

Knowledge and attitudes regarding care of leg ulcers

Survey of family physicians

Ian D. Graham, PHD Margaret B. Harrison, RN, PHD Mona Shafey David Keast, MD, MSC, FCFP

ABSTRACT

OBJECTIVE To determine family physicians' perceptions of and attitudes toward leg ulcer care and awareness of effective treatments for venous leg ulcers.

DESIGN Self-administered, cross-sectional faxed and mailed survey.

SETTING Ottawa-Carleton, Ont.

PARTICIPANTS All physicians in the region who were members of the College of Family Physicians of Canada.

RESULTS Response rate was 62%. During 1 month, 107 physicians reported having 226 patients with leg ulcers; only a few patients had had ultrasound assessment. Few physicians (16%) were confident about managing leg ulcers; 61% reported not knowing enough about wound-care products. More than 50% were unaware that compression is effective treatment for venous ulcers. Problems reported were lack of evidence-based clinical practice guidelines for leg ulcer care (82%); absence of evidence-based protocols in home-care agencies (72%); lack of access to wound-care products (69%) and wound-care centres (66%); and poor communication among health care workers (60%).

CONCLUSION Better access to diagnostic assessments and use of compression therapy for venous leg ulcers would improve care.

RÉSUMÉ

OBJECTIF Déterminer les perceptions et les attitudes du médecin de famille envers le traitement de l'ulcère de jambe et ses connaissances des traitements efficaces de l'ulcère variqueux.

TYPE D'ÉTUDE Enquête transversale auto-administrée, par télécopieur et par correspondance.

CONTEXTE Ottawa-Carleton, Ontario.

PARTICIPANTS Tous les médecins de la région faisant partie du Collège des médecins de famille du Canada.

RÉSULTATS Le taux de réponses était de 62%. Cent sept médecins rapportaient avoir traité 226 cas d'ulcère de jambe durant le mois à l'étude; quelques patients seulement avaient été évalués par Doppler. Seulement 16% des médecins se disaient à l'aise pour traiter cette affection; 61% déclaraient ne pas connaître suffisamment les produits utilisés contre ces lésions. Plus de 50% ignoraient que la compression est un traitement efficace de l'ulcère de stase. Les problèmes signalés étaient l'absence de lignes directrices de pratique appuyées sur des preuves pour le traitement de l'ulcère de jambe (82%); l'absence de protocoles fondés sur des preuves dans les agences de soins à domicile (72%); la disponibilité réduite des produits (69%) et des centres de traitement pour ce type de lésion (66%); et une communication inadéquate au sein du personnel soignant (60%).

CONCLUSION Une meilleure accessibilité aux outils diagnostiques et le recours à la compression pourraient améliorer le traitement des ulcères de stase.

This article has been peer reviewed.

Cet article a fait l'objet d'une évaluation externe.

Can Fam Physician 2003;49:896-902.

Patients with chronic wounds comprise a common and complex group. In Western countries, 10 to 20 per thousand adults in the population are likely to have had leg ulcers at some time.¹ The prevalence of active leg ulcers is 1.1 to 3.0 per thousand adults.^{2,4} Leg ulcers are known to be associated with age; among people older than 85, prevalence increases to about 10 to 30 per thousand.^{3,5} As the population ages, the number of patients requiring leg ulcer care will increase dramatically.

For each patient, the burden of illness caused by leg ulcers is heavy. Leg ulcers typically weep, smell, and reduce mobility, and can be incapacitating and socially isolating. Leg ulcers are chronic, often take years to heal, and frequently recur. Two thirds of those with leg ulcers have at least one recurrence, and 45% of patients have had leg ulcers for more than 10 years.³

For society, the cost of leg ulcer care is high. In 1992, Lees and Lambert reported that treatment of leg ulcers accounted for 1.3% of the United Kingdom's annual health care costs.⁶ In France and Germany, care of venous leg diseases accounts for 1.5% to 2% of their total national health budgets.⁷ Baker and associates estimated that treating leg ulcers in Australia cost between \$365 and \$429 million (Canadian) a year.⁸ In the United States, an estimated 2.5 million people suffer from venous leg ulcers, resulting in treatment costs of \$2.5 to \$3.5 billion (US).⁹

In Canada, there are few published data on the prevalence of leg ulcers or cost to the health care system. There are no reliable means of identifying this population through existing community or medical databases (eg, in Ontario, there is no unique physician billing code for leg ulcer care).

