Healthcare Improvement Scotland | SIGN Evidence-based clinical guidelines

Management of chronic venous leg ulcer

A national clinical guideline

Consultation draft, August 2026

NHS SCOTLAND

Key to evidence statements and recommendations

Levels of evidence

1^{++}	High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1^{+}	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
1^{-}	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2^{++}	High-quality systematic reviews of case-control or cohort studies High-quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2^{+}	Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2^{-}	Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, for example, case reports, case series
4	Expert opinion

Network meta-analyses are given a binary rating (sufficient or insufficient) according to relevance and credibility.

Recommendations

Some recommendations can be made with more certainty than others. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the 'strength' of the recommendation).

The 'strength' of a recommendation takes into account the quality (level) of the evidence. Although higher-quality evidence is more likely to be associated with strong recommendations than lower-quality evidence, a particular level of quality does not automatically lead to a particular strength of recommendation.

Other factors that are taken into account when forming recommendations include: relevance to the NHS in Scotland; applicability of published evidence to the target population; consistency of the body of evidence, and the balance of benefits and harms of the options.

R For '**strong**' recommendations on interventions that **'should'** be used, the guideline development group is confident that, for the vast **majority** of people, the intervention (or interventions) will do more good than harm. For '**strong**' recommendations on interventions that **'should not'** be used, the guideline development group is confident that, for the vast **majority** of people, the intervention (or interventions) will do more harm than good.

R For '**conditiona**l' recommendations on interventions that should be '**considered'**, the guideline development group is confident that the intervention will do more good than harm for **most** patients. The choice of intervention is therefore more likely to vary depending on a person's values and preferences, and so the healthcare professional should spend more time discussing the options with the patient.

Good-practice points

✓ Recommended best practice based on the clinical experience of the guideline development group.

Contents

1 Introduction

1.1 The need for a guideline

Venous ulceration is the most common type of leg ulceration. Sixty to 80% of leg ulcers have a venous component.[1, 2] Venous leg ulcers (VLU) are difficult to heal, with 1-year healing rates of 53% in the community.[3] VLU often recur, with 12-month recurrence rates ranging from 26 to 69%.[4]

Chronic VLU has an estimated prevalence of between 0.1% and 0.3% in the United Kingdom. Prevalence increases with age. Approximately 1% of the population will experience leg ulceration at some point in their lives.[5] Patients with venous leg ulcer have significantly impaired quality of life and physical impairment which is comparable to that experienced by patients with congestive cardiac failure and chronic lung disease.[6, 7] Leg ulcers in patients from the most deprived communities (social classes IV and V) take longer to heal and are more likely to be recurrent.[8] Venous ulcers arise from venous valve incompetence and calf muscle pump insufficiency which leads to venous stasis and hypertension. This results in microcirculatory changes and localised tissue ischaemia.[9, 10] The natural history of the disease is of a continuous cycle of healing and breakdown over decades.[7]

Treatment of this major health problem results in a considerable cost to the NHS. In 2022 the social and economic burden was estimated to be around £102 million annually in the United Kingdom.[11]

The previous SIGN guideline, SIGN 120: Management of chronic venous leg ulcers, recommended that protocol-driven, specialist leg ulcer clinics are the optimal service for community treatment of venous leg ulcer. This is highlighted in the NHSScotland Centre for Sustainability, National Venous Leg Ulcer Treatment Pathway.[12]

As new therapies and products have become available, there is a need to compare them to established therapies to determine what the best therapies are in terms of clinical and cost effectiveness, sustainability and acceptability for patients and carers.

1.1.1 What matters to people living with leg ulcers

The guideline was developed with direct involvement of a lived experience panel to ensure that recommendations reflect what matters most to people with lived experience of the condition. The panel's role was to articulate

priorities, values, preferences and real-world challenges that may not be fully captured within the published evidence base.

Engagement methods included facilitated discussions and written feedback.

Throughout the guideline, 'What matters to you?' statements reflect the priorities of people with lived experience. Clinicians are encouraged to use these insights to support shared decision-making and person-centred care.

1.2 Remit of the guideline

1.2.1 Overall objectives

This guideline provides recommendations based on current evidence for best practice in the prevention and management of adults at risk of, or who have, VLU.

It excludes foot ulcers.

This should be used alongside the NHSScotland Centre for Sustainability, National Venous Leg Ulcer Treatment Pathway, 2025.[12]

Further advice on wound identification and management in injecting drug users is available from The Scottish Drugs Forum, National Wound Care Guide for Scotland, 2022.[13]

1.2.2 Definition

Venous leg ulceration is defined as a break in the skin below the knee which has not healed within 2 weeks and occurs in the presence of venous disease between the knee and the ankle joint.

