has a teaching hospital of 500 beds or more for referral services and tertiary care.

### *Study overview*

The study group consisted of consecutive patients admitted for elective cholecystectomy. The study was a simulation (i.e., the patients were not actually discharged after their operations but were evaluated by preset criteria as to whether they were in condition to be discharged on the same day of their surgeries). The study was approved by the Hospital Ethics Committee.

### *Patients*

Written informed consent was obtained. Selection criteria included: less than 55 years old with symptomatic gall stone disease and diagnosed on ultrasonography. Any evidence of dilated common bile duct, choledocholithiasis, pancreatic pathology or deranged liver function tests were indications for exclusion. Acute cholecystitis, comorbid conditions such as heart disease, hypertension or diabetes, or extension of surgery (e.g., common bile duct exploration, bilioenteric anastomosis) were reasons for exclusion. Gall bladder carcinoma detected on table, major perioperative complications, the need for postoperative drainage and complications related to anesthesia requiring close observation or intensive care were also excluded.

### *Procedure*

The patients were worked up on an outpatient basis and admitted one day before surgery. They were kept fasting overnight. A wide bore nasogastric tube was inserted before induction, and the stomach contents were completely aspirated. An intravenous (IV) single dose of 1-g cefotaxime, and a single dose of ondansetron (Zofran) and pantoprazole (e.g., Demerol) were given before induction. The anesthesia was either general (GA) or epidural (EA), using bupivacaine. The abdomen was opened through a small transverse incision (5–6 cm) in the

right upper quadrant. The rectus muscle was split or cut depending on convenience. Lighted narrow Deaver's retractors were used for better illumination and retraction. Titanium clips were used to secure the cystic artery and cystic duct stumps. In difficult situations where adhesions were present in Calot's triangle, a fundus first approach was made. Complete hemostasis was ensured, and the abdomen was closed without a drain. Before closure, bupivacaine was injected (10 mL of 0.25%) in all the layers of the wound in the patients who received GA, for better postoperative pain control.

In the postoperative period, analgesics, both non-steroidal and/or opiates, were given on demand. Vital signs were checked at regular intervals, and vomiting, fever and urinary retention were noted. Six to 7 hours after surgery the patients were encouraged to sit up in bed with back support and clear fluids were allowed orally. If the patients were not vomiting, hydration was adequate and peristaltic sounds were present, IV fluids were stopped and oral fluids were progressively increased. Constant counselling and reassurance was required to explain what exactly was expected of them. Nursing care played a major role.

Assessment criteria were preset (Table 1) and scores were given for each parameter to assess the theoretical suitability for discharge in the evening (approximately 8 hours after surgery). Pain was assessed by a visual analogue scale. A patient with a score of 3 in any criteria was considered "unfit for discharge." All patients were closely observed through the night and reassessed by the same criteria at 9 am the following morning. This was done to determine the number who would have been readmitted had they been discharged on the previous evening and how many were fit for discharge by the next morning (extended day surgery). All patients were actually discharged after removal of stitches. During their stay in the hospital they were observed for the development of postoperative complications pertaining to the procedure, which potentially could have led to readmission. They were called for monthly follow up for 6 months.

### **RESULTS**

Thirty-two patients formed the study group, of which 26 were women and 6 men. Nineteen patients were given GA and 13 were given EA. Their mean age was  $35.25 \pm 7.4$  years (range 22–51). The most common symptom was right upper quadrant pain. Mean duration of surgery was 63.1 minutes (range



44–82). Mean length of skin incision was 5.98 cm (range 4.8–8.5). In 3 patients the incision had to be extended to facilitate better dissection. Of these, 2 had dense adhesions in Clot's triangle and in the third the gall bladder was grossly contracted and densely adherent to the liver. The rectus abdominis was cut in 19 patients, mostly in large or obese patients. In the remainder it was split. Biliary spillage was present in 3 cases, cystic artery bleeding occurred in 2 cases and liver trauma occurred in 1, caused by the retractor. There were no cases of common bile duct or intestinal injury.

According to the scoring system 25/32 patients (78.1%) would have been considered fit for discharge at 8 pm on the day of surgery. Seven patients were unfit (Table 2). All of these had difficulty with self care and were unable to walk to the bathroom. None had intolerable pain as the single reason for being unfit for discharge. Vomiting was the most predominant symptom and more so in those who had GA. All patients were hemodynamically stable, and none had fever or urinary retention. There was no significant difference in age, body weight and duration of surgery between the dischargeable and non-dischargeable groups. However, the dischargeable group had a significantly shorter incision length, and those given EA had less postoperative pain and proportionately more of them were fit for discharge. Re-evaluation on the next morning showed 3 patients of the 5 who were vomiting and both the patients who had refused to take oral fluids the previous night were now fit for discharge. The

remaining 2 patients who were vomiting refused to take oral feeds, and complained of severe pain at the incision site. They required IV fluids and analgesics and were considered unfit for discharge in the morning. None of the patients who were dischargeable on the day of surgery, when reassessed the next morning, had their designation altered. In terms of extended day surgery 30/32 (93.75%) patients would have been dischargeable.

All the patients were actually discharged after removal of stitches. The mean duration of hospital stay was 7.3 (range 6–14) days. The complications of the surgery were also studied. The perioperative complications were noted as above. In the early postoperative period vomiting was present in 5 (15.6%) patients. None had ileus, urinary retention or any respiratory complication. Two patients

**Table 2. Patient parameters as assessed in the evening of the same day of surgery**

Anesthesia, no. of patients	No. of patients		Reasons*
	Fit for discharge	Unfit for discharge	
Epidural, n = 13	12	1 woman	Refusal to feed, non ambulant
General, n = 19	13	1 man	Vomiting
		4 women	Vomiting, non ambulant, severe pain
		1 woman	Severe pain, refusal to feed

\*All 7 patients unfit for discharge had difficulty with self care.

**Table 1. Scores for the preset criteria for simulated discharge on the same day\* of surgery**

Criteria	Score†		
	1	2	3
Vital parameters	Stable		Unstable
Pain‡	None or mild	Moderate	Severe or intolerable
Vomiting	Nausea / No vomiting	≤2 episodes	>2 episodes
Oral fluid intake	> 100 mL	< 100 mL	Nil
<b>Self care (any two)</b>			
Can reach out for objects by bedside	Yes		No
Can change clothes oneself	Yes		No
Self feeding from a cup or spoon	Yes		No
Can pull a sheet to cover oneself in bed	Yes		No
Walking to toilet (10 metres)	Unassisted	With assistance	Non-ambulant

\*"Same day" was defined as "approximately 8 hours after surgery."  
†A patient with a score of 3 in any criteria was considered "unfit for discharge."  
‡Pain was assessed by a visual analogue scale.



(6.25%) had superficial wound infections, which were drained and secondarily stitched. Four (12.5%) had prolene granuloma, and hypertrophic scar was seen in 2 (6.25%) patients. None had deep dehiscence, incisional hernia, jaundice/biliary stricture, biliary fistula or recurrent intestinal obstruction on follow up.

## DISCUSSION

The concept of day surgery is not new.<sup>3</sup> The impetus has increased in the last few decades due to rising cost of surgical treatment, insurance liability and increased costs of hospitalization. The development of MLC in the 1990s represented an improvement over the conventional open cholecystectomy.<sup>4,5</sup> The introduction of LC soon after, the recognition of its potential, and its rapid replacement of the conventional open cholecystectomy never allowed MLC to gain wide popularity and confidence among surgeons. However, LC is not widely available in rural Bengal. Moreover, even where it is available it is costly and beyond the means of the large majority of the population who form the main bulk of cholecystectomies in the government nonteaching hospitals at the district and subdivision level. Hence open cholecystectomy is still widely practised in these centres. The long hospital stay following open cholecystectomy is a major factor preventing rapid turnover of patients, thus increasing the waiting list in these already overloaded hospitals. The combination of MLC and day surgery is an attractive option.

A long hospital stay after open cholecystectomy is traditionally accepted among both patients and surgeons. There is, in fact, little scientific data to support this.<sup>6</sup> To accept a reduction in duration of hospital stay, patients need to be counselled at every contact by doctors and, importantly, by well trained nursing personnel in the postoperative period so that it is actually possible for them to go home on the same day of surgery. This was especially difficult among patients who came from a lower socioeconomic bracket who were mostly from the working class. Better educated urban patients learned to cooperate and believed they could really be ambulatory a few hours after surgery, take a liquid diet and convalesce at home.

The important reasons for observing the patients overnight were pain and vomiting, as these 2 symptoms decrease the confidence of a postoperative patient for early ambulation. Following overnight observation, a high percentage (93.75%) was in a dischargeable position. It was interesting to note

that those who had EA were "more fit" than their GA counterparts. This was probably because EA has more analgesic and less nauseating effects than GA and the patients remained fully conscious throughout. Most of the previous studies of this nature used only GA.<sup>7-9</sup> It remains to be evaluated statistically whether EA has a definite edge over GA in sending patients home early.

It was difficult to explain the reasons behind the refusal to accept oral liquids by some patients on the evening of the surgery, as objectively there was no reason for concern. These patients were mainly older women. It is likely that the old notions of not accepting food for some time after "major surgery," older age and the apprehension of early mobility were probably the factors responsible. In comparison, the younger patients fared better.

We used strict criteria, similar to other studies, for feasibility of discharge.<sup>8,10</sup> We think that with simpler criteria the percentage of discharge of patients should increase. Practically speaking, the minimum requirements for same day or "day after" discharge are tolerable pain, absence of vomiting, tolerance of early feeding and ambulation sufficient to use the toilet. To ensure this, we used preoperative anti-emetic and proton pump inhibitors to decrease gastric juice and postoperative vomiting. A nasogastric tube kept the stomach empty until the completion of surgery. If vomiting is decreased the incisional pain is lessened. The basic difference between LC and MLC in terms of postoperative recovery is the amount of incisional discomfort and pain and its effect on early physical activity and pulmonary function. If this can be controlled the time of recovery is likely to decrease. The small incision results in less postoperative pain than the conventional incision. We also routinely used bupivacaine for postoperative pain control in those who had GA. In cases of EA it seemed unnecessary as analgesic effect was prolonged.

In these study patients MLC was considered safe. The use of lighted retractors and clip applicators made the surgery easier and safer, and allowed the surgeon to work in a small space. This is reflected by the few complications pertaining to the surgery itself. None of these complications were considered as reasons for readmissions had the patients been discharged early. MLC itself leads to lesser morbidity than its conventional counterpart, and the muscle splitting option is an improvement over the muscle cutting incision.<sup>11</sup>

From the surgeon's perspective MLC has a long learning curve and also requires a significant

amount of exposure to conventional open cholecystectomy. In this era of LC, same day discharge is a routine benefit of the procedure, even in developing countries.<sup>12</sup> The problem remains in the smaller centres in a developing country like India where LC or health insurance is not widely available and the majority of the patients are from a lower socioeconomic bracket and are unable to afford the cost of LC. In these situations day surgery MLC is a good substitute to cut short the hospital stay and attendant expenditures. At home the patient feels more comfortable and confident and returns to normal activities earlier.<sup>7</sup>

### Limitations

This study suggests that MLC is feasible as a day surgery and definitely as an extended day surgery. However the small sample size and the strict inclusion criteria might not be representative of the general population, particularly if exclusion criteria are relaxed. The feasibility of this approach needs to be demonstrated in a wider range of age groups and in cases where other factors such as choledocholithiasis, dilated common bile duct and probable pancreatic pathology exists.

The "Simulation" methodology itself makes the medical staff relaxed about the need for early discharge. There might have been a lack in commitment toward adequate counselling of the patients for early oral intake and ambulation, as these patients were mostly unwilling to comply. A more dedicated approach may increase the number of same day discharges. The common belief in rural Bengal is that delaying discharge until after stitch removal is desirable. This probably stems from the security afforded by the availability of the doctor and the medical facilities at all times to attend to any complications. This might not be so in the interior remote villages where medical facilities are meager and they are poorly connected to the district.

Since it was a simulation study, none of the patients was actually discharged in the evening. Since quite a number of them hailed from places more than 30 km from the hospital and others had little social support, the actual suggestion of early discharge might have prompted more subjective

symptoms (e.g., pain, nausea, refusal to feed and walk) and might have altered the results of the study. We believe that if the hospital has a separate day surgery unit and if follow-up of patients who live some distance away is improved, the success rate of early discharge may increase and the chance of readmission may decrease.

### CONCLUSION

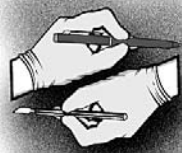
MLC as day surgery or extended day surgery is feasible, and is a safe, well tolerated procedure in a wide range of age groups. It can be a good alternative to LC in developing countries where resources are limited and waiting lists are long.

**Competing interests:** None declared.

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## ORIGINAL ARTICLE ARTICLE ORIGINAL

# Introducing a nurse practitioner: experiences in a rural Alberta family practice clinic

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*This article has been peer  
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**Objective:** To report on the experiences of introducing a nurse practitioner (NP) into a rural physicians' clinic in Taber, Alberta.

