



**National Wound Care
Strategy Programme**
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DRAFT LOWER LIMB RECOMMENDATIONS

The National Wound Care Strategy Programme is developing sets of recommendations for improving clinical practice for wound care.

The following recommendations are still in development so changes to future versions are likely/possible.

Editorial issues (including formatting) will be addressed once the content has been finalised.

Comments on this version can be sent to

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Lower Limb Ulcers

The National Wound Care Strategy Programme (NWCSP) is seeking to improve the care of wounds. The unwarranted variation in UK wound care services offers major opportunities to improve healing rates and thus reduce patient suffering, spend on inappropriate and ineffective treatments and the amount of clinical time spent on wound care.

Lower Limb ulcers are wounds on the lower leg (below the knee) and foot that are slow to heal. It is estimated that approximately 1.5% of the adult population in the UK is affected by active leg and foot ulceration which equates to 730,000 patients.¹ There is considerable variation in practice and outcomes² which increases care costs and extends healing times.³

Leg Ulceration

For the purpose of these recommendations, a wound on the leg is defined as a wound that originates on or above the malleolus. The biggest proportion of leg ulceration is due to venous insufficiency. There is robust evidence to support the use of compression therapy⁴ and endovenous surgery⁵ as first-line therapies to promote healing of venous leg ulceration. A recent UK randomised trial⁵ reports healing rates as high as 76.3% at 24 weeks with compression therapy alone and 85.6% when endovenous surgery supplemented compression therapy. These results are in line with systematic reviews which report that compression therapy doubles the chances of venous ulcer healing.^{4,6}

By contrast, it is estimated that UK practice is only achieving healing rates of 47% at 12 months for venous leg ulceration.⁷ Admittedly, these low healing rates are across populations of ulcer patients rather than samples of patients who are suitable and willing to take part in randomised trials and thus likely to be more willing or able to comply with care delivered by clinicians with a specialist interest. However, there is a strong argument that commissioning equitable and accessible services for leg ulceration would reduce unwarranted variation of care, increase the use of evidence-based care and discourage the over-use of therapies for which there is insufficient evidence² resulting in higher healing rates.

Foot Ulceration

Foot ulceration is also an issue of concern. People with diabetes are 23 times more likely to have a leg, foot or toe amputation than someone without diabetes and both ulceration and amputation are

¹ Guest, J. F., Ayoub, N., McIlwraith, T., Uchegbu, I., Gerrish, A., Weidlich, D., Vowden, K. & Vowden, P. 2015. [Health economic burden that wounds impose on the National Health Service in the UK. BMJ](#) .

² Gray TA, Rhodes S, Atkinson RA, et al [Opportunities for better value wound care: a multiservice, cross-sectional survey of complex wounds and their care in a UK community population](#) BMJ

³ NHS Right Care 2017. [NHS RightCare scenario: The variation between sub-optimal and optimal pathways. Betty's Story](#)

⁴ O'Meara, S. O., Cullum, N., Nelson, A. E. & Dumville, J. C. 2012. [Compression for venous leg ulcers. Cochrane Database of Systematic Reviews](#), Issue 11. Art. No.: CD000265. DOI: 10.1002/14651858.CD000265.pub3.

⁵ Gohel, M. S., Heatley, F., Liu, X., et al 2018. [A Randomized Trial of Early Endovenous Ablation in Venous Ulceration. New England Journal of Medicine](#), 378, 2105-2114

⁶ Nelson EA, Adderley U. [Venous leg ulcers. Systematic review](#) 1902. BMJ Clinical Evidence. 2016 January.

⁷ Guest, J. F., Ayoub, N., Mcilwraith, T. et al. 2017. [Health economic burden that different wound types impose on the UK's National Health Service. International Wound Journal](#), 14, 322-330.

associated with high mortality.⁸ The growing burden of diabetes and its complications has led to a national diabetes strategy⁹ with examples of significant regional service transformation.¹⁰ However, over half of all major amputations are in patients that do not have diabetes^{11 12}, the major amputation rate is falling in the diabetic population faster than the non-diabetic population¹³ but minor amputations are rising with the increase driven by non-diabetic men.¹³ It seems likely that this might be due to improved service provision for diabetes patients or poor access to equivalent services for the non-diabetic population. Again, there is a strong argument for commissioning equitable and accessible services for all patients with foot ulceration.

