

# Diagnosis and management of venous leg ulcers: a nurse's role?

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## Abstract

Leg ulcers are a common, debilitating and chronic condition, more prevalent in older people. As with most chronic illnesses and conditions, leg ulcers have a significant impact on the health system and the individual. As most leg ulcers are managed in the community, it is imperative that community-based practitioners have specific clinical expertise, skill and professional judgement to inform decisions about the ulcer aetiology, appropriate management and optimal client outcomes. The Royal District Nursing Service (RDNS) SA Inc. undertook an integrative literature review to examine the role of the district nurse (DN) and general practitioner (GP) in management of leg ulcers. The review concluded that, whilst there is some uncertainty regarding roles, the competent district nurse can independently assess and manage venous leg ulcers to achieve optimal outcomes for clients and support the already overburdened healthcare system.

*Keywords: venous leg ulcer, aetiology, diagnosis, management, general practitioner, nurse.*

## Introduction

Leg ulcers are a common, debilitating and chronic condition which can occur at any age, but are more prevalent in older people. Leg ulceration is a leading cause of morbidity among older people, particularly females in Western countries<sup>1-4</sup>. While it is difficult to establish the exact prevalence of leg ulceration it is typically estimated as being within a range of 1% and 2% of the population<sup>5-8</sup>.

There are many causes of leg ulceration. The majority of leg ulcers are caused by underlying venous hypertension with subsequent venous insufficiency<sup>9-15</sup>. Other causes of leg ulceration include, but are not limited to, arterial disease, underlying systemic disease, skin cancers and drug reactions.

Appropriate and effective treatment relies heavily upon correct determination of the underlying pathology, since there are critical management differences, depending on the cause of ulceration<sup>16-20</sup>. There is sound evidence demonstrating that compression therapy is the most effective treatment for venous leg ulcers<sup>21-23</sup>. However, there is recognition that in practice there is considerable variation in management of venous leg ulcers<sup>15,16,18,24,25</sup>. To maximise client outcomes, there is a need for more standardised practice, based on evidence.

It is estimated that the majority (80%) of leg ulcers are treated in the community. This is considered the most appropriate care setting due to the long-term nature of the condition and the need to minimise the consequences of leg ulcers on the person's quality of life (QoL)<sup>6,10,27-29</sup>. The management of leg ulcers is largely undertaken by community nurses, who can spend up to half of their time treating leg ulcers<sup>29,30</sup>.

## Background

The Royal District Nursing Service (RDNS) SA Inc. is a provider of district nursing services in the metropolitan area of Adelaide, South Australia (SA). Approximately half the wound management services provided by district nurses (DNs) involve management of persons with leg ulcers. As clients are often referred to RDNS with the diagnosis of 'leg ulcer', DNs are often required to undertake assessment, determine aetiology and institute appropriate treatment. Current practice and policy in RDNS supports the DN independently

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undertaking a structured assessment, determining aetiology and implementing treatment for venous leg ulcers. Whilst the DN communicates and collaborates with the general practitioner (GP) to ensure optimal management, it is not a requirement that medical officer 'approval' be gained prior to instituting compression therapy. However, practices vary across Australia and in some other states compression cannot be instituted by a nurse without permission from a medical officer. The purpose of this review is to explore the scope of practice of nurses in the assessment and management of venous leg ulcers.

## Aims

The aim of this literature review was to examine the wound management and healthcare literature relating to the diagnosis and management of venous leg ulceration. The review of the literature was guided by the following research questions:

- What is current best practice in venous leg ulcer management?
- What underpins clinical decision-making during assessment?
- What is the difference between medical and nursing diagnosis?
- Is it within the nurse's scope of practice to independently assess and manage venous leg ulcers?

## Methodology

The literature relating to venous leg ulcer management in both the international and Australian context was sought with particular focus on clinical decision-making during assessment of leg ulcers and current practice expectations in relation to management of leg ulcers. Selection of the literature was guided by the following criteria:

- published in English
- relevance to the research topic and questions
- published between 1996 and 2007 but also including some specific studies and seminal works from previous years.

The search strategy included using seven electronic databases, these being: Google Scholar, Google, CINAHL, Medline, Cochrane Database, Clinical Evidence and EBM. Clinical websites were accessed such as NICE, NICS, Joanna Briggs Institute and Royal College of Nursing. The initial search terms and phrases used were: 'leg ulcer management'; 'assessment'; 'clinical decision-making', 'community' and 'diagnosis'. Different variations of these terms and phrases were used. More specific keywords and phrases were used in the latter phase of the literature search. Scrutinising the reference lists of publications to identify key texts and authors

extended the search. The search yielded 160 publications that were considered to be relevant to the subject area. On closer examination, 135 publications were considered directly relevant to the aims of the review. As this review only deals with the questions concerning clinical decision-making and scope of practice, the publications relevant to these questions are reported on.