During a 4-week study, 192 patients receiving home care for an ulcer on a lower limb were identified.¹⁰ During the study period, these patients received 2270 nursing visits, an average of 12 visits each. The cost of direct home-nursing care and treatment supplies during the month was \$80 618 and \$21 058, respectively.¹¹

.....
Dr Graham is on staff in the *Clinical Epidemiology Program at the Ottawa Health Research Institute and is an Associate Professor in the Faculty of Medicine at the University of Ottawa in Ontario.* **Dr Harrison** is an Associate Professor in the Faculty of Nursing at Queens University in Kingston, Ont. **Ms Shafey** is a medical student at the University of Ottawa. **Dr Keast** is an Adjunct Professor of Family Medicine at the University of Western Ontario and Medical Director of the Chronic Wound Management Clinic at Parkwood Hospital, St Joseph's Health Care, in London, Ont.

Based on these data, the annual cost of home care for these patients (nursing visits and supplies) in this region would be \$1.5 million. This conservative estimate does not include the cost of physician services. Assuming Ottawa-Carleton is representative of the Canadian population, care of leg ulcers in Canada likely costs more than \$100 million a year.

More than 80% of ongoing management of chronic wounds, such as leg ulcers, occurs in the community. Many patients mostly care for themselves.^{6,12,13} A survey in the United States revealed that family physicians are often the first contact with the health care system for patients with venous leg ulcers.⁹ These family physicians had an important role in treatment and in directing treatment to be carried out by community nurses.

Despite the fact that chronic wound care occurs mainly in the community, little is known about what Canadian family physicians think and know about leg ulcer care. The purpose of this study was to determine family physicians' perceptions of attitudes toward leg ulcer care and knowledge of effective treatments for venous leg ulcers.

METHODS

A self-administered questionnaire was faxed or mailed to all family physicians belonging to the College of Family Physicians of Canada (CFPC) working in the Ottawa-Carleton region. The decision to restrict the survey to CFPC members was based on the limited resources available to conduct the survey. The sample frame was identified using MD Select, the CD-ROM version of the *Canadian Medical Directory*. Names, addresses, fax numbers (when listed), telephone numbers, sex, year of graduation, and country of graduation were abstracted for all appropriate family physicians. Physicians with no fax number listed were telephoned to obtain a fax number. Physicians with no fax numbers at all were mailed the survey along with a stamped, self-addressed return envelope. A second copy of the survey was sent to all nonrespondents. The survey was approved by the research ethics committee of the Ottawa Health Research Institute at the Ottawa Hospital.

Questionnaire

The questionnaire was designed to determine how many leg ulcer patients respondents cared for during 1 month and to assess their perceptions of their current diagnostic practices for patients with leg ulcers, typical healing rates, skill and competencies at leg ulcer

RESEARCH

..... Knowledge and attitudes regarding care of leg ulcers

care, knowledge of effective leg ulcer treatments, and attitudes toward caring for leg ulcer patients. The questionnaire also asked about barriers to leg ulcer healing. Physicians rated the 16 questions on attitudes on a 5-point Likert-type scale. To assess physicians' knowledge of compression therapy, respondents were asked to indicate the effectiveness of six forms of compression therapy for venous leg ulcers.

The questionnaire was originally designed to survey community nurses.¹⁴ Only minor modifications were made to questions to reflect the change in sample frame. Because the survey had been successfully completed by 175 nurses and no new questions had been added, we did not pilot-test the questionnaire among family physicians.

