



# Oligoanalgesia in a rural emergency department

*Dean Vlahaki, BPHE, BSc*

*Medical Student, University of Queensland, Brisbane, Australia*

*William Kenneth Milne, MD, MSc, CCFP(EM)*

*Adjunct Professor, Department of Family Medicine, University of Western Ontario, London, Ont.*

*Correspondence to: Dr. William Kenneth Milne, 27 Bruce St. W, Goderich ON N7A 2M5*

*This article has been peer reviewed.*

**Objective:** Multiple studies conducted over many years have demonstrated that pain is poorly managed in the emergency department (ED). This phenomenon has been referred to in the medical literature as "oligoanalgesia." However, little is known about whether oligoanalgesia occurs in a rural ED. National Ambulatory Care Reporting System data from 2003 for a small rural hospital in Ontario showed patients were satisfied with the amount of pain medicine they received in the ED. We designed a study to replicate a published urban study that investigated the use of analgesia in isolated lower limb injuries. Our objective was to see if oligoanalgesia was also a problem in a rural ED.

**Methods:** In 2003 we conducted a retrospective chart review of patients who presented to the South Huron Hospital ED with isolated lower extremity injuries for which radiographs of the foot, ankle or both were obtained. Demographics of the ED patients with lower extremity injuries were quantified. Other parametres included whether or not patients received analgesia in the ED; how long it took to get assessed, treated and discharged; whether patients received any analgesia upon discharge; what type of analgesia they received; and whether it required a prescription.

**Results:** A total of 189 patients met inclusion criteria, with 35 fractures identified (18.5%). Sixty-three percent of patients were male. The average age was 32.6 years. The mean Canadian Emergency Department Triage and Acuity Scale level was 4.4. The mean time to physician assessment was 31.6 minutes. The mean length of time spent in the ED was 74 minutes. Over one-half of the patients received analgesia upon discharge from the ED whether or not they had a fracture. In addition, 73% of the people in the fracture group received analgesia requiring a prescription, versus only 46% in the nonfracture group. Narcotics were used more often in the fracture group than in the nonfracture group (26% v. 6%).

**Conclusion:** The phenomenon of oligoanalgesia was not observed as often in our rural ED for isolated lower limb injuries, when compared with the published urban study.

---

**Objectif :** De multiples études réalisées au cours de nombreuses années ont démontré que la douleur est mal gérée à l'urgence. On a appelé ce phénomène «oligoanalgésie» dans les publications médicales. On connaît pas, cependant, l'étendue de ce phénomène dans les services d'urgence ruraux. Les données sur un petit hôpital rural de l'Ontario tirées du Système national d'information sur les soins ambulatoires en 2003 ont montré que les patients étaient satisfaits des analgésiques qu'ils avaient reçus à l'urgence. Nous avons conçu une étude pour reproduire une étude publiée réalisée en milieu urbain au cours de laquelle on a étudié l'utilisation de l'analgésie dans des cas de traumatismes isolés des membres inférieurs. Nous voulions savoir si l'oligoanalgésie était aussi un problème à l'urgence en milieu rural.

**Méthodes :** En 2003, nous avons réalisé une étude rétrospective de dossiers de patients qui se sont présentés à l'urgence de l'Hôpital South Huron avec des traumatismes isolés des membres inférieurs pour lesquels on a pris des radiographies du pied ou de la cheville ou les deux. Nous avons quantifié les caractéristiques démographiques des patients accueillis à l'urgence avec un traumatisme des membres inférieurs et nous avons aussi utilisé les paramètres suivants : si les patients avaient reçu ou non un analgésique à l'urgence, le temps d'attente avant de se faire évaluer, de



© 2008 Society of Rural Physicians of Canada

se faire traiter et d'obtenir leur congé, si les patients ont reçu des analgésiques en partant, le type d'analgésique reçu et s'il fallait une ordonnance pour le médicament en question.