Venous ulcers are usually shallow, situated on the gaiter area of the leg and may include:[12]

- oedema
- eczema
- ankle flare
- lipodermatosclerosis
- varicose veins
- hyperpigmentation or haemosiderin staining
- atrophie blanche.

1.2.3 Assessment of venous leg ulcers

The ulcer should be measured and an accurate clinical description of the wound should be documented including a description of the wound edge and the base of the ulcer. Deep ulcers which involve deep fascia, tendon, periosteum or bone may have an arterial component to their aetiology and should be referred for specialist assessment in secondary care.[12]

In the absence of clinical signs of infection (eg cellulitis, pyrexia, increased pain, rapid extension of area of ulceration, malodour, increased exudate), there is no indication for routine bacteriological swabbing of venous ulcers. All ulcers will be colonised by micro-organisms at some point, and colonisation in itself is not associated with delayed healing.[14]

When assessing, be aware of the following red flags that indicate urgent referral to the relevant secondary care service:[12]

- acute infection (for example, increasing unilateral erythema, swelling, pain, pus, heat)
- symptoms of sepsis
- acute or suspected chronic limb threatening ischaemia (for example, PAD with rest pain, gangrene, or lower limb ulceration >2 weeks duration)
- suspected acute deep vein thrombosis
- suspected skin cancer
- bleeding varicose veins.

1.2.4 Comorbidities to consider when managing patients with venous leg ulcer

Common comorbidities and coexisting health issues to consider in patients with venous leg ulcer include arterial disease, diabetes, obesity, rheumatoid arthritis, and immobility resulting in impaired muscle calf function.

1.2.5 Target users of the guideline

This guideline will be of interest to all healthcare professionals involved in the care of people with VLU and varicose veins. It will be of particular interest to nursing staff (district, practice, wound management, tissue viability and rheumatology), general practitioners, vascular specialists, podiatrists, patients and carers.

1.2.6 Equality impact assessment

An equality impact assessment for the development of this guideline is available in the supporting material section for this guideline on the SIGN website, www.sign.ac.uk

Included studies were screened for racial bias using a modified version of Naicker's Critically Appraising for Antiracism Quality Appraisal Tool.

1.2.7 Plain language version

A plain language version of this guideline is available from the SIGN website, www.sign.ac.uk

1.3 Statement of intent

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results.

The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at through a process of shared decision making with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be documented in the patient's medical records at the time the relevant decision is taken.

1.3.1 Influence of financial and other interests

It has been recognised that financial or academic interests may have an influence on the interpretation of evidence from clinical studies.

It is not possible to completely eliminate any possible bias from these sources, nor even to quantify the degree of bias with any certainty. SIGN requires that all those involved in the work of guideline development should declare all financial and academic interests, whether direct or indirect, annually for as long as they are actively working with the organisation. By being explicit about the influences to which contributors are subjected, SIGN acknowledges the risk of bias and makes it possible for guideline users or reviewers to assess for themselves how likely it is that the conclusions and guideline recommendations are based on a biased interpretation of the evidence.

Signed copies of declaration of interests forms are retained by the SIGN Executive and are available on request from the SIGN Executive.

2 Key recommendations

The following recommendations were highlighted by the guideline development group as the key clinical recommendations that should be prioritised for implementation.

[not available in this draft]

2.1 Section heading

R Rec 1

Rec 2

Rec 3

3 Risk factors

What matters to people living with venous leg ulcer

The panel with lived experience considered that understanding risk factors was important because it would:

- help them to understand why they have developed the condition
- support self management to reduce the risk of developing VLU
- educate clinicians from other specialities to consider VLU as a potential comorbidity.

Patient organisations highlighted that there is high prevalence of VLU in hard-to-reach communities, such as injecting drug users, homeless and others experience socioeconomic deprivation.