Data analysis

All data analyses were performed in the Clinical Epidemiology Program of the Ottawa Health Research Institute using SPSS for Windows version 10. We compared sex, year of graduation, and country of graduation of respondents and nonrespondents to assess for possible nonresponse bias using χ^2 procedures and Student's *t* tests as appropriate. The proportion of respondents choosing various options was calculated for each question. For the attitude questions, the 5-point response categories were collapsed into three (agree or strongly agree, neutral, and disagree or strongly disagree) for analysis. The 95% confidence intervals were calculated for variables. The effective sample size was used in all calculations.

RESULTS

Description of respondents

Of the 425 Ottawa-Carleton family physicians listed in the *Canadian Medical Directory* as members of the CFPC, 39 reported they were not practising family medicine, two had retired, and 36 had moved without leaving a forwarding address. Of the remaining 348 possible respondents, 214 (61%) sent back the questionnaire. Respondents and nonrespondents were similar with respect to sex and year and country of graduation.

Reported leg ulcer cases

Of the 214 responding physicians, half (107) reported having at least one patient with a leg ulcer in their practices during the study period. Collectively, these 107 family physicians reported having 226 patients with leg ulcers (mean 2.1 patients, standard deviation 1.5 patients, median 2.0 patients). Of these 107 physicians, 90 answered the attitude questions.

Assessment, treatment, and healing rates

A few physicians (16%, 95% confidence interval [CI] 8% to 24%) reported that half or more of their leg ulcer patients had had ultrasound Doppler assessment using the Ankle Brachial Pressure Index (ABPI). A similar proportion (20%, 95% CI 11% to 28%) reported that most of their patients had had vascular studies or clinical laboratory workups. However, 64% (95% CI 53% to 74%) of physicians reported they knew how most of their patients had developed leg ulcers. Almost half (41%) the physicians reported that typical leg ulcers took more than 3 months to heal, and 58% indicated they usually waited more than 2 months to refer patients with nonhealing ulcers for additional care.

Skills, competence, and knowledge

Few (16%) family physicians reported feeling confident in their ability to manage leg ulcers, and 61% reported they did not know enough about wound-care products (**Table 1**). More than half the physicians (58%) indicated they could rely on home-care nurses to have up-to-date information on how to treat leg ulcers effectively. If it were offered, 82% of physicians would take continuing medical education on leg ulcer care, and 89% were interested in periodically receiving synopses of the latest research information on effective treatment of leg ulcers.

Table 2 shows physicians' perceptions of the effectiveness of six types of compression for healing venous leg ulcers. More than half the respondents were unaware that four- and two-layer compression therapies are effective for venous leg ulcers.

Barriers to healing

Respondents identified several issues that might be barriers to wound healing (**Table 3**). Most respondents indicated that wound healing would improve if family physicians had access to evidence-based clinical practice guidelines for leg ulcer care (82%, 95% CI 74% to 90%) and that they would be more comfortable referring patients to home care if nursing agencies had evidence-based leg ulcer protocols (72%, 95% CI 63% to 82%). Greater access to wound care products was wanted by 69% (95% CI 59% to 78%), and 66% (95% CI 56% to 76%) thought an interdisciplinary wound-care centre was needed in the region. Better communication with home-care nurses and specialists was thought necessary to promote continuity of leg ulcer care (60%, 95% CI 50% to 71%).

Attitudes

Care providers are sometimes thought to hold negative attitudes toward people with leg ulcers. The

Table 1. Physicians' perceptions of leg ulcer care

ISSUE	AGREE OR STRONGLY AGREE			NEUTRAL			DISAGREE OR STRONGLY DISAGREE		
	N	%	CI (%)	N	%	CI (%)	N	%	CI (%)
I would be interested in receiving synopses of the latest research on how to treat leg ulcers effectively (n = 90)	80	89	82-96	9	10	4-16	1	1	0-3
I would attend a continuing medical education session on leg ulcer care (n = 90)	74	82	74-90	11	12	5-19	5	6	7-10
I think I have inadequate knowledge of wound-care products to use them effectively (n = 90)	55	61	51-71	15	17	0.9-25	20	22	13-31
Home-care nurses have up-to-date information on how to treat leg ulcers (n = 90)	52	58	47-68	28	31	21-41	10	11	0.5-17
I feel confident in my ability to treat leg ulcers (n = 88)	14	16	8-24	43	49	38-60	31	35	25-45

CI—95% confidence interval.

