

# Treatment and prevention of recurrence of venous leg ulcers using RAL hosiery

Advances in technology over the last ten years have allowed for greater choice of compression therapy. Leg ulcer services need to provide up-to-date, high quality services that ensure safety, effectiveness and improvements to the patient experience. This includes monitoring and reporting on leg ulcer healing rates and prevention of recurrence. This paper discusses a redesign in a community leg ulcer service, including the introduction of RAL compression hosiery. Healing rates improved from 36% at 12 weeks to 72%, and from 40% at 24 weeks to 100%. Recurrence rates for venous leg ulcers also reduced from 18–20% to 5.8%.

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## KEY WORDS

Venous leg ulcers  
RAL compression hosiery  
Community leg ulcer service  
Healing  
Recurrence

Leg ulceration affects approximately 580,000 individuals at any one time in the UK, causing increased morbidity and reduced quality of life (Callam et al, 1985; Moffatt et al, 1992). As well as associated patient costs such as pain and suffering, the cost to the NHS is between £300–600 per annum (Bosanquet, 1992; Simon and McCollum, 2004). The majority of these ulcers are of venous origin, requiring an average of 24 weeks to heal; approximately 15% never heal and recurrence is found once or multiple times in 15–71% of cases (Kurz et al, 1999).

Venous leg ulcers are the most common leg ulcer aetiology and are the result of a complex chain of events resulting from venous valvular incompetence and subsequent superficial venous hypertension (Chen and Rogers, 2007). Over half of venous ulcers are due to slowly progressive primary reflux disease that begins as varicose veins, and the remaining ulcers develop after deep vein thrombosis (DVT) and are prone to advance more rapidly to the ulcer stage in periods from six months to several years post DVT (Kistner, 2010). Venous disease is progressive and recurrent ulceration is frequently accompanied by new venous pathology, such as the development of new varicosities, new locations of reflux, or new incompetent perforating veins.

Compression therapy is the core intervention in venous leg ulcer treatment (Cullum et al, 2006). Reported healing rates of venous leg ulcers treated with compression therapy vary greatly, from 37–46% at 12 weeks and 55–68% at 24 weeks (Iglesias et al, 2004). The majority of these patients, up to 80%, are cared for in the community setting by community nurses and/or their general practitioner (Moffatt et al, 1992). Many patients are cared for in nurse-led community leg ulcer clinics, often organised by district nurses with specialist input from tissue viability or leg ulcer specialists. With recent

improvements in venous ulcer services, such as the availability of tissue viability and leg ulcer specialist nurses, more patients have their ulcers healed in a timely manner and the challenge is to prevent recurrence. In some areas, prevention or well-leg clinics have been established that focus solely on health promotion and prevention of recurrence of leg ulceration (Dowsett, 2010).

## Leg ulcer services

Many parts of the UK have followed a model of leg ulcer care based on 'nurse-led' community leg ulcer clinics. Rates of healing of venous leg ulcers have been shown to improve, with costs reduced when a coordinated service has been introduced (Moffatt et al, 1992). However, these improvements are only sustainable with regular training and support from specialist services such as tissue viability and leg ulcer specialist nurses, and should be monitored and audited to ensure improved outcomes and improvements to service quality in line with current policy directives. Audit not only measures outcomes for patients, but can also identify areas where good practice or policy is not being adhered to (Vowden and Vowden, 2010).

The care of patients with venous leg ulcers has improved over the last ten years (Dowsett, 2010). Advances

in technology have led to a greater choice in compression therapies. Bandages, hosiery kits and hosiery are now used in the treatment of venous leg ulcers. Early referral to leg ulcer services often means that the patient presents with a small leg ulcer and therefore compression hosiery kits or compression hosiery can be offered as a first treatment choice.

A recent meta-analysis of studies that compared a variety of bandages with specifically designed stockings for venous leg ulcer management, found that stockings were easier to use and that patients using stockings experienced less pain (Amsler et al, 2009). Additionally, a greater proportion of ulcers healed in patients treated with stockings than in those treated with bandages (62.7% versus 46.6%;  $P < 0.01$ ). The average time to healing (seven studies, 535 patients) was three weeks shorter with stockings ( $p = 0.001$ ) than with bandages (Amsler et al, 2010).

Patients are more likely to comply with compression therapy that is easy to use and reduces pain and discomfort. Developments in hosiery, such as improvements to fabric, range of available sizes and colours have led to improvements in patient concordance, with wearing hosiery leading to a reduction in recurrence rates. In a study that followed 113 patients over 15 years, ulcer healing was 97% in patients who adhered to treatment and 55% in those who did not. Mean time to ulcer healing was 5.3 months. Ulcer recurrence was 29% in five years. In the non-adherent group, all ulcers recurred at 36 months (Maybury et al, 1991).

### Redesign of leg ulcer services

In Newham, four nurse-led community leg ulcer clinics were set up in 1996, resulting in improvements to the management of patients with venous leg ulcers (Dowsett, 1997). Following the success of the leg ulcer clinics, three additional well-leg clinics aimed at preventing recurrence of venous leg ulceration were established. These clinics were organised and run by

the community nursing service with specialist input from the tissue viability team. Over time, variations in practice were noted across the localities and some clinics appeared to have better patient outcomes than others.