Observational studies identified over 70 different risk factors that could potentially be associated with developing VLUs.[8, 15-19] The most common factors across the studies are described below. 2+

Body mass index

Seven studies reported an association between increased body mass index (BMI) and VLU.[16, 18-23] Odds ratios (OR) for developing VLU ranged from 1.08 and 2.73.[19, 20, 22, 23] Definitions of higher BMI varied between studies, from 25-29 kg/m^2 and >30 kg/m^2. One study reported a predictive risk ratio (RR) of 2.86 (95% CI 1.74 to 4.69) for individuals with a BMI ≥ 30 kg/m^2.[16] 2+

Age

Risk for developing VLU increases with age.[15, 16, 18-21, 23, 24] The range of ages varied between studies, with the youngest being over 40 years.[23] A study of people with venous insufficiency reported hazard ratios (HR) of 1.32 (95% CI 1.28 to 1.37) for those aged 45 to 54 years, and 1.64 (95% CI 1.59 to 1.70) for those aged 55 to 64 years.[15] 2+

Lifestyle-related risk factors

In a systematic review six studies addressed smoking as a risk factor for VLU.[17] Only two found an association. One reported almost double the odds for developing a VLU OR 1.99 (95% CI 1.16 to 3.42), whereas the second reported a 12% greater odds: 1.12 (95% CI 1.01 to 1.25).[20, 22] 2+

Other lifestyle factors found to be associated with increased odds for developing VLU included low exercise (OR 2.21, 95% CI 1.51 to 2.23),

hours spent standing (OR 1.39, 95% CI 1.17 to 1.62) and hours spent sitting (OR 1.32, 95% CI 1.08 to 1.61).[20, 23]	
Socioeconomic factors Lower socioeconomic status is associated with an increase the likelihood of developing VLU. One study reported adjusted incident rate ratios for different levels of deprivation (Townsend deprivation quintile, 1 = least deprived and quintile 5 = most deprived). Compared to those who were least deprived, there was a clear gradient for every quintile (quintile 2: 1.08, quintile 3: 1.24, quintile 4: 1.30 and quintile 5: 1.44).[8]	2+
Lower class and living in an urban environment versus a rural one increased an individual's predictive risk for developing a VLU by a prevalence ratio of 2.31 (95% CI 1.42 to 3.74) and 1.62 (95% CI 1.05 to 2.50) respectively. The social class risk factor not adjusted for age and gender.[16]	2+
A Scottish survey of 200 people who currently or formerly inject drugs, found that injecting in the groin (OR 7.162, 95% CI 1.416–36.229) and in the lower leg (OR 5.900, 95% CI 1.900–18,318) increased the risk of leg ulceration (not specifically VLU).[25] Ninety-six percent of the study's participants who developed a leg ulcer had deep vein thrombosis (DVT).[25]	3
Venous history Two of six studies identified in a systematic review found an association between a history of DVT or post-thrombotic syndrome (PTS), with ORs ranging between 3.17 and 14.90.[17, 20, 23] Another reported a greater percentage (28%) of people who developed VLU had a DVT compared to participants without VLU (8%).[22] The remaining studies did not identify DVT as a possible risk factor.[15, 18, 19]	2+
Patients with DVT should be encouraged to use a compression stocking, which would also help reduce risk of developing VLU (see section 5).[26]	4
Superficial venous thrombosis was not found to have a statistically significant association with developing VLU.[15, 19]	2+
A history of deep venous valve insufficiency was found to be associated with a greater risk of developing VLU, with ORs ranging between 2.28 and 8.29.[19, 20, 22, 23] Another study reported chronic venous insufficiency a risk	2+

factor for developing VLU, with an adjusted HR of 1.17.[15]

Superficial venous valve insufficiency was not found to have a statistically significant association with VLU.[19] 2+

Other conditions with potential associations are:

- having varicose veins for a long time. Risk of ulceration increased by 2% with each year of having varicose veins (OR 1.02, 95% CI 1.00 to 1.04)[19]
- lipodermatosclerosis (OR 8.90, 95% CI 1.44 to 54.8)[22]
- pulmonary embolism. One of two studies reported an association (OR 1.42 (95% CI 1.06 to 2.00).[15, 18] 2+

Hypertension

Four studies found an association with hypertension and the development of VLU, with ORs ranging between 1.03 and 5.22.[18,20,22,23] Another reported group differences with 69% of individuals who developed VLU having hypertension compared to 46% who did not.[21] Two studies did not identify hypertension in their multivariate analyses.[16,19] 2+

R **When patients with venous insufficiency present with a combination of the following, clinicians should be alert that there may be associated risk of developing venous leg ulcer:**

- **increasing BMI** (from > 25 kg/m^2)
- **increasing older age** (from over 40 years)
- **low physical activity**
- **low socioeconomic status, or a chaotic lifestyle** (for example, injecting drug use)
- **venous history related factors** (for example, deep vein thrombosis or skin changes associated with chronic venous insufficiency such as lipodermatosclerosis)
- **cardiovascular conditions such as hypertension.**

✓ If appropriate, offer advice on early warning signs of venous leg ulcer and advice on how and when to get assessed.