**Résultats :** Au total, 189 patients satisfaisaient aux critères d'inclusion et l'on a identifié 35 fractures (18,5 %). Il y avait 63 % de patients de sexe masculin. Les patients avaient en moyenne 32,6 ans. Le niveau moyen de l'échelle canadienne de triage et de gravité pour les services d'urgence était de 4,4. Il a fallu attendre en moyenne 31,6 minutes pour obtenir une évaluation d'un médecin. Le séjour à l'urgence a duré en moyenne 74 minutes. Plus de la moitié des patients ont reçu un analgésique en quittant l'urgence, qu'ils aient subi ou non une fracture. En outre, 73 % des victimes d'une fracture ont reçu un analgésique sur ordonnance par rapport à 46 % seulement des patients qui n'ont pas subi de fracture. On a utilisé des narcotiques plus souvent chez les patients qui ont subi une fracture que chez les autres (26 % c. 6 %).

**Conclusion :** Pour des traumatismes isolés des membres inférieurs, on n'a pas observé l'oligoanalgésie aussi souvent dans ce service d'urgence rural, comparativement aux résultats de l'étude publiée réalisée en milieu urbain.

## Introduction

The term "oligoanalgesia" has been used to describe the phenomenon of poor pain management through the underuse of analgesia.[1–5] In many cases, pain is the primary motive for a patient's presentation to the emergency department (ED).[6–11] It has been well-documented that numerous patients presenting to the ED receive little or no analgesia to manage their pain.[12–15] Several factors are thought to contribute to this poor pain management. Children are less likely than adults to receive analgesics in the ED.[2,11] Ethnicity is also felt to play a role in oligoanalgesia.[3,4,16,17] Lack of health insurance is another factor shown to result in less analgesia provided in the ED.[16]

Many studies that demonstrate oligoanalgesia have been conducted in urban EDs.[1–11,13,14,18–20] No studies that investigated oligoanalgesia in a rural ED setting were identified in a PubMed literature search. However, National Ambulatory Care Reporting System (NACRS) data for South Huron Hospital showed patients were satisfied with the amount of pain medicine they received in this rural ED. Patients reported that the "right amount of pain medicine was received in ED" (89%) and that the "ED did all it could to control pain" (62%).

Data from the NACRS report raised the hypothesis that pain was better addressed in a rural ED. To investigate this hypothesis, we performed a retrospective chart review of patients who presented to the South Huron Hospital ED with isolated lower limb injuries for 2003. This study was based on and compared with a previous study by Kozlowski and colleagues,[20] which showed that pain was poorly addressed for this type of trauma in an urban ED. The purpose of our study was to see if oligoanalgesia was also an issue in our rural ED.

## Methods

Approval for the retrospective chart review was obtained from the South Huron Hospital Medical Advisory Board. A search of the radiology department's computer database identified patients who presented to the ED between Jan. 1 and Dec. 31, 2003, for whom radiographs of the foot, ankle or both were requested. The majority of radiographs were ordered by attending physicians, though some were requested by the triage nurse in accordance with the Ottawa Ankle Rules.[21] Exclusion criteria included patients presenting without acute trauma, patients with multiple trauma or patients for whom radiographs were taken for follow-up assessment, after diagnosis of fractures.

Multiple data points were obtained from each chart, including basic demographic information. Times of patient registration, physician assessment and discharge from the ED were collected, along with the Canadian Emergency Department Triage and Acuity Scale (CTAS) level assigned by the triage nurse.[22] The presence or absence of fracture was recorded. Whether or not the patient received analgesia before arrival to the ED, in the ED or upon discharge from the ED was quantified. In addition, the type of analgesia that was provided at discharge and whether it required a prescription was noted.

## Results

A total of 228 patient charts were pulled for patients who had radiographs of the foot, ankle or both. There were 39 charts that met the exclusion criteria. Of these charts, 9 were excluded because the patient's chief complaint was something other than acute trauma. Fifteen charts were excluded because the patients presented with multiple trauma, and a further 15 charts were excluded because the patients presented for follow-up or cast removal visits. This resulted in 189 patient charts that were included in the entire data cohort. The data shown in Table 1 were obtained and subsequently broken down into subgroups.