## Appraisal of literature

Of the 135 articles considered directly relevant to the review, most were written in the United Kingdom and Canada. A smaller number of articles (approximately 20%) were written in the United States and one in Germany. Six articles were written in Australia and one in New Zealand. Approximately 40% of the literature was research-based, with 60% being based on expert opinion. There were five national evidence-based guidelines on leg ulcer assessment and management representing Ireland, Scotland, England, New Zealand and Canada. The literature contained five National Health Service United Kingdom (NHS) leg ulcer guidelines or protocols. Five Cochrane reviews were referred to as providing evidence. Of the research-based articles, 18 were qualitative studies and 38 were quantitative. There were six systematic reviews, five randomised trials and four studies based on data from randomised controlled trials. There was some variation in the research standard. However, all articles selected reported on the research population, methodology and research tools used. Research populations ranged from n=6 to n=546.

## What is a leg ulcer?

A leg ulcer is defined as "an area of discontinuity of the epidermis and dermis on the lower leg persisting for four weeks or more"<sup>14</sup>. This definition is typical of others provided in the literature, although there was some variation between the period of four and six weeks. The distinction between the different types of leg ulcers is the underlying aetiology. Venous ulcers are the most common type of leg ulcer.

## Assessment: What underpins clinical decision-making?

The literature places strong emphasis on the importance of establishing the correct aetiology of a leg ulcer<sup>14,16-18,20,26,29,32,33</sup>. Management options differ according to the aetiology; that is to say, whether the ulcer is caused by venous insufficiency, arterial disease, a combination of venous and arterial insufficiency or something else (for example, skin cancer, manifestation of underlying disease and so on). The accepted treatment for venous ulcers is compression therapy. Venous leg ulcers managed without compression therapy may persist without healing for many months or years. However, compression is usually contraindicated in

persons with peripheral arterial disease because it could result in damage to the leg and potentially lead to avoidable amputation<sup>16,17,19,20,26,29,33</sup>. Therefore, determining correct aetiology and consequent decision-making regarding management is vital.

To determine correct aetiology, a comprehensive assessment is required<sup>14,16-20,24,26,29,32,34</sup>. Frameworks for leg ulcer assessment are found throughout the nursing literature and are predicated on sound nursing knowledge, skill and experience<sup>10,16,35,36</sup>.

Despite this, there is wide variation in the way leg ulcers are managed<sup>16,19,26,36-38</sup>. A large Australian audit found that over half the study population with leg ulcers had no confirmed aetiology and at the outset only 19% of people who should have been treated with compression therapy were actually receiving it<sup>37</sup>. Insufficient training is thought to be a key factor<sup>3,16,26,39,40</sup>. However, there is no consensus in the literature about what constitutes adequate training. Whilst there is strong emphasis placed on training and education for nurses on leg ulcer management this is not evident for GPs and other health professionals. Whilst GPs also manage leg ulcers, their competency is extremely variable with research identifying practice shortfalls, particularly in relation to compression therapy and application of evidence-based practice<sup>41,42</sup>.

### The assessment process

In existing leg ulcer guidelines assessment includes<sup>16,18-20,26</sup>:

1. An understanding of the person's unique social factors, concerns and experience.
2. An understanding of the pain experienced.
3. A thorough clinical history including the presence of other diseases/conditions.
4. A nutritional assessment.
5. Physical examination, including limb and wound assessment.
6. Relevant investigations including peripheral vascular assessment (including Ankle Brachial Pressure Index – ABPI), blood pressure, blood glucose levels, weight and urinalysis<sup>16,18-20,26,29,32,33</sup>.

Assessment has been recognised as a complex process with no one element being more important than the other<sup>18,20,29,31,32,43,44</sup>. The outcomes of assessment must take account of all information gathered and clinical decisions are made on the basis of the whole picture.