Recommendations

People with leg or foot wounds usually only present to a clinician if healing is problematic or anticipated to be problematic. These evidence-informed recommendations support excellence in preventing, assessing and treating such people with leg and foot wounds to optimise healing and minimise the burden of wounds for patients, carer's and health and care providers. The recommendations have been developed in collaboration with the NWCSP pressure ulcer and surgical wounds clinical workstreams and the NWCSP data and information, supply and distribution, research evidence and education and workforce enabler workstreams and been informed through consultation with the NWCSP Stakeholder Forums.

The recommendations signpost to relevant clinical guidelines or outline evidence-informed care that will improve healing and optimise the use of healthcare resources. The recommendations outline a pathway of care that promotes rapid diagnosis enabling fast access to appropriate therapeutic interventions with swift escalation of treatment or service provision for patients requiring more complex care. The recommendations thus offer a framework for the development of local delivery plans that includes consideration of:

- Relevant research evidence (where it exists) to inform care.
- Configuration of services, and deployment of workforce.
- Appropriate education for that workforce; and
- Relevant metrics to measure quality improvement.

The recommendations do not replace existing evidence-informed clinical guidelines or replace clinical judgement and decision making in relation to the needs of the individual patient but to bring attention to such evidence and support planning for implementation into clinical practice.

⁸ Kerr M (2017) [Diabetic foot care in England: An economic study](#).

⁹ NHS England. NHS Diabetes Prevention Program (NHS DPP). Available at <https://www.england.nhs.uk/diabetes/diabetes-prevention/>

¹⁰ Paisey RB, Abbott A, Levenson R, Harrington A, Browne D, Moore J, Roe M. Diabetes-related major lower limb amputation incidence is strongly related to diabetic foot service provision and improves with enhancement of services: peer review of the South West of England. *Diabet Med* 2018;35(1):53-62

¹¹ Ahmad N, GN Thomas, Gill P, et al. The prevalence of major lower limb amputation in the diabetic and non diabetic population of England 2003-2013. *Diab and Vasc Dis Research* 2016;13(5):348-53

¹² Moxey PW, Hofman D, Hinchliffe RJ, et al. Epidemiological study of lower limb amputation in England between 2003 and 2008. *BJS* 2010; 97: 1348-1353.

¹³ Ahmad N, GN Thomas, Gill P et al. Lower limb amputation in England: prevalence, regional variation and relationship with revascularisation, deprivation and risk factors. A retrospective review of English hospital data. *J R Soc Med.* 2014 Dec;107(12):483-9

Recommendations for Clinical Care

Immediate and Necessary Care

The guidance applies to people who have one or more wounds below the knee.

A leg wound is a wound that originates on or above the malleolus (ankle bone) but below the knee.

A foot wound is a wound that originates below the malleolus.

RED FLAGS - Immediately escalate to relevant clinical specialist

- Acute infection of leg or foot (e.g. increasing redness, swelling, pain, pus, heat).
- Acute or chronic limb threatening ischaemia.^{14 15}
- Suspected deep vein thrombosis (DVT).
- Suspected skin cancer.

For people in the last few weeks of life, seek input from their other clinicians to agree an appropriate care plan.

Immediate care should include:

- Wound bed, peri-wound and limb skin cleaning and emollient, as required.¹⁶
- Simple low-adherent dressing with sufficient absorbency.¹⁸
- For leg wounds, first line mild graduated compression (see explanatory notes).¹⁷
- When appropriate, people with leg and foot wounds should be supported to self-care.