**Table 1. Characteristics of patient visits by presence or absence of fracture**

| Characteristic of patient visit | Entire cohort, *n* = 189 | Patients without fracture, *n* = 154 | Patients with fracture, *n* = 35 |
|---|---|---|---|
| Male patients, % | 63.0 | 64.9 | 54.3 |
| Mean (and SD) patient age | 32.6 (1.37) | 30.6 (3.14) | 41.5 (1.49) |
| Mean CTAS score | 4.4 | 4.4 | 4.2 |
| Patients with fracture, % | 18.5 | — | — |
| Mean (and SD) total visit time, min | 74.0 (4.06) | 64.1 (3.43) | 113.9 (14.00) |
| Mean (and SD) waiting time until physician examination, min | 31.6 (2.42) | 29.7 (2.16) | 34.74 (8.25) |

CTAS = Canadian Emergency Department Triage and Acuity Scale; SD = standard deviation.

About 13% of patients reported taking some form of analgesia before presenting to the ED. Overall, roughly 18% of patients were given some form of analgesia in the ED. However, when a fracture was identified by the physician, a patient was given analgesia roughly 3 times more often than a patient without a fracture, while still in the ED (46% v. 14%). Over 50% of all patients received some form of analgesia, advice or a prescription for analgesia upon discharge from the ED. This was independent of whether or not a fracture was identified (Fig. 1).

Analgesia that can be obtained over-the-counter (OTC) was recommended to patients without a fracture more often then analgesia that requires a prescription. Alternatively, patients with a fracture received a prescription for analgesia nearly 3 times more often than they received a recommendation for OTC analgesia (Fig. 2).

Upon discharge from the ED, almost 40% of patients without fractures were most often advised to use OTC nonsteroidal anti-inflammatory drugs (NSAIDs) to address their pain. Patients without fractures only received a narcotic prescription 6% of the time (Fig. 3) upon discharge. In contrast, patients with fractures received a prescription for narcotics more than 4 times as often (26% v. 6%) upon discharge (Fig. 4).

## Discussion

When a fracture was identified, physicians in a rural ED were twice as likely as physicians in an urban ED to provide medication in the ED (46% v. 23%)

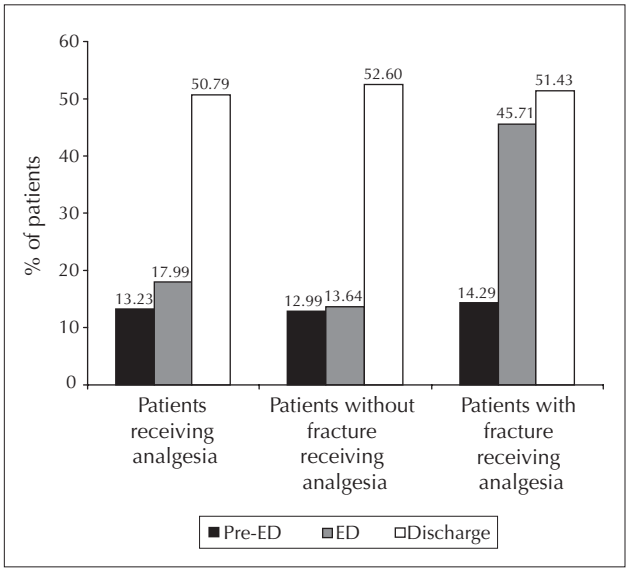



Fig. 1. The administration of analgesia for the entire cohort and broken down by presence or absence of fracture. ED = emergency department.