**Design:** Case study, grounded theory qualitative approach.

**Setting:** A rural community-based family practice in Taber, Alberta.

**Participants:** Twenty relevant stakeholders, including physicians, office staff, Regional Health Authority health professionals and community members.

**Method:** Open-ended interviews supplemented with a patient survey, billing and work time records.

**Main findings:** Successful introduction of the NP in the Taber clinic relied on: 1) flexibility in the first stages of developing the role; 2) strong connections to key individuals outside the clinic to maintain integration with the community; 3) support and guidance provided by a mentor group who assisted in developing positive working relationships; and 4) cost sharing (matched with benefits) by the clinic and provincial health system for sustainability of the position.

**Conclusions:** The NP role in Taber was viewed positively by clinic physicians and other stakeholders because of high patient satisfaction with the NP, billing potential that surpassed salary costs, and increased integration of physician services with RHA initiatives.

**Objectif:** Présenter un compte rendu des expériences découlant de l'arrivée d'une infirmière praticienne (IP) dans une clinique médicale rurale à Taber, en Alberta.

**Conception:** Étude de cas, approche qualitative fondée sur une théorie à base empirique.

**Contexte:** Cabinet de médecine familiale communautaire en milieu rural à Taber, en Alberta.

**Participants:** Vingt interlocuteurs pertinents, y compris des médecins, des membres du personnel de bureau, des professionnels de la santé de la région régionale et des membres de la communauté.

**Méthode:** Entrevues ouvertes complétées par un sondage auprès des patients et étude des dossiers de facturation et des heures de travail.

**Principales constatations:** L'implantation réussie de l'IP dans la clinique de Taber a reposé sur 1) la flexibilité au début de l'élaboration du rôle; 2) de solides liens avec des personnes clés en dehors de la clinique afin de maintenir l'intégration dans la communauté; 3) l'appui et l'orientation d'un groupe de mentors qui ont aidé à établir des relations de travail positives; 4) le partage des coûts (jumelés aux avantages) entre la clinique et le système de santé de la province pour assurer la viabilité du poste.

**Conclusions:** Les médecins de la clinique et d'autres intervenants ont jugé positivement le rôle de l'IP à Taber en raison de la satisfaction élevée des patients à l'égard des services de l'IP, de la possibilité de facturer plus que les coûts salariaux et de l'intégration accrue des services médicaux aux initiatives de la région régionale de santé.

## INTRODUCTION

Governments across Canada are pushing for more nurse practitioners (NPs) on primary health care teams. But what does this mean for physician clinics? This paper reports on the experiences of a rural physician clinic in Taber, Alberta. In this case study, we report on qualitative findings about the introduction of the NP role that provide information specific to the experiences of Taber physicians, clinic staff, health region employees and community members.

Twenty years ago in Alberta, NPs worked only in isolated northern areas. Currently there are approximately 140 NPs working in urban and rural areas, and in both acute care and primary health care settings. The professional role is now controlled by legislation<sup>1</sup> and rostered with the provincial nursing association.<sup>2</sup> NPs are registered nurses (RNs) who hold advanced levels of education and experience beyond that of an RN. They carry their own liability insurance, and are able to perform tasks such as diagnosing, prescribing and treating medical conditions within established guidelines. NPs primarily work as part of interdisciplinary teams, and are currently employed in critical care units, active treatment hospital wards, and primary health care settings, as well as isolated northern sites. The Taber project is one location where an NP was integrated into a team of health care professionals providing primary health care services for a community.

NP initiatives with provincial government support are increasing throughout the country.<sup>3-7</sup> Articles in nursing journals report positive outcomes from the introduction of NPs in Canadian locations.<sup>8,9</sup> But so far only a few articles have investigated the impact on a physician clinic of hiring an NP. Way and colleagues<sup>10</sup> identified differences in services provided by NPs compared with family physicians (FPs) in an Ontario clinic and suggested that NPs could be more effective in a clinical setting by increasing their role in managing acute episodic and stable chronic illnesses. Other studies found that NPs were equally cost-effective as family physicians,<sup>11</sup> and quality of care was equal to that provided by physicians, with higher levels of patient satisfaction.<sup>12</sup> These findings are somewhat at odds with a recent study in the Netherlands showing that efficiencies may not result from introducing NPs.<sup>13</sup>

Most literature suggests that NPs can be an effective addition to the primary health care team. But questions remain about situating them inside physician clinics in Canada. Through the analysis of data from this case study, we attempt to answer the

following questions: How has the NP role had an impact on perceptions about the delivery of primary health care services in Taber? How can the role be supported financially? and How have changes in working relationships been made as part of introducing the new role? We answer these questions through the analysis of qualitative interviews with key health care and community individuals.

## METHODS

In 2000, the Taber clinic of 8 physicians entered into a government-sponsored pilot project designed to try out innovative arrangements for integrating primary health care services.<sup>14,15</sup> In addition to an alternative payment plan based on capitation funding, the clinic introduced an NP as a key component of the project. The term of the official project was 2000–2003. But since the NP continued working after the project ended, we report not only on information gathered during the project, but also on statistics available after the completion of the pilot project.

The clinic advertised widely to fill the NP position. The successful candidate held appropriate credentials and had experience working in a northern community. A management team was created to provide support and guidance for the NP. Team members included a physician leader, clinic manager, project coordinator, and a Regional Health Authority (RHA) chronic disease program manager. During the developmental phase, the team met quarterly to guide the development of role parameters and to provide a forum for discussion of logistical issues. After the first year, the role was more established and the team met annually to review accomplishments and provide advice.

We followed a grounded theory approach because we were interested in answering questions about processes of change, and there were no established theoretical frameworks that could be tested.<sup>16,17</sup> We identified key informants who were familiar with the Taber clinic and the role of the NP. These individuals provided a starting point for our snowball sampling methodology.<sup>18</sup> In addition, the NP provided a list of people with whom she worked on a regular or project basis. Over a period of 6 months, we interviewed all individuals willing to be interviewed, who worked with the NP in any capacity.

Interview transcripts provided the primary data source for this part of the research project. To supplement the qualitative data, we analyzed survey data and billing records that were part of the overall research project. Physicians and the NP kept billing



records throughout the project, even though remuneration mechanisms changed to a population-based payment plan. These records were kept in order to evaluate the project overall. For our study we also reviewed local and provincial archival data related to the Taber project in particular, and NPs throughout the province.

Individual interviews lasted from 30 to 60 minutes. They were transcribed and then analyzed with the assistance of qualitative analysis software (QSR-N6). Themes from the data were identified through an iterative process, cycling back and forth between data generated in the field and general concepts about implementing the new role.<sup>19,20</sup> Since our goal was to understand not only what happened, but also *how* the NP role was integrated with processes of change, we focused on developing themes related to process theories.<sup>21</sup>

This study was approved by the Research Ethics Committees at the University of Alberta (Faculty of Business) and the Chinook Health Region in Alberta.

## RESULTS

Four doctors, 4 clinic staff, 9 RHA employees and 3 community members took part in the interview process. All interviewees were overwhelmingly positive about the role of the NP. They each identified key aspects of the role that contributed significantly to the overall success of the Taber project. In the early stages of employment, the NP was given flexibility to meet with a variety of individuals in the health care system and broader community. It was during this initial phase that important relationships were established. These connections with key individuals provided a strong foundation for subsequent initiatives, and all interviewees discussed the importance of developing trust in the NP as a critical factor for success. As well, all interviewees pointed out aspects of the NP role that served to more tightly connect the Taber clinic with the broader health care community.

Below we report our findings in 3 broad subcategories. These question areas reflect the broad issues that all our interviewees addressed when asked to explain "How have things changed since the NP was hired?"

### *1. Has the introduction of the NP improved health care services? If so, how?*

Consistent with findings from the UK,<sup>10,11</sup> physicians and the NP reported that patients who consulted

the NP were very pleased with services received. Other indicators of high satisfaction with the NP include, increasing numbers of patients requesting the NP; unsolicited testimonials in local health publications;<sup>22</sup> and special mention in a book outlining positive innovations in health care.<sup>23</sup>

All interviewees provided anecdotal information about ways in which health care services improved because of the NP. Several health professionals employed by the RHA worked closely with the NP to develop programs for the treatment of designated chronic diseases. These RHA employees described positive outcomes they attributed to the NP's efforts. Programs were seen to run very smoothly, largely because the NP provided a close connection between the physicians and the RHA. Instead of connecting individually with each physician who had patients in a chronic disease program, the NP became the link. As well, community leaders developed strong working relationships with the NP. These connections were primarily developed with regard to a special initiative on women's health, but the longer term relationships between several community foundations and the Taber clinic were viewed as very positive. Community members believed they could contact the NP on any issue they deemed important to community health, and through this connection could keep physicians informed or seek their input on community problems. Examples of comments follow:

Clients that I've spoken with have valued her approach, which is different than that of the primary care physician in that it seems to be more educational focused, self care, more empowerment type care. The NP seems to communicate well with people. [RHA employee]

People are coming in saying, "I've had to deal with asthma for my child every winter for the last four winters. Now since seeing the NP, I've never known as much as I know now about what to do when something happens." Those are the kind of positive things that I'm getting back from my patients. All of a sudden they really see value in the education because now they can self manage, whereas they say they have never had that in the past. [physician]

All physicians interviewed believed that patients received better health care services because of the NP. Consistent with Laurant and coworkers,<sup>13</sup> they reported that their hours of work remained unchanged, but they perceived that their practice pattern had shifted to more acute illnesses and more new patients. Physicians were very positive about the NP's ability to provide services in women's health and asthma treatment. They pointed out vari-

ous examples of patients who reported high satisfaction with women's health services from the NP. The NP developed community-based educational programs and also provided regular check-ups for healthy women. By the end of this study, the NP had developed a strong patient base for women's health services with a 5-week wait for scheduled appointments.

Physicians believed that a decrease in the number of emergency department (ED) visits for asthma was related to the efforts of the NP in educating patients. This appears to be substantiated by provincial statistics. Taber was the only community in the RHA where an NP played an integral role in asthma programs, and the number of asthma-related ED visits in Taber decreased by 61% from 1998–99 to 2003–04, compared with a reduction by 33% in the RHA (excluding Taber).<sup>24</sup>

The NP's job description included time for research and planning. When first hired, she was asked by physicians to review appropriate clinical practice guidelines (CPGs) for selected conditions to ascertain best evidence. She then gained agreement from all 8 physicians about the adoption of these guidelines. In this way, physicians themselves developed agreement about the use of CPGs, introducing a new level of consistency throughout the clinic, which was viewed as valuable. The NP was also asked to plan and develop innovative service delivery models for chronic conditions such as hypertension. Physicians and other respondents reported high levels of satisfaction with these programs.

## II. Assessing the cost-effectiveness of the NP role

Table 1 indicates the average breakdown of the NP's time and average number of patient encounters per week. Laboratory records show that the NP increased the number of Pap smears completed

**Table 1. Allocation of time for NP at a rural physicians' clinic in Taber, Alberta, during a government-sponsored pilot project**

Type of services provided	Average no. of patient encounters per week	% of time
Lifestyle education	6	5
Walk-in patients	9	10
Asthma education and treatment	4	10
Planning & research	–	15

per year from 253 (2002–03), to 338 (2003–04), to 426 (2004–05).

From the breakdown of NP time, and billing data, fees associated with NP services, and potential negation amounts (money deducted from clinic income if patients in the population area seek medical services elsewhere) rough estimations of costs compared with financial benefits for the clinic were developed. A significant portion of the NP salary was recovered by the clinic through retention of women's services (attributable to NP), and increased referrals from community members, and long-term cost savings through patient education. Not all associated costs, such as overhead and staff support, were covered. However, clinic staff and physicians reported they were trying to reconcile the short-term costs of patient education with the longer term expected benefits. Several physicians pointed out that it was only because of a comprehensive fee (rather than fee-for-service) that they could consider hiring an NP. And even with this funding arrangement, they pointed out the appropriateness of sharing the NP costs between the physicians and the government. The following quotes show indicators used to assess the cost effectiveness of the NP.

Now we have to judge if the NP keeps people in this practice versus going to the nearest city. In comprehensive care, obviously that's a benefit. [physician]

The physicians are being asked to pay [at least partially] for this NP role. We need to look at whether or not nurse practitioners are roles that need to be funded under health regions instead of through physician payments. If the number of patients seeking services outside our clinic is trending down, then I can make a case that she's reducing negation, therefore she's paying for herself. Also the customer satisfaction surveys that are being done show that people really like what she does. And the other programs that she runs have a lot of value-added as well. [clinic staff member]

Based on costing information and high levels of patient satisfaction, all 8 clinic physicians decided to renew the NP's contract at the end of the trial project. However, because of the goals of integrating primary health services between the clinic and the RHA, as well as improving the health status of the population, the physicians sought to develop a new cost-sharing arrangement with the government. Clinic revenues covered the NP's salary for 2 years, but effective November 2005, the clinic entered into a new funding arrangement that provided additional government resources for primary care innovations. This new arrangement recognized the value of inte-



grating community and physician services, and provided support for the NP position.

