

The role of nurse-led clinics in the management of chronic leg wounds

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Abstract

Leg ulcerations are a chronic and debilitating condition that predominantly affects older adults. The management of leg ulcers consumes a substantial amount of financial and human resources in acute, chronic and community health settings. This literature review examines the prevalence of leg ulcers and their impact on the individual and on Australia's healthcare system. The review considers the need for comprehensive client and wound assessment to determine appropriate management options, and discusses the potential contribution that community leg ulcer clinics can make in the management of chronic lower extremity ulcerations.

Rayner R. *The role of nurse-led clinics in the management of chronic leg wounds. Primary Intention 2006; 14(4):150-167.*

Literature review

Chronic wounds

Chronic wounds are a common healthcare problem in western societies. They are associated with a reduced quality of life (e.g. pain, sleeplessness, mobility restrictions, emotional distress, time off work and lethargy), and place a significant economic burden on the patient, their family and Australia's healthcare system^{1,2}. The majority of patients with chronic wounds, in particular lower leg ulcers, have repeated episodes of remission and recurrence that benefit from the development of a comprehensive assessment and management plan^{3,4}. Most leg ulcers are associated with venous disease, although other causative factors include trauma, arterial disease, vasculitis, neuropathy and neoplasia.

The human and financial cost associated with inpatient management of chronic wounds is enormous, particularly for the treatment of lower extremity ulcers⁵. In Australia, a study in 1996 estimated the private hospital cost for a mean

stay of 23.9 days for managing chronic leg ulcerations was approximately \$8,734 per admission⁶. Various studies have reported that community leg ulcer clinics are more effective and less expensive than hospital care for the management of chronic leg wounds⁷. Furthermore, some community wound clinics have shown that they provide more cost-effective treatment than domiciliary care through improved rates of healing⁸⁻¹⁰.

Prevalence of leg ulcers

Epidemiology data indicate that, in western countries, approximately 1.1-3.0 per 1000 adults have active leg ulcers, with the prevalence increasing to 20 per 1000 for individuals over the age of 80 years^{9,11-15}. The prevalence of leg ulcers is likely to increase with the rise in the average age of the population and the expected number of people aged over 65 years to double within the next 40 years^{15,16}.

It has been estimated that leg ulcer care costs the Australian healthcare system \$A400-654.5 million per year^{2,17,18}. Chronic wounds cost Australia an average of \$27,493 per wound¹⁹. However, this figure equates only to the direct cost and does not reflect the frustration, socio-economic loss and impaired quality of life experienced by patients and their families.

Several studies have examined the duration of chronic leg ulcerations, and report enormous variations, with 50-75% present for up to 9 months, 50-72% for up to 1 year, 13-29% for over 2 years and 30-45% reported episodes of more than 10 years^{17,20,21}.

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Venous ulcers, which account for the majority of lower leg ulcers, are potentially difficult to heal, have a high rate of recurrence, impact upon individual's quality of life, and frequently develop into an enduring and expensive problem^{2, 17, 22, 23}. Even though venous ulcerations affect younger adults, over 70% of ulcers occur in individuals aged over 70 years²⁴. Females have a 63% risk of developing venous leg ulcers, and many will have their ulcers for longer than 1 year²⁵. Epidemiological studies have found that the incidence of venous leg ulcers is associated with multiple co-existing health problems including obesity, deep vein thrombosis, diabetes, heart failure, hypertension, renal disease and rheumatoid arthritis^{14, 26-28}.

Recurrent leg ulcerations affect about 1-2% of the population or between 26-69% of patients with ulcers^{8, 29}. Approximately 45-90% of all lower extremity ulcers are reported to be venous, with recurrence rates ranging from between 26-33% for patients who comply with wearing compression bandages or hosiery, and rising to 69% for non-compliant patients^{3, 26, 30-32}. Even though leg ulcers heal faster and recur less frequently in compliant patients, there is a 69% risk of recurrence within a year^{10, 33}. However, appropriate preventative strategies can reduce the recurrence rate by 25% within 1 year²¹. Despite adequate conservative and surgical treatment, many ulcers fail to heal, with some individuals suffering lasting morbidity that adversely affects their general well-being and which poses substantial strain on healthcare resources³⁴.

Aetiology

The fundamental objective for the effective management of lower limb ulceration is the identification of underlying aetiology through a comprehensive assessment³⁵⁻³⁸. Research shows that clinical assessments performed by health practitioners are seldom standardised and the management of chronic leg ulcers commonly occurs without a formal diagnosis having been established³⁹.

A large population-based audit of various health services found that 52% of patients did not have an official diagnosis⁴⁰. Numerous studies of patients attending medical practitioners have also identified inadequate assessments, under-utilisation of ankle-brachial pressure index (ABPI) measurements, and a dependency on dressing products for the management of leg ulcerations⁴¹⁻⁴⁵.

The occurrence of leg ulcers is often associated with the failure of healthcare providers to establish a correct diagnosis, identify factors associated with poor healing, refer

patients to consultancy services and implement appropriate treatment^{46, 47}. Factors associated with poor healing of venous leg ulcers include extensive ulceration, duration of ulcer, advancing age, and restricted patient and ankle mobility^{4, 15, 48-50}.