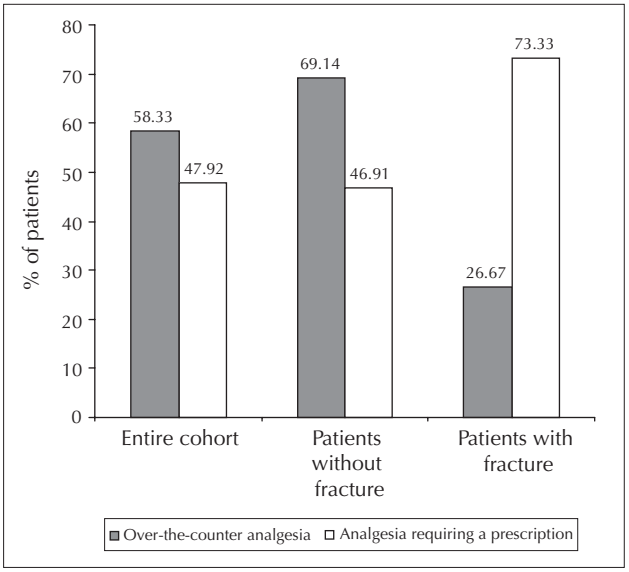



Fig. 2. Analgesia prescribed on discharge for the entire cohort and by presence of fracture. Patients may receive one or both types of analgesia.

and twice as likely to give a prescription when the patient was discharged (73% v. 36%). Therefore, oligoanalgesia was not observed as often in our rural ED for isolated lower limb injuries when compared with the previous urban study by Kozlowski and colleagues.[20]

Only one-half of the rural patients reported taking pain medication before arriving at the ED, compared with one-quarter of the patients in the urban study. This might explain why more rural patients received pain medication in the ED. However, this does not explain why patients with fractures were twice as likely to receive a prescription for pain medication upon discharge.

When a fracture was not diagnosed, analgesia was provided about 14% of the time in both settings. However, twice as many patients treated in the rural ED were given a prescription upon discharge compared with the urban ED (52% v. 27%). This again indicates that pain, with or without fracture, was more aggressively treated in this rural environment.

About 50% of patients, with or without fracture, received either a prescription or a recommendation to use OTC medication for their pain. The identification of a fracture did change physician prescribing habits. Prescription medication was used more often than OTC medication if a fracture was identified. The type of prescription provided was also different if a fracture was identified. Narcotics, compared with NSAIDs, were 4 times more likely to be prescribed at discharge when a fracture was diagnosed.

Patients presenting to our rural ED with an isolated lower limb injury were also managed in a timely manner. The mean time to physician assessment was about 30 minutes for patients presenting with an average CTAS score of 4.4. This is a shorter wait time than the guideline of 60 minutes for a CTAS-IV patient.[22] It is also shorter than the median wait time found in Ontario EDs of 54 minutes for a CTAS-IV patient.[23] The mean length of stay (LOS) in our study was also significantly shorter. Ontario ED patients had a median LOS of 100 minutes, compared with 74 minutes for patients in our rural ED.[23]

The times found in this study were also better than those reported by Todd and colleagues,[18] who looked at patients with painful conditions presenting to 2 urban EDs. Their study reported that the mean time to analgesic, if it was provided, was 116 minutes and that the mean LOS was 240 minutes. So patients arriving in our rural ED with painful conditions were assessed, treated and discharged quickly, when compared with national guidelines, provincial statistics and urban EDs.

Why does it appear that isolated lower leg injuries are more aggressively treated in this rural setting compared with a similar urban study and other urban studies investigating oligoanalgesia? One reason could be that the volume of patients presenting to the rural ED is much smaller. This facility has about 10 000 ED visits per year. It is staffed by 1 physician and 2 registered nurses. Patients are seen much more quickly in this setting.[24] The patient with the lower limb injury may very well be the only person in the ED. Therefore,