Physicians believe that in the longer term, the integrating activities of the NP and her patient education initiatives will contribute significantly to the health of the population. All the physicians interviewed believed strongly that this is the right thing to do.

### *III. How have working relationships been adjusted to include the NP role?*

The interview data provided rich insights into the challenging processes associated with the introduction of a new health professional into established practice patterns. These challenges arose both inside the clinic and with RHA staff. Everyone reported that working relationships with the NP were exceptionally positive. But several pointed out that it had taken time to develop an understanding of what the NP could do, and how she would fit in. In developing these relationships, the NP benefited greatly from the thoughtful, reasoned and experienced approach of her management team. Especially during the developmental stage, the NP team's guidance was critical in supporting the NP's need to practise new skills as well as to develop new working relationships with many individuals. Without support from the team, the very steep learning curve may have been overwhelming.

Staff inside the clinic reported that they valued the flexibility of the NP's time at the beginning of the project. Her first task of reviewing CPGs to develop standards for her practice allowed physicians to get to know her, and provided a foundation for her to work with each physician to demonstrate her knowledge and skills. She found ways to work with physicians and clinic staff that minimized perceptions of her as a threat. Her management team mentor group helped to develop strategies that included other staff members in overall project changes. Through these slow but significant processes, staff members overcame their initial wariness and began to consider the NP as an integral part of the team.

In the early stages of the project, the NP used her flexibility to establish working connections with community members and RHA staff members. Her role in developing a very successful women's health day in the community formed the basis for future collaborations. Developing relationships with RHA employees was initially challenging. Regional employees sometimes believed that work was being taken away from them, but with the help of her

management team, the NP developed strategies to work together with these individuals, rather than compete. There were challenges along the way, but all RHA employees interviewed reported very strong and favourable relationships with the NP. Selected quotes below illustrate these points.

She went around with the physicians and then they got to understand the level of her clinical assessment skills and potential treatment skills. So through that process there was significant trust building. The doctors got to see — wow, she knows her stuff, and she's confident. They were very impressed. [clinic staff member]

I think that it's really instrumental in our program that the NP is a key, close link between us and the physicians. It's very critical that you have that close link between your primary care physicians and your educators, and I think [the NP] is a critical link being in the clinic. All the guys [physicians] know her and she's able to approach them on certain topics and certain things. And of course [the NP] was really instrumental in making things work. [RHA employee]

## **DISCUSSION**

This qualitative study showed strong support for the addition of an NP position in the Taber family practice clinic

Physicians believed that the NP role was cost-effective because of high patient satisfaction with the NP, billing potential that surpassed salary costs, and increased integration of physician services with RHA initiatives.

### *Introduction of an NP role to the Taber clinic*

Four important points about the introduction of an NP role in Taber are highlighted here.

#### **1. Flexibility in first stages of introducing the NP role were critical**

When introducing the NP role to an established clinic, it took time for individuals to develop trust. Trust-building was facilitated by funding levels and appropriate timelines that allowed a relatively slow start. In this case, it was critical to build secure relationships and then use them as a foundation for future initiatives.

#### **2. Integrative aspects of the NP role relied on strong connections to key individuals outside the clinic**

Policy-makers are continually striving to achieve a

tighter connection between family physicians and the broader health care community. The NP in this project became a strong integrative mechanism, but her continuing ability to do so requires sufficient time to participate in programs that combine aspects of the clinic and health region. These projects and other events allow her to maintain a network of community contacts. It takes time and resources to establish and maintain links with key health care and community members, but these links are critical to integrating services.

### **3. The NP benefited from support and guidance from a management team who assisted in developing positive working relationships**

The NP role is one with many demands. Support from others was required to make the role effective for the clinic and the health care system. In the Taber experience, these managerial skills came from a management team that provided mentoring and guidance related to the navigation of interpersonal issues at organizational levels both above and below the NP.

### **4. The NP position required funding arrangements that recognized joint benefits (and costs) to the physician clinic and the broader health care system**

In Taber, the NP provided valuable services to both physicians and the broader health care system. To sustain this role financially, it was important to develop appropriate joint funding mechanisms to support tasks that directly assist physicians as well as preventive and population-based initiatives that both physicians and health care officials know will improve the future of health care. At this point in time, it appears that the NP role in Taber is viewed as a sustainable and valuable addition to the clinic and the community.

### ***Limitations***

This research was completed at only one site and brings with it all the limitations of small sample qualitative research. Whether the findings can be generalized to other locations should be tested through investigations of other clinics where NPs have been introduced.

Quantitative indicators are less clear than qualitative ones about the impact of the NP role. Since many changes were made to the clinic simultaneously, it was not possible to isolate the effects experi-

enced specifically because of the NP. However, some outcome data were closely connected to services provided by the NP (e.g., women's health), and we used these measures with appropriate caution.

### **CONCLUSION**

The results of this case study point to interesting aspects of the NP position that warrant further investigation. For example, the NP's efforts to establish and maintain strong working relationships with RHA and community members may be creating shared benefits in the clinic and health region. As policy-makers strive to create new, more integrated ways of working for physicians in primary health care, more research into the role of NPs will provide useful information.

The 3-year project is officially completed, but based on positive feedback and promising cost-effectiveness indicators, a decision was made to continue employing the nurse practitioner.

**Acknowledgements:** We thank Canadian Health Services Research Foundation (CHSRF) and the Alberta Heritage Foundation for Medical Research (AHFMR) for funding that supported this research.

**Competing interests:** None declared.

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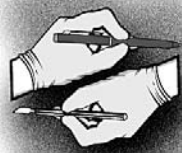
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## Health promotion needs of women living in rural areas: an exploratory study

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This article has been peer  
reviewed.

**Objectives:** To describe the types of health-promoting activities currently engaged in by women who live in rural communities, to explore perceived barriers and facilitators to staying healthy in rural communities, and to examine how these factors may differ for women throughout their adult life.

**Design:** Qualitative pilot study.

**Participants and setting:** Women aged 18 years and older living in a small rural community in Saskatchewan.

**Method:** Eight focus groups were conducted with a total of 44 participants who had been stratified into 3 age groups. Content analysis of the focus group transcripts was undertaken.

**Main findings:** Older women were more likely to report that they engage in a balance of activities to promote their physical and mental health. Middle and younger aged women, however, were more likely to engage in activities to promote their physical health, with less emphasis on their mental health. Among the 3 age groups, exercise and nutrition-related activities were most commonly reported. Social support and the "rural way of life" were the most commonly reported community supports available to these women. Younger women were more likely to discuss family commitments as a barrier to maintaining physical fitness, and older women discussed the impact that loneliness and lack of appropriate exercise options had on healthy living in their community.

**Conclusion:** The interviews provided a chance for a group of rural women to paint their own picture of promoting and maintaining their health in their own community. The activities engaged in by women to maintain their health, and the barriers and facilitators to staying healthy were different for women of different ages. It is useful for health planners to understand how women's health promotion needs vary across their adult life span.

**Objectifs :** Décrire le type d'activités de promotion de la santé des femmes vivant en communauté rurale afin d'analyser les facteurs qui facilitent et entravent le maintien d'une bonne santé dans ces communautés et déterminer comment ces facteurs peuvent changer pour les femmes au cours de leur vie adulte.

**Conception :** Étude pilote qualitative.

**Participantés et contexte :** Femmes de 18 ans et plus vivant dans une petite communauté rurale en Saskatchewan.

**Méthode :** On a organisé 8 groupes de discussion qui ont réuni au total 44 participantés stratifiées en 3 groupes d'âge. On a analysé le contenu des comptes rendus des groupes de discussion.

**Principales constatations :** Les femmes plus âgées étaient plus susceptibles d'indiquer qu'elles font un ensemble équilibré d'activités pour promouvoir leur santé physique et mentale. Les femmes d'âge mûr et plus jeunes étaient plus susceptibles de choisir des activités de promotion de la santé physique et d'attacher moins d'importance à la santé mentale. Parmi les trois groupes d'âge, les participantés ont signalé le plus souvent l'exercice et les activités reliées à la nutrition. L'aide de la société et le «mode de vie rural» ont été les appuis communautaires disponibles pour ces femmes qu'elles ont signalés le plus souvent. Les femmes plus jeunes étaient plus susceptibles de considérer



les engagements familiaux comme un obstacle au maintien d'une bonne condition physique et les femmes plus âgées ont parlé de l'impact de la solitude et du manque d'options appropriées pour faire de l'exercice sur les habitudes de vie saines dans leur communauté.

**Conclusion :** Les entrevues ont permis à un groupe de femmes rurales de brosse leur propre tableau de la promotion et du maintien de leur santé dans leur communauté. Les activités qu'adoptent les femmes pour demeurer en bonne santé et les facteurs qui facilitent ou entravent le maintien de la bonne santé étaient différents pour des femmes d'âges différents. Il est utile pour les planificateurs du secteur de la santé de comprendre l'évolution des besoins des femmes en matière de promotion de la santé pendant leur vie adulte.

## INTRODUCTION

Deaths due to cardiovascular disease, certain cancers and unintentional accidents have fallen dramatically over the last decade. However they remain the leading cause of potential years of life lost (PYLL), morbidity and health care utilization in Canadian women<sup>1</sup> and for Saskatchewan residents.<sup>2</sup> The preventable nature of the above conditions reinforces the need for system-wide disease prevention and health promotion strategies. However, in terms of rural communities, little research has been published examining the availability of health-promoting and disease-preventing supports or services. In addition, although gender is a determinant of population health, it is rarely considered within the context of health planning and community needs assessment. Health needs of women living in rural communities are typically not considered separately from those of men,<sup>3</sup> and, if these women are considered, it is most frequently in the context of their role as "mother" or on their children's health needs.<sup>3</sup>

Our research hypothesizes that the changing face of rural life, coupled with the organizational restructuring of the health care system, has left many people in rural communities, particularly women, at a disadvantage in terms of accessing programs and activities that promote health or prevent disease.

### *Literature review*

A small body of literature suggests that women in rural areas may have different needs than men in terms of both physical and mental health promotion.<sup>4</sup> Emotional problems, stress, exercise and quitting smoking are among the top concerns for rural women, especially those on farms, in regard to health and well-being.<sup>5,6</sup> Women living in rural areas have limited access to programs and facilities that promote physical and mental health<sup>7</sup> and, as such,

report more difficulty motivating themselves to engage in health-promoting behaviours such as exercise, healthy eating and regular physical check-ups.<sup>7</sup> Due to the lack of availability and choice, they are also more likely to eat fried and fatty foods and less likely to eat the recommended 5–10 servings of fruits and vegetables per day than city dwellers.<sup>5</sup> In addition, the health promotion concerns and behaviours have been found to differ with age in rural women. Although taking responsibility for one's health tends to increase with age, interpersonal support and exercise have been found to decline.<sup>8</sup>

The purpose of this exploratory study is to describe the types of health-promoting activities currently engaged in by women who live in rural communities, explore perceived barriers and facilitators to staying healthy in rural communities, and examine how these factors may differ for women throughout their adult life.

The long-term goal of this study was to develop a process whereby women residing in rural communities are consulted about the health promotion needs that are specific to their community.

## METHODS

A series of exploratory focus group interviews were planned for a rural community within the Regina Qu'Appelle Health Region. Volunteers were recruited through posters placed within the community and by publishing a description of the project in the local newspaper. Ethical approval for the study was obtained from the Regina Qu'Appelle Health Region Research Ethics Board.

Eight focus groups with 3 to 10 participants in each group were held in February 2004. Forty-four women participated; they were divided into 3 groups: aged 18–44 years (16 women), aged 45–64 (16) and ≥65 years (12). All participants provided their written consent to participate in the focus groups.

The interview guide, structured according to guidelines suggested by Krueger,<sup>9</sup> consisted of an introduction, transition questions, key questions, confirming critical issue questions and a closure section. Summarizing the discussion for participants and asking for their feedback at the end of the interviews served to validate content. The investigators, experienced in focus group techniques, moderated the 1.0–1.5-hour sessions. Discussions were audio taped and then transcribed verbatim.

Content analysis was performed on the transcribed interview data.<sup>10</sup> Focus group transcripts were independently analyzed by 3 of the investigators to identify preliminary codes. Data were then sorted and coded according to these themes. The data were reviewed several times, as new themes developed and others changed. The research team met to compare analyses so that differences in coding could be resolved by discussion. Verbatim quotes of participants are included here so that the investigators' interpretations can be assessed.

### *Community description*

Statistics Canada Census data from 2001 reveal that the community had a population of approximately 1000 residents (53% female) with a median family yearly income of \$42 152. The median age of women was 53.3 (40% over the age of 65). The labour force participation rate for women over the age of 15 is 47%. Women report the following participation rates for unpaid work: 88% for housework, 31% for child care and 24% for care of senior family members.