Assessment for diagnosis and treatment planning

Within 24 hours of identification of a non-healing wound:

- Escalate to a clinician with advanced wound care capabilities / competencies working within a multi-disciplinary team system for assessment, diagnosis, and treatment planning.
 - A person with diabetic foot problems being admitted to hospital, or the detection of diabetic foot problems (if the person is already in hospital) should be referred to the multidisciplinary foot care service within 24 hours of the initial examination of the person's feet and the responsibility of care should be transferred to a consultant member of the multidisciplinary foot care service if a diabetic foot problem is the dominant clinical factor for inpatient care.¹⁸
 - For all other active diabetic foot problems, refer the person within 1 working day to the multidisciplinary foot care service or foot protection service.¹⁸
 - A person with a non-diabetic foot wound, refer the person within 1 working day to the multidisciplinary foot care service or foot protection service.
 - A person with a leg wound presenting should be assessed within 14 days of original presentation.

Wounds due to pressure damage associated with immobility or a medical device:

¹⁴ Conte M.S., Bradbury A.W., Kohl P et al (2019) [Global vascular guidelines on the management of chronic limb-threatening ischemia](#) *Journal of Vascular Surgery* 69, (6) Supp. 3S–125S.e40

¹⁵ NICE (2018) [Clinical Guideline Peripheral Arterial Disease \(CG147\)](#)

¹⁶ SIGN. 2010. [Management of chronic venous leg ulcers - a national clinical guideline.](#)

¹⁷ BLS (2019) [Position Paper for assessing vascular status in the presence of chronic oedema prior to the application of compression hosiery: Position Document to guide decision making A5](#)

¹⁸ NICE. (2016). [Clinical Guideline - Diabetic foot problems: prevention and management. \[NG19\]](#)

- Report using local incident reporting system¹⁹ and the revised definitions and measures.²⁰

Explanatory Notes

Red Flag Symptoms: The listed 'red flag' symptoms are those that the NWCSF Lower Limb Workstream has identified as requiring immediate attention from a relevant specialist to reduce the risk of rapid deterioration or serious harm.

Treatment of an infected diabetic foot ulcer should follow the [NICE Guideline for Diabetic Foot Problems](#)¹⁸
Treatment of an infected leg ulcer should follow the [NICE Guidance for Leg ulcer infection: antimicrobial prescribing](#)²¹

The absence of foot pulses is not included as a 'red flag' symptom because pulse palpation has poor sensitivity and specificity as a diagnostic sign for inadequate arterial supply (and the Dorsalis pedis pulse is congenitally absent in some people).

Some people in the last few weeks of life may benefit from some of the standard therapeutic interventions for lower limb ulceration to improve their quality of life. However, the complexity of the health needs of these people, means that a multi-disciplinary approach is particularly important in planning their health care to optimise outcomes and reduce the risk of harm.

Immediate Care: Prevention of initial wounding is outside the remit of the NWCSF, but early appropriate care can prevent leg and foot wounds that are non-healing, or at risk of non-healing, becoming ulcers. (The literature commonly defines a leg ulcer as an open lesion between the knee and ankle joint that remains unhealed for at least four weeks.)

It is good practice to cleanse the wound bed, peri-wound (around the wound) and the limb and apply emollient to moisturise the surrounding skin. The method of cleansing will depend on the situation in which care is being undertaken and the individual needs of the patient. While debridement may be required for leg and foot wounds, in most cases, this will not form part of initial and necessary care.

No robust evidence has been identified to support the superiority of any dressing type over another for standard care of leg or foot wounds. Therefore, simple low-adherent dressings with sufficient absorbency are recommended as first line care but this recommendation does not replace clinical judgement and decision making in relation to the needs of the individual patient.

People with leg and foot wounds with 'red flag' symptoms should not be treated with compression. The recommendation for wounds on the leg to be treated with mild compression is based on the British Lymphology Society view that, providing people with 'red flag' symptoms (such as the symptoms of arterial insufficiency) are excluded, the benefits of first line mild compression outweigh the risks, even for people without obvious signs of venous insufficiency¹⁷. In most clinical situations it is not possible to precisely measure the level of compression that is applied since this is dependent on several factors including ankle circumference, choice of compression system and clinician skill. For the purpose of this guidance 'mild graduated compression' is defined as a compression system that is intended to apply 20mmHg or less at the ankle. This is based on the World Union of Wound Healing Societies definition of 'mild graduated compression'²² and is intended to illustrate what is meant as 'mild graduated compression' rather than being a precise level of compression required.