R **Encourage patients to participate in physical activity.**

R **Encourage patients with obesity to access support for a healthy lifestyle. If they meet the criteria, refer them to the weight management service.**

R **Consider use of a compression product for patients presenting with deep vein thrombosis to reduce the risk of developing a venous leg ulcer.**

✓ When possible, carry out opportunistic screening in people from hard-to-reach populations (eg homeless, injecting drug users).

4 Compression therapies

Compression therapy is the first line treatment for patients with VLUs.

For patients with healed venous leg ulcers a Cochrane review concluded that UK class 3 compression hosiery may reduce re-ulceration compared with UK class 2 compression hosiery. Higher compression, however, may lead to lower compliance.[27]

Full assessment of the patient, the leg and the ulcer including ankle brachial pressure index (ABPI) measurement should be carried out prior to any treatment. Patients with a reading of 0.8 to 1.3 (inclusive) with a clinical picture of venous ulceration, can safely have compression therapy applied (see the National Venous Leg Ulcer Treatment Pathway for contraindications).[12]

In some circumstances it may not be possible to get ABPIs measured immediately. Rather than delaying compression therapy in patients who are at low risk of pressure damage over bony prominences, first-line reduced, graduated compression (20 mmHg or less at the ankle) can be used while waiting for the ABPI assessment. These patients need close monitoring for skin integrity and signs of vascular insufficiency and should have ABPIs measured as soon as possible.[12]

The National Institute for Health and Care Excellence (NICE) HealthTEch guidance found that the following compression products have similar clinical and cost effectiveness for ulcer healing:[28]

- 2-layer compression bandaging
- 4-layer compression bandaging
- 2-layer compression hosiery
- compression wraps.

1++

These compression products included in the assessment aim to deliver at least 40 mmHg of pressure at the ankle and are used for treating venous leg ulcers. The assessment did not include:

- made-to-measure compression hosiery, which is used for maintenance compression after ulcers have healed, or
- compression products that are used before or after surgery.

The studies on which the NICE decisions were based reported that 2-layer compression hosiery and 4-layer compression bandaging had a similar time to healing. When compared to a combination of 2-layer compression hosiery with 4-layer compression bandaging, compression wraps had a slower time to healing but the difference was small and not statistically significant.[28]

Compression wraps may be the most suitable option for some patients in terms of ease of use and adherence to treatment who may not have tolerated other products. NICE concluded that a variety of products should

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be available for use. Decisions on which product to use should be based on a person-centred, shared decision-making approach.[28]

What matters to people living with venous leg ulcer

The lived experience panel stressed that different products are appropriate for different situations and that it is important to discuss what matters to the person. Consideration needs to be given to lifestyle, self confidence and self image, comfort, ease of use, and whether or not the person needs help to apply the product, either at home or from a healthcare practitioner.

The product is only effective if the patient is able to use it optimally, therefore, a full assessment of the patient's health and lifestyle is needed, in relation to the potential impact on treatment. This should inform the discussion with the patient on selecting the right product for them. An assessment should include:[28]

- assessment of the ulcer and where pressure should be applied
- living arrangements (for example, at home with or without support, care home, homeless, prison, if sleeping in a bed or chair)
- activities of daily living (for example, work, leisure, mobility)
- mental wellbeing
- physical ability to apply products or attend clinics
- support from others.

R A range of the following compression products should be available to enable healthcare professionals to provide the product that best meets the individual patient's needs:

- 2-layer compression bandaging
- 4-layer compression bandaging
- 2-layer compression hosiery
- compression wraps.

R A healthcare professional and the person with the venous leg ulcer should discuss and decide together which compression product to use to match their individual needs. Decisions should take into account how the choice of compression product might affect the person's quality of life, including:

- ability to complete activities of daily living
- adherence to the treatment regimen
- physical health, including whether they can apply products themselves
- mental health and wellbeing
- relationships with others, including whether they have informal carer support at home.

- ✓ See the National Venous Leg Ulcer Treatment Pathway for advice on contraindications to compression therapy.
- ✓ Patients using compression products should have a care pathway. Patients and their carers should be given training or information on how to use their compression hosiery or wrap, including when to seek help, guidance or support from their nurse.
- ✓ Compression bandaging should only be applied by staff with appropriate training and in accordance with manufacturer's instructions.

5 Endovenous therapy

In addition to compression therapy, removal of incompetent veins can improve the healing times of leg ulcers. Minimally invasive procedures, such as endovenous ablation offer an alternative to surgery that does not require general anaesthetic and can be carried out as a day or clinic procedure.