Younger women in the community have a lower level of education, with only 56% of the 20–34 year olds having a high school diploma or above, compared with 84% of the 35–44 year olds and 65% of those aged 55–64. (Data for those over 65 years of age were not available.)

## **FINDINGS**

The following section presents the findings of the study according to 4 main sections: Current health promotion behaviours of women in the community; Available supports for maintaining health in the community; Barriers to staying healthy in the community, and Community needs for the future.

### *1. Current health promotion behaviours of women in the community*

Participants discussed more than 70 different self-

practices or activities that they engaged in to maintain or improve their health. These behaviours represented 2 themes: activities to improve one's physical health (e.g., exercise and nutrition) and psychosocial activities to improve or maintain a healthy mind or well-being (e.g., stress reduction, social support and intellectual stimulation).

In general, women in the oldest age group were engaged in a balance of activities that supported their physical and mental health. Women in the middle and youngest groups, however, were often more focused on activities designed to improve or maintain their physical health. Within the activities that support the women's physical health, the most commonly reported activities for all 3 age groups pertained to exercise and nutrition.

Watching what you eat ... is extremely important. And learning, when you are young ... what you are putting in your body.

Disease prevention strategies such as medical screening (e.g., annual physical exam, PAP or breast cancer screening) or strategies that minimized potential health risks, such as quitting smoking or drinking in moderation, were only reported by women in the middle and oldest groups.

Activities that maintained a "healthy mind" were behaviours women practised to maintain emotional, spiritual or psychological balance in their lives. These behaviours included ensuring there was social support in their lives by visiting with family and friends, setting personal priorities for themselves, keeping an active mind through hobbies and crafts, and other miscellaneous activities such as volunteering, travelling and attending church.

Being self-focused and selfish ... you really miss out on an opportunity ... other people's lives enrich yours so much and if you're just focused on yourself, oh poor me, that's not just a youth problem.

You have to go beyond yourself. Keep interested in others.

Younger women more commonly spoke of the importance of "setting priorities" in maintaining their health, and older women were unique in their focus on keeping an "active mind."

### *2. Available supports for maintaining health in the community*

In general, younger and middle-aged women spoke more frequently about the supports available in their community for maintaining their physical

health, and women in the oldest group were more likely to speak of the community-based supports for maintaining a healthy mind.

Exercise-related activities to support one's physical health included the availability of a year-round walking club, curling, baseball and golf. Having flexible grocers and a variety of food choices at local restaurants were also reported as being supportive of their efforts to maintain good nutrition.

Women in the oldest group were more likely to refer to "medical support" (e.g., availability of quality doctors, nurses and pharmacists) in their community as a critical component in maintaining their health.

If you have questions about something, our doctor is fairly accessible, or the health nurse, or the people that work in the various departments in our wellness centre. So if you have a question about mental health or something, you know who [to ask] ... Most of these people are our neighbours, so we feel more comfortable in asking them questions.

Family and friends were the women's primary supports for maintaining a healthy mind. Older women were more likely to report that the "rural way of life," including taking pride in managing without outside help, community friendliness and willingness to help, were instrumental in helping them maintain a healthy mind.

What I like about a small town is you can walk down the street and everybody is your friend.

### ***3. Barriers to staying healthy in the community***

Women in all 3 age groups agreed that achieving or maintaining physical fitness was hampered due to a lack of facilities and a lack of resources (i.e., financial and trained personnel) to maintain the currently available activities.

Winter sports involve a lot of money. Like if you want to ski or if you want to ski-doo and all those kinds of things, oh gosh, you've got to spend.

Lack of facilities. ... I have friends in the city that just decide — well, I'm going to an exercise class tonight — and they'll just find one and go.

You have to be more motivated in a small town, because you have to make yourself do things more. Because we don't have gyms that we can go to, or field houses, or big parks like [the cities do]. We have to make do with what we have and encourage each other.

They spoke about the discontinuation of previously offered programs and services, and the dying

interest in formed groups that made it difficult to maintain a routine.

That's the problem. They get this thing going and then somehow it just fizzles. I don't know if it loses interest or what. But yeah, it goes down...

Younger women were more likely to perceive family commitments as a barrier to staying healthy.

I want my kids to be involved in everything, because I never had that chance when I was a kid ... but then you don't have time to do your own thing.

Being at home ... [with children], sometimes the walls get really close. It just depends if you can get your breaks from them, either a nap or bedtime at night ... so ... you can actually feel like you're essentially human.

With my family, they are into hockey. Because they're not little, you're not chasing them but you are chasing them in different ways. So you are following them to the rinks, different towns. Eating lots of rink food.

Cold weather and the travel distance to attend community activities were also considered barriers to exercise in the community.

Who's going to drive an hour and a half to [the city] to go [to an exercise class]?

In a smaller town you don't always get large numbers out. Especially during Saskatchewan winters when it's cold.

Barriers to good nutrition were described by women of all ages, but significantly more frequently by those in the middle age group. Concerns often pertained to the lack of variety at the grocery stores or selection choices at restaurants.

I like to eat avocado, so when I ask about that, they bring in a whole bunch of avocados, and I can't eat 50 avocados. I'll buy 5 or 6 and then they'll say "Well they don't sell so we can't bring them in."

Sometimes when you go to a restaurant, it's hard to pick something that isn't cooked with grease or something like that.

The grocery stores in town do very well, but there are some days you go and there's just not fresh produce. It's an unfortunate part of being in [a rural area].

It's like a kid at a carnival when you go into the city to the markets and you see all this fresh stuff, and you think "oh my god."

Older women spoke about the impact that loneliness or social isolation had on their efforts to stay healthy.

Often a lot of pressures or problems that come up for us are related to loss and being alone.



---

#### 4. *Community needs for the future*

Participants were asked what, if anything, they would like to see in their community that could better support their attempts to stay healthy. The women provided interviewers with 43 different “wishes” for their community, a few of which are mentioned here.

##### **Exercise facilities**

Activities, programs and services that could support the maintenance of a healthy body were most commonly requested by all 3 groups (e.g., an indoor pool, more funding for programs, improved accessibility of buildings, gymnasium, trained personnel).

##### **Seniors and young families**

Additional supports to assist seniors and young families were next most commonly mentioned.

##### **Seniors**

A greater variety of accommodation options and travel assistance to the city were the most frequently mentioned supports for seniors, but the need for a counsellor with experience in bereavement and grieving was also expressed. Interestingly, the majority of discussion pertaining to support for seniors came from women in the middle age group. Some of this reflected their acknowledgement of their future, and some reflected the struggles they currently faced by caring for an older family member.

My husband and I are getting older and you look around the community — there will be some day when you cannot look after your house. I would like to see an apartment complex.

What will happen if the two of us, together, live to get pretty old. Where will I go? The [nursing] home cannot take couples, which I think is terrible, because what if you both need really a lot of care?

If you want to travel to [the city], you have to travel at a certain time of day and make accommodations. Like, for us, the bus goes in the evening to [the city], and then the train is in Melville and the plane is in [the city], so you know, if you don't drive, you're very handicapped.

##### **Support for young families**

Suggestions for improving support for families included access to activities providing on-site child care, or activities that include mothers and children.

Having a Moms and Tots group or something in town. I know they used to have one a few years ago.

#### **DISCUSSION**

These interviews provided an opportunity for a group of rural women to paint their own picture of promoting and maintaining health in their community. Over the past decade, health care has become increasingly regionalized. This has resulted in the development of health regions that encompass both large urban centres and rural communities. Senior health care decision-makers are often located in the urban centres and are more knowledgeable about and more aware of the needs of the urban centres. Moreover, the proportion of the rural population is smaller, resulting in less representation in decision-making. Consequently, rural health care needs may not be addressed in ways that are seen as most appropriate by the rural community members.

#### *Limitations*

A limitation of this study was the selective nature of the sample and its small size. Although the sample provided a rich description of rural women's experiences, other women from their community or women from other rural communities may have different opinions.

#### **CONCLUSIONS**

Using this type of community level focus group format to identify concerns and needs of these communities may be particularly useful for providing planning information for decision-makers as new primary health care initiatives are developed in rural areas.

A representative cross-section of the community demographic characteristics must be included in this process. For example, the health-promoting activities currently engaged in by the women, and the barriers and facilitators to staying healthy were found to differ for women of different ages. It is useful for health planners to understand that women's health promotion needs vary across their life span. The information from these interviews can be compared with information obtained from women living in urban centres to further examine how the health-promoting behaviours and needs of rural and urban women differ. Exploration of health-promoting activities for men using an age-stratified approach should also be undertaken to obtain a comprehen-

sive picture of communities' health promotion needs.

This pilot study provides a good basis for further research into developing the role of community participation in health promotion planning, and for how to better support women in rural and remote communities to improve or maintain their physical and mental well-being.

**Competing interests:** None declared.

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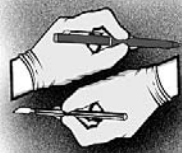
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## CASE REPORT OBSERVATIONS DE CAS

### Sealer's finger

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This article has been peer  
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#### INTRODUCTION

The people of Newfoundland continue to make a living from the ocean, and the seal hunt is an occupation and source of livelihood for Newfoundlanders in many rural areas of the province. Occupational injuries have always been associated with this fishery. We present a case of sealer's finger (or seal finger) that was recently seen at a hospital in rural Newfoundland. This condition is known as "Spekk-finger" or "blubber-finger" in Norwegian literature. Sealer's finger is a severe finger infection observed in sealers, who can acquire the infection by accidentally cutting themselves with a knife used to clean seal carcasses or by contact of seal pelts to small breaks in the skin of the hand. Delay of diagnosis or treatment of sealer's finger can result in permanent stiffness or loss of the affected finger. The disease progresses from a cellulitis, to arthritis with eventual joint dissolution and healing by ankylosis.<sup>1</sup> Because of improved access to health care these severe side effects are not often seen. In the historical setting, it was, however, often the case, as sealers on ships at sea were isolated from medical resources and adequate treatment. The causative bacterial agent is presumed to enter the finger through small cuts in the skin, and the symptoms may develop after an incubation period varying from 3 to 21 days.<sup>2</sup> We present this case as a reminder that this occupational disease continues to exist.

#### CASE REPORT

A 33-year-old man recently presented to the rural hospital emergency depart-

ment (ED) with pain and erythema of the left thumb, of 2 days duration. Vital signs, including temperature, blood pressure, respiratory rate and heart rate were all within normal limits, and the patient was clinically stable. There was decreased range of motion (flexion, extension, adduction, abduction, opposition) and marked tenderness over the thumb of the left (non-dominant) hand. Skin over the entire left thumb was red, taut, warm, edematous and non-suppurative. The patient had suffered a laceration on the affected digit 2 days before presentation. Holding his knife with his right (dominant) hand the patient had cut his left thumb accidentally while skinning a seal. This produced a laceration roughly 1 cm long. In the ED the laceration was cleansed with antiseptic, and sterile dressing was applied over the wound area. Treatment consisted of tetracycline 500 mg *PO q.i.d.* for 14 days, a commonly used protocol for sealer's finger at this hospital. The patient was given the medication and sent home. At follow up 2 weeks after presentation, the swelling and redness had subsided, normal range of motion had returned to the thumb; the patient made a full recovery.

#### DISCUSSION

Sealer's finger is a condition that is not uncommon to certain parts of rural Newfoundland, where it is seen in the local ED during the short seal hunt in the spring. The specific bacteria that causes this infection is unknown, but certain species of *Micrococcus* have been implicated.<sup>3</sup> Bacteria likely invade through small cuts on the sealer's hand. It has been found that a high percent-



age of affected digits occurred on the index and middle fingers of the left hand of sealers,<sup>1</sup> suggesting that the bacteria were possibly acquired through the practice of inserting these fingers through the eyes holes (palpebral fissures) of the seal pelts, when carrying them.<sup>1</sup> In a study of 244 patients only 22 subjects were unable to recall a pre-existing break in the skin.<sup>4</sup> In the early and mid-20th century sealers would request that the finger be amputated because otherwise the disorder would keep them from working during the short sealing season.<sup>1</sup>

### *Not only sealers*

Sealer's finger is commonly seen in seal hunters but is also seen in those who care for or study seals, such as wildlife workers and biological researchers.<sup>5,6</sup> Many of the case reports document how sealer's finger may be acquired by the bite from a seal.<sup>5</sup> This disease has even been associated with handling of an anesthetized polar bear with tooth abscesses.<sup>7</sup>

### *Treatment*

It is the opinion of the second author, based on clinical experience and supported by other publications in the literature, that injuries of this etiology should be treated with the tetracycline<sup>5,6</sup> or its chemical derivative, deoxycycline. In our local hospital deoxycycline 100 mg *PO q.i.d.* for 14 days has been successfully used in the treatment of this condition. In the situation of a more serious case of sealer's fin-

ger, when inflammation extends to the other digits or wrist, a third generation cephalosporin, administered intravenously, is used in addition to one of the previously mentioned oral antibiotics.