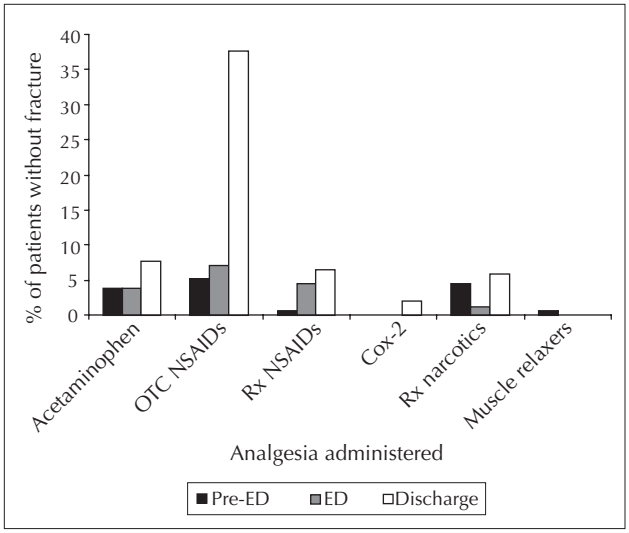



Fig. 3. Percent of patients without fracture receiving analgesia, broken down by type of analgesia. ED = emergency department, NSAIDs = nonsteroidal anti-inflammatory drugs, OTC = over-the-counter, Rx = prescription.

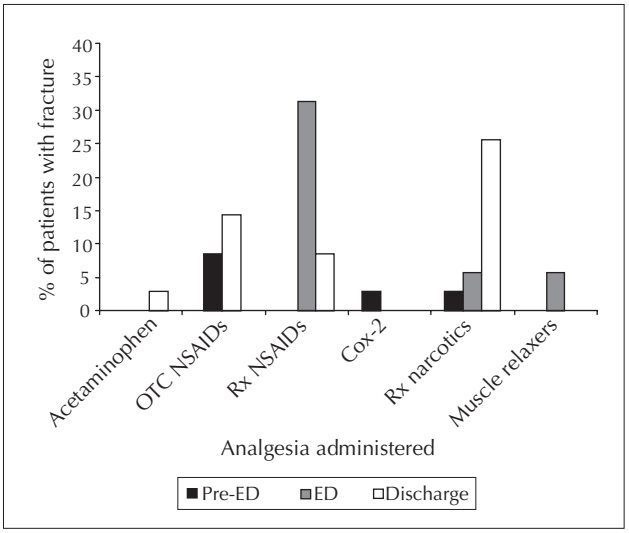



Fig. 4. Percent of patients with fracture receiving analgesia, broken down by type of analgesia. ED = emergency department, NSAIDs = nonsteroidal anti-inflammatory drugs, OTC = over-the-counter, Rx = prescription.

he or she may get much closer personal attention and his or her pain may be recognized more quickly.

The physical size of a small ED could also contribute to pain being recognized and treated more aggressively. The rural ED in our study has 3 treatment rooms and 1 treatment chair. The nurses and doctor can see all of the patients from the desk. The imaging department is across the hall. These close settings allow the staff to observe the patients closely and monitor their pain.

Only 18.5% of patients imaged had fractures identified in the rural setting, compared with 35% in the urban setting. The patient in the rural ED with a fractured ankle may be the only fracture seen that day and could very well represent the most painful condition seen for the entire shift. Therefore, this may lead the ED physician to treat this painful condition more aggressively.

Another reason for using twice the analgesia in the rural ED and upon discharge could be the familiarity of the staff with the patients. The patients presenting to the rural ED are mostly members of the small town and surrounding farm community. Chances are that someone from the hospital staff will either know the patient personally or be related to him or her. This might create an environment of greater empathy for patients' pain.

Training of the attending physicians in the rural ED could also play a role in better pain management in the ED. Family physicians who have completed a 2-year residency, with or without a third year option in emergency medicine, staff most Canadian rural EDs. Our ED is staffed only by family medicine–trained physicians, with many practising primary care within the community. These general practitioners may be more sensitive to their patients' painful conditions.

Also, patients presenting with their painful injury may be treated by their personal physician. This may lead to the duty doctor recognizing a patient's pain and treating it more aggressively. These physicians may also be more comfortable prescribing narcotics because they know the patients well and will be seeing them for follow-up.