### ABPI using Doppler ultrasound

Several best practice clinical guidelines and authors stipulate that the ABPI must be measured prior to treatment

decisions<sup>14-16,18-20,26,29,32,35,45</sup>. Pedal pulses should also be palpated. However, on its own this is not a reliable method of assessment<sup>46,47</sup>. Once again there is emphasis in the literature on the clinician having been trained in the technique of ABPI and having experience in treating leg ulcers<sup>16,18-20,26,34,48,49</sup>. Correct procedure and technique is critical to the result. Research conducted by Sadler *et al.*<sup>41</sup> found that GPs in primary care did not follow holistic assessment guidelines and many did not take ABPI measurements. Conversely, there are many nursing courses covering management of leg ulcers and training programmes for nurses in the measurement of ABPI.

### Assessment tools

There is a need to standardise leg ulcer assessment to facilitate accurate determination of aetiology and monitor clinical progress<sup>50</sup>. There is agreement that an assessment tool needs to be: valid, reliable, able to detect changes over time, and appropriate for the care setting and the practitioners using it<sup>18,51-55</sup>.

Several leg ulcer assessment tools were identified in the literature that best fitted the features described as being important<sup>16,18,54,56</sup>. Most of these assessment tools are aimed at nurses, supporting the argument that assessment of leg ulcers and determination of aetiology is within nursing's scope of practice. Such assessment tools provide a framework for reminding the practitioner of important areas to cover and are an adjunct to, rather than a substitute for clinical expertise and judgement. Interestingly, the literature search did not reveal any existing tools or frameworks specifically for GPs to use in the assessment of leg ulcers.

### Current expectations for the management of venous leg ulcers

Leg ulcer management is client-centred, with care being organised around the person's concerns, experiences and QoL. Along with this, there is an emphasis that leg ulcer management occurs within a collaborative, multidisciplinary approach involving various health professionals working together<sup>16,28</sup>. It is important that the GP is included in venous leg ulcer management. However, in many instances they may not be the most skilled and knowledgeable practitioner to lead the management. Irrespective of the discipline, the emphasis must remain on the individual, treating practitioner possessing the appropriate skills and knowledge base to manage leg ulcers. Where this is not evident, the practitioner has a responsibility to refer the client to a trained practitioner with the required knowledge and skill set<sup>57</sup>.

### Compression therapy

There is a wealth of evidence on the effectiveness of

compression bandaging for treating venous leg ulcers. The outcomes reported include improved healing rates, better QoL and greater cost-effectiveness<sup>29,31,36,58-69</sup>. Application of dressings and bandages clearly falls within the scope of the nurse's role. It is widely acknowledged that practitioners applying compression bandaging need appropriate training in the art of bandaging, require a sound knowledge of the principles of compression and possess good technique<sup>16,18,26,29,35,69,70</sup>. Both theoretical and practical knowledge is required to make appropriate choice and undertake application of dressings and bandages. Such training is usually provided for and taken up readily by the nursing profession. However, both Sadler *et al.*<sup>41</sup> and Graham *et al.*<sup>42</sup> in examining the experiences of GPs in managing people with leg ulcers in primary care reported a lack of confidence in compression therapy and a tendency not to prescribe it.

### Leg ulcer management: who is best placed to provide care

Whilst wound management has become increasingly scientific, it is being taken up almost exclusively by the nursing profession, who are developing a distinct body of knowledge<sup>71</sup>. The emerging speciality of wound management has evolved into predominantly a nurse-led field<sup>72</sup>. The day-to-day responsibility for chronic wound management is generally undertaken by nurses in primary care<sup>14,27,28,49,73,74</sup>. It is generally accepted that many medical practitioners delegate the care of people with leg ulcers to nurses without having first determined the underlying aetiology<sup>48</sup>. In Canadian research conducted by Graham *et al.*<sup>42</sup> few GPs reported feeling confident about managing leg ulcers and 58% reported that they could rely on home care nurses to inform them about current methods of effective treatment. McGuckin *et al.*<sup>75</sup> found that GPs refer 83% of persons with venous leg ulcers to nurses. Overall, nurses are recognised throughout the literature as possessing specific knowledge, skills and experience in wound management, something which is not generally seen accorded to GPs.

It has been argued that it is not within the nurse's role to formulate a 'diagnosis'. However, the existing guidelines for leg ulcers do not preclude nurses determining leg ulcer aetiology and instituting management. In SA, the nurse's regulatory body, The Nursing and Midwifery Board states that:

*Registered nurses (RNs)... are accountable for their clinical decision-making and have moral and legal obligations for the provision of safe and competent nursing ... care, including an ethical responsibility to report instances of unsafe and unethical practice. It is not well understood by the community,*

*nor perhaps by medical doctors and healthcare managers, that nurses ... are not passive implementers of medical practitioners' orders, and do not work under medical supervision. Nurses ... hold direct legal and ethical accountability for their clinical practices and that of their colleagues. Thus, all RNs ... are regarded as autonomous health professionals. However, it is true that in some organisations there are limitations placed on the practice of nurses ... and thus the ability to exercise one's autonomy can be decreased*<sup>76</sup>.