What matters to people living with venous leg ulcer

The panel of people with lived experience welcomed the option of further therapies, if viable. It is important to receive clear information about benefits, risks, suitability, and recovery to support informed decision-making. Helpful information to discuss includes:

- potential healing times
- a clear explanation of the options and the opportunity to ask questions and feel reassured
- what follow-up care is available
- how people can help themselves
- possible complications and mitigating factors.

A Cochrane review identified two studies that reported a quicker time to complete healing of the ulcer with endovenous ablation therapy and compression in patients with VLU for less than 6 months, compared to compression alone or compression with deferred endovenous treatment. In the large UK study (the Early Venous Reflux (EVRA) trial) the mean ulcer healing time was 56 days (95% confidence interval (CI) 49 days to 66 days) in the intervention group versus 82 days in the control group (95% CI 69 days to 92 days). A smaller Brazilian study reported a median healing time of 68 days in the intervention group (95% CI 57 days to 147 days) and 77 days in the control group (95% CI 72 days to 198 days). The pooled HR was 1.41, 95% CI 1.36 to 1.47.[29] 1++

The combination of endovenous ablation therapy and compression therapy had a higher healing rate in terms of the proportion of ulcers healed at 90 days (RR) 1.14, 95% CI 1.00 to 1.30).[29]

The effect on recurrence at 12 months was unclear (pooled RR 0.29, 95% CI 0.03 to 2.48).[29] Of the 426 participants whose leg ulcer had healed, 28.4% had had at least one recurrence within 3 years, but there were no differences between the groups.[30]

The EVRA trial also addressed quality of life, and found no significant difference between the treatment and comparison groups at 12 months.[29]

The most common adverse effect with endovenous treatment was venous thromboembolism. The EVRA trial reported 2.7% cases (6/224) of calf vein DVT in the early intervention group. In the deferred intervention group calf vein thrombosis occurred in 1.3% of participants (3/226). In all cases this occurred after endovenous treatment. In the other trial no episodes of DVT 1++

or pulmonary embolism were detected. The pooled effect of endovenous ablation on thromboembolism was reported as unclear with a RR of 2.02 (95% CI 0.51 to 7.97).[29]

Analysis of the EVRA trial found that endovenous ablation was cost effective. The mean cost difference was £163 and the mean quality of life years (QALY) difference was 0.041, yielding an incremental cost-effectiveness ratio (ICER) of £3,976 per QALY. At a willingness-to-pay threshold of £20,000 per QALY, the probability that endovenous treatment was cost effective was 89%. The authors of the Cochrane review graded the certainty of evidence for this outcome as moderate.[29]

No further randomised controlled trials on the use of surgery or endovenous ablation therapies were identified.

R **Patients with venous leg ulcer should be offered endovenous ablation therapy within 6 months of the ulcer developing.**

R **Prior to treatment patients should have a risk assessment for DVT and DVT prophylaxis if needed.**

✓ Refer to the venous leg ulcer national pathway for referral criteria for endovenous ablation therapy.

6 Wound management

Venous leg ulcers do not require routine bacteriological swabbing.[14] All ulcers will be colonised by micro-organisms at some point, and colonisation in itself is not associated with delayed healing.[14] Antibiotics do not help to promote healing when a leg ulcer is not clinically infected, but can be offered where there are symptoms of infection.[14] 2+ 4

Swabs should only be taken if there are clinical signs of infection (eg cellulitis, pyrexia, increased pain, rapid extension of area of ulceration, malodour, increased exudate).[14]

R **Do not use bacteriological swabbing of venous leg ulcer unless there are clinical signs of infection.**

NICE HealthTech guidance found that the evidence base for antimicrobial dressings was limited and heterogenous. It was not possible to determine which agent was the most clinically or cost effective. There was insufficient evidence to determine whether price variations between different antimicrobial agents in topical dressings were justified. It concluded that the dressing should be chosen first by the needs and preferences of the patient, and if one or more option is appropriate, the least expensive option can be used.[31] 1++ 4

In NHSScotland, local formularies for wound dressings are informed by the NHSScotland national procurement advanced wound management product formulary (NP59926), due for publication in November 2026.

What matters to people living with venous leg ulcer
[not available in this draft]

R **If an antimicrobial dressing is needed for a patient with venous leg ulcer, consider the needs and preferences of the patient and select the most appropriate product listed in the local formulary.**

7 Provision of information

What matters to people living with venous leg ulcer

Information provided to people with, or at risk of, VLU should be clear, practical, and support shared decision-making. The panel listed the following areas for information provision:

- helping them understand their condition
- treatment options
- self management
- when to seek further help.