### Patients are more likely to comply with compression therapy that is easy to use and reduces pain and discomfort.

A comparative audit of the leg ulcer clinics for 2007 and 2008 showed that care was not consistent across the localities and aspects of best practice were not being sustained. Nurses were failing to measure ankle circumferences that determined the amount of compression to be used, and many patients did not have up-to-date Doppler readings. Patients reported varying levels of satisfaction depending on which clinic they attended. Following the audit a business case for change was proposed by the tissue viability service, including the appointment of

two dedicated leg ulcer coordinators from the community nursing service who would take sole responsibility for the nurse-led leg ulcer clinics and the well-leg clinics. Following approval, the two coordinators worked alongside the two clinical nurse specialists in tissue viability to drive up quality and improve outcomes in the leg ulcer treatment and prevention clinics.

A number of service developments followed, including:

- ▶▶ Education and training of the leg ulcer coordinators
- ▶▶ Increased use of hosiery kits for treatment of venous leg ulcers
- ▶▶ A move to using RAL compression hosiery in the prevention of recurrence of venous leg ulceration.

Traditionally, British class hosiery has been used in community leg ulcer clinics, as this was available on prescription (FP10). However, the levels of compression vary significantly from RAL hosiery (Table 1) which is now available on FP10. Additionally, RAL offers more available sizes and has an extra wide calf size.

**Table 1**  
Compression hosiery pressures

Title	Available	Strength	Features
Support hosiery	Retail shops	Less than 10mmHg	Non-medical
Anti-embolism stockings	Hospitals for DVT prophylaxis	16–18mmHg	For patients, pre, peri and post surgery
Travel socks	Over the counter	20mmHg	For travel on planes, trains, car
British standard hosiery	FP 10 prescription	Class 1 14–17mmHg Class 2 18–24mmHg Class 3 25–35mmHg	Clinically effective for up to three months, four sizes
RAL standard hosiery	Only available from hospital appliances in the past Now available on FP10	Class 1 18–21mmHg Class 2 23–32mmHg Class 3 34–46mmHg Class 4 over 49mmHg	Clinically effective for up to six months Seven off-the-shelf sizes as well as custom-made Comprehensive range of styles and colours Upper and lower limb garments

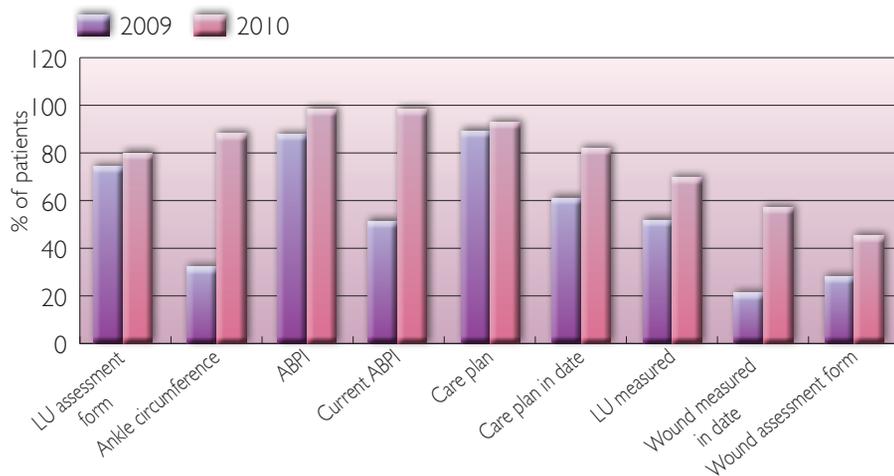


Figure 1. Leg ulcer clinic data comparisons 2009/10.

It should be noted that some centres refer to 'European' class hosiery, but this does not exist as a recognised classification.

**Patient outcomes and efficiency gains**

Recurrence rates in the nurse-led clinics before the changes were between 18–20%. Some of this was in part due to patients not wearing their hosiery because of poor fitting, discomfort and a general lack of concordance. Many patients failed to attend follow-up prevention appointments. The effectiveness of compression hosiery is due to correct fit, pressure generated beneath the stocking and, of course, relies on the patient wearing their stockings. The following benefits of using RAL hosiery have been seen by the leg ulcer clinics:

- ▶ Patients get a higher level of compression and are therefore more likely to remain healed
- ▶ They have more choice of size with extra wide calf and shoe size available
- ▶ They are reviewed every six months instead of three months, as the hosiery lasts for six months
- ▶ This has led to increased productivity in that more patients can be seen in the clinic as less frequent visits free up time for new patients
- ▶ The cost has decreased as each patient requires less nursing time and the hosiery lasts for six months instead of the previous three months
- ▶ Patients now attend routine follow-up appointments.

More importantly, the feedback from the patients has been positive. Patients report a better fit, ease of application and they are more likely to be concordant with treatment. In terms of outcomes, the recurrence rates have been reduced from 18–20% down to 5.8% for the period April–September 2010.