Additionally, the Scope of Practice decision-making framework in SA supports the principles inherent in leg ulcer management<sup>77</sup>.

Whilst each state and territory in Australia might have slight differences, the RN remains accountable for their decisions and might be judged on a decision to omit recognised best practice, in addition to being accountable for acts that lead to harm.

### What is the difference between medical diagnosis and nursing diagnosis?

There is a paucity of studies which examine or compare the diagnosis and management of venous leg ulcers by GPs and nurses<sup>41</sup>. More generally it is possible to identify a difference between the attitudes of GPs and nurses towards leg ulcer management and it is likely that this is reflected in assessment and management. Nurses are generally portrayed as having a pivotal role in leg ulcer management with specialist knowledge and expertise, while the GP's role is expressed differently according to the author's perspective<sup>42,73</sup>. Some authors refer to a general disinterest in leg ulcer care by GPs<sup>78</sup> or a lesser role for general practice<sup>79</sup>. However, McGuckin and Brooks<sup>73</sup> argue that GPs have a role in directing the management of leg ulcers cared for in the community by DNs. Other papers advocate that GPs work collaboratively with DNs in leg ulcer management<sup>75</sup> or as being uncertain about whether management of leg ulcers was a medical or nursing responsibility<sup>48</sup>. This has led to a lack of clear boundaries between the clinical practice responsibilities of GPs and DNs working in the community in relation to venous leg ulcer management.

Hickie *et al.*<sup>79</sup> described the management of leg ulcers in a sample of primary care settings in Scotland, based on a postal survey. It was reported that initial assessment of leg ulcers was frequently conducted in general practice by practice nurses in collaboration with GPs. However, DNs reported carrying out assessments alone. This research found that GPs reported seeing significantly fewer people with leg ulcers than DNs and practice nurses. Field<sup>3</sup> interviewed a

small sample of DNs (n=6) in the UK, who reported that in cases of uncertainty regarding diagnosis, referral to a GP was a last resort as both nurses and GPs perceived that ulcer management was a nursing speciality.

The situation in Australia varies. Some service providers allow nurses to independently assess, determine aetiology and institute compression bandaging for venous leg ulcers. However, other service providers place restrictions on this, allowing the nurse to undertake the assessment and determine the aetiology but only permitting the nurse to apply compression bandaging if written approval is obtained from the GP. This can lead to confusion, uncertainty regarding role responsibilities and may lead to compromised client outcomes.

A number of studies revealed shortfalls in the assessment and management of leg ulcers by GPs<sup>41,42,48,75,80</sup>. Identified issues included: inadequate assessment, underuse of ABPI

measurements, a heavy reliance on dressings, overuse of antibiotics and a lack of knowledge and understanding regarding use of compression therapy. The reasons have been thought to include a disinterest in the common, routine management of leg ulcers and confusion about where the responsibility for the care of leg ulcers lies<sup>41,42,73,80</sup>. Both Hickie *et al.*<sup>79</sup> and Sadler *et al.*<sup>41</sup> found that evidence-based guidelines for the management of leg ulcers are not widely adopted in general practice. However, Sadler *et al.*<sup>41</sup> make the point that general practice may see a different type of client group for whom traditional ulcer guidelines may not be appropriate or well-received.

Sadler *et al.* in qualitative research with GPs identified a difference between the clinical decisions made by GPs and specialist nurses. GPs appeared to be "losing track of certain aspects of leg ulcer management as they balanced diverse treatment goals"<sup>41</sup>. Ulcer aetiology was not given adequate emphasis by GPs, while there was an overemphasis on

Table 1: Nursing decision making applied to venous leg ulcer management<sup>76</sup>