### *Precautions*

Case reports show that a delay in appropriate treatment due to lack of awareness by primary care physicians of sealer's finger, can lead to unnecessary loss of function due to permanent stiffness.<sup>5</sup> Our recommendations for the prevention of sealer's finger include education of the condition among seal fishers and ships' officers having an adequate supply of antibiotics on board to treat the condition at sea, after telephone contact to a physician. Pelt handlers should use gloves and ensure adequate dressing and treatment of all minor flesh wounds on the hands, to help prevent acquisition of sealer's finger.

**Competing interests:** None declared.

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# THE PRACTITIONER LE PRATICIEN

## Country cardiograms case 30

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**A** sixty-seven-year-old woman is brought to the emergency department of a rural British Columbia hospital with symptoms of weakness and a sensation that her heart is racing. The following tracing is obtained (Fig. 1).

What is your ECG diagnosis?

**For the Answer, see page 133.**

**Competing interests:** None declared.

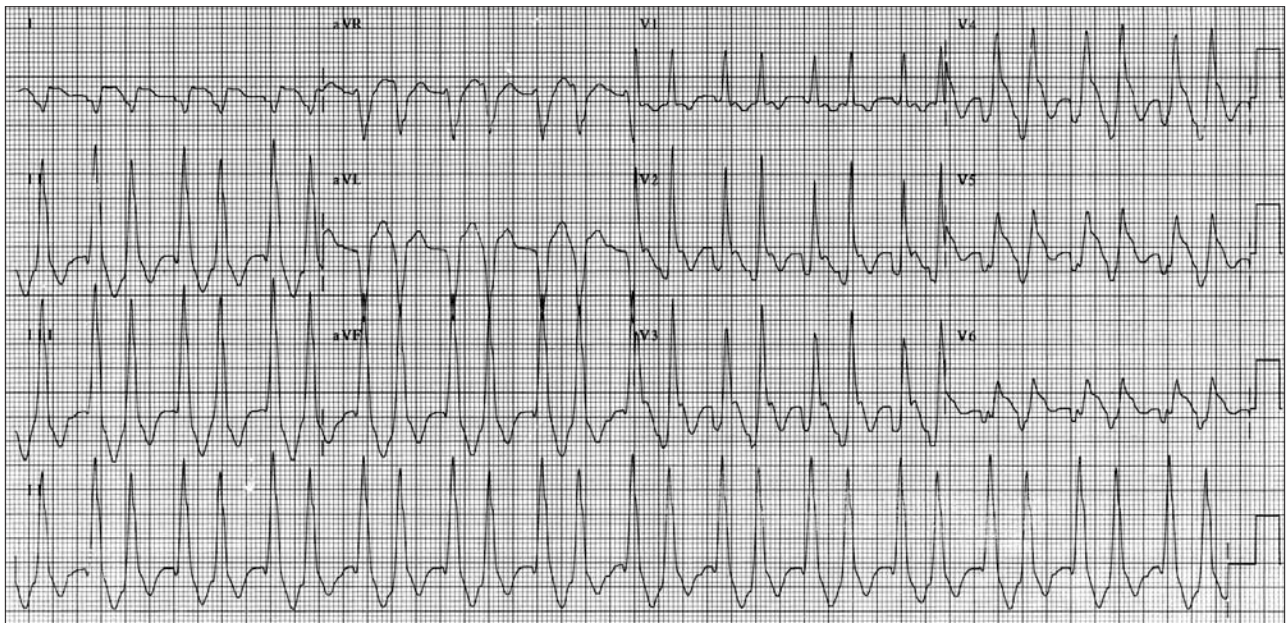


Fig. 1. Results of the ECG taken shortly after the patient's arrival in the emergency department.



# THE PRACTITIONER LE PRATICIEN

## The occasional extensor tendon laceration repair

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### INTRODUCTION

Rural physicians commonly have patients present to the emergency department with injuries to the hand. Occasionally, these injuries involve extensor tendons. Extensor tendon injuries are more common than flexor tendon injuries, due largely to the fact that extensor tendons are less protected and are more superficially located. The strategy used to manage an extensor tendon injury varies with the location of that injury. For this reason, optimal management of a hand extensor tendon injury requires an understanding of extensor tendon anatomy and function. The other principle regarding extensor tendon injuries is that these injuries should not be underestimated. Care and attention during initial treatment is an important aspect of ensuring good outcome, or at least to minimize deformity. This article reviews extensor tendon anatomy and terminology, and then reviews briefly the management of hand extensor tendon injuries with a focus on repair of lacerated tendons.

### EXTENSOR TENDON ANATOMY AND TERMINOLOGY

Extension of the wrist and fingers is accomplished via the coordinated efforts of an intricate and interconnected complex of extensor muscles and their terminal tendons (Fig. 1).<sup>1,2</sup> The muscles that make up the extensor tendon complex are located in the dorsal aspect of the forearm, and all are innervated by the radial nerve (C5–C8) (Table 1). The tendons of these extensor muscles form just proximal to the wrist joint, and they then pass into the

dorsal aspect of the hand. A dense, thickened, fibrous fascia known as the extensor retinaculum, stretching across the dorsum of the wrist, holds the tendon sheaths down and prevents bowstringing when contraction of the muscles occurs. Another fibrous fascia, known as the extensor expansion, stretches from the metacarpophalangeal (MCP) joint to halfway down the proximal phalanx and functions to hold the extensor tendon down and in a more or less central position.

The 5 muscles that are involved in actually extending the fingers are the extensor pollicis brevis, extensor pollicis longus, extensor indicis proprius, extensor digiti minimi, and extensor digitorum communis (Fig. 1). The extensor pollicis brevis muscle extends the thumb at the MCP, and the extensor pollicis longus extends the thumb at the interphalangeal joint. The extensor indicis proprius muscle extends the index finger, the extensor digiti minimi extends the little (fifth) finger, and the extensor digitorum communis is involved in extending all digits except for the thumb. The 4 extensor digitorum communis tendons share a common muscle origin, which explains why fingers tend to extend together. The tendon of extensor digitorum communis to the little finger is missing in more than 50% of people and is replaced by a fibrous sheath from the ring finger extensor originating just proximal to the MCP joint. Similar fibrous sheaths connect other tendons of the extensor digitorum to one another. These fibrous sheaths are referred to as juncturae tendinum. They are the reason why one can lacerate a tendon of the extensor digitorum communis muscle proximal to the MCP



joints and still see extension of the involved digit distal to the laceration. The extensor tendons of the extensor digitorum communis muscle inserts at multiple sites, including the base of the proximal, middle and distal phalanges. Halfway down the proximal phalanx the extensor tendons of this muscle trifurcate into a central “slip” and into 2 lateral bands (Fig. 1, Fig. 2). The central slip inserts primarily to the base of the middle phalanx, and the lateral bands insert primarily to the base of the terminal phalanx.

Contributing to, and adding to, the complexity of the extensor tendon mechanism are interconnections

with intrinsic muscle (interossei and lumbricals) tendons and with a variety of ligamentous sheaths and bands (e.g., sagittal, retinacular, triangular). The intrinsic muscles contribute to flexion at the MCP joint and extension of the proximal and distal interphalangeal (DIP) joints. A more detailed discussion of these intrinsic muscles, tendons, sheaths and bands is beyond the scope of this article, and the reader is referred elsewhere for more information.<sup>1,2</sup> Suffice it to say, the extensor tendon mechanism is a complicated, somewhat delicate system held in balance by a flexor tendon complex. Injury to either the extensor or flexor tendon complex from trauma, infection, inflammation or degeneration can lead to imbalances that manifest themselves as finger deformity and/or dysfunction in finger movement.

The extensor tendon system has been divided into 8 anatomic zones (Verdan’s zones), which are summarized in Table 2 and shown in Fig. 1. Divi-

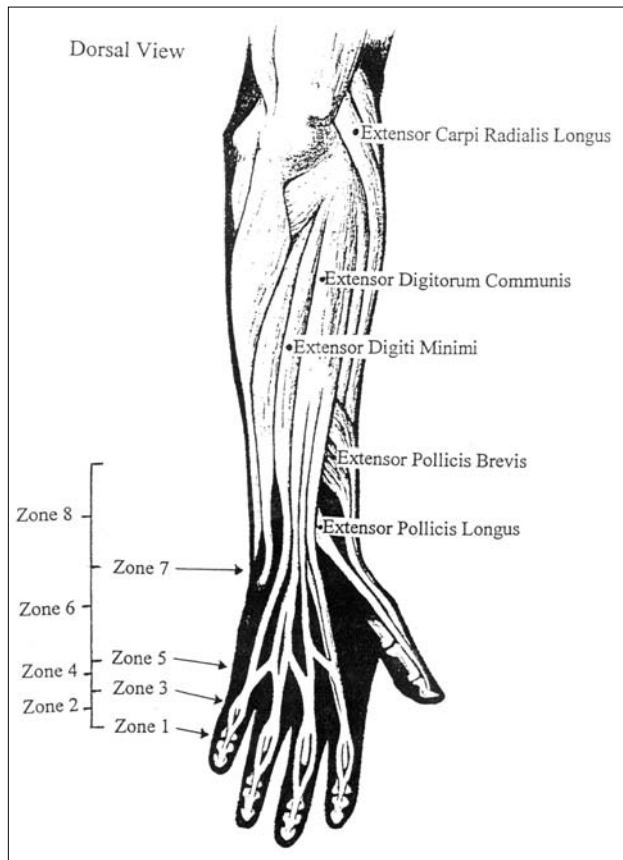


Fig. 1. Extensor muscles and tendons

Extensor muscle	Function
Pollicis	
Brevis	Extends thumb
Longus	Extends terminal phalanx of thumb
Carp	
Radialis brevis	Extends and abducts wrist
Radialis longus	Extends and abducts wrist
Digitorum communis	Extends wrist joint and non-thumb digits
Indicis proprius	Extends index finger
Digiti minimi	Extends fifth digit
Carp	Extends, adducts wrist

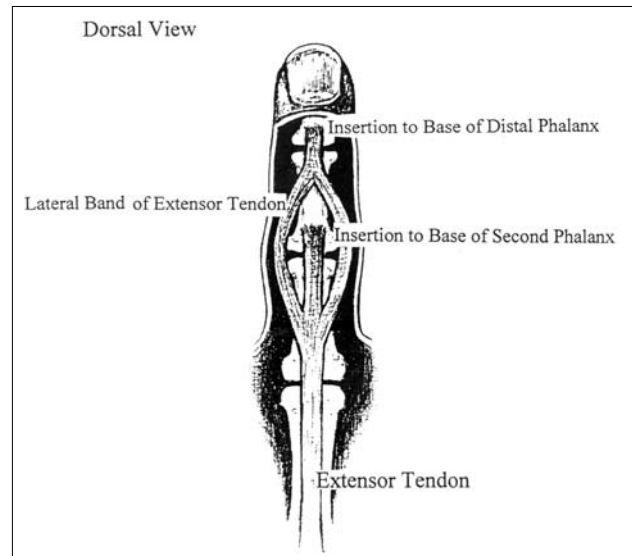


Fig. 2. Finger extensor tendon complex

Zone	Location	Deformity
I	Distal interphalangeal (DIP) joint	Mallet finger* (a.k.a. baseball or drop finger)
II	Between DIP and proximal interphalangeal (PIP) joints	Mallet finger
III	PIP joint	Boutonniere deformity
IV	Between PIP and metacarpophalangeal (MCP) joints	
V	MCP joint	
VI	Hand between MCP and wrist joints	
VII	Wrist joint	
VIII	Dorsal forearm	

\*If left untreated, mallet finger can develop into swan-neck deformity.

sion into anatomic zones is useful conceptually because injuries within each zone are associated with distinctive deformity, dysfunction, treatment strategy and surgical outcome. Only injuries in zones I to VI will be discussed in this paper. Zone VII and VIII extensor tendon injuries are associated with significant retraction of tendons. There is often a need to release the extensor retinaculum (dorsal carpal ligament), multiple tendons may be injured at the same time and the risk of postoperative adhesions is high. For all these reasons zone VII and VIII extensor tendon injuries are best referred on to physicians with more expertise.

### **INITIAL APPROACH TO EXTENSOR TENDON INJURY**

The initial approach to an extensor tendon injury should include a full history of the event, including an assessment of the degree of possible contamination. Always ask if the injury is the result of a human bite. Give tetanus immunization if indicated. A history of heavy smoking or drinking may be associated with poorer healing. Provide analgesia for pain (e.g., Demerol 75–125 mg intramuscularly, morphine 3–5 mg intravenously) as needed.

Note the location, size and depth of wound; viability of tissue around the wound; presence or absence of debris within the wound; and estimate how deep the laceration could have extended into tissue. Stop bleeding by applying pressure over any actively bleeding areas. Carefully document the neurovascular integrity distal to the wound before anesthetizing the area. Carefully document flexion and extension of hand joints particularly those distal to the laceration. Make a decision as to whether or not radiography would be helpful to identify internally embedded foreign bodies (e.g., glass) and/or bony injury. Remove watches and rings.