The panel considered that there was a need for both printed and verbal information. They welcomed the opportunity to discuss the condition with a healthcare professional, and signposting to support groups and relevant organisations.

7.1 Publications from SIGN

SIGN presents recommendations and rationales, created for health and social care professionals, in plain language to be easily understood and used by the public. This information aims to:

- help people understand the latest evidence around diagnosis, treatment, and self care
- empower people to actively participate in decisions about managing their condition in discussions with health and social care professionals
- highlight areas of uncertainty for people, making them aware of where more information or research is needed.

A copy of the plain language version of this guideline is available from www.sign.ac.uk/patient-publications.html

Other SIGN plain language booklets that may be relevant are:

Preventing cardiovascular disease

Managing chronic pain

7.2 Sources of further information

Legs Matter
www.legsmatter.org
Email: support@legsmatter.org

Legs Matter is a UK-wide coalition of healthcare charities and professional bodies dedicated to raising awareness of lower leg and foot health. The coalition provides patient-focused information on non-healing wounds, venous insufficiency, and downloadable care guides to help individuals advocate for the correct medical interventions.

NHS inform
www.nhsinform.scot/illnesses-and-conditions/skin/skin-injuries-bites-and-infections/venous-leg-ulcer
Tel: 111
NHS inform is Scotland's national health information service. It provides a comprehensive public guide outlining the symptoms, causes, specialist diagnosis, and self-care steps, including guidance on preventing ulcer recurrence.

The Lindsay Leg Club Foundation
www.legclub.org
Tel: 07855 616354
Email: ellie.lindsay@legclub.org
The Lindsay Leg Club Foundation is a registered charity that promotes a unique, psychosocial model of lower limb care. Operating through local, community-run Leg Clubs, it provides leg ulcer management, nursing advice, and peer support in a non-clinical, social environment to reduce isolation.

The Leg Ulcer Forum
www.legulcerforum.org
Email: info@legulcerforum.org
The Leg Ulcer Forum is a network of specialist practitioners, educationalists, and patient advocates working to improve outcomes for individuals with lower limb conditions. It hosts educational events, provides open-access resources, and campaigns to drive clinical standards.

8 Implementing the guideline

This section provides advice on the resource implications associated with implementing the key clinical recommendations, and advice on audit as a tool to aid implementation.

8.1 Implementation strategy

Implementation of national clinical guidelines is the responsibility of each NHS board, including health and social care partnerships, and is an essential part of clinical governance. Mechanisms should be in place to review care provided against the guideline recommendations. The reasons for any differences should be assessed and addressed where appropriate. Local arrangements should then be made to implement the national guideline in individual hospitals, units and practices.

Quality improvement methodologies can be used locally to implement the guidelines. The Quality Improvement Journey contains generic advice and tools to use quality improvement methods to support local implementation. NHS Education for Scotland also delivers the Scottish Improvement Leaders programme and Scottish Quality and Safety Fellowship programme to develop individuals to lead local implementation projects to improve the quality of care.

Implementation of this guideline will be encouraged and supported by SIGN. The implementation strategy for this guideline encompasses the following tools and activities.

8.2 Resource implications of key recommendations

No recommendations are considered likely to reach the £5 million threshold which warrants resource impact analysis.

8.3 Auditing current practice

A first step in implementing a clinical practice guideline is to gain an understanding of current clinical practice. Audit tools designed around guideline recommendations can assist in this process. Audit tools should be comprehensive but not time consuming to use. Successful implementation and audit of guideline recommendations requires good communication between staff and multidisciplinary team working.

The guideline development group has identified the following as key points to audit to assist with the implementation of this guideline:

- time from presentation to Doppler assessment
- access to specialist leg ulcer clinic

- healing rate at 12 and 24 weeks
- time to complete healing
- recurrence rate and 1 and 3 years
- provision of endovenous treatment to patients with VLU within each NHS board
- collection of standardised data on how many patients have VLU in the community and how many are receiving compression therapy

9 The evidence base

9.1 Systematic literature review

The evidence base for this guideline was synthesised in accordance with SIGN methodology. A systematic review of the literature was carried out using an explicit search strategy devised by an Information Scientist. Databases searched include Medline, the Cochrane database and Cochrane Central. Internet searches were carried out on various websites for relevant guidelines and health technology appraisals. The year range covered was 2010–2025 for key questions 1 and 2 (risk factors and endovenous therapies) and 2020-2025 for key question 3 (compression therapy). Studies were screened and selected by the Health Services Researcher, Programme Manager, and the chair of the guideline development group. Each of the selected papers was evaluated independently by two Health Service Researchers using standard SIGN methodological checklists before conclusions were considered as evidence by the guideline development group.