Where the management of patients with chronic wounds is inconsistent and poorly coordinated, healing rates are low and treatment costs consume an inordinate amount of the Australian health budget¹. Health professionals have a responsibility to maintain consumer confidence by providing high quality efficacious services. Moreover, it is an important requirement of clinical governance for professionals and healthcare organisations to demonstrate the effectiveness and quality of care⁵¹.

Evidence-based research suggests that patients who present with a leg ulcer need to have a comprehensive assessment, history and physical examination, including measuring the ABPI using a hand-held Doppler device^{27, 36, 52-56}. While reports show palpable pedal pulses are an indicator that blood flow is sufficient to permit healing, they do not exclude the presence of lower extremity arterial disease^{57, 58}. A recent study suggests that even in the presence of palpable pedal pulses, there is a 40% false negative prediction of alerting health professionals to the existence of arterial disease as defined by an ABPI of less than or equal to 0.9⁵⁹. Conversely, the absence of pulses does not necessarily indicate arterial disease, particularly where oedema is present. Accordingly, the measurement of an ABPI by Doppler ultrasound is an essential diagnostic investigation⁵⁶.

Numerous studies indicate that chronic leg ulceration contributes to increased illness. This may include induced difficulties in the individual's home environment, greater psychological distress, major lifestyle changes (including loss of an employment and productivity), mobility limitations, social isolation and poor quality of life⁶⁰⁻⁶³. In addition, many patients experience pain and demonstrate limited knowledge in regard to the cause and treatment of the ulcer⁶⁰. The failure of health practitioners to accurately diagnose patients and implement appropriate treatment often leads to feelings of anger, depression and fear that tend to resolve as ulcers heal^{2, 60}.

Compression therapy

A number of comprehensive reviews have identified compression therapy as the most important conservative treatment modality for improving venous ulcer healing rates in the absence of clinically significant arterial disease^{20, 64, 65}. High compression has been demonstrated to be more successful than

low compression, and 4-layer elastic compression bandages are more effective and less expensive than multi-layer short-stretch bandages^{4, 13, 66}.

A review into the use of compression therapy for venous leg ulcer healing reported that only 20% of patients who needed compression received the treatment in home healthcare in the United States of America, while this figure was 57% for patients in district nursing in the United Kingdom⁶⁷. In Australia, a population-based study reported that only 19% of patients who had a venous component received compression therapy⁴⁰. However, conservative treatments that focus on dressing selection rather than addressing the underlying aetiology only result in a 23% rate of healing^{68, 69}. This is despite the finding that no specific dressing has proven superior to any other in the management of venous ulcers⁷⁰.

Community care in the management of chronic wounds

The majority of venous leg ulcers will heal if patients are hospitalised for continuous leg elevation. However, a shortage of beds, the increased cost of care, and the fundamental need to maintain the independence of a predominantly elderly population means that hospitalisation is not a practical or feasible option⁷¹. Various studies report that the cost associated with inpatient management of wounds is enormous in terms of human and economic resources, especially for the treatment of leg ulcers^{5, 72}. Moreover, ulcers frequently recur when patients resume a normal lifestyle with increased leg dependency. Domiciliary nursing care can therefore be a more cost-effective and appropriate alternative for patients, as individuals retain their independence, mobility, quality of life and avoid the complications associated with bed rest⁷¹.

However, enormous challenges confront nurses who work in the community setting, as they endeavour to provide services to a broad range of people with diverse and dynamic health problems. Domiciliary nurses manage a variety of wound types using varying levels of knowledge, practices and resources^{40, 73-75}. Since domiciliary nursing services manage approximately 60-90% of all leg ulcers, it is clinically and economically imperative that patients receive effective wound care^{40, 49, 76, 77}. Estimates of the cost of chronic wound care are driven by an enormous use of nursing resources, with up to 50% of domiciliary nursing time spent caring for patients with ulcers^{75, 78-82}. However, various studies suggest that some

community leg ulcer care may be fragmented, and that time constraints, limited resources and inadequate knowledge are potentially responsible for a high rate of ulcer recurrence^{55, 83}.

Community wound clinics

In recent years, the establishment of a number of nurse-led community wound clinics which promote a collaborative relationship with other health professionals has been reported to be more effective and less expensive than hospital care⁷. Leg ulcer clinics in particular have been shown to be an efficient method of treating leg ulcers within financial constraints⁸⁴. Furthermore, community clinics can reduce the costs of domiciliary nursing care by improving healing rates⁸⁻¹⁰.

Community nurse-led wound clinics are an increasing trend, offering a specialised adjuvant service to domiciliary and other healthcare services for managing chronic wounds. Nurses with specialised wound management skills and an awareness of current evidence-based practices generally operate the clinics. Studies comparing the healing rates obtained by community ulcer clinics with domiciliary nursing care report significantly higher rates of healing rates within clinics^{9, 85, 86}. Leg ulcer clinics improve healing rates through comprehensive assessments (including ABPI), standardising health practices, lowering recurrence rates and home-visit costs and enhancing patients' quality of life^{7, 8, 10, 80, 85-92}.