¹⁹ NICE (2014) [Clinical Guideline - Pressure ulcers: prevention and management \[CG179\]](#)

²⁰ NHS Improvement (2018) [Pressure ulcers: revised definition and measurement: Summary and recommendations.](#)

²¹ [NICE Guidance Leg ulcer infection: antimicrobial prescribing](#) (2020)

²² [Compression in venous leg ulcers: a WUWHS consensus document.\(2009\)](#)

Assessment for Diagnosis and Treatment: People with foot ulcers, whether associated with diabetes or not, are at high risk of leg, foot or toe amputation and increased risk of death^{8, 11,12,14}. All people with non-healing wounds on the foot should be able to swiftly access services for assessment, diagnosis and treatment planning.

People with leg wounds usually only seek clinical advice when healing is delayed or there are risk factors for non-healing. People with non-healing leg wounds should receive assessment within 14 days of initial presentation as it is likely that such wounds will already have been present for some time before this and further delay increases healing times and suffering. Parity is desirable for both foot and leg ulcer assessment, but in the absence of 'red flag' symptoms, leg ulceration has a lower risk of mortality or severe morbidity than foot ulceration. This justifies a time frame of 14 days between initial presentation and assessment for people with leg wounds, compared to within 24 hours for a person with foot wounds.

A multidisciplinary team (MDT) is a team of relevant specialists, who together can ensure that all available treatment options are considered for each person. An MDT for wound care may include clinicians from podiatry, nursing, medicine, tissue viability, vascular, lymphoedema and dermatology services with the capabilities / competencies identified for clinicians working at an advanced level. (A capability framework for lower limb is in development).

The services that should be offered by multidisciplinary foot care service or foot protection service are outlined [below](#).

Wounds Associated with Pressure Damage: NICE¹⁹ requires NHS Trusts to report skin pressure damage of Category / Stage 2 or above. Therefore, it is important to differentiate between pressure ulcers on the foot and foot ulceration due to other causes. A pressure ulcer is a localised injury to the skin and/or underlying tissue usually over a bony prominence primarily as a result of unrelieved pressure due to immobility in combination with shear¹⁹. A foot ulcer can be defined as a breakdown in the skin that occurs below the ankle¹⁶. Foot ulcers generally present on the plantar aspect of the foot and dorsal interphalangeal joints and apex of toes. Pressure ulcers are found in places of pressure over bony prominences usually associated with unrelieved pressure due to immobility. Many foot ulcers have an element of pressure as part of the aetiology. Footwear may be a cause of this pressure but may only be a problem if there is also lack of circulation and / or sensation in the foot²³. When all individual clinical and non-clinical factors pertaining to the person are considered and the predominant causative factor is pressure, then the wound should be considered a pressure ulcer and reported as such. When the predominant factor is disease related e.g. diabetes, neuropathy, arterial disease, as the NICE definition of a pressure ulcer¹⁹ relates to static pressure not ambulatory pressure, the wound should not be considered a pressure ulcer in people who are independently mobile¹⁹ unless the pressure damage has been caused by a prescribed orthosis or cast.

²³ Communication with North West Clinical Effectiveness Group for Diabetes, Wound Care & PAD (NWCEG, 2019)

WOUNDS ON THE FOOT

The guidance applies to people who have one or more wounds below the malleolus (ankle bone) with, and without a diagnosis of diabetes.

Diagnosis and Treatment Wounds on the Foot

1. **Assess and identify contributing causes for non-healing** by undertaking an assessment that includes:
 - Comprehensive assessment including clinical and psychosocial needs.
 - Screening for diabetes.
 - Wound assessment documented using wound minimum data set²⁴ and wound photography.
 - Lower limb assessment that includes:
 - a. Vascular assessment of arterial supply,
 - b. Neuropathic assessment for sensation,
 - c. Biomechanical assessment.¹⁶

2. **Diagnose cause of non-healing and formulate treatment plan:**

All types of foot wound:

