Diagnosing, treating, and delivering care for people with venous leg ulcers

The management of venous leg ulcers has advanced considerably over the past 10 years. This has been due to various factors, from greater knowledge of the aetiology of leg ulceration to more recent developments in this area of care.

These developments have included:
- National guidelines from the RCN (1998) and Scottish Intercollegiate Guideline Network (SIGN, 1998);
- Development of dedicated leg ulcer clinics;
- Availability of compression therapy on prescription, enabling treatment to be undertaken more easily in the primary care setting;
- Development and validation of postgraduate courses relevant to leg-ulcer management.

Despite all of these developments, leg-ulcer management remains a challenge for many nurses.

The prevalence of active venous ulcers in the UK is approximately 1.5 per 1,000 of the adult population, increasing to 40–50 per 1,000 among older people (Callam et al, 1985). Two-thirds of patients with leg ulcers experience two or more recurrences (Callam et al, 1987). Concordance with therapy can reduce recurrence rates (Mayberry et al, 1991).

Leg ulceration has a significant impact on quality of life, with patients experiencing depression, anxiety, fear, social isolation, and disruption to their daily and social activities (Franks et al, 1994).

**Assessment** Venous leg ulcers tend to occur primarily in the gaiter area and are generally shallow. Clinical signs and symptoms are: brown staining; ankle flare (redness); atrophie blanche (abnormality of skin scar formation – the white scar tissue is dotted with the red dots of dilated capillaries); induration; oedema; varicose eczema; varicose veins; ulceration; and pain.

Assessment tools can be used to identify the underlying aetiology as accurate diagnosis is the key to successful management.

An awareness of the underlying pathology is required to exclude arterial causes and to choose an appropriate treatment regimen.

In the UK approximately 85 per cent of patients with leg ulcers are treated in the community by district nurses and/or GPs (Callam et al, 1985). It is essential that community nurses are confident and competent to undertake such an assessment.

Mayberry et al (1991) state that assessment should include the following:
- The immediate cause of the ulcer;
- Any underlying pathology in the lower limb – for example, arterial disease;
- Any local problems at the wound site that may delay healing;
- Other more general medical conditions that may delay healing;
- The patient’s social circumstances and the optimum care setting.

**Doppler ultrasound** Continuous-wave Doppler ultrasound, an essential assessment tool (SIGN, 1998), measures systolic pressure and ankle brachial pressure index (ABPI).

This is considered a reliable method of detecting arterial insufficiency. However, an ABPI of more than 0.8, the accepted ratio, does not necessarily exclude arterial involvement.

A false elevation can occur in patients with diabetes because calcification of the medial layer of the artery prevents arterial compression (Vowden et al, 1996). Doppler waveforms and toe-pressure analysis have been found to be more reliable in this patient group (Carter and Tate, 1996). Doppler assessment procedure has been outlined by both Vowden et al (1996) and Stubbs et al (1997).

Care must be taken to:
- Position the patient correctly;
- Use an appropriate gel;
- Use the correct sphygmomanometer cuff size;
- Place the cuff correctly;
- Avoid rapid cuff inflation and deflation;
- Ensure accurate calculation of ratios.

Doppler assessment should be repeated if:
- There is a change in the patient’s condition – for example, an increase in pain;
- The ulcer has not healed after 12 weeks;
- A new ulcer occurs.

**REFERENCES**


**Management** The main aims of management are to:
- Reduce blood pressure in the superficial venous system;
- Aid venous return of blood to the heart by increasing the velocity of flow in the deep veins;
- Reduce oedema by reducing the pressure differences between the capillaries and the tissue.

Compression therapy used in conjunction with medical and surgical therapy, appropriate dressings, and patient education (Stacey et al, 2001), is considered the most effective treatment for venous leg ulceration (Cullum et al, 2001; Fletcher et al, 1997).

Multilayer high-compression bandaging is more effective than single-layer, low-compression bandaging, and has been shown to heal up to 70 per cent of venous leg ulcers in 12 weeks (Moffatt et al, 1992). Sustained compression can be provided by:
- Elastic bandages;
- Inelastic bandages;
- Multilayer bandages;
- Intermittent pneumatic compression.

**High-compression elastic bandages** These elastic, highly extensible (long-stretch) bandages expand or contract to accommodate changes in leg geometry when the patient is walking, so that the pressure changes over the calf are fairly small. They sustain applied pressures for extended periods, even when the patient is resting (Marston and Vowden, 2003).

**High-compression inelastic bandages** These inelastic, minimally extensible (short-stretch) bandages cannot accommodate changes in limb circumference.

The pressures beneath the bandage tend to increase when the calf muscle is activated, and therefore the bandage reinforces and supports the action of the calf-muscle pump. It is important to note that these bandages are unsuitable for immobile patients because they have low resting pressures.

**Multilayer bandaging** This comprises a combination of bandages to offer an accumulation of pressure. Combinations include elastic or inelastic, cohesive/adhesive, and crepe in three or four layers with padding. The multilayer (four-layer) bandage system is predominantly used in the UK.

**Intermittent pneumatic compression** This may be of benefit, particularly when used with compression bandaging. Early theoretical analysis suggests it may be useful in immobile patients with a slow or non-healing ulcer (Vowden, 2001).

**Achieving compression** The degree of compression provided by any bandage system is determined by the complex interaction between the following:
- The physical structure and electrometric properties of the bandage;
- The size and shape of the limb;
- The skill and technique of the person applying the bandage;
- The nature of any physical activity undertaken by the patient (Clark, 2003).

The pressure generated by a bandage immediately following application is a function of the tension in the fabric, the number of layers applied and the radius of the limb’s curvature. Laplace’s law governs the relationship between these factors, stating that sub-bandage pressure is directly proportional to bandage tension but inversely proportional to the radius of the limb’s curvature to which it is applied.

**Choosing compression** The International Leg Ulcer Advisory Board (2003) suggested benchmarks for the ideal compression system for patients with uncomplicated venous ulcers, as well as a treatment pathway (Box 1).

It is vital to remember that compression therapy is a powerful treatment in its own right and can be misused, with potentially serious consequences. For example, if used in patients with arterial disease, it can lead to severe skin necrosis and, in extreme cases, amputation.

Venous leg-ulcer management requires a multidisciplinary approach involving the patient and carer, the patient’s family, the patient’s GP, a nurse, and other team members such as a vascular surgeon.

The patients that have a diagnosis of venous leg ulceration and fail to progress with high-compression bandaging should be referred for specialist assessment and management.

Patients who develop complications during treatment, such as allergy, cellulitis, uncontrolled pain, or who do not tolerate compression, should also be referred (Marston and Vowden, 2003).

**Conclusion** While management of venous leg ulceration can be based on the best possible evidence, if it is not acceptable to the patient then it will fail.

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**REFERENCES**


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**FOOTNOTE**

The full version of this article has been published in Journal of Wound Care: Dowsett, C. (2004) Our agenda is to raise the standard of venous leg ulcer care. Journal of Wound Care; 13: 5, 181–185.