Totals might not add to 100% owing to rounding.

Table 2. Knowledge of effectiveness of types of compression for various leg ulcers

TYPE OF COMPRESSION	VERY EFFECTIVE			SOMEWHAT EFFECTIVE			INEFFECTIVE			NEVER USED			DID NOT KNOW		
	N	%	CI (%)	N	%	CI (%)	N	%	CI (%)	N	%	CI (%)	N	%	CI (%)
Four-layer compression (n = 87)	4	5	0.1-9	16	18	10-27	0	0	0	22	25	16-35	45	52	41-62
Two-layer compression (n = 85)	3	4	0.4-7	14	16	8-25	2	2	0-6	22	26	16-35	44	52	41-63
Zinc oxide boot (Unna's paste boot) (n = 87)	10	11	5-19	19	22	13-31	5	6	0.8-11	24	28	18-37	29	33	23-43
Zinc oxide boot (ichthopaste) (n = 83)	10	12	5-19	17	20	12-29	3	4	0-8	25	30	20-40	28	34	23-44
Tensors (n = 86)	1	1	0-3	40	47	36-57	28	33	22-43	12	14	6-21	5	6	0.7-11
Compression stocking (n = 88)	27	31	21-41	52	59	49-70	1	1	0-3	5	6	0.7-11	3	3	0-0.7

CI—95% confidence interval.

Totals might not add to 100% owing to rounding.

assumption is that leg ulcers are unpleasant to deal with because they tend to be chronic, malodorous, recurrent, and generally slow to heal. We found little evidence that family physicians view patients with leg ulcers negatively or would prefer not to care for them (Table 4).

DISCUSSION

Results of our survey indicated how many leg ulcer patients were seen by family physicians during a month. In this study, 50% of reporting physicians stated they were caring for patients with leg ulcers; average was two patients per physician. The survey

also revealed critical gaps in care related to diagnostic assessments (ABPI) and physicians' awareness of effective treatments for venous leg ulcers. International and national evidence-based practice guidelines for leg ulcer care recommend all patients receive ultrasound Doppler assessments before any treatment,^{15,21} yet less than 20% of respondents reported that most of their patients had received ABPI screening.

Systematic reviews, including a Cochrane review, have concluded that compression is an effective treatment for venous leg ulcers and that high compression is more effective than low compression.^{22,23} The number of patients with leg ulcers needing to be treated with multilayer high compression for one

RESEARCH

Knowledge and attitudes regarding care of leg ulcers

Table 3. Barriers to wound healing and attitudes toward patients with leg ulcers

PERCEIVED BARRIERS TO HEALING	AGREE OR STRONGLY AGREE			NEUTRAL			DISAGREE OR STRONGLY DISAGREE		
	N	%	CI (%)	N	%	CI (%)	N	%	CI (%)
Wound healing would improve if physicians had access to evidence-based clinical practice guidelines for leg ulcer care (n = 90)	74	82	74-90	14	16	8-23	2	2	0-5
My level of comfort referring patients to home care would increase if home-care nursing agencies had evidence-based leg ulcer protocols (n = 90)	65	72	63-82	17	19	11-27	8	9	0.3-15
We need greater access to wound-care products (n = 89)	61	69	59-78	23	26	17-35	5	6	0.7-10
Patients would benefit from an interdisciplinary wound-care centre in the region (n = 90)	59	66	56-76	26	29	19-38	5	6	0.7-10
Better communication between home-care nurses and family physicians is needed to promote continuity of care (n = 88)	53	60	50-71	25	28	19-38	10	11	5-18
When needed, I have easy access to specialist consultations for leg ulcer patients (n = 90)	39	43	33-54	18	20	12-28	33	37	27-47
Leg ulcer healing is hindered by inappropriate treatments ordered by physicians (n = 88)	38	43	33-54	36	41	30-51	14	16	8-24
In my experience, leg ulcer healing is hindered by patients' not complying with treatment plans (n = 90)	38	42	32-53	40	44	34-54	12	13	6-20