- Wound bed cleansing, debridement, peri-wound and limb skin cleaning and emollient, as required. (Debridement should only be undertaken by healthcare professionals with the relevant training and skills.)
- Dressing selection should consider the clinical assessment of the wound and the person's preference, with the lowest acquisition cost appropriate to the clinical circumstances.¹⁸
- Analgesia, as required.
- Implement offloading and pressure redistributing strategies as required.¹⁸
- Follow NICE guidance¹⁸ and local policy for infection and antimicrobial stewardship.
- If there is evidence of ischaemia, refer for vascular surgical interventions.
- Offer advice on skin care, footwear, exercise and mobility, rest and limb elevation, nutrition and self-care and if appropriate, smoking cessation and weight loss.
- Provide written information about their diagnosis and treatment plan and identify, discuss, and incorporate opportunities for self-care into treatment plans as agreed with the individual.

People with confirmed or suspected diabetic foot ulceration

- More detailed advice about:
 - Offloading.
 - Control of foot infection.
 - Control of ischaemia.
 - Wound debridement.
 - Wound dressings.
- can be found in the [NICE Guideline for Diabetic Foot Problems](#)¹⁸

²⁴Coleman, S., Nelson, E. A., Vowden, P. et al 2017. [Development of A Generic Wound Care Assessment Minimum Data Set](#). *Journal of Tissue Viability*. 26 (4) 226-40

People with confirmed or suspected peripheral arterial disease

- More detailed advice about:
 - Intermittent claudication.
 - Surgical interventions.
 - Critical limb ischaemia
- can be found in the [NICE Guideline for Peripheral Arterial Disease](#)¹⁵

Explanatory Notes

Foot ulceration can be due to different underlying causes, but amputation is a risk for many of these causes, especially for severe peripheral arterial disease which often manifests as foot ulceration. Rapid assessment, diagnosis and treatment is crucial for all those with foot ulceration, especially when half of all major amputations are in those without diabetes.¹¹

The establishment of diabetic foot clinics has done much to address the needs of those with diabetic foot ulceration, but such clinics are not designed or resourced to meet the needs of people with foot ulcers without diabetes. The NWCS recognises that whilst some healthcare services have adopted a 'high risk foot' approach to address this inequality, more is needed to ensure that all patients with foot ulcers can access appropriate care.

A multi-disciplinary team (MDT) approach to care is essential. People with foot ulceration may require complex interventions such as offloading, vascular surgical interventions, orthopaedic/podiatric/plastic surgery, microbiology and toe and foot compression alongside specialist medical management of contributing disease. A multidisciplinary foot care service or foot protection service should be able to offer access to such services. The multidisciplinary team for diagnosis and treatment may include clinicians from podiatry, nursing, medicine, tissue viability, vascular, lymphoedema and dermatology services with the capabilities / competencies identified for advanced practitioners. (A capability framework for lower limb is in development).

The recommendations in this section refer to the current NICE guideline advice ^{15,18} where more detailed information and condition-specific recommendations can be found.

Assessment: *For all types of foot ulcer, accurate wound assessment is essential for monitoring wound healing as wound size and wound bed status form the baseline against which all subsequent treatment effectiveness will be measured. Wound photography should be incorporated into wound assessment and regarded as part of standard practice.*

Treatment:

The foot is a highly complex part of anatomy and people with foot ulceration are at high risk from infection and other complications. Therefore, debridement should only be undertaken by healthcare professionals with the relevant training and skills such as podiatrists and nurses working at advanced level or surgeons.

While there is a lack of robust evidence for first line dressings for promoting foot ulcer healing, there is some evidence to guide dressing selection for people with hard to heal foot ulcers. Dressing selection should therefore take account of current research evidence as well as patient preferences and cost.

Ongoing Care and Review

Wounds on the Foot

At each dressing change:

- Wound bed cleansing and debridement, peri-wound and limb skin cleaning and emollient, as required.
- Review effectiveness of treatment plan and escalate any concerns to the relevant clinical specialist.
- Where appropriate, people with foot wounds should be encouraged to self-care.

At weekly intervals:

- Review effectiveness of treatment plan and escalate any concerns to the relevant clinical specialist.
- Wounds that are deteriorating should be urgently escalated to the relevant clinical specialist.