There were limitations of this study inherent in its retrospective chart review design. Some physicians documented whether analgesia was offered to the patient but was declined, while other physicians did not document if analgesia was offered. Also, it is difficult to determine directly if patients got enough analgesia when it was offered because it was not documented whether patients were asked if their pain was better. Further studies should be done at other rural EDs to see if this observation was an isolated finding. In addition, a prospective study could be designed to see if other painful conditions are more aggressively treated in a rural setting.

While this study was very encouraging, there is still room for improvement. About 50% of patients with fractures did not receive any pain medication in the ED or on discharge from the ED. To reach these patients who did not receive any analgesia we exhort the Canadian Association of Emergency Physicians to incorporate a pain score as part of the vital signs assessment.

## Conclusion

Patients presenting with painful isolated lower limb injuries are assessed, treated and discharged quickly in our rural ED. These patients are also twice as likely to receive pain medication in the ED and upon discharge, compared with the published urban study. This suggests the phenomenon of oligoanalgesia is less of a problem in our rural ED.

**Acknowledgements:** The successful completion of this research probject would not have been possible without the assistance of Joanne Bowen, MRT(R), Susan Oke, Brenda Palsa, RN, and Linda Wilcos, MLS.

**Competing interests:** None declared.

## References

1. Wilson JE, Pendleton JM. Oligoanalgesia in the emergency department. *Am J Emerg Med* 1989;7:620-3.
2. Selbst SM, Clark M. Analgesic use in the emergency department. *Ann Emerg Med* 1990;19:1010-3.
3. Todd KH, Samaroo N, Hoffman JR. Ethnicity as a risk factor for inadequate emergency department analgesia. *JAMA* 1993;269:1537-9.
4. Todd KH, Deaton C, D'Adamo AP, et al. Ethnicity and analgesic practice. *Ann Emerg Med* 2000;35:11-6.
5. Beel TL, Mitchiner JC, Frederiksen SM, et al. Patient preferences regarding pain medication in the ED. *Am J Emerg Med* 2000;18:376-80.
6. Ducharme J, Barber C. A prospective blinded study on emergency pain assessment and therapy. *J Emerg Med* 1995;13:571-5.
7. Hoyt KS, Sparger G. Pain assessment by ED nurses. *J Emerg Nurs* 1984;10:306-12.
8. Boisaubin EV. The assessment and treatment of pain in the emergency room. *Clin J Pain* 1989;5:S19-24.
9. Johnston CC, Gagnon AJ, Fullerton L, et al. One-week survey of pain intensity on admission to and discharge from the emergency department: a pilot study. *J Emerg Med* 1998;16:377-82.
10. Tanabe PO, Buschmann M. A prospective study of ED pain

management practices and the patient's perspective. *J Emerg Nurs* 1999;25:171-7.

11. Brown JC, Klein EJ, Lewis CW, et al. Emergency department analgesia for fracture pain. *Ann Emerg Med* 2003;42:197-205.

12. Drayer RA, Hnederson J, Reidenberg M. Barriers to better pain control in hospitalized patients. *J Pain Symptom Manage* 1999;17:434-40.

13. Fosnocht DE, Swanson ER, Bossart P. Patient expectations for pain medication delivery. *Am J Emerg Med* 2001;19:399-402.

14. Guru V, Dubinsky I. The patient vs. caregiver perception of acute pain in the emergency department. *J Emerg Med* 2000;1:7-12.

15. Joranson DE, Gilson AM, Dahl JL, et al. Pain management, controlled substances, and state medical board policy: a decade of change. *J Pain Symptom Manage* 2002;23:138-47.

16. Hostetler MA, Auinger P, Szilagyi PG. Parenteral analgesic and sedative use among ED patients in the United States: combined results from the National Hospital Ambulatory Medical Care Survey (NHAMCS) 1992-1997. *Am J Emerg Med* 2002;20:83-7.

17. Weisse CS, Sorum PC, Sanders KN, et al. Do gender and race affect decisions about pain management? *J Gen Intern Med* 2001;16:211-7.

18. Todd KH, Sloan EP, Chen C, et al. Survey of pain etiology, management practices and patient satisfaction in two urban emergency departments. *CJEM* 2002;4:252-6.