CI—95% confidence interval.

Totals might not add to 100% owing to rounding.

Table 4. Attitudes toward patients with leg ulcers

ISSUE	AGREE OR STRONGLY AGREE			NEUTRAL			DISAGREE OR STRONGLY DISAGREE		
	N	%	CI (%)	N	%	CI (%)	N	%	CI (%)
Most physician specialists seem uninterested in care of leg ulcers (n = 90)	29	32	22-42	40	44	34-55	21	23	14-32
Caring for patients with leg ulcers is unrewarding (n = 90)	15	17	8-25	26	29	19-38	49	54	44-65
If I had the option, I would prefer not to care for leg ulcer patients (n = 89)	6	7	1-12	24	27	18-36	59	66	56-76

CI—95% confidence interval.

Totals might not add to 100% owing to rounding.

to be healed is six (95% CI 4% to 18%).^{24,25} All current evidence-based leg ulcer practice guidelines recommend compression therapy.¹⁵⁻²¹ Fewer than half the respondents, however, were aware of the importance of compression therapy in treatment of venous leg ulcers. Given the low prevalence of venous leg ulcers in average family practice, these results are unsurprising, but are of some concern because of family physicians' role in either direct treatment of patients with leg ulcers or in ordering treatment by home-care nurses.

The study identified perceived barriers to wound healing. Barriers included a lack of evidence-based guidelines, of access to wound-care products, of access to a multidisciplinary wound centre, and of communication between home-care nurses and family physicians. The survey also revealed that family physicians were very interested in learning more about effective leg ulcer care and wound-care products and did not hold negative attitudes toward this very challenging group of patients.

Results of this survey and other planning studies^{10,11,14} were carefully considered during development of a demonstration community leg ulcer service for the region.¹⁰ The leg ulcer service has been set up by the home-care authority to provide care for leg ulcer patients both at home and in neighbourhood clinics.

The service is guided by an evidence-based protocol produced by a local interdisciplinary task force on leg ulcer care using a rigorous methodologic framework. A sample of family physicians was offered the opportunity to comment on the draft protocol and overwhelmingly approved it. A research grant from the Canadian Institutes of Health Research is funding an evaluation of the effectiveness and efficiency of the new service with a randomized clinical trial.

Limitations

As with all surveys, this one has limitations. The response rate was good for a survey,²⁶ and the demographic information we had on nonrespondents suggested they were no different from respondents. The findings might not be generalizable to nonrespondents, however, or to physicians who are not members of the CFPC. As a self-administered survey, there is also the possibility of social response bias.

Because only 16% of physicians reported feeling confident about treating leg ulcers and more than 90% reported wanting more education on the topic, access to evidence-based clinical practice guidelines, and synopses of the latest research information on leg ulcer care, we do not believe that social response bias strongly influenced our findings. Another indication that social response bias was not a factor is that most of the sample admitted not knowing about the effectiveness of four-layer compression.

Conclusion

Our findings suggest that leg ulcer care might be greatly improved if patients had better access to diagnostic assessments (eg, ABPI) and if compression therapy were routinely used for patients with venous leg ulcers. Many respondents wanted continuing medical education on care of leg ulcers, the introduction of clinical practice guidelines for leg ulcer care in the community, and better communication between family physicians and home-care nurses.