Element	Questions to determine if the role/practice is appropriate for nursing practice		Applicability to venous leg ulcer management
Public interest and client centred access	<ul style="list-style-type: none"> <li>Is there an identified client need?</li> <li>Is there an identified client benefit?</li> </ul>		<ul style="list-style-type: none"> <li>1-2% of the population have a venous leg ulcer.</li> <li>Wound management is a recognised area of nursing expertise.</li> </ul>
Regulation	<ul style="list-style-type: none"> <li>Is it within legislated scope of practice?</li> <li>Will the practice comply with regulatory standards?</li> </ul>		<ul style="list-style-type: none"> <li>The assessment and management of venous leg ulcers does not involve invasive procedures.</li> </ul>
Accepted Professional Nursing Practice	<ul style="list-style-type: none"> <li>Is the practice consistent with the definitions and values underpinning nursing practice?</li> </ul>		<ul style="list-style-type: none"> <li>The assessment and management of wounds is within the nurse's scope of practice.</li> </ul>
Organisational support	<ul style="list-style-type: none"> <li>Is it within the identified role?</li> <li>Is there an organisational policy?</li> <li>Are there policies or standards (national or local) relating to this practice/role?</li> </ul>		<ul style="list-style-type: none"> <li>There are several overseas practice guidelines and standards for venous leg ulcers that are written by nurses and for nurses.</li> <li>These include assessment, determination of aetiology and management in their scope.</li> </ul>
Individual practice	<ul style="list-style-type: none"> <li>Does the nurse have the required education, knowledge and skills to perform and accept accountability for this role/practice?</li> </ul>		<ul style="list-style-type: none"> <li>The nurse's role includes assessment and management of persons with wounds.</li> <li>Individual practitioners are responsible to ensure they possess the required competency in venous leg ulcer assessment and management.</li> </ul>
	↓		
	<b>Yes</b> The role/practice is within the scope of the nurse/nursing	<b>No</b> The role/practice is not within the scope of the nurse/nursing	



dressings as the primary treatment. Most concerning was a lack of knowledge about compression and decreased use of compression therapy in the treatment of leg ulcers by GPs. This is particularly concerning in light of the strong evidence for its effectiveness in the treatment of venous leg ulcers<sup>22,81</sup>.

From these studies a number of issues involving the differences between a medical diagnosis and a nursing diagnosis of leg ulcers can be identified. These are considered in light of existing leg ulcer guidelines<sup>16,19,20,82</sup>.

1. GPs do not always use specific, comprehensive clinical assessment and ABPI measurement to assess and determine leg ulcer aetiology. This could lead to lack of diagnosis and less than optimal management. While a few studies report the underuse of ABPI measurements in nursing samples, the main impression from the literature is that nurses include ABPI measurement in assessment as a matter of best practice. Community nursing organisations might also have specific leg ulcer assessment tools designed to assist nurses to ascertain correct ulcer aetiology.
2. The overuse of dressings as the primary treatment reflects an acute medical response, while nurses tend to focus on longer term health promoting strategies which limit the adverse consequences to the person and their QoL.
3. GPs in the main do not adopt national guidelines for assessment of leg ulcers whereas nursing practice is more likely to be based on guidelines. Most of the existing venous leg ulcer management guidelines have been developed by nursing organisations, for nurses to use. This implies nurses are trained and expected to manage venous leg ulcers in their scope of practice. There is a paucity of guidelines developed for medical practitioners. It should be noted that the Australian Wound Management Association (AWMA) is currently developing an inter-professional guideline for management of venous leg ulcers. This might help increase medical practitioners' access to guidelines for venous leg ulcer management.
4. The restrictions surrounding GP consultations regarding time and location are extremely likely to work against a holistic comprehensive assessment. The time required for initial assessment is often approximately one hour, this being almost impossible for GPs. Nurses, on the other hand, are more likely to have some flexibility in their workload to allow time for a thorough, comprehensive assessment.

## Conclusion

Nurses are seen as pivotal to effective leg ulcer management. The literature identifies venous leg ulcer management as

squarely in the domain of nursing practice. There is some peripheral lack of clarity about boundaries between the role of GPs and DNs, with the main focus of this being diagnosis. However, it is clear from the literature that many nurses play a major role in the assessment and diagnosis of venous leg ulcers, along with decision-making about management. Increasingly, the community is seen as the optimal environment for leg ulcer care. Therefore, leg ulcer assessment and management is clearly within the scope of community nursing practice.

There can be no doubt that the foundation of effective leg ulcer management lies in a comprehensive and holistic assessment which seeks to identify underlying aetiology. Several tools are available as a basis for this process. However, any assessment tool is no substitute for clinical expertise and skilled judgement. There are inconsistencies in the current expectations concerning the management of venous leg ulcers. The current variation in the practice of managing leg ulcers is thought to relate to the lack of education and training. Considering there is no agreement in the literature about what is adequate education and training for leg ulcer management, it is not surprising to find variation in practice. There is a strong call made for standardisation of leg ulcer assessment and management, including clarification of the roles of the inter-professional team.

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