Assessment of leg ulcers is complex and should include examination of the wound and consideration of underlying causes, comorbidities and their psychosocial impact

Multidimensional leg ulcer assessment

In this article...

Key components of assessment in patients with leg ulcers
The importance of thorough assessment to gain a full picture
The impact of living with leg ulcers

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Abstract

Assessing patients presenting with a leg ulcer is like doing a multidimensional jigsaw puzzle, in which all the pieces need to fit together to make a whole picture that has depth and meaning. This enables rational clinical decisions to be made with patients, according to their capability and agreement to be involved.

This article highlights some of the key features of leg ulcer assessment, drawing on recommendations in national guidelines.

A priority in assessing a leg ulcer is to establish its underlying aetiology. The majority are venous (Moffatt et al, 2007) but this cannot be assumed until the assessment has been completed. The key aspects of assessment are outlined in Box 1.

It may not be possible to complete an assessment at a single point in time; in these cases it is important to gather information from a range of sources such as clinical notes, referral letters, results from any investigations and from carers and family where possible.

Present medical condition
People with leg ulcers often have other conditions that may complicate assessment and management. Comorbidities each have specific impacts on patients’ lives, and a long-term condition such as leg ulceration adds to this burden.

Margolis et al (2004) investigated comorbidities in patients over the age of 65 with venous leg ulcers, and found conditions included anaemia, osteoarthritis, asthma and depression. These are not necessarily related to the ulcer but each has its own additional effect on the patient so the assessment has to identify every factor (Moffatt et al, 2007). Ulceration and comorbidities may result in depression and anxiety, which can significantly delay ulcer healing (Finlayson et al, 2011), and the conditions themselves can affect important factors such as mobility.

An increasing challenge is the rising number of people with obesity, which adversely affects many aspects of health including cardiovascular disease, mental health and mobility (Goldie and Brown, 2012a). Key to managing obesity is assessing patients’ motivation as well as their practical and emotional needs so they can be helped to reach achievable goals (Goldie and Brown, 2012b).

Tobon et al (2008) reviewed literature on obesity, nutrition and venous disease and identified low levels of zinc, protein and vitamins A and C in affected people. Patients’ weight, build and nutrition are therefore important assessment factors alongside existing medical conditions.

People who inject drugs into their legs often have leg ulceration, and sometimes multiple ulcers. Injecting into the veins can cause venous scarring or blockage of the vessel lumen from thrombus formation. The damage can extend to muscle and nerves as well as cause lymphatic blockage (Pieper et al, 2007). It is therefore important

5 key points

1 The priority is to establish the leg ulcer’s aetiology
2 It may not be possible to complete an assessment at one time; in these cases it is important to gather information from a range of sources
3 People with leg ulcers often have other conditions that may complicate assessment and management
4 Baseline assessment should include blood pressure, urinalysis, weight and blood screening according to local protocols and patient presentation
5 Wound assessment involves noting the site, size, depth and location of the wound
to ensure a full patient assessment takes into account the presenting signs of venous insufficiency, ulceration and other wounds such as abscesses.

Assessing patients in these circumstances can be challenging and care must be taken to work with them in a non-judgemental way.

Past medical history

Previous ulceration, leg surgery or other trauma, varicose veins and deep vein thrombosis are linked to ulcer development (Scottish Intercollegiate Guidelines Network, 2010; Royal College of Nursing, 2006).

Hypertension, cardiac events, stroke and intermittent claudication (ischaemia) can indicate a compromised arterial status, providing clues to a possible arterial aetiology. However, SIGN (2010) guidelines caution that the apparent absence of such symptoms may not indicate the absence of arterial disease, illustrating the need for a comprehensive and detailed assessment.

Assessing for underlying disease

Baseline assessment, including blood pressure, urinalysis, weight, blood screening (according to local guidelines/protocols and patient presentation), is the starting point for clinical assessment (RCN, 2006).

Mobility and the patient’s ability to flex the ankle joint needs to be assessed because ankle flexion activates calf muscle movement, which is relevant to reducing venous hypertension in venous disease (Vowden and Vowden, 2007).

The shape and appearance of both legs should be visually assessed. Oedema is a feature of venous disease (Anderson, 2006); measuring the circumference of the lower leg at the ankle, gaiter area and calf can help to determine the extent of oedema in the limb and whether it is increasing or decreasing. The time of day and physical activity before assessment should be recorded. For instance, oedema may be less evident first thing in the morning but may have increased significantly by the afternoon when the patient has been standing or sitting for some time, or may change if the patient’s legs have been elevated (Anderson, 2006).

There will be some oedema with arterial disease and it usually presents as dependent oedema. This is oedema that forms around the ankle when the leg is in a dependent position for a period of time.

It is also important to recognise that there are many causes of oedema apart from vascular disease, such as lymphoedema, and cardiac and renal problems (Moffatt et al, 2007). This reinforces the importance of building all the elements of the assessment into a full patient picture.

In venous disease, venous hypertension causes leakage of red blood cells from capillaries and their breakdown causes tissue staining called hyperpigmentation (Moffatt et al, 2007). Other visual clues related to venous disease include ankle flare caused by dilated capillaries and varicose veins (RCN, 2006).

Varicose eczema is very common in venous disease and the skin will be dry and flaky. Assessment should identify the history of the skin condition and any factors that soothe or exacerbate. Acute flare-ups of varicose eczema may necessitate the short-term use of topical steroids (Cameron, 2007). If the condition is assessed as persistent and complex, or if there is evidence of allergies or sensitivities, the patient may need to be referred to a dermatologist (SIGN, 2010).