At 4- week intervals (or more frequently if concerned):

- Assess for reduction in wound size and document using wound photography.
- Assess condition of skin.
- Assess pain/ discomfort.

Wounds that are not improving /concerns identified at regular dressing changes should be escalated to the local specialist service for advice. Where possible, care should continue to be delivered by the local care team under the supervision of the specialist team.

At 12 weeks:

For wounds that remain unhealed, undertake a comprehensive re-assessment.

More detailed advice for people with diabetic foot ulceration can be found in the [NICE Guideline for Diabetic Foot Problems](#).¹⁸

More detailed advice for people with peripheral arterial disease, can be found in the [NICE Guideline for Peripheral Arterial Disease](#).¹⁵

WOUNDS ON THE LEG

The guidance applies to people who have one or more wounds that originate on or above the malleolus (ankle bone).

Diagnosis and Treatment Wounds on the Leg

1. **Assess and identify risk factors for non-healing** by undertaking an assessment that includes:
 - Comprehensive assessment including clinical and psychosocial needs, review of medication, pain and analgesia needs, possible infection, nutrition.
 - Wound assessment documented using wound minimum data set²³ and wound photography.
 - Lower limb assessment that includes:
 - Vascular assessment of arterial supply.¹⁸
 - Neuropathic assessment for sensation.
 - Lymphoedematous changes.
2. **Diagnose cause of non-healing and formulate treatment plan**

All types of leg wound:

- Wound bed cleansing and debridement, peri-wound and limb skin cleaning and emollient, as required.²⁵
- Simple low-adherent dressing with sufficient absorbency.²⁵
- Follow NICE Guidance²¹ and local policy for infection and antimicrobial stewardship.
- Offer advice on skin care, footwear, exercise and mobility, rest and limb elevation, nutrition and self-care and if appropriate, smoking cessation and weight loss.
- Provide written information about their diagnosis and treatment plan and identify, discuss, and incorporate opportunities for self-care into treatment plans as agreed with the individual.
- Analgesia, as required.
- Where possible, people with leg wounds should be encouraged to self-care.

Leg wounds with an adequate arterial supply and where no aetiology other than venous insufficiency is suspected:

- Refer for venous surgical interventions.^{26 27}
- Offer care in line with the [SIGN Clinical Guideline for Venous Leg Ulcers](#).¹⁸ This should include:
 - Information about the benefits of compression therapy.
 - Strong compression therapy (see explanatory notes).⁴

²⁵ SIGN. 2010. [Management of chronic venous leg ulcers - a national clinical guideline](#).

²⁶ NICE (2013) [Clinical guideline \[CG168\] Varicose veins: diagnosis and management](#)

²⁷ Gohel, M. S., Heatley, F., Liu, X. et al. (2018) [A Randomized Trial of Early Endovenous Ablation in Venous Ulceration. *New England Journal of Medicine*](#).

People with:

- Chronic ankle/leg oedema not reduced by elevation; or
- Abnormal limb shape; or
- Copious exudate, or
- Very fragile skin,

should be offered strong multi-component compression bandaging (see explanatory notes)^{7, 22, 28}. If these symptoms do not improve, escalate for expert diagnosis and advice about lymphoedema.²⁹

People without the above symptoms should be offered strong compression in the form of two-layer compression hosiery kits as first line treatment³⁰ (with strong multi-component compression bandaging^{7, 22, 26} as an alternative.) The need for application aids should be considered.

For people with advanced, unstable cardiac failure, liaise with their cardiac clinician to agree how to offer compression to optimise healing while minimising additional cardiac burden.

Leg wounds with signs of arterial disease:

- Refer for vascular surgical interventions and advice on compression.
- Follow NICE Guideline for Peripheral arterial disease.¹⁵
- Pending vascular opinion:
 - Simple low-adherent dressing.
 - If limb is oedematous but with no signs of limb-threatening ischaemia, continue with mild graduated compression if tolerated and no deterioration (see explanatory notes p4).

Leg wounds of other or uncertain aetiology:

- Refer for a dermatology opinion (or other specialist depending on symptoms and service arrangements).
- Pending specialist opinion.
 - Simple low-adherent dressing.
 - Continue with mild graduated compression if tolerated and no deterioration.