The search strategies are available on the SIGN website, www.sign.ac.uk

9.2 Recommendations for research

The guideline development group was not able to identify sufficient evidence to answer all of the key questions asked in this guideline (see Annex 1). The following areas for further research have been identified:

- Prospective cohort studies that comprehensively adjust for confounding factors to identify risk factors for VLU.
- Systematic collection and reporting of race, ethnicity and structural determinants to be incorporated into future studies.
- Studies to determine whether early treatment of risk factors (for example, venous skin changes or DVT) reduce the risk of developing VLU.
- Long-term follow-up study on recurrence rates of VLU following endovenous therapy.

9.3 Review and updating

This guideline was issued in 2027 and will be considered for review in three years. The review history, and any updates to the guideline in the interim period, will be noted in the update report, which is available in the supporting material section for this guideline on the SIGN website: **www.sign.ac.uk**

Comments on new evidence that would update this guideline are welcome and should be sent to the SIGN Executive, Gyle Square, 1 South Gyle

Crescent, Edinburgh, EH12 9EB (email: sign@sign.ac.uk).

10 Development of the guideline

10.1 Introduction

SIGN is a collaborative network of clinicians, other healthcare professionals and patient organisations and is part of Healthcare Improvement Scotland. SIGN guidelines are developed by multidisciplinary groups of practising healthcare professionals using a standard methodology based on a systematic review of the evidence. Further details about SIGN and the guideline development methodology are contained in 'SIGN 50: A Guideline Developer's Handbook', available at **www.sign.ac.uk**

This guideline was developed according to the 2025 edition of SIGN 50.

10.2 The Guideline Development Group

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The membership of the guideline development group was confirmed following consultation with the member organisations of SIGN. All members of the guideline development group made declarations of interest. A register of interests is available in the supporting material section for this guideline at **www.sign.ac.uk**

Panel of people with lived experience

Mr Sean Ross	Patient representative, Aberdeen
Ms Karen Standing	Patient representative, Aberdeen

All members of the panel made declarations of interest.

Guideline development and literature review expertise, support and facilitation were provided by SIGN Executive and Healthcare Improvement Scotland staff. All members of the SIGN Executive make yearly declarations of interest. A register of interests is available on request from the SIGN Executive.

Karen Graham	Patient and Public Involvement Advisor
Gaynor Rattray	Guideline Co-ordinator

10.3 Consultation and peer review

A report of the consultation and peer review comments and responses is available in the supporting material section for this guideline on the SIGN website. All expert referees and other contributors made declarations of interest and further details of these are summarised on the report.

10.3.1 Specialist reviewers invited to comment on this draft

This guideline was also reviewed in draft form by the following independent expert referees, who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline. The guideline group addresses every comment made by an external reviewer, and must justify any disagreement with the reviewers' comments.

SIGN is very grateful to all of these experts for their contribution to the guideline.

Dr Una Adderley	Queen's Nurse and Director, National Wound Care Strategy, London
Dr Leanne Atkin	Vascular Nurse Consultant and Associate Professor, Mid Yorkshire NHS Trust
Professor Gill Belch	Professor of Vascular Medicine, Ninewells Hospital, Dundee
Ms Janice Bianchi	Medical Education Specialist and Honorary Lecturer, University of Glasgow
Professor Alun Davies	Professor of Vascular Surgery, Imperial College, London
Ms Patsy Grant	Tissue Viability Nurse Specialist, Aberdeen Royal Infirmary
Ms Mariama Jammeh Kinteh	District Nurse Team Leader, Oxford Health NHS Foundation Trust
Ms Sarah Kiernan	Consultant Nurse in Tissue Viability, North Middlesex University Hospital
Mrs Jo Jones	Lecturer in Healthcare Sciences (Adult Nursing), Bangor University

Ms Chloe Macknamara	Community Nurse, Airdrie, NHS Lanarkshire
Professor Andrea Nelson	Nurse Researcher and Pro Vice Chancellor, Glasgow Caledonian University
Ms Georgina Ritchie	Queen's Nurse and Director of Research and Academy, St Joseph's Hospice, London
Ms Rebecca Sawyer	Practice Nurse, Spittal Street Practice, NHS Lothian
Ms Kathryn Scullion	Community Staff Nurse, Plean Street Health Centre, Glasgow

10.3.2 Public consultation

The draft guideline was also available on the SIGN website for a month to allow all interested parties to comment.