After examination, inform the patient about the need for cleaning the wound and repairing the tendon injury. Obtain informed consent for the procedure and review potential complications, including infection, bleeding, scarring, adhesions, rupture, stiffness and additional damage to the underlying and surrounding tissue.

### ***Specialized repair***

If the tendon injury and wound is judged to be too complicated to handle at the rural facility, make arrangements to transport the patient to another facility for specialized repair after the wound has

been cleaned and dressed. If there is going to be any delay in secondary tendon or nerve repair, close the wound before transportation. If tendon or nerve ends are visible, tag them with a short piece of 4/0 nylon suture ( $\pm 3$  cm) to facilitate subsequent repair. Immobilize the hand in position of function before transfer — MCP joint at 70° flexion with the interphalangeal joints at about 10° flexion. Amputated parts should be saved and transported with the patient. Wrap the amputated part in saline-soaked gauze, place this into a sealed plastic bag, which is then placed into a container filled with ice and water.

### ***Equipment for cleaning wound and repairing extensor tendon***

Equipment necessary for managing hand injuries and repairing extensor tendons consists basically of the same equipment one would use to manage any laceration; i.e., a suture set.

### ***Wound care before repair***

1. Using sterile technique, clean the wound and surrounding area with an antiseptic skin solution (e.g., chlorhexidine 2% with 4% isopropyl alcohol [e.g., Dexidin 2 Solution], antiseptic isopropyl alcohol pad [e.g., WEBCOL Alcohol Prep] or Betadine Surgical Scrub [7.5% povidone-iodine] and wash it off with sterile sodium chloride solution (0.9%). Butter, mayonnaise or mineral oil will remove oil quite effectively.
2. Make a decision about what kind of anesthesia should be used — local, digital nerve block, metacarpal nerve block, regional nerve block or general anesthesia. No exploration or débridement should be carried out before anesthesia is achieved. For local and nerve block anesthesia 1% or 2% Lidocaine hydrochloride is used. Avoid the use of epinephrine (1:100 000) in the finger. Regional or metacarpal nerve block is recommended if the wound is large or looks complicated.
3. After anesthesia irrigate with copious amounts of sterile saline solution — up to 1 L. Consider taking wound cultures before irrigation if the wound is at high risk for infection — e.g., human bite wound. Apply sterile drapes around the wound area. A bloodless field is very useful, so consider inflating a blood pressure cuff to a level 50 mm Hg above systolic blood pressure for at least the first part of the examination.

Remove obvious foreign bodies, excise any dead tissue, clean or clip off dirty fingernails. Push down on the fully extended digit, and if any weakness in tendon function is detected (i.e., the digit is easily forced into flexion) the laceration should be opened further to allow proper assessment of the tendon damages. Proper exposure of the damaged tendon is very important. Usually this involves extending the laceration in a Z-plasty type fashion, folding the flaps back and holding them in place with a 25-gauge 1.5-in needle until tendon repair is completed (Fig. 3).

### General principles regarding repair

Remember that the extensor tendon becomes

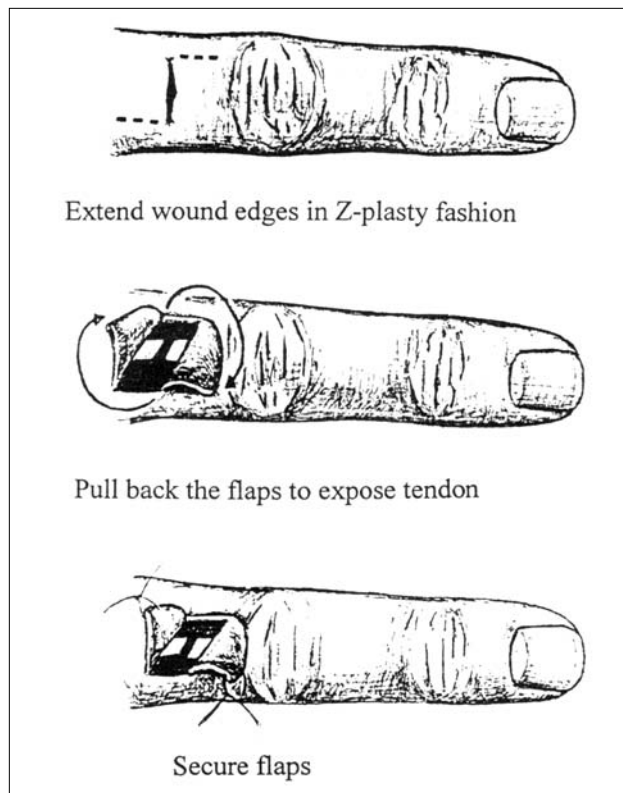


Fig. 3. Open up laceration to expose tendon.

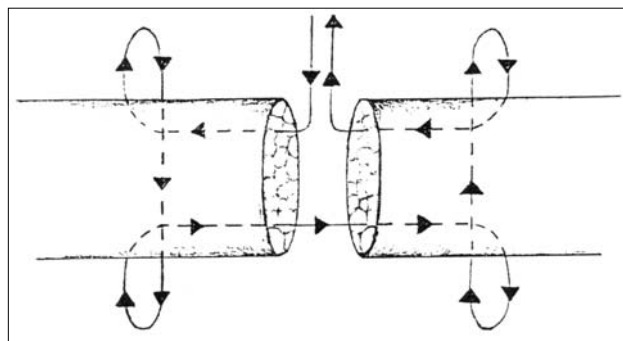


Fig. 4. Modified Kevlar suture technique

increasingly thin, flat and difficult to suture the further out the tendon is. The extensor tendon has a tendency to scar to the skin and bone so it is important to suture the ends carefully together. The exception to this is the zone I extensor tendon laceration, where one can purposely suture subcutaneous skin and tendon together as a way of encouraging the scarring down of the extensor tendon at the insertion site. As a general rule, repair of a tendon is effected with nonabsorbable 4/0 clear nylon or synthetic braided (e.g., Ticron) suture using a modified Kevlar stitch (Fig. 4). When repairing the tendon be sure that both ends of the tendon touch without puckering up on each other. The purpose of the suture is to keep both ends opposed and not to substitute for the disrupted tendon. Remember that tendon collagen does not begin to form for at least 3 weeks after injury, so immobilize all extensor tendon repairs for at least 3 weeks post repair.

### Repair technique(s)<sup>1,3,4</sup>

#### Zone I – mallet finger

Zone I extensor tendon injury manifests itself as a mallet finger deformity; also known as a baseball finger or drop finger (Fig. 5). The DIP joint has a

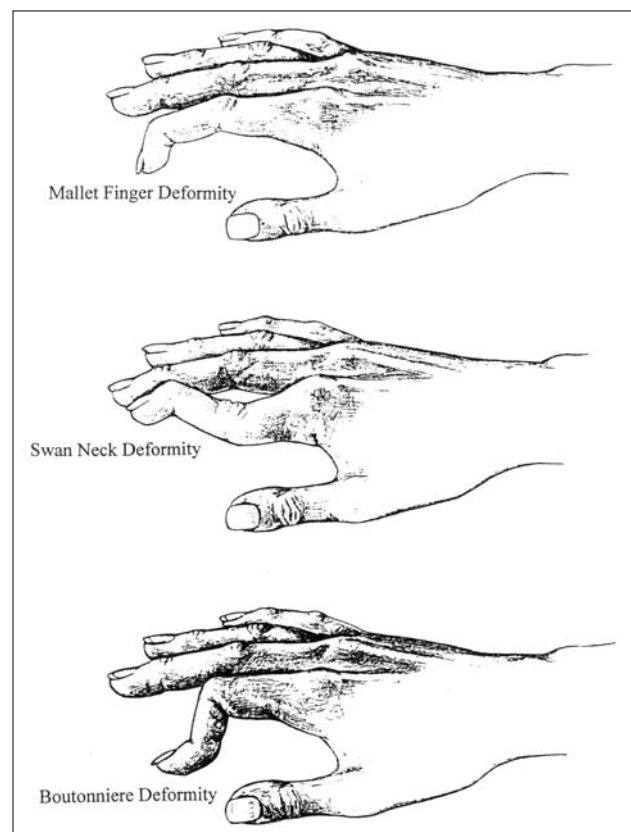


Fig. 5. Acquired finger deformities



flexion deformity, and the patient is unable to extend it when asked to. The basic mechanism underlying a mallet finger deformity is that insertion of the extensor tendon to the base of the terminal phalanx is disrupted. Typically the disruption is the result of sudden, forceful flexion while the digit is in extension — the closed “boink” injury. The deformity can also occur as the result of a laceration or deep abrasion involving the extensor tendon. If a mallet finger deformity is left untreated, the central “slip” often retracts and the lateral bands migrate dorsally, forcing the proximal interphalangeal joint into hyperextension while the DIP joint remains in flexion — a position known as the swan-neck deformity (Fig. 5).

All mallet finger deformities must be x-rayed. Referral for possible open reduction and internal fixation is indicated if

1. greater than 30% of bony surface of the distal phalanx is avulsed;
2. the articular fragment is comminuted;
3. the DIP joint has been subluxed or dislocated and cannot be reduced;
4. in children, if there is transepiphyseal fracture with significant displacement of the distal phalanx fragment — especially palmar displacement; or
5. the abrasion injury is so deep that immediate grafting is necessary.

If less than 30% is avulsed, treat closed mallet fingers by splinting the DIP joint at 0°–15° hyperextension for 8 weeks. After this, the patient is instructed to use the splint when doing heavy lifting or heavy jobs, and at night for another 2–8 weeks. When the splint is off the patient is instructed to do 10 active repetitions of DIP flexion and extension hourly.<sup>3</sup> Lacerations of the extensor tendon, at or proximal to the DIP joint, may be repaired, and then splinted as described above for closed injury.

In children, mallet finger deformities are often associated with transepiphyseal fracture of the distal phalanx. These are best managed by closed reduction to correct deformity and then splinting the DIP joint at 0°–15° hyperextension for 3–4 weeks. If the patient presents with a history of 6 or more weeks of a mallet finger deformity and the DIP joint is not subluxed or dislocated, splint the DIP at 0°–15° hyperextension for 12 weeks and then at night for a few weeks. The patient must be compliant and always keep the DIP joint in extension at all times. Whenever the splint is removed, the involved digit must be held in extension with the thumb; the joint must not be allowed to drop into flexion.

The patient is instructed to mobilize the MCP and proximal interphalangeal (PIP) joints. It is important not to splint the PIP or MCP joints in extension as the lateral bands will shorten, pulling the proximal end of the injured tendon away from its site of insertion.

## **Zone II — middle phalanx laceration**

Most zone II extensor tendon injuries are the result of laceration or crush injuries.

While exploring the wound try to assess whether or not 50% of the tendon width has been cut. If so, suture the tendon and then splint the entire finger in extension for 3 weeks as described for zone I injury. If less than 50% of the tendon width has been cut simply splint for 2 weeks followed by gradually increasing the active range of motion. As with zone I injuries, the patient is instructed to mobilize the MCP and PIP joints.

## **Zone III — boutonniere deformity**

Zone III extensor tendon injury manifests itself as a boutonniere deformity — flexion at the PIP joint and hyperextension at the DIP joint (Fig. 5). The basic mechanism underlying a boutonniere deformity is that insertion of the extensor tendon central slip to the base of the middle phalanx at the PIP joint is disrupted. The PIP joint can no longer be extended, but the DIP can be extended because the lateral bands of the extensor digitorum communis tendon remain intact and continue to insert into the base of the terminal phalanx. Over time, the lateral bands tend to migrate palmarly, which exaggerates the deformity. Once contracture sets in, the deformity is very difficult to correct.

The mechanism of injury can be closed or open and with or without avulsion or bony fragmentation. In closed injuries, the original injury may have occurred 1–2 weeks before development of the deformity.

All boutonniere finger deformities must be x-rayed. Referral for possible open reduction internal fixation is indicated if

1. there is a displaced avulsion fracture at the base of the middle phalanx;
2. there is marked instability of the PIP joint due to more extensive injury;
3. primary repair of the central slip is not possible; or
4. nonoperative treatment fails.

Uncomplicated open injuries are managed by

primarily repairing the injured tendon followed by splinting the PIP joint in extension for 3 weeks. Closed injuries are managed by splinting the PIP in extension for a minimum of 4–6 weeks. There seems to be controversy in the literature with respect to optimal time to immobilize these injuries. In older people, the period of immobilization is decreased to 2–4 weeks to minimize contracture formation. While the PIP is immobilized in neutral position (not hyperextension), all other joints are left free to move. The patient is encouraged to actively and passively flex the DIP joint hourly so as to prevent ligamentous tightness. The MCP and wrist joints are also left free and actively mobilized.