The study also revealed that family physicians do not have negative attitudes toward patients with leg ulcers. Our findings also highlight the challenge of improving continuity of care and providing effective, coordinated, evidence-based care for leg

Editor's key points

- This survey of family physicians in the Ottawa-Carlton area of Ontario assessed knowledge of diagnosis and treatment and attitudes toward chronic leg ulcers. Response rate was 62%.
- More than half the respondents currently had at least one patient with a leg ulcer; average was 2.1 each.
- Only 16% were regularly using Ankle Brachial Pressure Index measurements before treatment, and more than 50% were unaware that two- and four-layer compression is effective treatment for venous leg ulcers.
- These physicians would appreciate receiving updated, evidence-based guidelines on management of leg ulcers, better cooperation with home-care services, and access to specialists when necessary.

Points de repère du rédacteur

- Cette enquête auprès de médecins de famille de la région Ottawa-Carlton, en Ontario, évaluait leurs connaissances sur le diagnostic et le traitement de l'ulcère de jambe chronique, de même que leurs attitudes face à ce problème. Le taux de réponse était de 62%.
- Plus de la moitié des répondants avaient traité au moins un cas d'ulcère de jambe dans le mois, la moyenne étant de 2,1 cas par médecin.
- Seulement 16% mesuraient systématiquement l'indice de pression bras-cheville avant de traiter, et plus de 50% ignoraient qu'un traitement compressif à deux ou quatre couches est efficace dans les ulcères de stase.
- Les répondants aimeraient être régulièrement informés des lignes directrices fondées sur des preuves concernant le traitement de l'ulcère de jambe, établir une meilleure collaboration avec les services de soins à domicile et avoir accès à des spécialistes lorsque nécessaire.

ulcer patients during the current period of economic restraint and physician and nurse shortages. ❁

Acknowledgment

We thank Zöe Robinson for extracting the data on physician characteristics from MD Select. This study was supported by a grant from the Ottawa Health Research Institute. Dr Graham is a Canadian Institutes of Health Research New Investigator, and Dr Harrison is an Ontario Ministry of Health Career Scientist.

Contributors

All the authors were involved in the concept and design of the study, gathering and analyzing the data, and preparing the paper for publication.

RESEARCH

Knowledge and attitudes regarding care of leg ulcers

Competing interests

None declared

Correspondence to: Dr Ian D. Graham, Clinical Epidemiology Program, Room 200, Ottawa Health Research Institute, Ottawa Hospital, 1053 Carling Ave, Ottawa, ON K1Y 4E9; telephone (613) 798-5555, extension 18273; fax (613) 761-5402; e-mail igraham@OHRI.ca