10.3.3 SIGN editorial group

As a final quality control check, the guideline is reviewed by an editorial group comprising the relevant specialty representatives on SIGN Council to ensure that the specialist reviewers' comments have been addressed adequately and that any risk of bias in the guideline development process as a whole has been minimised. The editorial group for this guideline was as follows. All members of SIGN Council make yearly declarations of interest. A register of interests is available on the SIGN Council page on the SIGN website **www.sign.ac.uk**

Dr Roberta James	SIGN Programme Lead; Co-Editor
Professor Angela Timoney	Chair of SIGN; Co-Editor
Dr Safia Qureshi	Diector of Evidence, Healthcare Improvement Scotland

Abbreviations

CI	confidence interval
DVT	deep vein thrombosis
EVLT	endovenous laser treatment
EVRA	Early Venous Reflux Ablation trial
HR	hazard ratio
ICER	incremental cost-effectiveness ratio
MOCA	mechanochemical ablation
NICE	National Institute for Health and Care Excellence
OR	odds ratio
PTS	post-thrombotic syndrome
QALY	quality-adjusted life years
RFA	radiofrequency ablation
RR	risk ratio
SIGN	Scottish Intercollegiate Guidelines Network
VLU	venous leg ulcer

Annex 1
Key questions addressed in this guideline

Guideline section	Key question
3	1. What patient-related and clinical risk factors are associated with the incidence of a first venous leg ulcer in adults? Population: adults (equal to or greater than 18 years old) who have no prior history of venous leg ulceration Concept of interest: patient-related and clinical risk factors. For example, these may include but are not limited to demographic factors, genetic predisposition, clinical history, lifestyle factors Outcome: • measures of association (for example hazard ratio, odds ratio, relative risk) • measures of effect (for example attributable risk).
4	3. In adults with venous leg ulcers, which compression product is the most clinically and cost-effective for promoting healing and preventing recurrence? Population: adults (equal to or greater than 18 years old) diagnosed with venous leg ulcer. Intervention: • compression bandaging • compression hosiery and garments • compression wraps Comparison: • any intervention listed above • usual care. Outcomes: • time to complete wound healing (for example number of patients, ulcers or limbs that completely healed) • recurrence rates • acceptability (for example ease of use) • change (and rate of change in wound size) • factors associated with adherence/non-adherence

- health-related quality of life (for example measured using a validated standardised generic questionnaire such as EQ-5D, SF-36, SF-12 or SF-6 or validated disease-specific questionnaire)
- pain (for example at dressing change, in between dressing changes or over the course of treatment)
- rates of adverse events together with descriptions (for example infection, eczema, maceration)
- resource use (for example cost or cost-effectiveness estimations, supply use (for example number of dressing changes) and administration and, or clinician time).

5 2. In adults with venous leg ulcers, is varicose veins intervention in addition to compression therapy, clinically and cost-effective for improving healing and preventing recurrence?

Population: adults (equal to or greater than 18 years old) who have no prior history of venous leg ulceration

Intervention: Varicose veins interventions:

- conventional surgery (for example high tie, short saphenous ligation, stripping and avulsions)
- minimally invasive ablation therapies such as endothermal ablation (for example endovenous laser treatment (EVLT) or radiofrequency ablation (RFA))
- non-thermal endovenous ablation therapies (for example mechanochemical ablation (MOCA) sclerosant plus rotating catheter), glue (cryanpacrylate embolisation) and ultrasound guided foam sclerotherapy).

Comparison:

- compression monotherapy
- conventional surgery (see above)
- minimally invasive ablation therapies (see above).

Outcomes:

- time to complete wound healing (for example number of patients, ulcers or limbs that completely healed)
- recurrence rates.
- acceptability (for example ease of use)
- change (and rate of change in wound size)
- factors associated with adherence/non-adherence
- health-related quality of life (for example measured using a validated standardised generic questionnaire such as EQ-5D, SF-36, SF-12 or SF-6 or validated disease-specific questionnaire)
- pain (for example at dressing change, in between dressing changes or over the course of treatment)

- rates of adverse events together with descriptions (for example infection, eczema, maceration),
- resource use (for example cost or cost-effectiveness estimations, supply use (for example number of dressing changes) and administration and, or clinician time).

6 4. In adults with venous leg ulcers receiving compression therapy, which dressings are more clinically and cost-effective in promoting ulcer healing?

Adoption of the NICE HealthTech appraisal.

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