After the splint is removed an exercise program to gradually increase flexion and extension of the PIP joint should be prescribed. A physiotherapist can be consulted on how best to do this. It is recommended that night-time splinting continue for another 4–8 weeks after the continuous splint is removed.

#### **Zone IV – proximal phalanx laceration**

Most zone IV extensor tendon injuries are the result of laceration or crush injuries. While exploring the wound try to assess the width of tendon injury. If extension of DIP joints is intact and laceration of tendon appears to be partial, splinting of the interphalangeal joint as per closed zone III extensor injuries is recommended. If there is a complete uncomplicated laceration of the extensor tendon, primary repair with 4–0 nonabsorbable suture is recommended followed by splinting the PIP joint in extension for 3 weeks.

#### **Zone V – metacarpophalangeal (MCP) joint**

Zone V extensor tendon injuries are those localized around the MCP joint. They are usually open, and frequently human-bite related. Remember that if the injury occurred with the fist clenched (MCP joint in flexion) the tendon injury will often be proximal to the outer skin injury. If 50% of the tendon width has been cut, repair the tendon primarily. If less than 50% of the tendon width is cut, simply splint. Splinting is for 3 weeks followed by gradually increasing the active range of motion. The wrist and hand should be immobilized and splinted as follows: wrist extended 30°, MCP joint flexed 0°–30°, and both interphalangeal joints of the affected finger extended at 0°.

#### **Zone VI – dorsal hand**

Zone VI extensor tendon injuries are located over the dorsum of the hand between the wrist and MCP joint. Remember that significant tendon lacerations may still be associated with normal extension distal to the injury site because of juncturae tendinum extending from adjacent tendons of the extensor digitorum communis muscle. Careful inspection is therefore necessary to detect lacerations in this zone. Manage extensor tendon lacerations as per zone V extensor tendon injuries.

#### **Wound care after repair**

Wound care following extensor tendon injury involves closing the wound with sutures, applying topical antibiotic ointment and covering the wound with a simple dressing. The patient should be reminded about the risk of infection and told to return if signs of infection arise – erythema, discharge, pain and swelling. If the wound is the result of a human or animal bite, extensive irrigation and débridement of necrotic tissue is particularly important, and consideration should be given to leaving the wound open. The longer the treatment of a human bite injury is delayed the higher the probability the wound will become infected, and the more certain that one should leave the wound open to heal by secondary intention. Prophylactic antibiotics should be started on all patients with bite wounds and should be considered for all patients who have conditions that increase risk of developing infection (e.g., diabetes, peripheral vascular disease, long-term steroid use, collagen vascular disease, HIV, heavy smoker, alcoholism). A follow-up appointment is organized at 4 weeks – sooner if complications arise. It is important to remind the patient that the hand must be elevated to prevent swelling, which is associated with stiffness and loss of function.

**Competing interests:** None declared.

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## PODIUM: DOCTORS SPEAK OUT LA PAROLE AUX MÉDECINS

### Generalism versus subspecialization: Changes necessary in medical education

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During the initial Partners Meeting of the Association of Faculties of Medicine of Canada (AFMC), the Canadian Association for Medical Education (CAME), the College of Family Physicians of Canada (CFPC), the Medical Council of Canada (MCC), and the Royal College of Physicians and Surgeons of Canada (RCPSC) in May 2005, a plenary discussion and debate focused on the tensions that exist between generalist and subspecialty education within both the undergraduate and postgraduate educational programs in Canadian medical schools. Key issues identified in the debate included medical student selection, generalist representation on medical school faculty and in learning experiences, and the need for a greater teaching role and respect for generalism to be developed.

Over 600 participants listened to data from the National Physician Survey (NPS), the Canadian Post-M.D. Education Registry (CAPER), and a debate on the issues that influence and determine career choices by medical students and residents during the inaugural Partners Meeting. This document focuses on the key issues raised during the presentations and the debate, the audience comments (both oral and written), and recommended directions for change in educational approaches.

Although the ratio of practising family/general physicians to specialists has remained relatively constant over the last decade (52:48), the number of medical students making Family Medicine their first career choice match has declined from 44% in 1992 to about 25% in 2003, with some improvement in 2004.<sup>1</sup> Practice entry into generalist specialties that serve a critical role in the provision of medical care in rural communities, including General Internal Medicine, General Surgery, Obstetrics and Gynecology, Pediatrics and Psychiatry, has dropped from 35% of

all Royal College-registered residents certified in 1995 to 25% in 2004.<sup>2</sup>

Why is this a concern? Generalist physicians, including both family physicians and generalist specialists, deliver an enlarged scope of practice, covering health needs of populations in rural and remote parts of Canada as well as defined urban communities. A generalized care model has health care providers who have a better understanding of the community context, the patient's total health status, and options to respond to current patient needs. Services are generally accessible, particularly in smaller communities, and there is greater likelihood of a long-term relationship between health care provider and patient. A specialized care model is characterized by more highly concentrated expertise available to address rare or complex problems, with service access concentrated in larger communities, resulting in greater fragmentation of care and a higher incidence of short-term relationships between health care providers and their patients. The subspecialist has a substantial depth of knowledge about spe-



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cific disease entities and possesses the skill set necessary to diagnose and treat those diseases. In recent years, there has been a tendency to equate more specialized care with higher quality care.

The generalist possesses a breadth of knowledge and uses an integrative approach to a patient's problems. Decision-making in the context of uncertainty and acceptance of care partnerships in the management of an individual's illness characterize the generalist's care model. However, recent data from the NPS<sup>5</sup> suggest that many general practitioners are limiting their breadth of knowledge and skills, as only 6.3% of all Canadian family physicians are now offering comprehensive patient care from "cradle to grave." For some time now, generalized medical knowledge and skills have been devalued in physician-controlled compensation schemes. This devaluation of generalized medical knowledge and skills by the profession itself is one factor that has discouraged the next generation from pursuing careers in fields requiring such knowledge and skills.

By definition, university environments promote specialized expertise and scholarly work. Medical schools do not escape this tendency. Medical school admission processes that emphasize marks and Medical College Admission Test scores tend to select students who are likely to prefer acquiring competency and expertise within a narrow field.

Both in medical school as well as in residency training, learners quickly become aware that the health care system values specialist knowledge more than that of the generalist. Students perceive that many of their teachers in medical school, even for relatively introductory classes, are subspecialists and that family physicians and general specialists are relatively under-represented in full-time faculty positions in medical schools compared with both the physician mix and need in Canada. When students begin their clerkship rotations in tertiary care centres, they are mostly exposed to residents who are pursuing specialist-training programs, rather than family practice residents who train in more generalist settings. Daily, in their teaching or patient care experiences, students and residents hear that the generalist physician erred in the care of the patient and the specialist needed to step in to solve the problem. During clinical case discussions, the junior medical student hears learned discussions about the latest scientific papers with limited recognition on the part of teachers that the required background science has not yet been taught. Residents rotating on subspecialty services find that multiple consultations to other subspecialties are necessary to care

for a patient with more than one medical problem. The concept of caring for the whole patient is rarely modelled in the teaching environment for either medical students or residents. Training exclusively in a chosen discipline reduces quality of care for the chronically ill as training models tend to become practice models.

Other factors deterring students from considering generalist careers include rising tuition fees that are daunting, especially for students from small rural communities who may have limited family financial resources. Medical students are graduating today with formidable debt loads, resulting in career choices that generate higher earnings, such as procedural disciplines. Other major issues facing rural students interested in a career in medicine are outlined in a report of the Task Force of the Society of Rural Physicians of Canada.<sup>4</sup> In pursuit of letters of reference for the most highly desirable residency positions, students seek interactions, including both clinical and research elective experiences, with subspecialists with national reputations. This then limits their exposure to generalist experiences during the time when career choices are developing.

Canadian medical schools face an interesting dilemma in attempting to resolve these problems. In provinces in which there is only a single medical school providing both health professional education as well as tertiary care for the entire province (e.g., British Columbia, Nova Scotia, Saskatchewan, and Newfoundland and Labrador), it would not be possible to provide generalist education alone. Other provinces with multiple medical schools may be able to create schools with a generalist mandate (such as the Northern Ontario School of Medicine), but students choosing to attend such schools will need to make career choices even earlier than medical students do now. As there is some evidence that students like to stay in the environment where they are trained, the experiments in Northern Ontario and other settings with distributed programs will be followed with interest by the entire medical education community.

Changes are necessary in medical education if students and residents are to be attracted to generalist careers. Recommendations arising from this discussion include the following.

- Admission processes must be examined to determine whether there is a selection bias toward applicants more likely to select specialty training.
- Generalists should have more teaching responsibility, including exposure to medical students

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in the early years of the curriculum and a role in case development in problem-based learning environments.

- The portrayal of the generalist in case studies and the language used by subspecialists when discussing their generalist colleagues requires correction and a more supportive text.
- Enhanced patient-centred care in urban hospitals, incorporating generalists as part of the patient care team in tertiary care teaching settings, would provide a more appropriate model for students.
- Generalist role models and mentors are necessary at all levels of medical education and should be developed and rewarded for this activity.
- Collaborative teaching programs involving both generalists and subspecialists will provide models for learners to emulate in their own practices and may enhance communication and team skills.
- Accreditation bodies must develop accreditation requirements for the generalist-learning environment, and specialty accreditation committees should consider generalism as a fundamental requirement for all specialist training.
- Health care and health education institutions need to examine their mission statements, hiring practices and academic atmosphere to ensure that generalists feel not just welcome but absolutely necessary within their institutions.
- Promotion criteria and remuneration of generalists, particularly those practising in smaller communities where practice may be altered by the presence of a learner, require consideration by medical school authorities.
- More research into problems and issues faced by the generalist in practice needs to be done in order to help deal with these issues and to provide an academic base for the generalist within the academic environment.

- If all physicians were to accept the role of teacher as a condition of licensure and if academic departments accepted the expertise available in the generalist community, the opportunities for distributing learning out of the tertiary care centre and into the community would expand the number of generalists within the virtual walls of contemporary medical schools.

The choice of respectful language used during day-to-day activities with students and residents is probably the single most important individual action that teachers and supervisors can do to begin to change learner attitudes toward generalist careers. Other solutions, such as easing student debt burden, improving teacher remuneration or developing more distributed learning, require interaction between educators and policy-makers and will take time to implement.

Generalists may well be an endangered species. Medical schools and the medical profession need to take action if the health care system as it is currently designed is to survive.

**Competing interests:** None declared.

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## RESIDENTS' PAGE PAGE DES RÉSIDENTS

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### It takes more than rural roots to make a rural doc

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**T**here is a significant gap between health care needs in rural Canada and the availability of health care professionals. Although 30% of Canadians live in rural communities, 17% of family physicians and 4% of specialists practise rurally.<sup>1</sup> Recruitment and retention continue to be significant issues in eliminating this disparity. Early exposure to rural medicine is crucial for later recruitment of physicians into rural practice.<sup>2</sup> The Northern Ontario School of Medicine (NOSM) and the University of British Columbia's Northern Medical Program are currently trialling years of research indicating that physicians with a rural upbringing are more likely to practise rurally.<sup>3</sup> In addition, distributive learning models are requiring more trainees to be exposed to rural medicine, but the majority of medical training is still conducted in urban centres.<sup>5</sup>

Despite the significance attributed to rural medicine exposure, few studies focus on process and outcome evaluations related to trainees' rural experiences. Process evaluation focuses on program delivery with the aim to learn about participant characteristics, perceived barriers and problems with service delivery.<sup>4</sup> Outcome evaluation pursues a program's impact on participants and dropouts and seeks differences in baseline characteristics. Applied to medical trainees' rural experiences, these evaluations could address shared characteristics of those completing rural clinical rotations, overall experience of participants, problems encountered during scheduling and completing rotations. Long-term evaluations could

explore residency program and career choices comparing participants with a rural and urban upbringing.

The lack of process and outcome evaluation became evident during my (A.S.) medical training. I was raised and completed my secondary and post-secondary education in Northern Ontario. I moved to Southwestern Ontario primarily to further my education. I was exposed early to rural medicine through electives and core rotations.

There are many not-for-profit organizations with the primary goal of facilitating recruitment of future physicians to rural areas. In Northeastern Ontario for example, the NOME (Northeastern Medical Education Corporation) is responsible for managing undergraduate medical training opportunities and postgraduate residency programs in family and specialty rural programs.

During my first year of medicine I completed an elective in Sault Ste. Marie funded through NOME.

A few weeks before starting a scheduled anesthesia elective, a letter informed me that because of unforeseen circumstances my elective would be changed to another discipline. "Was there anything I could do to help find an anesthetist?" I asked. NOME policy does not allow medical student's participation in setting up electives (i.e., prearranging an elective with a preceptor). Nevertheless, I turned to my family physician for help and within a day I had a preceptor and a 3-week elective in Sault Ste. Marie. NOME reluctantly approved the funding of the elective as it was not organized internally. Surprisingly, I received an email from the CEO explaining the drawback to



students setting up their own electives without a central body involved. I did enjoy my elective, but was concerned about the scheduling problems. The majority of my colleagues who completed rural clinical rotations enjoyed the work, but many felt getting there was onerous, and most discussed constructive improvements directed to program delivery. The lack of organization left many concerned. The worst experience was shared by a colleague who was switched communities and discipline a few weeks before the elective and decided to cancel his trip to Northern Ontario.