References

1. Dale JJ, Callam MJ, Ruckley CV, Harper DR, Berry P. Chronic ulcers of the leg: a study of prevalence in a Scottish community. *Health Bull* 1983;41:310-4.
2. Scottish Intercollegiate Guidelines Network. *The care of patients with chronic leg ulcer. A National Clinical Guideline*. Edinburgh, Scot: Scottish Intercollegiate Guidelines Network; 1998.
3. Callam MJ, Ruckley CV, Harper DR, Dale JJ. Chronic ulceration of the leg: extent of the problem and provision of care. *BMJ* 1985;290:1855-6.
4. Cornwall J, Dore C, Lewis J. Leg ulcers: epidemiology and aetiology. *Br J Surg* 1986;73:693-6.
5. Nelzen O, Bergqvist D, Lindhagen A. Leg ulcer etiology: a cross sectional population study. *J Vasc Surg* 1991;14:557-64.
6. Lees TA, Lambert D. Prevalence of lower limb ulceration in an urban health district. *Br J Surg* 1992;79:1032-4.
7. Laing W. *Chronic venous diseases of the leg*. London, UK: Office of Health Economics; 1992.
8. Baker SR, Stacey MC, Jopp-Mckay AG, Hoskin SE, Thompson PJ. Epidemiology of chronic venous ulcers. *Br J Surg* 1991;78:864-77.
9. McGuckin M, Kerstein M. Venous leg ulcers and family physicians. *Adv Wound Care* 1998;11:344-6.
10. Harrison MB, Graham ID, Friedberg E, Lorimer K, Vandeveld-Coke S, the Ottawa-Carleton Regional Leg Ulcer Project. Assessing the population with leg and foot ulcers. *Can Nurse* 2001;97(2):18-23.
11. Friedberg E, Harrison MB, Graham ID. Current home care expenditures for persons with leg ulcers. *J Wound Ostomy Contin Nurs* 2002;2(29):186-92.
12. Nelzen O, Bergqvist D, Lindhagen A, Hallbook T. Chronic leg ulcers: an underestimated problem in primary health care among elderly patients. *J Epidemiol Community Health* 1991;45:184-7.
13. Simon D, McCollum C. Approaches to venous leg ulcer care within the community: compression, pinch skin grafts and simple venous surgery. *Ostomy Wound Manag* 1996;42(2):34-40.
14. Graham ID, Harrison MB, Moffat C, Franks P. Leg ulcer care: nursing attitudes and knowledge. *Can Nurse* 2001;97(3):19-24.
15. Royal College of Nursing Institute. *Clinical practice guidelines. The management of patients with venous leg ulcers. Recommendations for assessment, compression therapy, cleansing, debridement, dressing, contact sensitivity, training/education and quality assurance*. London, Engl: Royal College of Nursing Institute; 1998. Available at: www.rcn.org.uk/resources/guidelines.php. Accessed 2003 April 29.
16. Scottish Intercollegiate Guidelines Network. *The care of patients with chronic leg ulcer*. Edinburgh, Scot: Scottish Intercollegiate Guidelines Network; 1998. Publication no. 26. Available at: www.sign.ac.uk/guidelines/index/html. Accessed 2003 April 29.
17. Clinical Resource Efficiency Support Team. *Guidelines for the assessment and management of leg ulceration. Recommendations for practice*. Belfast, Ireland: Clinical Resource Efficiency Support Team; 1998.
18. Eriksson E, Moffatt C, Neumann H, Stark G, Werner K, Wolff K. *Guidelines for outpatient treatment. Venous and venous-arterial mixed leg ulcer*. Berlin, Ger: Compliance Network Physicians/ Health Force Initiative; 1999. Available at: www.cnhfi.de/index-engl.html. Accessed 2003 April 29.
19. Clement D. Venous ulcer reappraisal: insights from an international task force. *J Vasc Res* 1999;39(Suppl 1):42-7.
20. New Zealand Guidelines Group. *Care of people with chronic leg ulcers: an evidence based guideline*. Auckland, NZ: Guidelines Group; 2000.
21. Kunimoto B, Cooling M, Gulliver W, Houghton P, Orstead H, Sibbald R. Best practices for the prevention and treatment of venous leg ulcers. *Ostomy Wound Manag* 2001;47(2):34-50.
22. Cullum N, Nelson EA, Fletcher AW, Sheldon TA. Compression bandages and stockings for venous leg ulcers. *The Cochrane Library* [database on disk and CD-ROM]. The Cochrane Collaboration. Oxford, Engl: Update Software; 1999. Updated quarterly.
23. Fletcher A, Cullum N, Sheldon TA. A systematic review of compression treatment for venous leg ulcers. *BMJ* 1997;315:576-80.
24. Nelson EA, Cullum N, Jones J. Venous leg ulcers. In: Godlee F, Goldman D, editors. *Clinical evidence*. London, Engl: BMJ Publishing; 1999. p. 792-801.
25. Nelson EA, Cullum N, Jones J. Venous leg ulcers. In: Barton S, editor. *Clinical evidence*. London, Engl: BMJ Publishing; 2001. p. 1365-75.
26. Hayward RS, Guyatt G, Moore K, McKibbon A, Carter A. Canadian physicians' attitudes about preferences regarding clinical practice guidelines. *Can Med Assoc J* 1997;56:1715-23.