Assessment of the leg may identify lipodermatosclerosis, where the underlying tissue becomes fibrosed, making the skin feel hard and woody with an indurated skin surface. The fibrotic tissue leads to changes in the limb shape. The leg loses its normal profile where the circumference of the lower limb increases to the calf. Instead, the calf enlarges and the lower leg shape is likened to an upside-down champagne bottle (Moffatt et al, 2007). The shape can be further distorted by ankle oedema.

In arterial disease, the leg may be shiny and hairless, feeling cool to the touch. There may also be trophic nail changes. The leg may appear to be dark red (dependent rubor), pale or cyanosed. If the limb becomes paler when elevated, this is a sign of poor arterial flow. Patients may report that the distance they can walk before feeling pain is decreasing, which can be a sign of intermittent claudication (Moffatt, 2001).

Wound assessment

Wound assessment should note the site, size, depth and location of the wound.

The type of tissue in the wound bed is recorded. A framework such as TIME (Fletcher, 2007) could be useful to determine the tissue (T) in the wound, the presence of infection or inflammation (I), the exudate (M, moisture) level and the wound edges (E), and any evidence of epithelialisation. Other tools to aid wound assessment include the Applied Wound Management tool, comprising continuums for exudate, infection and healing (Fletcher, 2007). These tools can help to structure the assessment, focusing assessors on important aspects of the wound (Fletcher and Anderson, 2011).

Infection will delay wound healing and cause pain. Sometimes, cellulitis or erysipelas can occur in the leg, caused by Staphylococcus aureus or Streptococcus spp. Erysipelas usually has a rapid onset with red margins and blistering, while cellulitis has a slower onset, with less defined margins and is less likely to cause blistering (Seal et al, 2000).

Photography is extremely useful in the assessment of the leg, skin and wound, provided that the pictures are of good quality. For a Nursing Times Learning unit on venous leg ulcers, go to nursingtimes.net/ulcers

Venous ulceration of leg: venous ulcers tend to be shallow with ill-defined edges in the medial part of the gaiter/ankle area, although this varies...
quality and taken in reasonably consistent conditions of light, position and distance to allow changes to be tracked over time. Patients need to give consent for this and secure processes for storage of patient data are necessary.

Although it is unwise to base an aetiology diagnosis on ulcer appearance, some wound characteristics may help towards building the patient picture. Venous ulcers tend to be shallow, with ill-defined edges and sited in the medial part of the gaiter/ankle area, although this does vary and ulcers due to problems in the small/short saphenous vein can appear on the lateral aspect of the ankle (Carr, 2008). Arterial ulcers tend to be smaller and deeper with defined edges, described as “punched out”, and can often be necrotic (Moffatt et al, 2007). It is potentially dangerous to base a diagnosis on appearance but a clear description helps to create an overall picture.

**Vascular assessment**
An important part of the structured assessment of patients with leg ulceration is vascular assessment. The use of handheld Doppler ultrasound to determine the ankle brachial pressure index must be part of patient assessment to help confirm or exclude peripheral arterial disease (SIGN, 2010; RCN, 2006). Although just part of a wider assessment, it is an important test and must be carried out by suitably trained and skilled practitioners.

On the basis of the assessment findings, or if healing does not occur as expected, further tests may be needed. A colour duplex scan can be extremely useful to determine the specific areas of the limb that are affected by venous and/or arterial problems (Thrush and Hartshorne, 2005). This helps the vascular team to decide whether patients could benefit from surgical intervention.

**The Venous Forum of the Royal Society of Medicine** recommended referring patients with venous insufficiency to vascular surgeons (Berridge et al, 2010). Criteria for referral include signs of significant venous disease and/or a healed ulcer and those with active ulceration. People with bleeding varicosities and superficial thrombophlebitis should also be referred.

These recommendations are relatively new and assessors should consider how they can be incorporated into leg ulcer assessments.

**The impact of leg ulceration**
Leg ulcers can have a devastating effect on people's lives, affecting daily activities, sleep, mental health, appetite and mobility (Ebbeskog and Ekman, 2001). In addition, malodour and poorly controlled exudate can lead to stigma and social isolation (Rich and McLachlan, 2003). Patients' experience should be recorded and ongoing assessment must monitor the effects of treatment on these factors to ensure it is not exacerbating them.

**Pain** is a major issue for patients with leg ulcers, regardless of aetiology. Pain varies and is often combined with:

- Heaviness and discomfort from oedema and skin conditions;
- Ischaemic pain from peripheral arterial conditions;
- Pain related to infection, rheumatoid arthritis or sickle cell disease;
- Pain related to procedures such as wound cleansing, dressings and compression therapy (Briggs and Closs, 2006).

The assessment must lead to intervention and outcomes so it is vital that contributory and relieving factors are explored in detail to allow for pain-reduction interventions and ongoing evaluation of their effectiveness.

Social support networks correlate positively with lower recurrence rates (Wissing et al, 2001). Social isolation and loneliness may be difficult to deal with; while it is outside nurses' remit to address these directly, assessing and discussing these with the person affected must be handled with sensitivity and compassion (RCN, 2006).

Practitioners should discuss assessment findings, as well as previous health and ulcer-related experiences, with patients. Those with a recurrent ulcer may have found compression bandaging difficult to tolerate previously. Nurses should find out why and try to offer something different, such as beginning with reduced compression and gradually building up the pressure according to tolerance, or using a different system of bandage or hosiery (Moffatt et al, 2007).

**Conclusion**
Assessment is never a one-off process. A full assessment takes time – perhaps one and a half to two hours – and some aspects may be explored over a period of time. Evaluation of interventions is ongoing, which makes assessment an inherent and skilled part of management.

The initial assessment picture serves as a benchmark and enables changes, both positive and negative, to be monitored. Early intervention is crucial to minimise harm to patients and only an excellent record of a thorough and systematic assessment will enable subtle changes to be identified. NT

**References**
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