Students have months of elective time to explore the breadth of medicine and its practice in various settings. Completing a rural rotation is not only a chance for exposure to rural life, but also an excellent opportunity to learn about these organizations that are closely tied to rural residency programs. A student's experience setting up an elective, completing forms, getting questions answered, meeting rural residents and staff, are all reflections of potential residency life.

The Northeastern Ontario Stream Anesthesia Residency Program is a 5-year program based in Ottawa, offering trainees 4 months of each year to be spent in Sudbury and surrounding area. I completed anesthesia electives in Ottawa and Sudbury and was impressed with this new program. CaRMS (Canadian Resident Matching Service) interviews approached and I contacted NOMECC for information about accommodations for my wife, newborn baby and our small dog. I was assured that accommodations would be provided for my family during the month-long rotations in Sudbury. However, pets were not accepted. I later learned that pets had been an on-going issue for interested residents over the years. After voicing my concerns, NOMECC suggested I propose new "pet rules" to be presented at an executive meeting. A few days after my CaRMS interview in Ottawa, NOMECC informed me that

the proposed pet rules were not accepted and no changes would be made to the policy. The option offered was to find and cover the costs of accommodations while in Sudbury despite paying for rent in Ottawa.

Important data ascertained from research focused on characteristics of current rural physicians has helped shape recruitment practices across Canada. Despite increases in the number of medical students, despite junior medical students competing for electives every year in Northern Ontario, there is a constant struggle to fill training positions. Additional research on trainees' overall experience in rural regions is desperately needed. Collecting rich data through the use of targeted and follow-up focus groups could prove a very useful methodology. Why do trainees believe that Northern Ontario can offer unmatched elective experiences but stray away from its rural training programs? Why are trainees with a rural upbringing not choosing rural programs? Are there real or perceived barriers that could be addressed? Process and long-term outcome evaluative data could offer new insights needed to foster change and to improve current recruitment practices with a mission to improve patient care in rural Canada.

**Competing interests:** None declared.

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# OUT BEHIND THE BARN DANS LE FEU DE L'ACTION

## Adverse drug reactions

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### MEDEFFECT WEB SITE

#### WWW.MEDEFFECT.CA

Health Canada has created a new Web site to make it easier for physicians to obtain information about adverse drug reactions and to report such events in their own practice. This article reviews the features of this Web site that are most relevant to rural physicians.

### NAVIGATION

MedEffect is part of the main Health Canada Web site. The menus at the top and left-hand side of the page are part of that Web site, rather than MedEffect itself. Most of the information about adverse reactions is found in the "Topics" or "Quick Links" sections on the right-hand side of each MedEffect page. A search engine is available, but it searches the entire Health Canada Web site, not just MedEffect.

The home page provides links to the following topics on the right-hand side of the page.

### ABOUT MEDEFFECT

This section contains background information about the MedEffect program. The "Quick Links" section contains useful links to "View Advisories, Warnings, and Recalls" and "Report a Problem or Reaction."

### ADVERSE REACTION DATABASE

This link takes you to a page that eventually allows you to search for all reported reactions to a particular product. The most relevant link is at the bottom of the page. It starts with the words "Please read this document." To reach the database itself, you must click the "I have read and understood" link at the bottom of the next page.

### ADVERSE REACTION INFORMATION

This section contains background information about adverse drug reactions.

### ADVERSE REACTION REPORTING

The "Topics" menu contains a link to a list of the regional adverse reaction reporting centres. It also contains a link to the adverse reaction reporting form (ar-ei\_form\_e.pdf) in PDF format. The "Guidance Documents" link provides background information about reporting adverse reactions.

### ADVISORIES, WARNINGS, RECALLS

The "Topics" menu has separate sections for health professionals and patients. Information is listed by year and month. Warnings about "natural products" only seem to appear in the patient section.

### CANADIAN ADVERSE REACTION NEWSLETTER

The *Canadian Adverse Reaction Newsletter* is published quarterly. It alerts health professionals to issues arising from case reports submitted to Health Canada.

### CONSULTATIONS

This section contains further background information about the MedEffect program.

### FAQS

Here you will find answers to frequently asked questions (FAQs) about the program. A link to this section also appears on the main MedEffect page.

### MEDEFFECT E-NOTICE SIGN-UP

This link allows you to register to receive the *Canadian Adverse Reaction*

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*Newsletter* and other adverse reactions information in electronic format.

### REPORTS & RESEARCH

This link displays reports and research about adverse drug reactions. At the time of writing, the latest report was 2 years old.

### RESOURCE CENTRE

The Resource Centre offers links to other relevant Web resources, which may be useful for those seeking additional information on health product safety.

### UPDATES

This is a direct link to information that has been listed in the past 30 days. After that, the information is moved to the "Advisories, Warnings, Recalls" section.

### BOTTOM LINE

This Web site contains useful information about adverse drug reactions, but its confusing organization and lack of a site-specific search engine limit its usefulness for busy rural physicians.

**Competing interests:** None declared.

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## RENSEIGNEMENTS GÉNÉRAUX

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**MedRurale :** Pour trouver de l'information sur MedRurale (le serveur de listes de la SMRC), des renseignements sont disponibles en ligne (www.amc.ca/cjrm).

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# THE PRACTITIONER

## LE PRATICIEN

### Country cardiograms case 30: Answer

#### INTERPRETATION AND DISCUSSION

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CCFP

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The ECG illustrated on page 119, taken at the time of the patient's presentation to the emergency department, displays a wide complex tachycardia, rate 164 beats/min. As often happens with this kind of tachycardia, the QRS complex merges with the downsloping ST segment and deeply inverted T waves, making exact measurement of QRS duration difficult, but QRS duration is at least 0.15 seconds. QRS morphology is unusual, and neither typically a right bundle branch block nor a left bundle branch block pattern. There is pairing of the QRS complexes, in a very regular pattern: R-R intervals are alternately 0.29 seconds and 0.44 seconds.

When confronted with any wide complex tachycardia, the differential diagnosis includes:

- ventricular tachycardia
- supraventricular tachycardia with pre-existing bundle branch block
- supraventricular tachycardia with aberrancy.

It is therefore important to try to obtain a copy of a previous ECG for comparison, and background history on the patient's cardiac status, if available. In this case the previous ECG, taken when the patient was asymptomatic (Fig. 1, illustrated on this page), does show QRS widening, but with a different morphology, especially in the precordial leads. It shows Q waves in leads V4, V5, I and aVL consistent with old anterolateral myocardial infarction. Her records show that she has a ventricular aneurysm, which may account for the coved ST segment elevation in leads V3-V5. Her left ventricular ejection fraction has been reported as 15%.

Based on this previous tracing,

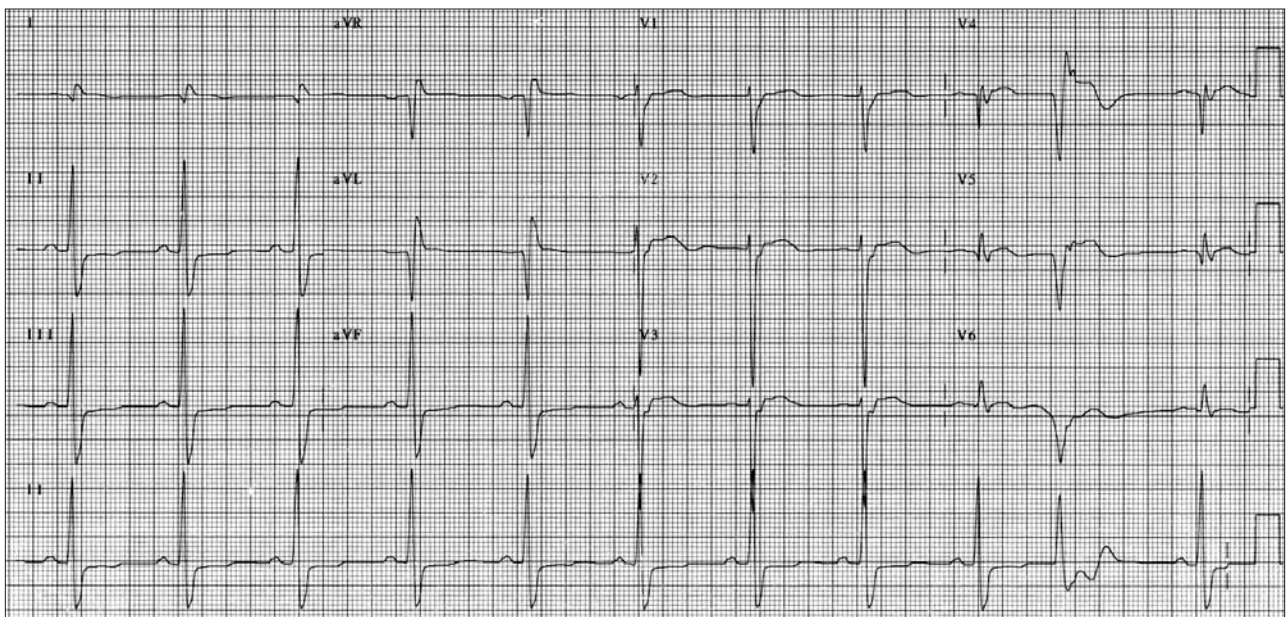


Fig. 1. Copy of a previous ECG, taken when the patient was asymptomatic, obtained for comparison.

supraventricular tachycardia with pre-existing bundle branch block can be ruled out.

The most unusual feature of the figure on page 119 (Question section) is the pairing of the wide QRS complexes, with the longer R–R interval less than twice the shorter R–R interval. This ratio is typical of Wenckebach's phenomenon, and in this scenario there are 2 possible causes to be considered. One is ventricular tachycardia with a 3:2 Wenckebach exit block from the ectopic ventricular focus. The other is supraventricular: atrial flutter with 3:2 Wenckebach conduction to the ventricles, along with aberrant conduction related to the rapid rate.

In general, ventricular tachycardia can often be "ruled in" by looking for certain clues, such as dissociated P waves, fusion beats and capture beats, but the absence of these phenomena does not rule it out. A close look for any atrial activity is therefore crucial in analyzing a wide complex tachycardia.

Scrutiny of this tracing shows some interesting features in the rhythm strip. First, there is a small negative deflection before every second QRS complex. Second, the QRS complexes alternate in height, as does the depth of the subsequent T wave inversion. Could atrial activity be causing these subtle repetitive changes?

The answer may lie in lead V1, always a good lead to use to look for atrial activity. A probable saw-tooth pattern can be seen "marching through"

the paired QRS complexes in this lead at a rate of 246 beats/min (Fig. 1, previous page).

The most likely ECG diagnosis thus becomes atrial flutter with aberrancy, and 3:2 A–V conduction.

Vagal manoeuvres may be useful in confirming this. Symptoms, vital signs and degree of cardiac compromise will dictate the urgency and type of treatment — drugs, or synchronized cardioversion. In this case the low ejection fraction alone dictated the need for rapid treatment — she was given a loading dose of amiodarone without effect, and then cardioverted, followed by the return of sinus rhythm.

It often remains impossible to determine whether a wide complex tachycardia is due to a ventricular or supraventricular cause. In the past, physicians were faced with potential catastrophic consequences if digoxin or verapamil were inadvertently used on a ventricular tachycardia. When in doubt, amiodarone can now be used effectively in either scenario, and adenosine is unlikely to exacerbate a ventricular tachycardia. Nonetheless, the old maxim of assuming a ventricular origin for the tachycardia, unless there is good evidence to the contrary, still holds true.

**For the Question, see page 119.**

**Acknowledgement:** I am indebted to Dr. Anton Venter for clinical details on this case.

## Country Cardiograms

Have you encountered a challenging ECG lately?

In most issues of *CJRM* an ECG is presented and questions are asked.

On another page, the case is discussed and the answer is provided.

Please submit cases, including a copy of the ECG, to Suzanne Kingsmill, Managing Editor, *CJRM*, Box 1086, Shawville QC J0X 2Y0; [cjrm@lino.com](mailto:cjrm@lino.com)

## Cardiogrammes ruraux

Avez-vous eu à décrypter un ECG particulièrement difficile récemment?

Dans la plupart des numéros du *JCMR*, nous présentons un ECG assorti de questions. Les réponses et une discussion du cas sont affichées sur une autre page.

Veuillez présenter les cas, accompagnés d'une copie de l'ECG, à Suzanne Kingsmill, rédactrice administrative, *JCMR*, CP 1086, Shawville (Québec) J0X 2Y0; [cjrm@lino.com](mailto:cjrm@lino.com)