19. Tcherny-Lessenot S, Karwowski-Soulié F, Lamarche-Vadel A, et al. Management and relief of pain in an emergency department from the adult patient's perspective. *J Pain Symptom Manage* 2003;25:539-46.

20. Kozlowski MJ, Wiater JG, Pasqual RG, et al. Painful discrimination: the differential use of analgesia in isolated lower limb injuries. *Am J Emerg Med* 2002;20:502-5.

21. Stiell IG, Greenberg GH, McKnight RD, et al. Decision rules for the use of radiography in acute ankle injuries. *JAMA* 1993:269:1127-32.

22. Beveridge R. CAEP issues. The Canadian Triage and Acuity Scale: a new and critical element in health care reform. Canadian Association of Emergency Physicians. *J Emerg Med* 1998;16:507-11.

23. *Understanding emergency department wait times: Who is using emergency departments and how long are they waiting?* Ottawa (ON): Canadian Institute for Health Information; 2005.

24. Vlahaki D, Milne WK. A rural hospital exceeding CTAS benchmark. Canadian Association of Emergency Physicians Annual Meeting; 2007 June 2–6; Victoria (BC).

# Service Information

**Society of Rural Physicians of Canada (SRPC) members:** Subscription price included in membership fee.

**Nonmembers (2008 rates):** *Individuals:* Canada, $94 (single copy, $30); USA and elsewhere, US$119. *Institutions:* Canada, $151 (single copy, $30); USA and elsewhere, US$176 (single copy, US$30). *Students* $35 Canadian/US$. Please contact the CMA Member Service Centre (see next paragraph) for other information. These rates include surface postage. Canadian subscribers please add 5% GST/13% HST (NS, NB, NL) as applicable.

All subscriptions are payable in advance. Payment should be made to the Canadian Medical Association (CMA) in the funds specified. MasterCard, VISA and American Express are accepted. Orders or requests for information should be addressed to: *CJRM*, CMA Member Service Centre, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; 888 855-2555 x2307 (Canada/US) or 613 731-8610 x2307; fax 613 236-8864; cmamsc@cma.ca

**Missing issues:** Claims for missing issues must be made within 3 months of publication date (subject to availability).

**Change of address:** Send one month before effective date to the CMA Member Service Centre (see above).

**Reprints:** Bulk reprints of *CJRM* articles are available in minimum quantities of 50. For information please contact the reprint coordinator, Janis Murrey, 800 663-7336 or 613 731-8610 x2110; fax 613 565-7704; permissions@cma.ca.

**Copyright and Permissions:** Copyright for all material is held by the SRPC or its licensors, unless otherwise indicated. You may reproduce or otherwise use material from this journal only in accordance with Canadian copyright law and provided that credit is given to the original source. In the case of photocopying or other reprographic copying, please contact the Canadian Copyright Licensing Agency (Access Copyright): 800 893-5777; accesscopyright.ca. For any other use, including republishing, redistribution, storage in a retrieval system or transmission in any form or by any means, please contact Permissions Coordinator, CMA Publications, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; fax 613 565-7704; permissions@cma.ca

**Indexing and Abstracting:** *CJRM* is available through the following services: MEDLINE/*Index Medicus*, Ovid Technologies, EbscoHost EJS, ProQuest Information and Learning Company, CAB Abstracts, Global Health and *Ulrich's International Periodicals Directory*. All articles published in *CJRM* are available free at the time of publication at cma.ca/cjrm.

**RuralMed:** Information on RuralMed (the SRPC Listserv) is available online at srpc.ca.

**Advertising:** ***Classified ads:*** Contact Bev Kirkpatrick or Deborah Rodd, *CJRM*, 1867 Alta Vista Dr., Ottawa ON K1G 5W8; 800 663-7336 or 613 733-8610 x2127/2314, fax 613 565-7488, advertising@cma.ca. See Classified Advertising section of *CJRM* for information on rates. ***Display ads:*** Contact Deborah Woodman (see preceding information); x2159.