**Regular monitoring of healing and recurrence rates through audit and patient satisfaction surveys is important for advancing practice, and also for identifying those patients who are not healing in a timely fashion.**

The leg ulcer coordinators report that they have had to request less made-to-measure hosiery, as the increased availability of sizes means that many patients who have had made-to-measure in the past now fit in sizes available on FP10. To ensure that patients receive their compression hosiery in a timely manner, the clinics carry a stock of RAL hosiery. Patients are measured, fitted and have their hosiery applied and they replace the stock on the first review visit.

As well as improving recurrence rates for venous leg ulcers, the service redesign has also impacted on the management of those patients with

active leg ulcers. Care across the four localities shows an improvement in continuity and consistency in practice. A re-audit of best practice in the clinics shows an increase in the number of patients with full leg ulcer assessments, measurement of ankle circumference, current ankle brachial pressure index (ABPI) readings, wound measurements taken, and up-to-date care plans. Data comparison for 2009/10 is outlined in Figure 1.

Patient treatment outcomes have also improved, with healing rates for venous leg ulcers improving from 36% at 12 weeks to 72%, and from 40% at 24 weeks to 100% for 2010. Patient reported satisfaction has also improved, with patients feeling that they are now receiving greater continuity in their care.

**Conclusion**

In the current healthcare climate, it is important to demonstrate how services are driving up quality, increasing productivity and increasing patient satisfaction (Dowsett and White, 2010). The three domains of quality are safety, effectiveness and patient experience and this service redesign has addressed the quality agenda and demonstrated that taking a different approach to the delivery of leg ulcer care can significantly improve patient outcomes and their experience. However, as clinicians, we need to be constantly looking at innovative ways of achieving clinically and cost-effective patient-centred care. While many patients have benefited from this service development, there are still those patients who do not heal in compression and need to be managed outside of the nurse-led community leg ulcer clinic model in more specialist areas.

Regular monitoring of healing and recurrence rates through audit and patient satisfaction surveys is important for advancing practice, and also for identifying those patients who are not healing in a timely fashion. These patients can be referred to specialist clinics where they can be considered for further investigations, surgery, advanced products such as skin substitutes, or other biological

**Key points**

- ▶▶ It is important to demonstrate quality outcomes in venous leg ulcer management as part of the QIPP agenda.
- ▶▶ Audit can make a valuable contribution to re-design of leg ulcer services.
- ▶▶ RAL compression hosiery is effective in the treatment and prevention of venous leg ulcers and can improve recurrence rates of venous leg ulcers.
- ▶▶ As clinicians we need to be constantly looking at innovative ways to achieved clinically and cost-effective patient-centred care.

agents that are not always available in the community leg ulcer clinics. **WUK**

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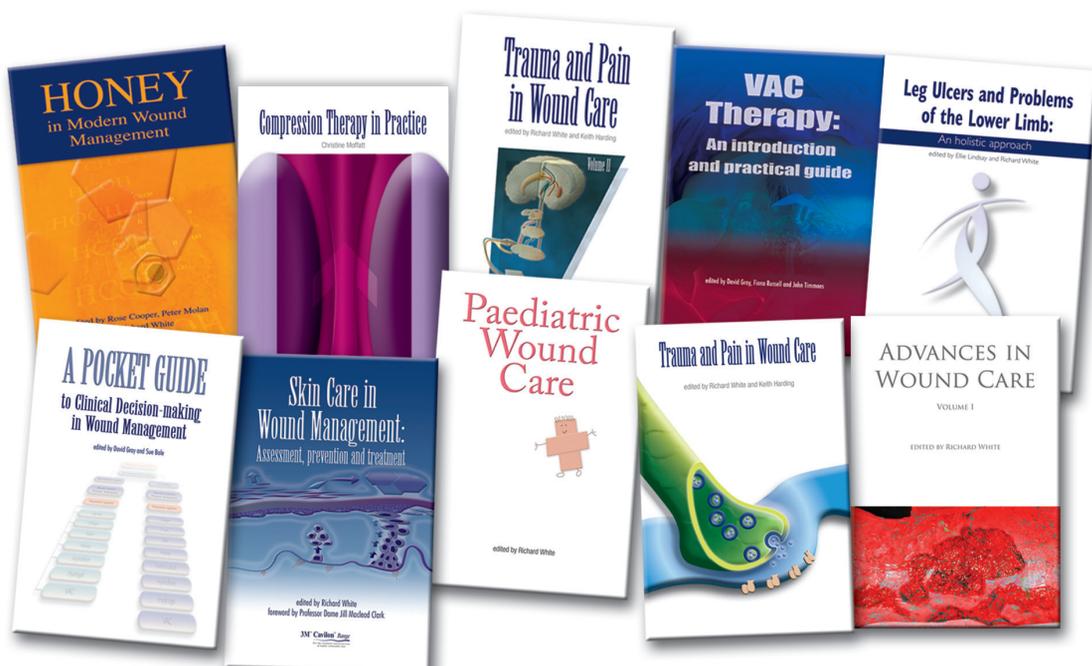
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