Lymphoedema

People with suspected **lymphoedema** should be offered care in line with the [International Lymphoedema Framework Recommendations](#).²⁷

²⁸ O'Meara S, Cullum N, Nelson EA, Dumville JC. [Compression for venous leg ulcers. Cochrane Database of Systematic Reviews](#) 2012, Issue 11. Art. No.: CD000265. DOI: 10.1002/14651858.CD000265.pub3.

²⁹ International Lymphoedema Framework (2006) [Best Practice for the Management of Lymphoedema](#)

³⁰ Ashby, R. L., Gabe, R., Ali, S. et al 2014. [VenUS IV \(Venous Leg Ulcer Study IV\). Health Technology Assessment](#).

Explanatory Notes

Assessment: Accurate wound assessment is essential for monitoring wound healing as wound size and wound bed status form the baseline against which all subsequent treatment effectiveness will be measured. Wound photography should be incorporated into wound assessment and regarded as part of standard practice.

Palpation of pulses is known to be an unreliable form of vascular assessment of arterial supply³¹ so vascular assessment of arterial supply should be undertaken by using Doppler to measure the ankle brachial pressure index (ABPI) or other evidence-informed methods.

Neuropathic assessment for sensation is recommended to reduce the risk of pressure damage from compression therapy. People with impaired sensation may be unable to identify discomfort from inappropriately applied compression therapy so may require closer monitoring.

Lymphoedematous changes include swelling that does not resolve on elevation/ overnight, thickening of skin & subcutaneous tissues, shape distortion, hyperkeratosis.

Treatment: No robust evidence has been identified to support the superiority of any dressing type over another for any type of non-healing leg wounds. Therefore, simple low-adherent dressings with sufficient absorbency are recommended as first line care but this recommendation does not replace clinical judgement and decision making in relation to the needs of the individual patient.

There is good evidence in favour of endovenous ablation for healing venous leg ulcers and preventing recurrence and this is recommended in the [NICE Guideline for Varicose Veins](#). However, there will be some people for whom a vascular referral would be inappropriate (e.g. those unsuitable for surgical intervention due to infirmity) so this recommendation does not replace clinical judgement and decision making in relation to the needs of the individual patient.

People with leg wounds with an adequate arterial supply and where no aetiology other than venous insufficiency is suspected, should be offered care in line with the SIGN clinical guideline for venous leg ulcers¹⁶ which is currently the most recent UK national clinical guideline for this condition. However, since the publication of the SIGN Guideline, several relevant NIHR funded studies have been published so this guidance also considers the evidence from these studies.

In most clinical situations it is not possible to precisely measure the level of compression that is applied since this is dependent on several factors including ankle circumference and clinician skill. For the purpose of this guidance strong compression is defined as an elastic compression system that is intended to apply at least 40mmHg at the ankle or a non-elastic (e.g. short stretch) system applied at full stretch.

There is evidence that for those willing to wear them, two-layer compression stockings are an effective alternative to four-layer bandaging for healing venous leg ulcers, are more cost effective, may reduce recurrence rates and increase quality of life²⁴ and are more likely to enable people to self-care. However, two-layer compression stockings are not suitable for all people with venous leg ulcers so multi-component compression bandaging should be offered to patients with significant oedema, exudate, fragile skin and abnormal limb shape.

The margins of uncertainty around the current evidence for compression therapy mean that it is not possible to recommend one type of elastic system designed to deliver 40mmHg over another. Whilst there is stronger evidence for four-layer bandaging and short stretch bandaging over two-layer graduated compression, all these systems are used in the UK. Ultimately, the choice of type of compression therapy should be the choice of the person with the wound.

³¹ Callam, M. J., Harper, D. R., Dale, J. J. & Ruckley, C. V. 1987. Arterial disease in chronic leg ulceration: an underestimated hazard? *BMJ*, 294, 929-931.