Evaluations of wound clinics report improvements of between 42-67% for healing rates of ulcers at 12 weeks^{9, 50, 80, 88-90, 93, 94}. One study reported that patients had more ulcer-free weeks following treatment in a community leg ulcer clinic than those receiving home care⁸⁵. In one health authority area in the United Kingdom, the recurrence rates at 6 and 12 months fell after introducing a specialised leg ulcer clinic⁸⁹. Another study indicated that 25% of patients who self-referred to a community clinic received no prior medical or nursing care. However, the precise impact of patients who care for their own wounds and who self-referred to leg ulcer clinics was unknown^{26, 95}.

A report suggests that the rate of leg ulcer recurrence is markedly influenced by the availability of community leg ulcer clinics, adherence to preventative treatments such as compression hosiery, and quality of life issues⁸¹. Delaying ulcer recurrence by 1 month could result in a saving of as much as 8% of domiciliary nursing time⁸¹. Frequency of visits, close supervision, support by specialised nurses and ready accessibility are important factors that are available to patients who attend leg ulcer clinics⁹⁶.

Evaluations of community leg ulcer clinics have identified a number of important benefits apart from improved healing rates. Ulcer clinics can offer empathy, promote enthusiasm, motivation, increase patient knowledge, and provide peer support and the opportunity for patients to socialise²⁶. Community leg ulcer clinics are generally less intimidating than hospital-based healthcare services, thereby encouraging attendance, compliance and the promotion of preventative practices. For example, studies show that non-compliance with wearing compression bandages or hosiery significantly increases the risk of re-ulceration^{97, 98}. Specific factors that affect compliance include patient attitude, level of motivation and ownership of the problem⁹⁹⁻¹⁰². Improved patient education that permits informed choice, development of a collaborative approach and utilisation of health promotion activities enhance patient compliance¹⁰³.

Health professionals and agencies have a responsibility to demonstrate the effectiveness and quality of the care they provide⁵¹. A comprehensive literature review to determine whether community leg ulcer clinics were more effective delivery systems than usual care (dressing therapy, no compression or inadequate compression), reported a serious deficiency in evidence-based research⁹¹. While ostensibly emphasising community leg ulcer clinics as the preferred model for delivering leg ulcer care, the report found that none of the studies actually evaluated the effectiveness of the care, and that effectiveness of care was not necessarily due to the clinic setting but was possibly associated with the expertise of the nurse and the standard of assessment⁸. In addition, wound clinics may not be available in rural areas, thereby disadvantaging patients who are not able to access equivalent quality of care, while inadequate transportation might impede the frail, older and housebound patients from using the service^{8, 87, 91}.

A comprehensive literature review found that there was a lack of studies which compared the effectiveness of treatment in community leg ulcer clinics with home visits where the provision of nursing services and treatments were standardised in both settings¹⁰. Several studies advocate that suitably qualified and experienced domiciliary nurses who follow reliable treatment guidelines may obtain similar healing rates without the need to invest in additional resources for establishing community clinics^{68, 91}. In some cases, organisations that provide wound care have been criticised for failing to adopt a multidisciplinary approach⁴². Chronic wounds require intervention by multiple healthcare

disciplines (such as nurses, dietitians, occupational therapists, physiotherapists, physicians, podiatrists, social workers or vascular surgeons) to address the many conditions and co-morbidities that affect wound healing¹⁰⁴. Numerous authors advocate a multidisciplinary approach with 3-6 monthly patient follow-up in the management of chronic leg ulcers^{21, 42, 96, 105}.

However, many nurse-led clinics, particularly those in rural areas, do not have the resources to provide specific one-stop multidisciplinary health prevention and care delivery services. These clinics typically maintain a multidisciplinary approach by referring patients to appropriate health professionals (including podiatrists, diabetic educators or dieticians), or rely on general practitioners for additional referral to a specialist vascular surgeon or dermatologist. A recent unpublished report found that utilising a comprehensive client assessment, a nurse-led wound clinic operating in a large rural centre of Western Australia served as an invaluable conduit for clients to access a broad range of multidisciplinary healthcare. This clinic achieved a healing rate of 50% at 12 weeks^{106, 107}.

Access to nurse-led wound clinics, especially in large rural centres, is particularly important for the elderly who have a greater incidence of chronic leg ulceration, reduced mobility, multiple health problems and are generally reliant on family members for transportation. Moreover, clients are usually able to access services and receive appropriate management in a shorter period than it would take if they attended busier metropolitan clinics.

Conclusion

Nurse-led wound clinics can provide an efficient and invaluable adjuvant service to domiciliary, general practice and hospital care for the management of clients with chronic leg wounds. Effective clinics require comprehensive client and wound assessment, identification of appropriate intervention, and advocating for specialised medical and allied health services.

Acknowledgements

This review formed part of a course requirement toward a Master of Wound Care at Monash University. Financial support to undertake the degree was contributed to by the Royal College of Nursing (Commonwealth Aged Care Nursing Continuing Profession Development Scholarship Scheme). This financial assistance is gratefully acknowledged.

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