Regarding 'wrap' compression systems, the lack of evidence of effectiveness has led to an ongoing NHS funded randomised controlled trial ([VENUS-6](#)) to investigate this issue. Clinicians who wish to offer wrap compression systems are encouraged to do so within the trial to enable swift recruitment and completion of this study.

Mild compression is thought to have benefits for people with leg wounds, even without obvious signs of venous insufficiency by supporting the vein to improve venous return, and by reducing oedema, reduce pressure on both veins and arteries. These benefits are thought to outweigh potential risks in people without 'red flag' symptoms.¹⁷

Chronic oedema/ lymphoedema is common in people with lower limb ulceration. The clinician responsible for diagnosis and treatment planning should either have capabilities / competencies for managing lymphoedema or be able to refer to specialist lymphoedema services for specialist input.

Oral pentoxifylline, a drug which helps blood flow, has been used to treat venous leg ulcers. Although compression bandaging is the mainstay of treatment to promote healing in people with venous leg ulcers, some venous ulcers remain unhealed, and some people are unsuitable for compression therapy. A [Cochrane Review](#) found evidence that oral pentoxifylline is an effective adjunct to compression bandaging for treating venous ulcers and may be effective in the absence of compression. However, caution is needed when making prescribing decisions as many people with venous leg ulcers may already use polypharmacy and gastrointestinal disturbances (nausea, indigestion, and diarrhoea) are a known adverse event in some patients.

Ongoing Care and Review

Wounds on the Leg

For all types of leg ulcer:

At each dressing change:

- Wound bed cleansing and debridement, peri-wound and limb skin cleaning (including removal of hyperkeratosis) and application of emollient, as required.
- If being treated with compression therapy, review reduction in ankle circumference and consider whether compression therapy should be adapted.
- Review effectiveness of treatment plan and escalate any concerns.

At least every 4- weeks:

- Assess for reduction in wound size and document using wound photography.
- Assess condition of skin.
- Assess pain/ discomfort.
- Measure to assess for reduction in limb swelling.

People with wounds that show no significant progress towards healing or are deteriorating should be escalated to the local specialist service for advice. Where possible, care should continue to be delivered by the local care team under the supervision of the specialist team.

At 12 weeks:

- People with wounds that show no significant progress towards healing or are deteriorating should be escalated to the local specialist service for advice. Where possible, care should continue to be delivered by the local care team under the supervision of the specialist team.
- When wounds are progressing to healing but remain unhealed, a comprehensive re-assessment should be undertaken.

Prevention of recurrence

For all types of leg ulcer:

- People with healed leg ulcers should be offered advice on skin care, footwear, exercise and mobility, rest and limb elevation, nutrition, and self-care and if appropriate, smoking cessation and weight loss.
- People should be provided with written information about their diagnosis and treatment plan and opportunities for self-care should be identified, discussed, and incorporated into treatment plans as agreed with the individual.

Venous Leg Ulceration

- Care should be in line with the SIGN clinical guideline for venous leg ulcers¹⁸ which recommends maintenance in compression hosiery. People with healed venous leg ulcers and no clinical signs of arterial impairment should be reviewed 6-monthly for replacement of compression garments and ongoing advice about prevention of recurrence. Changes in lower limb symptoms or skin problems relating to hosiery should trigger a comprehensive re-assessment that includes vascular assessment for arterial supply.

Explanatory Notes

The healing rates for venous leg ulcers reported in the literature^{4,5,6} suggest that at least 75% of patients with venous leg ulceration uncomplicated by other conditions should heal within 24 weeks. Therefore, if after 4 weeks of treatment, there is no evidence of progress towards healing, such people should be escalated to the local specialist service for review by a clinician working at an advanced level with the capabilities / competencies identified in the Competency Framework for Advanced Practitioners. Similarly, people that are unhealed at 12 weeks and who show no significant progress towards healing should be escalated for specialist input.

Lower limb venous disease is characterised by episodes of remission (healing) and relapse (recurrence of ulceration). The frequency of recurrence of ulceration can be reduced by ongoing use of compression therapy³² and endovenous surgery.^{24,25}

³² Nelson E A, Bell-Syer S. (2014) [Compression for preventing recurrence of venous ulcers](#) *Cochrane Systematic Review*